3rd European Academic Workshop on Electronic Human Resource Management

20 – 21 May 2010, Bamberg, Germany

Evidence-Based e-HRM? On the way to rigorous and relevant research.

The Third Academic Workshop on electronic Human Resource Management (e-HRM) is organized by the Chair of Management Information Systems (MIS), Saarland University, Germany

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PREFACE

Dear e-HRM experts and colleagues,

I would like to welcome you warmly to the "Third European Academic Workshop on electronic Human Resource Management (e-HRM)".

I am pleased to see that our Workshop has been established and is attracting a committed group of e-HRM practitioners and academics.

In order to tackle an obviously wide-spread scientific problem we decided for "Evidence-Based e-HRM? On the way to rigorous and relevant research." as the major workshop topic. We hereby face the challenges of the rigor vs. relevance debate and intend to bridge research and practice by elaborating on the idea of evidence-based management in e-HRM.

After a prolific review process by our program committee we could select 23 quality papers, some of which directly, some rather indirectly refer to this topic. In particular, we received papers in the realm of Strategic Perspectives, HRIS Personnel, e-Recruitment, e-Learning and e-Competencies Management, Research Perspectives, Organizational Aspects, Cases and further miscellaneous issues and are looking forward to interesting presentations and discussions.

I am grateful to Theresa Welbourne (University of Southern California) and Uwe Simon (SAP) who agreed to be Key Note speakers to support and stimulus us.

In an established manner, the Workshop also includes a Practitioner Track. Besides, as a final part of the Workshop, a Scientist-Practitioner-Forum is planned to foster relevant future research.

I thank all authors for sharing their findings, all reviewers for their active support and I hope that all participants will profit from interesting discussions. I also thank our two sponsors, SAP (http://www.sap.com/) and DFG (http://www.dfg.de/en/) for supporting the funding.

Enjoy the conference and your stay in Bamberg.

Prof. Dr. Stefan Strohmeier

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Academic Key Note

From e-HRM to Fast HRM

Opportunities for Research and Practice Innovation

***Theresa M. Welbourne*, Ph.D.**

Human resource management (HRM) is a field that historically has been inundated with paperwork and bureaucracy. Thus, the promise of e-HRM was to help streamline core HR process, reduce costs, and improve efficiency. The result of these improvements would be transforming HRM to take on a more strategic role in the organization. However, with all the improvements in technology and HRM, the reality of moving into a more strategic role has not ensued in many organizations. While there is agreement that e-HRM has helped the field progress, something remains missing.

One way to move forward is to study the negative consequences of eHRM. In one word, what we hear from leaders, managers, HR executives and the general employee population is "information overload." And with too much data comes complexity and slowness, often the very things that e-HRM was implemented to reduce. The answer lies not in more technology but with innovative thinking about core HR systems. It is time to go beyond putting tried and true HR practices on the web and moving to creatively rethink how HR work can be done. In other words, the academic community can apply new thinking to suggest alternative ways to do HRM. Combining technology, theory and empirical research with innovative exploration and science, the field of HRM can let go of its past and move into a new realm.

New HRM systems should be fast and light because in today's fast paced environment, if HRM does not keep up, practitioners will miss the opportunity to be strategic. Replacing manual HRM processes with heavy technology often creates more, rather than less, work for HR. Think about the many HR areas where we now have too much data and perhaps not better decisions (e.g. dashboards with HR metrics few know how to use; recruiting with more resumes than anyone can read; performance management systems that for efficiency went to annual programs that exhaust everyone involved).

If HRM is going to help organizations grow, it must not only add technology but also become fast and light. In this regard, academics are well equipped to help practitioners. To start, there is an abundant amount of well researched work from other areas of business that can be applied to HRM. One such area is agile or extreme programming. Over the last few years, through work at the Center for Effective Organizations, we have tapped into the agile and extreme programming research to speed up HRM. We are working with companies to alter the HRM strategy making process, reinvent

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employee surveys, and applying new theories to deploy a role-based, 3-minute 360 feedback tool. These experiments lead to innovation for practitioners and research for academics. Also, our team is working to speed up learning by blending social networking with traditional teaching, webinars, and real-time benchmarking. These Fast HRM™ tools and processes, using a development cycle based on extreme programming, are examples of moving from e-HRM to Fast HRM.

Evolving from e-HRM to Fast HRM requires innovation and high quality relationships. There is tremendous opportunity for the academic community to shape the transformation of e-HRM by applying new theories, tested empirical work, in-depth case studies and innovative technology to change core HR practices. Fast HRM goes beyond putting HRM on the web. Fast HRM is a lens that can be used to think differently, and it can be one more effort to take the somewhat abstract idea of "being strategic" and turning it into a reality.

Can the Evidence-Based Management Movement Help e-HRM Bridge the Research-Practice Gap?

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Abstract. *Evidence-based movements have emerged recently in various disciplines. They are motivated to improve practice by making research-informed decisions. However, the concept of "evidence-based" is easily misconstrued, risking a lost opportunity to bridge the gap between practitioners, academics and other stakeholders. As an inter-disciplinary field, e-HRM is likely to exhibit the research-practice gap from which its parent disciplines (IS and HR) suffer. In this paper, (1) We trace the developments of the Evidence-based Management (EBMgt) movement; (2) We outline how e-HRM will profit from an evidence-based perspective; and (3) We offer recommendations to increase the role of academics in the practice of evidence-based e-HRM.*

Keywords: Evidence-Based movements, Levels of evidence, Research – practice gap, Decision making, Recommendations for e-HRM researchers.

1 Introduction

Calls to incorporate the best available scientific evidence in decision making have been raised in domains as widespread as medicine [25], education [32], criminal justice [28], management [14][18][20][22][23][33], and software engineering [9]. These calls in part stem from the frustration academics experience from limited uptake of their research findings by practitioners –a phenomenon referred to as "the research-practice gap" [24]. In the context of management, academics criticize business decisions that fly in the face of well-established, scientific evidence [20], such as over-use of mergers and acquisitions and ineffective use of incentives and change management despite published studies identifying appropriate actions and conditions of use [18]. Business decisions are frequently based upon "gut feelings," custom, bandwagon effects, "best practices" from noticeable companies and even organizational politics [14]. Yet it remains common that "[c]hief executives,… pay little attention to what business schools do or say," because of academics' "inability to research and write about their work in a way that real-life business people understand;" "many business school faculty prefer to adorn their work with scholarly tables, statistics and jargon because it makes them feel like real academics" [29].

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But scientific jargon is only part of the problem. The issues upon which researchers focus their attention are often perceived as irrelevant [5][17]. To use an example from e-HRM research, many pages have been written to illustrate that top management support is important [16] or that a positive intra-departmental relationship between IS and HR matters in the intensity of use of HR technologies [15]; a positivistic stance (the epistemological viewpoint that knowledge advances by confirming through observation and empirical validation) is, after all, a fundamental basis of scientific research. Still, how many practicing IS or HR managers would find these conclusions surprising or useful? Findings are often based on issues of interest to scientists, not practitioners, and thus fail to motivate managers to seek out or apply them. The emerging field of e-HRM, defined by Strohmeier as "the (planning, implementation and) application of information technology for both networking and supporting at least two individual or collective actors in their shared performing of HR activities" ([31], p. 20) would also do well by making as purposeful an effort as possible, so that its scholarly work does not grow separate from what is needed and useful for practitioners.

We now proceed as follows: in section two, we describe the recent developments of the nascent Evidence-based Management (EBMgt) movement; in section three, we argue that e-HRM is likely to profit from an evidence-based perspective and offer recommendations to increase the role of academics in the practice of evidence-based e-HRM. The conclusion of this paper summarizes its major contributions.

2 The Evidence-based Management (EBMgt) Movement

As noted in the call for papers to the Evidence-Based e-HRM workshop, EBMgt attempts to bridge the research-practice gap by using the "best-available scientific evidence" in managerial decision-making [18]. The earliest proponents of EBMgt have attributed the Evidence-Based Medicine movement as the inspiration for EBMgt [18][20]. Although the essence of these movements is the systematic use of scientifically derived information, Table 1 shows that a certain amount of adaptation is necessary to promote evidence-based practice suited to a given profession or domain. The working definitions of EB Medicine and EB Management have evolved to emphasize the importance of certain stakeholders; it is not exclusively about taking into account the best available evidence (preferably of the scientifically collected kind), but also about considering the focal professional's expertise and the stakeholder's preferences or values.

Table 1: Evolving Definitions of Evidence-Based Medicine and Management

Elements in Definition	Medicine	Management
(1) Best available evidence	"the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients" (Sackett, cited in [18], p. 63)	"a way of seeing the world and thinking about the craft of management; it proceeds from the premise that using better, deeper logic and employing facts, to the extent possible, permits leaders to do their jobs more effectively" ([18], p. 74)

Elements in Definition	Medicine	Management
(1) Best available evidence, combined with (2) professional expertise, and (3) stakeholder's preferences or values	"the integration of best research evidence with clinical expertise and patient values" ([26], p. 1)	"a movement to integrate best-available evidence, manager's judgment and stakeholder values in business decision making" ([14], p. 11)
(1) Practitioner's expertise, (2) evidence from the local context, (3) best available research evidence, and (4) stakeholders' perspectives		"making decisions through the conscientious, explicit, and judicious use of four sources of information: practitioner expertise and judgment, evidence from the local context, a critical evaluation of the best available research evidence, and the perspectives of those people who might be affected by the decision" ([3], p. 19)

This development is necessary and appropriate but far from complete. Practice domains deal with problems that vary in complexity and in the types of research that might effectively inform practice. To illustrate, in medicine, randomized controlled trials are considered to be the "gold standard" [19][22], but the applicability of random assignment to assess the effectiveness of most managerial interventions is limited. Again, in Medicine, hierarchies of evidence classify studies in accordance to the strength of the research design [19]. In contrast, in Management, evidence hierarchies are disputed [3]. A first attempt at creating an evidence hierarchy applicable to Management was characterized as "helpful" in terms of organizing literature but also as meriting "further development [through] a more rigorous process that engages more and more varied experts in the management and implementation sciences" ([19], p. 16). Moreover, the importance of contextual factors including culture and societal issues in management research means that a mix of methodologies, including qualitative and critical approaches, are more central to evidence-informed management practice than may be the case in other domains [3][22].

2.1 The Evidence-Based Management Collaborative

A group working to promote of the use of evidence in management practice is the Evidence-Based Management Collaborative. It has been described as:

> ...a community-of-practice to make evidence-informed management a reality. [Its] mission is to close the gap between management research and the ways practitioners make managerial and organizational decisions and educators teach organizational behavior, theory, strategy and human resources management. [11]

This collaborative has been brought together prominent researchers, including several past-presidents of the Academy of Management, representatives from many of its divisions, and journal editors and international professors, all of whom are early adopters of an evidence-based perspective in their teaching and scholarly activities. As a result of these meetings, this group have organized professional development workshops during professional meetings (e.g., Academy of Management) and published journal articles to promote EBMgt. A related initiative, sponsored by the collaborative, exists in the Society of Industrial/Organizational Psychology (SIOP), sponsoring developmental activities for its practitioner members, and the launch of a research

translation annual *Science You Can Use* series in 2010. We now summarize two major contributions of the EMBMgt Collaborative that might also be helpful for e-HRM academics: Systematic Research Syntheses and Translation Prototypes.

2.1.1 Contributions of the EBMgt Collaborative –Systematic Research Syntheses

A major contribution of the collaborative has been to call attention to the importance of a comprehensive form of literature review, referred to as systematic research syntheses (SRS, akin to "systematic reviews" in Evidence-Based Medicine) [22]. Rousseau and her colleagues have identified four forms of systematic review: aggregation, integration, interpretation and explanation [22].

The well-known statistical meta-analysis [27] is a way to execute the first kind of SRS, called "aggregative systematic research synthesis." In essence, given a well-specified, focused question, researchers set *a priori* inclusion criteria for the studies that refer to that question and use statistical algorithms to find the answer.

The second category is an "integrative" synthesis, similar to a meta-analysis in that it identifies patterns and uses questions defined at the onset of the study, but triangulation and contextualization are allowed –including qualitative data and procedural knowledge. An exemplar of this type of review dealt with information systems outsourcing authored by Dibbern, Goles, Hirschheim and Jayatilaka [8].

"Interpretive syntheses" are the third category, associated with relativist epistemologies, where social construction or phenomenology is the main approach to understand the subject matter. Meta-ethnographies and theoretical narratives typify this category, wherein the original researchers' judgment is of paramount importance. Use of this approach is an alternative to more structured methods such as triangulation in sampling and coding, which stress objectivity at the expense of contextual richness. Campbell and colleagues' meta-ethnography of diabetes care [4] is offered as an exemplar by Rousseau et al. [22].

The fourth SRS category is the "explanatory research synthesis", emphasizing the identification of causal mechanisms underlying observed phenomena across diverse circumstances. At first blush, this type of synthesis is very similar to the former –interpretive—, except that the explanatory synthesis does not favor a particular type of evidence (e.g., quantitative over qualitative studies). Rousseau and her colleagues suggest that this is particularly useful "in fragmented and methodologically diverse fields, where little consensus exists regarding what constitutes quality research" (p. 499); such as the Management and Organizational Sciences, a characterization also used by Denyer et al. [7].

Perhaps not so coincidentally, in his recent review of the e-HRM literature, Strohmeier found that the field is influenced by several disciplines, that it is "mainly non-theoretical, employs diverse empirical methods, and refers to several levels of analysis and to diverse focal topics" ([31], p. 19). We believe that these characteristics in e-HRM offer the opportunity to profit from SRS. We will explore these ideas further in section 3, below.

2.1.2 Contributions of the EBMgt Collaborative – Research Translations Prototype

Another contribution is a prototype for research translations. To date, a practitioner seeking to get best available research evidence on a practice question would have a

tough time. Few plain language summaries of research findings exist. Most up-to-date reviews of findings are written for academics and relevant original research, albeit available through electronic databases, is difficult for lay people to find or read. The new research translation annual –*Science You Can Use*—provides such user-friendly summaries as does a proposed on-line searchable portal similar to WebMD® (www.webmd.com) that is intended to allow practitioners easy access to research summaries relevant to their decisions.

2.2 The Future of the Evidence-Based Management Collaborative

The EBMgt Collaborative is actively developing the nascent features of the EBMgt movement. At present these features are four-fold. The first of them is *interaction-based,* creating quality relationships between scholars and managers via joint research efforts, consultation, and personal networks. SIOP is a particularly important partner organization in this regard as its membership represents both scholars and practitioners. The second is *text-based,* both on-line and in print via scholarly publications and research translations. The *Science You Can Use* series initiated in 2009 uses the EBMgt Collaborative-developed prototype for research translations as its template for authors. Its editors and authors comprise teams of practitioners and academics. The third is *user-oriented*, where recognition of the lack of knowledge researchers have of practice, coupled with the heterogeneity of practitioners, has led to detection of the need for user research in preparation of research translations and other possible means of bridging the research-practice gap. User research involves focus groups as well as controlled studies to identify conditions promoting use of evidence. The fourth feature is *accessing pointer-knowledge*, recognizing that text or even electronic availability of information is no substitute for access to knowledge people. Networks of practitioners and scholars are being developed by such means as an Evidence-Based Management network at the US-based Academy of Management, and a planned website with contact information for practitioners interested in obtaining answers to specific questions. In general, the notion of pointer knowledge entails connecting practitioners with knowledge brokers (librarians, communities of practice, local experts, post-graduate ties with faculty) to provide guidance in navigating academic research and its findings. These activities also provide opportunities for practitioners interested in e-HRM to become involved in the EBMgt community.

3 How Might an Evidence-Based e-HRM Perspective Help?

Strohmeier offered the following definition for e-HRM: "the (planning, implementation and) application of information technology for both networking and supporting at least two individual or collective actors in their shared performing of HR [Human Resources] activities" ([31], p. 20). As an inter-disciplinary and emerging field, is likely to exhibit many of the traits that its "parent disciplines" –particularly HR and IS—have. It has been documented that both IS and HR appear to have a noticeable "practice-research gap" that needs to be bridged [1][2][6][24]. Can we honestly say that most e-HRM papers provide usable, actionable knowledge that practitioners look forward to reading? Are we addressing issues that make a difference in crucial moments of an individual's career or an organization's life? Is the motivation section of our papers shaped mainly by industry needs or by academic research? An inspection of the e-HRM literature will certainly find exemplary contributions to answer the questions above, but also many more that can easily be improved.

A related discussion that has often surfaced suggests that research in applied fields like management has to play a balancing act between rigor and relevance. Palmer and his colleagues observed that the relevance-rigor debate often claims that "methodological rigor drives out relevance" (p. 267); they suggest that systematically collected, empirical data obtained "at arm's length" to develop quantitative measures and analyze using multivariate statistical techniques is currently considered more rigorous than the alternative views [17]. They also point out that theoretical rigor has been associated with lack of relevance in management research [12], and that there are strong arguments against the notion that the most rigorous theoretical work is deductive (the type most often used in academic journals), compared to inductive, which is based upon field observations (p. 268).

Huff's characterization about this debate as "boring" might provide a refreshing point: research that is truly helpful for practice cannot be either rigorous or relevant; it must be *both*. We believe that e-HRM research also cannot afford the luxury of favoring relevance to the detriment of rigor or vice versa. It is our collective task to find or create the ways in which we can serve our constituencies in a way that provides useful and soundly derived solutions. The following are some among the first proposals that can be derived from the EBMgt Collaborative, but it should be clear by now that a great deal of effort and talent must be leveraged before we can claim that we have found final answers.

3.1 Ways e-HRM Researchers Can Promote an Evidence-Based Approach

As e-HRM has a narrower, highly oriented to practice focus, we believe that the use of the conceptual tools that are being developed as a result of the EBMgt Collaborative can have momentous consequences. To illustrate, the use of SRS requires great proximity to the potential users of the knowledge –i.e., managers, users of e-HRM technology in our particular case—, in an explicit effort to formulate research questions that lend themselves to use-oriented, actionable answers. Within the management and organizational sciences, an approach to generating useable knowledge has been offered by the evidence-based group at the Cranfield School of Management [7][33]. A recent proposal –referred to as "CIMO-logic"—involves identifying the Context of the problem, the Intervention(s) that have been tried (similar to a treatment in medicine), the Mechanisms that have been observed after the interventions are put in place, and the Outcomes intended by the interventions in several aspects [3][7]. This approach uses design science principles that may be helpful in generating procedural knowledge that can be useful for e-HRM practitioners.

Because of its advantages over conventional literature reviews, Systematic Research Reviews, as proposed by Rousseau et al. [22] may be of great value in making e-HRM research more relevant for practice, without diminishing –actually, we argue, while simultaneously increasing—the degree of rigor. See Table 2 for a comparison between these two types of syntheses.

Table 2 Comparing Conventional literature Reviews vs. Systematic Research Syntheses

Characteristic	Conventional Literature Reviews	Systematic Research Syntheses
Genesis	Often motivated by debates in the scientific literature	Explicitly based on the review's intended use

Characteristic	Conventional Literature Reviews	Systematic Research Syntheses
Transparency	No need to specify the way that sources are found	Must specify keywords, literature aggregators, databases, and other sources utilized
Replicability	Not guaranteed	Must be sought after as an essential characteristic
Thoroughness	Often limited to published sources, sometimes only to certain journals or types of publications (e.g., empirical studies only)	In addition to published sources, SRS must include unpublished studies, conference papers, dissertations, consultant reports, surveys, databases, etc.
Levels of analysis	May be restricted to as few as one level of analysis but others may be included	Any study that is relevant to the research question should be included, taking into account its level of analysis
Contextual factors	Frequently disregarded; studies carried out recently may be placed alongside others that had different dates or backgrounds (e.g., different nations, industries, profit orientations, etc.)	Background features are to be specified to better understand the applicability and relevance of the studies for the research question
Language	Most are restricted to studies published in the English language	Relevant studies in other languages ought to be included too

As suggested above, the departing point in an SRS is the research question [22]. If the research question (or topic) is not appropriately defined, the following steps of the SRS will be severely handicapped. This also implies that special care needs to be placed in identifying the stakeholders that might be more strongly affected by the interventions (e.g., researchers that neglect the impact of union status in companies that intend to downsize their workforce after the introduction of an Enterprise Resource Planning system do so at their own risk).

Another essential property of an SRS is its transparency. A well-executed SRS is explicit about the procedure that will be used to answer the research question; in fact, in EB Medicine, the Cochrane Collaboration (www.cochrane.org; a volunteer organization that coordinates and publishes EBM reviews known as "Cochrane Reviews") and in EB Education, Criminology, and Social Welfare, the Campbell Collaboration (www.campbellcollaboration.org; a similar organization for these fields) use a multi-stage process in commissioning systematic reviews. First, a review title is negotiated between potential authors and the group's editorial team; then, a review protocol is published, describing how the review itself will be carried out; finally, the review is published in the Collaboration website, although the responsibility to update the review usually remains with the authors, aided by the editorial team (see http://www.cochrane.org/reviews/revstruc.htm for details).

As it has been stated, there is no consensus regarding what the "best available scientific evidence" in management is (e.g., [3] [17][22]). While it might be tempting to use the concepts and tools that have been developed by other Evidence-Based movements, we strongly believe that careful adaptation and customization are needed to avoid the "blind benchmarking" or the misguided obsession with "best practices" that have been presented among the motivations for EBMgt [18][14][20]. Careful consideration of the

differences in the complexity and dynamism of the problems dealt with in Management and other organizational sciences demands rigorous work that ensures that the wide variety of epistemological approaches is used for advancement of the task, not to undermine or favor certain research traditions [14].

Systematic research syntheses are also superior to conventional literature reviews in that the latter often are sets of "cherry-picked" studies that support or advocate the reviewers' world view in constructing hypotheses or offering recommendations. In contrast, SRS make findings replicable, and the way that conclusions as well as recommendations are reached, auditable. Also importantly, SRS are expected to take into account the "grey literature" that includes studies that haven't been published because the results did not reject the null hypotheses –also referred to as the "file cabinet" problem [14], or dissertations that, because of career or other personal issues have not been published in searchable journals.

3.2 Getting Closer

Academics and practitioners are largely mutually incompetent in relating to each other [15]. Academics don't have very good understandings of how practitioners think nor even what they do. Practitioners, an even more heterogeneous group than academics, often lack training and insight into basic organizational phenomena and limited insight into their own decision making. People in general tend to be overly optimistic when evaluating the quality of their performance on social and intellectual tasks [7]. Surrounded as we are by (academic or practitioner) peers who make the same mistakes, this lack of insight into our own errors [10] leads to overly optimistic estimates of how much academics understand about practitioners and vice versa. In the case of EBMgt, it is academics who must take the first steps toward gaining insight into the thinking and decision styles of practitioners. Our research and our educational programs ought to reflect these approaches if we are truly interested in bridging the research-practice gap.

4 Conclusion

e-HRM stands to profit from an evidence-based perspective. As an inter-disciplinary field that is nurtured by disciplines such as HRM, MIS and more generally speaking the managerial and organizational sciences, a gap between what researchers study and what practitioners need to know has began to develop. The use of systematic research syntheses can help us better understand what is known in the domain of e-HRM and which areas need further research [22]. Yet this effort may not suffice if we fail to pay attention to the knowledge managers –especially e-HRM practitioners—need [6] and the ways in which they make decisions to which e-HRM evidence is related. Promoting an evidence-based e-HRM practice necessitates closer ties between researchers and end-users. The use of research translations is likely to aid in getting the information practitioners need from researchers.

We hope that the concepts developed by the EBMgt Collaborative that we have described in this paper are a useful step in this direction. Ultimately, the answer to the question in our title depends upon the actions that e-HRM researchers undertake individually. The potential exists; shall we make it a reality?

References

[1] Applegate, L. M. (1999). Rigor and Relevance in MIS Research – Introduction, MIS Quarterly, 23 (1), 1-2.

[2] Benbasat, I. & Zmud, R. W. (1999). Empirical Research in Information Systems: The Practice of Relevance. MIS Quarterly, 23 (1), 3-16.

[3] Briner, R. B., Denyer, D. & Rousseau, D.M. (2009). Evidence-Based Management: Concept Cleanup Time? Academy of Management Perspectives, 23 (4), 19-2.

[4] Campbell, R., Pound, P., Pope, C., Britten, N., Pill, R., Morgan, M., & Donovan, J. (2003). Evaluating Meta-Ethnography: A Synthesis of Qualitative Research on Lay Experiences on Diabetes and Diabetes Care. Social Science and Medicine, 56, 671-684.

[5] Cascio, W. (2007). Evidence-Based Management and the Marketplace for Ideas. Academy of Management Journal, 50 (5), 1009-1012.

[6] Cohen, D. J. (2007). The Very Separate Worlds of Academic and Practitioner Publications in Human Resource Management: Reasons for the Divide and Concrete Solutions for Bridging the Gap. Academy of Management Journal, 50 (5), 1013-1019.

[7] Denyer, D., Tranfield, D., & Van Aken, J. (2008). Developing Design Propositions through Research Synthesis. Organization Studies, 29 (3), 393-413.

[8] Dibbern, J., Goles, T., Hirschheim, R., & Jayatilaka, B. (2004). Information Systems Outsourcing: A Survey and Analysis of the Literature. The DATA BASE for Advances in Information Systems, 35 (4), 6–102.

[9] Dybå, T., Kitchenham, B. A., Jørgensen, M. (2005). Evidence-Based Software Engineering for Practitioners. IEEE Software, 22 (1), 58-65.

[10] Ehrlinger, J., Johnson, K., Banner, M. Dunning, D. & Kruger, J. (2008). Why the Unskilled are Unaware: Further Exploration of (Absent) Self-Insight among the Incompetent. Organizational Behavior and Human Decision Processes, 105, 98-121.

[11] Evidence-Based Management Conference. (2007). Retrieved June 16, 2007, from http://wpweb2.tepper.cmu.edu/rlang/ebm%5Fconf/.

[12] Hambrick, D. (2007). The Field of Management's Devotion to Theory: Too Much of a Good Thing? Academy of Management Journal, 50, 1346-1352.

[13] Huff, A.S. (2009). [Keynote presentation]. Speech offered during the Practice Theme Committee's All-Academy Theme session "Bringing Practice Back into our Scholarship: Delivering the Agenda for Action" at the Academy of Management Annual Meeting in Chicago, IL.

[14] Olivas-Luján, M.R. (2008). Evidence-Based Management: A Business Necessity for Hispanics. The Business Journal of Hispanic Research, 2 (2), 10-26.

[15] Olivas-Luján, M.R. & Florkowski, G.W. (2010). Does IT Governance Matter in e-HRM? International Journal of Business Information Systems, 5 (2), 134-147.

[16] Olivas-Luján, M.R., Ramírez, J. & Zapata Cantú, L. (2007). e-HRM in Mexico: Adapting Innovations for Global Competitiveness. International Journal of Manpower, 8 (5), 418-434.

[17] Palmer, D., Dick, B., Freiburger, N. (2009). Rigor and Relevance in Organization Studies. Journal of Managerial Inquiry, 18 (4) 265-272.

[18] Pfeffer, J. & Sutton, R. I. (2006). Hard Facts, Dangerous Half-Truths, and Total Nonsense: Profiting from Evidence-Based Management. Harvard Business School Press.

[19] Reay, T.; Berta, W.; & Kohn, M.K. (2009). What's the Evidence on Evidence-Based Management? Academy of Management Perspectives, 23 (4), 19-2.

[20] Rousseau, D.M. (2006). Is there such a Thing as Evidence-Based Management? Academy of Management Review, 31, 256–269.

[21] Rousseau, D.M. & Boudreau, J. (in press). Sticky Evidence: Research Practitioners Find Useful. In E.E. Lawler & S. A. Mohrman, Doing Research that is Useful to Practice. San Francisco: Berrett Kohler.

[22] Rousseau, D. M., Manning, J., & Denyer, D. (2008). Evidence in Management and Organizational Science: Assembling the Field's Full Weight of Scientific Knowledge through Syntheses. In A. Brief & J. Walsh (Eds.), Annals of the Academy of Management, Vol. 2.

[23] Rousseau, D. M., & McCarthy, S. (2007). Evidence-Based Management: Educating Managers from an Evidence-Based Perspective. Academy of Management Learning and Education, 6, 94–101.

[24] Rynes, S. L. (2007). Tackling the "Great Divide" between Research Production and Dissemination in Human Resource Management. Academy of Management Journal, 50 (5), 985-986.

[25] Sackett, D. L., Rosenberg, W. M., Gray, J. A., Haynes, R. B., & Richardson, W. S. (1996). Evidence Based Medicine: What It Is and What It Isn't. British Medical Journal, 312, 71-72.

[26] Sackett, D.L., Strauss, S.E., Richardson, W.S., Rosenberg, W. & Haynes, R.B. (2000). Evidence-Based Medicine, London: Churchill Livingstone.

[27] Schmidt, F.L. & Hunter, J. (1990). Methods of Meta-Analysis: Correcting Error and Bias in Research Finding. Thousand Oaks, CA: Sage Publications.

[28] Sherman, L. W. (2002). Evidence-Based Policing: Social Organization of Information for Social Control. In E. Waring & D. Weisburd (Eds.), Crime and Social Organization. New Brunswick, NJ: Transaction Publishers.

[29] Skapinker, M. (2008). Why Business Ignores the Business Schools, The Financial Times, online available [http://www.ft.com/cms/s/0/215022b8-bd2c-11dc-b7e6-0000779fd2ac.html?nclick_check=1], (accessed December 3, 2009).

[30] Smith, G. C. S., & Pell, J. (2003). Parachute Use to Prevent Death and Major Trauma Related to Gravitational Challenge: Systematic Review of Randomised Controlled Trials. British Medical Journal, 327, 1459–1461.

[31] Strohmeier, S. (2007). Research in e-HRM, Review and Implications. HRM Review, 17 (1), 19-37.

[32] Thomas, G. & Pring, R. (Eds.). (2004). Evidence-Based Practice in Education. Buckingham, UK: Open University.

[33] Tranfield, D., Denyer, D. & Smart, P. (2003). Toward a Methodology for Developing Evidence-Informed Management Knowledge by Means of Systematic Review. British Journal of Management, 14, 207–222.

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SESSION A

Topic: **Strategic Perspectives of e-HRM**

Chair: **Tim Weitzel, Bamberg University, Germany**

The Strategic Value of e-HRM: results from an exploratory study in a governmental organization

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Abstract. *This paper presents results from an exploratory study in a governmental organization on the strategic value of e-HRM. By means of a questionnaire as well as through face-to-face interviews with HR professionals, line managers and non-managerial employees data were collected on two generally acclaimed strategic advantages of e-HRM: changing the role of HR towards a business partner, and increasing the time available for strategic HR issues. The data presented reveals that indeed to a large extent these strategic advantages are realized, however regarding some advantages certain conditions need to be met. The results of this paper contribute to the ongoing debate on e-HRM and its strategic value.*

Keywords: HRM strategic value, interviews, line managers, HRM services.

"P&O has become dynamic, flexible, it is all true.
They are doing interesting projects, many innovative projects and ideas.
And it is always good to feel that
things are moving forward"
(from an interview with a line manager)

1 Introduction

Initially, in the 1970s, personnel management was seen as a suitable candidate for office automation in payroll and benefits administration and for keeping employee records [10, 17, 34]. Typically, personnel management information would be stored in simple databases and interrogated using simple key word searching. Early studies into e-HRM found only 'hesitant' use of it by HR practitioners who perceived IT as 'workhorses' of the personnel function [1, 11, 13].

One of the first large-scale empirical studies was conducted in 1986 into the status of Human Resource Information Systems [11]), where the author concluded that the role of HRIS in the corporate management of information systems was not clear; and the topic itself was a controversial one; HRIS managers were not trained properly and lacked skills for personnel management; and HRIS planning was not well coordinated with personnel planning and the organization's strategic plans.

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Since the mid-1990s, organizations have increasingly introduced electronic Human Resource Management (e-HRM) which is understood as a set of Information Technology (IT) applications that coverer "all possible integration mechanisms and contents between HRM and IT's aiming at creating value within and across organizations for targeted employees and management" [3: 507].

Recent developments in the e-HRM area are driven by rapid technological changes. Complex Enterprise Resource Planning (ERP) applications offer an integration of a broad range of HRM modules together as well as with numerous modules from other business areas such as sales, production, and finance. However, the findings from mid-1980-s still have a certain familiarity. Professional reports since 2000 have indicated an increase in confidence in using e-HRM, albeit still mainly for administrative purposes. They also report that the e-HRM projects have largely remained focused on the growing sophistication of information technology [8, 9, 15].

The literature on e-HRM suggests that, overall, the three goals of e-HRM are cost reduction, improving HR services, and improving strategic orientation [5, 23, 33]. Some empirical findings supplement these goals with globalisation as a driving e-HRM force in international large organisations (e.g. [30]). However, the findings also show that these goals are not clearly defined in practice, and that e-HRM is mostly directed at cost reduction and efficiency increases in HR services, rather than at improving the strategic orientation of HRM [12, 30, 31]. Recent studies have found that in nearly half of the companies with a completely integrated HRIS, the HR department was not viewed as a strategic partner [21].

The debate on strategic advantages of e-HRM still continues: while some researchers argue that e-HRM offers strategic opportunities to HR professionals [30], others report the absence of strategic changes due to e-HRM [14], yet another group of researchers suggests to think about special conditions when e-HRM can create strategic value for organizations and for the HRM function [24].

Driven by conflicting findings (if any) and vague theoretical ideas regarding the strategic contribution of e-HRM, this paper explores the question of what kind of strategic benefits e-HRM can and does offer to organizations.

2 e-HRM and Strategic Benefits

The literature suggests that the different goals of e-HRM, and the different types of e-HRM, are expected to result in outcomes including more efficient HRM processes, a higher level of service delivery and a higher strategic contribution. Ruël et al. [29] noted an aspect that is fairly well covered by the above summary but that is nevertheless interesting to highlight, namely the changing nature of the employment relationship. With a supply shortage in the labour market (during the economic upturn of the 1990s), the individualisation of society, and the increased educational level of citizens (and thus of employees), the power balance in the employment relationship has shifted in the direction of employees: they want to set their own career paths. In the view of Ruël et al. [29], a move towards e-HRM can provide tools to support this development. This aspect adds to the earlier-mentioned drivers, such as improving service towards internal clients, but has an external societal drive.

Ruël et al. [30] have also shown that although, in practice, the e-HRM types are mixed, establishing a good basis for e-HRM at the operational level seems to be an essential prerequisite for relational and transformational e-HRM. This requires changes in the

tasks of HR professionals (less paper-based administration, more e-communications with employees, acquiring skills for operating IT). However, positioning companies by their e-HRM types does not imply judging them - it is not about better or worse e-HRM types. Further, it was also shown that there is a 'gap' between e-HRM in a technical sense (the available functionality) and its use and adoption by employees and line managers. Actual usage/adoption can lag up to three years behind what is available [30].

Other available research evidence suggests that, in many organisations, e-HRM has led to a radical redistribution of the work that HR managers used to do. Many of the reporting activities, previously performed by HR professionals, can now be performed on-line by managers and employees [30, 31]. On their own desktops, line managers have to perform appraisals, evaluate employee costs, generate HR reports (turnover, absenteeism), process training requests and oversee competence management. Employees have access to everything they need to change and manage their personal files, plan their development, process financial documents, and apply for new jobs [28].

Examination of recent e-HRM literature allows us to classify strategic benefits prescribed for e-HRM in six groups:

The generation of HR metrics to support strategic decision making [3, 16, 18, 20, 22],

The automation of routine HR tasks and replacing 'filing cabinets' [4, 26, 27],

The branding of organizations [21, 25],

Freeing HR staff from administrative burdens and allowing them to undertake strategic people-management activities [23, 25, 30, 32],

Improving talent management through e-selection, self-assessment, e-performance management [25], and

Transforming HR professionals from administrative paper handlers to strategic partners [2, 6, 7, 19, 14, 37].

For our study as the initial basis we have chosen two popular advantages of e-HRM, mentioned in the literature as strategic: changes in HR roles (from administrative expert – towards strategic partner), and time spent on HR administration (an assumption is that with e-HRM HR professionals spend less time on HR administration). Further, we were sensitive to the idea that in a real life case study, other 'strategic issues' as outcomes of e-HRM could be discovered. Our study, thus, was further motivated by several questions like what is perceived by organizational members as e-HRM strategic benefits. Who (strategically) benefits from e-HRM? To which extent can strategic benefits of e-HRM be achieved, and under which conditions?

3 Method

The study was conducted within a Belgian Federal Public Health Service, where the introduction of the e-HRM project had a seven-year history. In 1999, the Belgian Government introduced the Copernicus project as part of a thorough reform of the federal administration aiming to simplify procedures, automate administration, and improve service provision to civil servants while, at the same time, reducing their numbers.

As a key component of the Copernicus project, the HR function of the Federal Agency was reorganized. In 2005, the various HR units were integrated into one HRM department with the strategic goals of minimizing administrative HR tasks, focusing on

value-adding HR tasks, and improving HR services for its internal customers. As a part of the HRM reorganization, an Oracle-based e-HRM system called DeBOHRA was launched in 2006 by the HRM department, following careful preparation, customization, and weekly meetings with key-users, training courses, and feedback sessions. Later, in the period June – November 2007, in preparation for the system going live for all employees, no less than 40 presentations and training sessions were held involving 68% of intended users.

3.1 Research approach

The research went through four stages. *Stage 1* involved intensive preparation for the research. During this stage, we held presentations for the HR specialists about e-HRM studies, discussed the research design with the DeBOHRA team and the HR director at the Federal Agency, and prepared the questionnaire (March – September 2008). *Stage 2* involved finalizing the questionnaire design, putting it on-line, and collecting responses (October 2008). *Stage 3* concerned conducting interviews, as the follow-up data after the questionnaire. *Stage 4* was dedicated to transcription of the interviews, discussion of the preliminary results, and analyzing the questionnaire, integrated with the analysis of the documents and interviews.

In conclusion, multiple research methods were applied in this project: document analysis, interviews, and a survey. Throughout the whole project we were greatly assisted by the DeBOHRA team, including its former and current leaders, members, and especially the Organization & Development Officer. The latter coordinated all communications between the research and practice, translated the questionnaire into French, and selected respondents for the questionnaire and interviews.

3.2 Document analysis

We gained access to the following documents: Records of 18 presentations from the period between October 2006 and February 2008; Implementation plan of the DeBOHRA project; SWOT analysis of the DeBOHRA project; four different sets of users' manuals; documents for new users of DeBOHRA (“coaching materials”), and operationalization of the strategic HRM plans.

3.3 Survey

Our survey was performed between March and October 2008. To gain commitment to the research and to establish an atmosphere of mutual understanding, we presented the study four times, held two round-table sessions with the project team and the HR director, and had numerous discussions with HR specialists. In addition, we accessed the full set of related e-HRM documents such as software manuals, presentation materials, training courses materials, business case documents, progress reports, and technical descriptions of the modules. This detailed preparation allowed us to add some specific items and also modify the standard ones in the questionnaire.

91% of the Federal Agency’s staff accessed DeBOHRA. The population consists of 1236 users of DeBOHRA. From these users, a stratified random sample of 500 users was drawn that reflects the user demographics in terms of gender (56% female), origin (51% Dutch language, and 49% French language users), and educational level (44% have been educated up to the university level, 23% had attained higher vocational education, 16% - bachelor studies, and the remaining 17% had left after high school).

In total, we received 219 completed questionnaires indicating the 43.75 % response rate with the respondents not differing significantly from the populations in terms of gender, origin, and education level. Since we had used an entry-force technique, all returned forms were fully completed with no missing values.

Scale development consisted of several stages. First, we developed a pool of items for each construct using a deductive approach. The first round content validity was assessed by independent cross-checking by six HRM experts in a survey research. The initial questionnaire was reduced and after that, back-translation into Dutch and French was done independently by two Dutch- and two French-speaking researchers, to ensure the correctness of the items [36]. These versions were checked during focus group sessions at the Federal Agency involving four DeBOHRA project team members and the HR director to insure clarity for the targeted respondents of the questionnaire.

Construct	Variable	Number of items in the questionnaire	Cronbach's alpha
Usage of e-HRM	Appropriation	4	.630
	Frequency of use	2	.892
HRM roles	Employee Advocate	4	.854
	Human Capital Developer	4	.878
	Functional Expert	4	.884
	Strategic Partner	4	.866
	Role ambiguity	4	.943
Time spent on HR activities	Time spent on Strategic HR activities	4	.933
	Time spent on IT-related HR activities	4	.901
	Time spent on HR administration	4	.618

Table 1. Variables and Cronbach's alpha

Only 8.2% of the respondents had less than 1 month's experience with working with DeBOHRA; the majority (91.8%) had been working with DeBOHRA for a longer period of time. 68.95% of the respondents have been working for the Federal Agency for longer than one year. Among respondents 140 (63.9%) were employees; 38 (17.35%) - HR professionals, 24 (10.96%) - line managers, and 17 (7.76%) - IT specialists.

All variables are measured on the 5-point Likert scale, ranging from 1= very low (unimportant) to 5= very high (important). In terms of the reliability of our measurement items, all but two of our lowest level constructs had a Cronbach's Alpha above 0.7 which indicates an acceptable reliability.

3.4 Interviews

Thirteen interviews were conducted with HR specialists, line managers and IT professionals, amounting to 21 hours of conversation. The interviewees were selected by the Organization & Development Officer, who scheduled the interviews and explained the reasons to the interviewees.

Six HR professionals were invited for interviews based on three criteria: their extended experience of working with DeBOHRA, involvement in strategic HR planning, and diversity in HR operational services. The e-HRM manager and representatives of four HR activities participated in interviews: recruitment, payroll, training, and leave administration. Ten line managers were invited for interviews via e-mail, based on four

criteria: their extended experience of working with DeBOHRA, large span of control, unusual services, and equal distribution between French and Dutch speakers. Three line managers responded positively and promptly, and they participated in interviews. Three IT specialists, who were particularly busy with DeBOHRA maintenance, were invited.

We conducted the interviews after having analyzed the data gathered through the questionnaire. The aim of such a sequential design was to elaborate on some specific findings arising from the survey. Transcripts of all interviews were sent to the respondents via e-mail for verification.

Questions were semi-structured and open, covering the main topics from the research model: Appropriation of DeBOHRA, perceived benefits from working with DeBOHRA, changes in the HR roles, and perceived effectiveness of e-HRM at the Federal Agency.

	HR professionals	IT specialists	Line managers	DeBOHRA project team
Number of interviews	6	1	3	3[1]
Time	8 h 40 min	1 h 30 min	5 h	6 h
Total	13 interviews – 21 h 10 min			

Table 2. Number and type of interviewees

4 Setting the Stage: HRM and DeBOHRA

This research was exploratory in nature; we were interested in determining whether different HR actors experienced a strategic "twist" after the introduction of DeBOHRA; and if so, what kind of. Therefore, we started with the exploration of perceived involvement in HR activities. Figure 1 allows us to compare perceptions of the respondents' involvement in HRM activities. Line managers expressed that they were mostly busy with organizational development including career opportunities, career planning and development, individual development cycles and personnel planning. Managing the workforce is the activity performed most often. It includes planning, recruitment and selection, promotion, contract management and retirement policies and procedures. It can be linked to the organizational change happening at the Federal Agency: HR professionals take on more strategic roles and are involved in strategic planning of the workforce. Employees noticed that for them, the work with DeBOHRA seemed the HR activity performed most often from the list. It confirms the meaning of e-HRM in organizations – to devolve HR responsibilities for the individual data administration to the employees themselves.

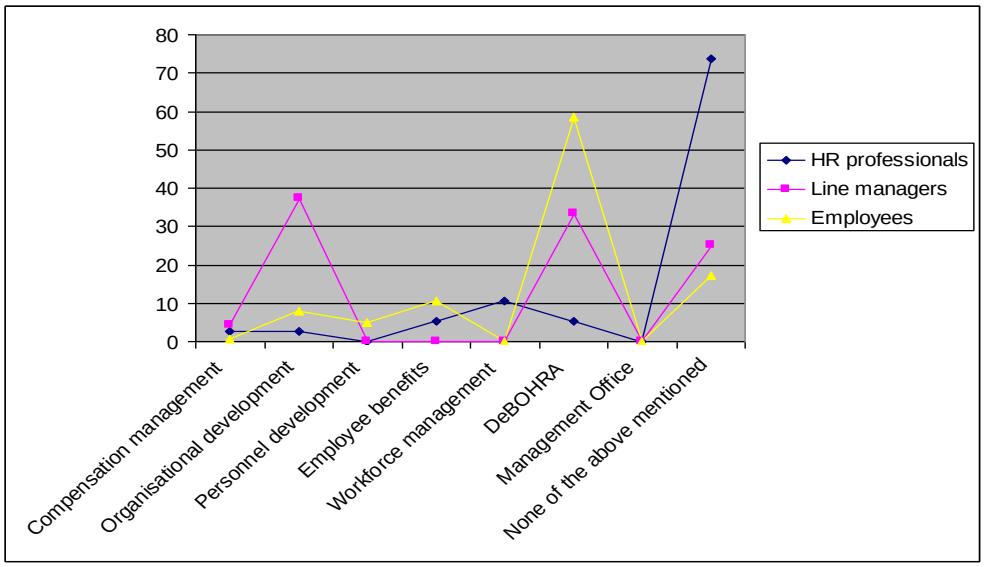

Figure 1. Perceived involvement in HRM activities by HR professionals, line managers, and employees

Type of e-HRM transaction	Number of transactions	Percentage of total
Application for internal training programs	1441	51.17%
Application for external training programs	747	26.52%
Application for biking compensation payment	174	6.18%
Changing address	102	3.61%
Changing work scheme	96	3.43%
Changing basic personnel data	94	3.34%
Application for paid services	39	1.35%
Changing family status and contact persons	34	1.19%
Recognition of educational level, language proficiency	27	0.95%
Diploma recognition	19	0.68%
Application for vocational training leave	19	0.68%
Training evaluation	14	0.50%
Recognition of success of exams SELOR	5	0.20%
Application for a badge	3	0.11%
Application for the birth allowance premium	2	0.09%
Application for diploma recognition	0	0.00%
TOTAL	2816	100

Table 3. An overview of DeBOHRA e-transactions / sampled employees

Our next step in setting the stage for the research was to investigate applications and HR tools offered by DeBOHRA. Important was also to figure out how intensively respondents worked with DeBOHRA.

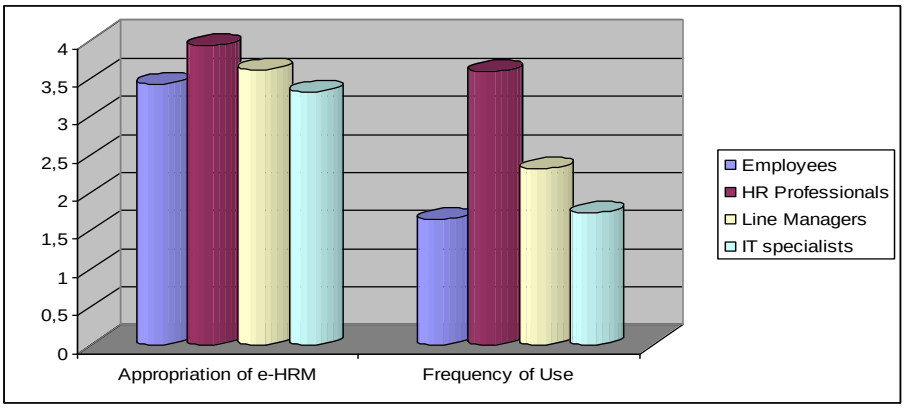

Figure 2. Perceptions of respondents about usage of e-HRM

DeBOHRA (Oracle based) contains various modules that offer HR applications such as managing personnel data, training and development, recruitment and selection, personnel planning, e-learning, HR report generation, holiday administration, workflow registration, and payroll management. Of the 1236 employee-users of DeBOHRA, 126 employees never logged onto the system (10.2 %), indicating that 89.8% had logged onto DeBOHRA at least once. Table 3 reports the usage of DeBOHRA by the users selected for this study, and further details of 16 HR activities performed by those users in DeBOHRA. There were 2816 electronic transactions registered in DeBOHRA in the period July 2008 – October 2009. On average, the employees used DeBORAH 8.8 times. Overall, 91% of the Federal Agency's staff had access to DeBOHRA.

The data from data-base was triangulated with the survey results. Usage of DeBOHRA was assessed in the questionnaire by the respondents' perceptions of two dimensions: appropriation of DeBOHRA and frequency of use (the amount of actual use perceived by users). The data were also compared with the objective transactions administration.

As Figure 2 illustrates, all respondents perceive that they appropriate DeBOHRA very well (mean varies from 3.3 to 3.9). This shows that they work with DeBOHRA in the way it was intended to be used, and perceive that they use it in an optimal way. The amount of actual usage is perceived as lower than appropriation by employees (mean = 1.650), line managers (mean = 2.313), and IT specialists (mean = 1.735).

5 Strategic Benefits of DeBOHRA

5.1 DeBOHRA and Changes in HRM Roles

HR roles are usually considered norms and expectations that govern the behavior of HR professionals. We could not make strong differences between four HR roles [35]. However, the differences between "People" and "Business" orientation in the HR profession were clearly visible in the descriptive statistics. This is in line with the results of the Explorative Factor Analysis .

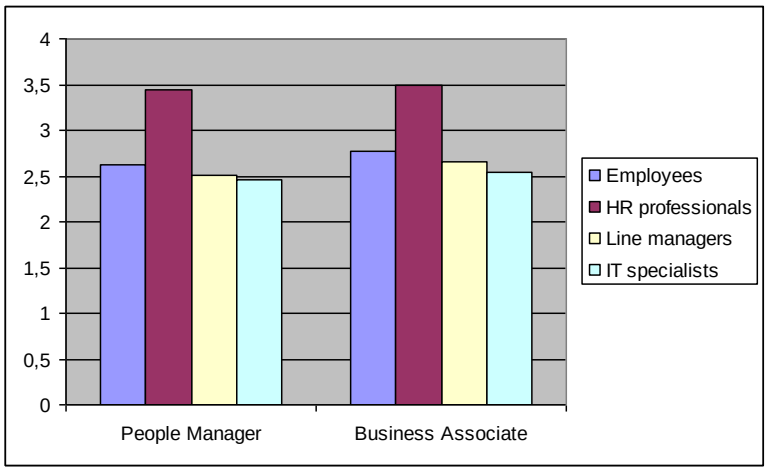

Figure 3. Perceptions of respondents about two HR roles performed by the HR professionals

The EFA revealed two factors, reducing 4 roles into 2, the business associate and the people manager Further, the following observations were made:

The respondents score both HR orientations – business and people – as equally important, with a slight predominance for Business Associate.

The HR professionals see their own roles more clearly and distinctly than other respondents.

Employees perceive HR professionals as Business Associates (mean = 2.76) slightly more than as People Managers (mean = 2.62).

Line managers also perceive HR professionals more as Business Associates (mean = 2.65) than as People Managers (mean = 2.50).

Interviewees felt that the introduction of DeBOHRA did not change the HR roles and responsibilities at the Federal Agency. HR specialists did not see their work becoming easier. For example, the HR specialists described:

> "People who were busy with HR administration five years ago – they still do the same. New HR employees are mostly busy with strategy and policies. But that is due to our new HR director and not due to DeBOHRA." (HR sp-1)

> "My tasks did not become easier, maybe only making reports and checking the data go easier. But talking about my main responsibility – staffing plan – it is as intensive as without DeBOHRA." (HR sp-3)

At the same time, all interviewees acknowledged changes in the vision of the HRM department. They see it as becoming more strategic, oriented towards people and organization development. However, attributing an HR strategic orientation to the introduction of DeBOHRA seems to be unsound. Most of all, interviewees attributed such a re-orientation to the new envisioning of the HRM work at the Federal Agency, and particularly to the HRM director and his highly effective and respected leadership. One of the HR professionals described it:

> "Nowadays I think that our P&O department plays a more strategic role than ever before. P&O is becoming strategic. At the same time, given the FOD work environment, such changes go too quickly. People have different knowledge, expectations, and experience. I often hear that it is a 'long-life change'. Myself I do not think it is bad, but some people find it too quick." (HR sp-3)

Line managers also expressed changes they experience as a result of the whole reconstruction of the HRM: new roles, new responsibilities. And there is a clear commitment to these changes:

> "I see lots of advantages compared to the situation of ~10 years ago... There are a lot of changes. Now we have to be busy with management of people, budgeting, planning, etc. I have 3-, 6-year plans, for example. Our targets are high: sustainability and mobility. We determine the goals, and the P&O helps us further. We get guidelines from P&O or the board." (Line man-3)

An HR specialist emphasizes:

> "We are very much up-front. The HR Director is a fantastic leader! He is a driver of this change! I am very glad that we are pushing ahead and in front of other ministries. I like it much more than only administration, to be a pioneer in HRM." (HR sp-4)

The e-HRM manager summarizes:

> "I feel that we work now very differently from the past. We discuss concepts, rules, policies, and less administration." (HR sp-5)

All in all, the respondents did not see big changes in the HR roles or HR responsibilities as a result of the introduction of DeBOHRA (from the questionnaire and interviews). However, both groups of respondents, HR specialists and line managers, acknowledged that extensive changes have happened to the HR management at the Federal Agency. HRM has become more strategic, in their view, due to the whole program of HRM re-envisioning.

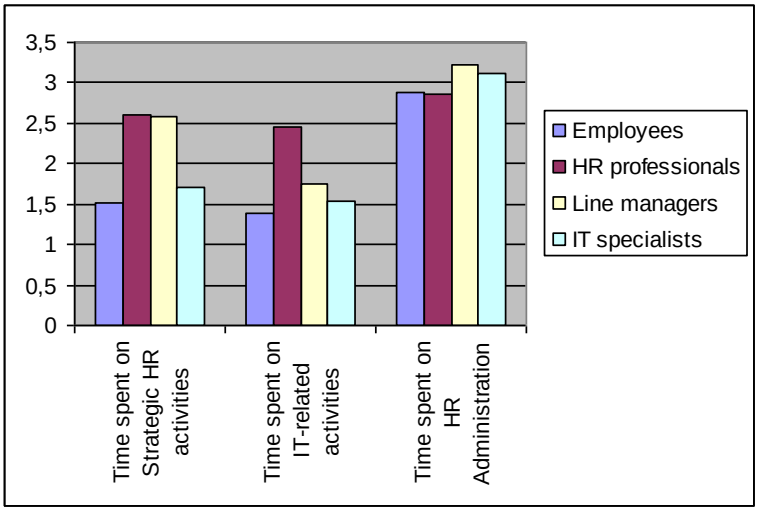

Figure 4. Perceptions of respondents about time spent on HR activities after the introduction of DeBOHRA

5.2 DeBOHRA and Changes in Time Spent on Different HR Activities

Figure 4 allows observe that all respondents perceive that since the implementation of e-HRM, they spend most of their time on HR administration (checking, recording and organising personnel data). Line managers score the highest on amount of time spent on HR administration since the introduction of e-HRM. HR professionals score the lowest on the time spent for HR administration. Time spent on strategic HRM activities (forecasting employees' needs, matching job vacancies with the organizational needs, developing long-term HR policies) is perceived by both HR professionals and line managers as the second greatest time-consuming HR activity (since the e-HRM

introduction). It also echoes the latest strategic developments at the Federal Agency. The maintenance of DeBOHRA and other e-HR applications is not perceived as time consuming by line managers, employees, and IT specialists. HR professionals indicated that they spend more time on these activities than other groups of respondents, although it remains the lowest time-consuming activity.

The opinions of interviewees fell into two groups: those who did not see differences, and those who noticed a lot of time saving due to the introduction of DeBOHRA.

> "In my view, it does save time. If in the past 30 people had a salary increase, we had to change the salary steps 30 times. Now, with the basic data, the list is in DeBOHRA, and it makes changes automatically. At the beginning people were not motivated to make this list. Now they see – if they have good information, it helps. It takes time to explain and convince people to use it. Time saving is in my view the great benefit." (HR sp-1)

For line managers, on the contrary, the introduction of DeBOHRA is perceived as partial devolution of the HR tasks to them. They might see it as time-consuming, as one of them said:

> "At the same time I feel that line managers do more and more HR tasks that were done by the P&O department before. It is not always very pleasant but has to be done. I can imagine that it is an evolution of the whole organization." (Line man-2)

> "DeBOHRA doesn't support all of our HR policies and responsibilities yet. To take, for example, personnel development circles. I have to spend about 2 full days per employee to work on their evaluation, planning and development plans for the next year because all of this still has to be done on paper. Too time consuming and not flexible at all." (Line man-2)

The e-HRM manager stressed the importance of changes in the *content of* spending time instead of simply saving it:

> "The idea is that we spend less time on routine tasks and more on guiding tasks, to partner with line managers. In 2002 we had 80 FTE, now 60." (HR sp-5)

The descriptive statistics show some differences in the ways respondents spend time on HR-related activities. However, overall we cannot conclude that the introduction of DeBOHRA significantly affects/changes the time spent. During the interviews we observed that the respondents had diverse opinions regarding this issue. First, HR pro's do see time savings in digitalization and moving away from paperwork but stress the shift in time spending (from administration towards 'guiding' tasks); line managers perceive that they spend more time on HR than before.

6 Overall Perceived Benefits from DeBOHRA

6.1 Conditional Benefits

Interviewees talked about so-called *"conditional" benefits*: time saving, strategic re-orientation, and better collaboration with other departments. It could all be achieved if certain conditions are met. For example,

Time saving will be apparent if all modules and all IT's are integrated in one, inclusive e-mail traffic. Saved time could be spent on policy-making and strategic activities:

> "Furthermore, I think that we have to do more to get more results out of DeBOHRA. Currently, a lot goes through the e-mail correspondence. It could be all in DeBOHRA. If we save time on e-mails, we could use the freed time for policy-making, re-organizing of the processes, improving our collaboration with the salary-providing

> company, developing tools for calculation of the net salaries, more integration with the social departments." (HR sp-1)

One condition mentioned by many interviewees was users' readiness to work with DeBOHRA. If all users were geared to an advanced usage level, all expected benefits will appear (as expressed by the respondents):

> "At the moment only those who are working at the administrative level win time from using DeBOHRA. But they are not qualified to accomplish DeBOHRA projects. You need to train them, invest in people. So, first thing to do is to up-grade people." (HR sp-1)

> "P&O professionals are not always competent to work with DeBOHRA. If you use such an application, you have to be PC literate." (HR sp-2)

> "I feel that we can be still more pro-active. We could work better with IT. Our image of HRM would be even stronger." (HR sp-4)

Moreover, involvement of line managers in the HRM processes requires them to acquire new analytical skills. To obtain all the benefits of e-HRM, you need to raise line managers to another managerial / analytical level:

> "I have used many DeBOHRA applications, and I think it is interesting. Mostly, we perform statistical analysis with DeBOHRA. It could enable us to make in-depth analyses of ROI, strategic orientation, service improvement. But for this you again need new skills – analytical. In my view, not all managers have such skills. Moreover, they need to think strategically, to broaden their mind-set, to switch to other personnel goals." (HR sp-2)

- Although the usefulness of orderly information was acknowledged, HR professionals saw a possibility to gain more benefits from, for example, better utility of a report generator application:

> "Till now DeBOHRA did not help to save time as we have to print many papers to make reports. In the future I believe if a report generator works better, it will help much more, but now we still produce many documents manually." (HR sp-4)

- There was understanding of the strategic possibilities IF the DeBOHRA implementation is completely successful:

> "If it works, then I foresee my future as being busy with: steering a HR project, working on competencies development" (HR sp-4).

6.2 Realized benefits

Many interviewees noted benefits from using DeBOHRA without any conditions, so-called '*benefits-in-use'*. Collection of their expressions reflects the aggregated value of use of DeBOHRA. DeBOHRA contributes to the image of the HRM department.

> "We are trying to be a modern HR brand. There are other ministries that do not have an 'organization' group within their HRM department." (HR sp-5)

> "P&O department doesn't always have a very good symbol / image in an organization. When people talk about P&O, usually they talk about paying salaries. DeBOHRA might improve and change such an image. For example, if you need to, you can quickly communicate your problems and get a rapid response. It contributes to the image." (HR sp-2)

> "I think that with DeBOHRA, P&O has become more 'open' to the employees. We get more insight into a lot of the business and actions that are being taken by P&O." (IT sp-1)

DeBOHRA is a tool that helps the company to realize a new way of doing HRM. HR specialists participate in strategic and analytical discussions instead of being busy with

just the salary administration. Thus, e-HRM improves the professionalization of the HR specialists.

> "I feel that we work now very differently from in the past. We discuss concepts, rules, policies, and less administration. It is not easy to explain to all HR colleagues, mostly we benefit from others' work. Benefits I see are: professionalization of the HR function, strategic discussions, and analytical discussions." (HR sp-5)

HR administration runs more easily, with possibilities for orderly information.

> "Anyway, we see certain benefits from DeBOHRA. Definitely, the administration runs more easily as there is a link with, for example, the position of people in the organization. If we recruit somebody, we see immediately overviews of similar positions. We also see directly how diverse our workforce is, and whether we should work further on this issue: gender, language, handicaps, etc." (HR sp-3)

Administrative HR tasks are mostly automated, allowing for less paper work, more transparency and sharing of information.

> "An advantage is that certain HR administrative tasks get automated, less paper work, documents can be shared and centralized. Everything can be done within one system. No need to have contacts with P&O for every small administrative question. P&O tries to keep a "Q&A" section up-dated, too. If we have to ask for a reimbursement for example, it is just a few clicks now, no need to search for many documents as we did earlier. To change your address is the same – very easy." (IT sp-1)

Orderly information in DeBOHRA makes it possible for HR specialists to participate in strategic workforce planning.

> "I have an overview of the workforce, then I also take recommendations from FOD P&O concerning personnel planning (levels, functions, diversity, etc., and after that I make vacancy plans." (HR sp-3)

> "Thanks to DeBOHRA, the board now discusses HR issues on another level. Today I presented a balance-score card to all P&O directors of all ministries. It's easy to make a balance-score card now. e-HR makes it much more modern." (HR sp-5)

Orderly information in DeBOHRA makes it possible for HR specialists and line managers to manage employee performance objectively.

> "DeBOHRA = transparency: all jobs are now 'officially' function-matched and not people-matched, which is useful to map career opportunities and objectify promotions. It became more visible with DeBOHRA. At least with DeBOHRA, performances of people can be objectively evaluated. It is very good." (Line man-2)

DeBOHRA is seen as a means to make HRM more efficient. At the moment there are 60 HR specialists working for almost 2000 employees at the Federal Agency.

> "At the moment there are 60 employees in the HRM department working for 2000 workers. A norm for the public sector is 1:60, but here we have 1:33." (HR sp-5)

7 Strategic Benefits from DeBOHRA: Quantitative and qualitative data combined

Perceived benefits	*Perceived status of benefits*
Improved image of the HRM department and HR professionals	Realized
Perceptions about uniqueness of the HRM	Realized
Facilitating a new way of "doing HRM" and professionalization of the HRM function	Realized
Enabling strategic and analytical HRM discussions	Realized
HRM-related information is orderly and transparent	Realized
Enabling sharing of HRM-related information	Realized

HR administration is easier than without e-HRM	Conditional
Enabling and simplifying strategic workforce planning	Conditional
Enabling, objectifying, and simplifying strategic performance management	Realized
Strategic re-orientation of HR professionals	Conditional
Time saving for HR pro's by reducing HR administration	Conditional

Table 4. Overview of the realized and conditional benefits perceived from using DeBOHRA

The results from the quantitative and qualitative studies combined leads to the following picture: the implementation of DeBOHRA has resulted in an improved image of the HRM department and HR professionals, it has contributed to perceptions of the unique character of HRM within the ministry, it has facilitated a new way of 'doing HRM' and contributed to the professionalization of the HRM function, it has enabled strategic HRM discussions, it has lead to more orderly and transparent HRM information, it has enabled the sharing of HRM-related information, and it has enabled objectifying and simplifying strategic performance management.

Only if certain conditions are met (e.g. integration of tools, user readiness, line manager involvement), the implementation and use of DeBOHRA will make HR administration easier, it will enable simplifying strategic workforce planning, it will enable the strategic re-orientation of HR professionals, and it will save time for HR professionals.

We summarize in Table 4 the integrated overviews of statistical and interview-based data regarding potential (conditional) and realized benefits from working with DeBOHRA at the Federal Agency, and conditions for their realization and further enhancement.

8 Lessons Learnt

8.1 Success of DeBOHRA Implementation

The implementation of DeBOHRA should be considered a successful project for *three reasons:*

- More than 90% of the people working for the Federal Agency are using DeBOHRA.
- The acceptance rate of the technology is very high. Perceived appropriation ranges from 3.3. to 3.9 (5-point scale, 5=the strongest appropriation), meaning that the users work with DeBOHRA as they are supposed to.
- Users are competent to work with DeBOHRA.

8.2 Net Benefits of DeBOHRA

Research has revealed that the implementation of DeBOHRA (= high level of its use and appropriation) leads to sound benefits for the Federal Agency:

- High level of perceived uniqueness of the HRM at the Federal Agency by all stakeholders.
- Brand management of the organization as a whole and its Human Resource Management.
- Enhancing of a "new way of doing HRM":

    - HR professionals see themselves more as HR advisors than administrators
    - Line managers and employees perceive HR specialists more as Business Associates than People Managers
    - Line Managers get more involved in (Strategic) Personnel Management
    - Employees take responsibility for some HR administration
- Improving HR information management:
    - Transparency of HR-related information
    - Sharing of HR-related information
- Enabling Strategic HRM:
    - Enabling strategic and analytical HRM discussions
    - Strategic workforce planning
    - Strategic organizational and employees' performance management
    - Strategic re-orientation of HR professionals
- Simplifying *administrative HR processes.*

Conditions for DeBOHRA benefits realization / enhancement
Increasing ease of use of DeBOHRA applications, good and prompt communication about improvements and challenges
Matching of all information technologies
Increasing intrinsic data quality in DeBOHRA
Increasing visibility of HR practices, more communication
Improving comprehensibility of HR policies, more explanation
Employees' involvement in the DeBOHRA projects (more than just informing)
Increasing analytical skills of line managers and HR pro's
Technology should work well, and all modules should be integrated
Communicating to the users both the advantages and limitations of DeBOHRA
Increasing the usability of a report generator

Table 5. Overview of conditions for enhancing benefits from using DeBOHRA

Two facts advocate the efficiency gains from using DeBOHRA:

- Reduction of the number of HR professionals (ratio is 1:33)
- Partial, perceived reduction of time spent on HR administration.

However, it is difficult to draw conclusions about the total financial overview as a result of DeBOHRA implementation from this research. Such an overview may include many aspects like training, maintenance, new DeBOHRA projects, upgrading, interface changes, Oracle license, line managers' involvement, etc.

Line managers deem DeBOHRA benefits less positive than HRM specialists. On the one hand, this is understandable as they feel it is taking over their HR tasks. On the other hand, it indicates that the visibility, comprehensibility, and distinctiveness of HRM policies and practices should become clearer for line managers.

User participation is a well-acknowledged factor affecting people's commitment to an IT (e-HRM). In IT research, user participation is usually recorded as the activities and behaviors of potential users in an IT project. Line managers and employees score their participation in the project as low. A lot has been done by the e-HRM project team to inform the users of DeBOHRA about its intentions, functionalities, and progress. At the same time, research has shown that the intensity and extent of users' responsibilities and hands-on activities in the DeBOHRA project are characterised as "symbolic participation" and "participation by advice". This means that users are informed about the project (at the risk of having information overload!), and they participate in the project groups. But their advice / inputs are limited due to different circumstances, including legitimacy and empowerment issues. Our advice is to involve users in participation by doing: create DeBOHRA sub-projects in the future to empower line managers, employees and HR pro's to take decisions.

9 Discussion: The Ongoing Debate on e-HRM and its Strategic Value\

As put forward in the introduction of this paper, the debate on e-HRM and its strategic value has not been conclusive: does e-HRM create strategic value? and how does it create value, if it does so. The literature presents different schools of thought on this issue, however the results presented in this paper support the school that believes that e-HRM does create value. Although we are aware of the critique one can have on the methodology used, which mainly investigates perceptions, we believe that it is relevant and useful to use perceptions as a data source. As we combined systematic – structured measurement procedures such as a questionnaire with face-to-face interviews, the research method allowed opposing views and perceptions to emerge.

However, we invite new studies in other types of organizations to make new contributions to the debate on e-HRM and its strategic value.

References

1. Ashbaugh, S., & Miranda, R. (2002). Technology for human resources management: Seven questions and answers. Public Personnel Management, 31, 7 – 16.
2. Bell, B.S., Lee, S.-W., & Yeung, S.K. (2006). The impact of e-HRM on professional competence in HRM: implications for the development of HR professionals. Human Resource Management, 45 (3), 295 – 308.
3. Bondarouk, T., & Ruël, H. (2009). Electronic Human Resource Management: challenges in the digital era. International Journal of Human Resource Management, 20 (3), 505 - 514.
4. Brown, D. (2002). eHR – victim of unrealistic expectations. Canadian HR Reporter, 15 (5), 1.
5. Brockbank, W. (1997). HR's future on the way to a presence. Human Resource Management, 36 (1), 65 – 70.
6. Broderick, R., & Boudreau, J.W. (1992). The evolution of computer use in human resource management: interviews with ten leaders. Human Resource Management, 30 (4), 485 – 508.

7. Burbach, R., & Dundon, T. (2005). The strategic potential of Human Resource Information Systems: Evidence from the Republic of Ireland. International Employment Relations Review, 11 (1/2), 97 – 117.

8. CedarCreastone (2006). CedarCrestone 2006 Workforce Technologies and Service delivery approaches Survey, 9th Annual edition, Cedar Crestone.

9. CedarCrestone 2008 -2009 HR Systems Survey, 11th Annual Edition.

10. Cheek, L. (1971). Personnel Computer Systems: solutions in search of a problem. Business Horizons, 14 (4), 69 – 76.

11. DeSanctis, G. (1986). Human Resource Information Systems: a current assessment. MIS Quarterly/ March, 14 – 27.

12. Gardner, S.D., Lepak, D., & Bartol, K.M. (2003). Virtual HR: the impact of information technology on the Human Resource professional. Journal of Vocational Behaviour, 63, 159 – 179.

13. Groe, G.M., Pyle, W., & Jamrog, J.J. (1996). Information Technology ad HR. Human Resource Planning, 19 (1), 56 – 61.

14. Haines III, V.Y., and Lafleur, G. (2008), Information Technology usage and Human Resource roles and effectiveness. Human Resource Management, 47 (3), 525-540.

15. HayGroup (2002). E-HR: a new way of value creation. HayGroup, Philadelphia.

16. Hendrikson, A.R. (2003). Human Resource Information Systems: backbone technology of contemporary human resources. Journal of Labor Research, 24 (3), 381 – 394.

17. Hennessey, H.W., Jr. (1979). Computer applications in Human Resource Information Systems. Human Resource Planning, 2 (4), 205 – 213.

18. Hussain, Z., Wallace, J., & Cornelius, N.E. (2007). The use and impact of human resource information systems on human resource management professionals. Information & Management, 44 (1), 74 – 89.

19. Keegan, A., & Francis, H. (2008). HRM, technology and strategic roles: considering the social implications. In: G. Martin, M. Reddington, & H. Alexander (Eds.): Technology, Outsourcing and Transforming HR (pp. 421 – 447), Elsevier, Amsterdam.

20. Lawler, E.E., Levenson, A., & Boudreau, J.W. (2004). HR metrics and analytics : use and impact. Human Resource Planning, 27 (4), 27 – 35.

21. Lawler, E.E., & Mohrman, S.A. (2003). HR as a strategic partner: What does it take to make it happen? Human Resource Planning, 26, 15 – 29.

22. Lengnick-Hall, M.L., & Moritz, S. (2003). The impact of e-HR on the Human Resource Management function. Journal of Labor Research, 24 (3), 365 – 379.

23. Lepak, D.P., & Snell, S.A. (1998). Virtual HR: strategic human resource management in the 21st century, Human Resource Management Review, 8 (3), 215 – 234.

24. Marler, J. (2009). Making human resources strategic by going to the Net: reality or myth? International Journal of Human Resource Management, 20 (3), 515 — 527.

25. Martin, G., Reddington, M., & Alexander, H. (2008): Technology, Outsourcing and Transforming HR. Elsevier, Amsterdam.

26. Martinsons, M.G. (1994). Benchmarking human resource information systems in Canada and Hong Kong. Information & Management, 26 (6), 305 – 316.

27. Parry, E., Tyson, S., Selbie, D., & Leighton, R. (2007). HR and Technology: Impact and Advantages. London: Charted Institute of Personnel and Development.

28. Roehling, M.V., Boswell, W.R., Caligiuri, P., Feldman, D., Graham, M.E., Guthrie, J.P., Morishima, M., & Tansky, J.W. (2005). The future of HR management: research needs and directions. Human Resource Management, 44 (2), 207 – 212.

29. Ruël, H.J.M., Looise, J.C., & Bondarouk, T. (2002). E-HRM: een verschijnsel nader in kaart gebracht. De ontwikkeling van een model voor praktijk en onderzoek.[e-HRM: a phenomenon observed more closely: developing a model for practice and research] Tijdschrift voor HRM. [Journal of HRM] winter 2002.

30. Ruël, H.J.M., Bondarouk, T.V., & Looise, J.C. (2004). E-HRM: innovation or irritation. An exploration of web-based Human Resource Management in large companies. Lemma Publishers: Utrecht.

31. Ruta, C.D. (2005). The application of change management theory to the HR portal implementation in subsidiaries of multinational corporations. Human Resource Management, 44 (1), 35 – 53.

32. Shrivastava, S., & Shaw, J.B. (2004). Liberating HR through technology. Human Resource Management, 42, 201 – 222.

33. Stanton, J.M., & Coovert, M.D. (2004). Turbulent waters: the intersection of information technology and human resources. Human Resource Management, 43 (2), 121- 126.

34. Tomeski, E.A., & Lazarus, H. (1974). Computerized Information Systems in personnel – a comparative analysis of the state of the art in government and business. Academy of Management Journal, 17 (1), 168 – 172.

35. Ulrich, D. (1997). Human Resource Champions. Harvard Business School Press.

36. Usunier, J.-C. (1998). International and Cross-Cultural Management Research, London: Sage.

37. Voermans, M., and Veldhoven, M. Van (2007). Attitude towards e-HRM: an empirical study at Philips. Personnel Review, 36 (6), 887 - 902.

An Evidence-Based Review of E-HRM and Strategic Human Resource Management

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Abstract. *One stated purpose of electronic human resource management (e-HRM) is to make the entire HRM function more strategic. The goal of this paper is to examine recent research in e-HRM to evaluate the cumulated evidence on the relationship between strategic HRM and e-HRM, and to provide evidence-based guidance to practitioners and researchers. Specifically, we examine evidence of a relationship between e-HRM and strategic HR, the direction of the relationship, and the resources or contexts important for the e-HRM and strategic HR relationship to exist. We review 20 studies published from 2007-2009 using integrative synthesis as our evidence-based methodology. Results reveal that few e-HRM empirical studies have explicitly examined strategic issues. Less than half the studies are at a macro-level of analysis, which is a key distinguishing feature of research conducted in the strategic HRM domain. Furthermore, most research only examines the relationship between e-HRM and perceived strategic effectiveness of HRM. None directly examine other strategic outcomes. Our review highlights the need for more empirical studies on e-HRM and strategic HRM outcomes at a macro level.*

Keywords: e-HRM; Strategic HRM, Evidence-Based Management; HRIS; HRM.

1 Introduction

Both strategic human resource management and electronic human resource management (e-HRM) are relatively new research streams. Strategic HRM literature emerged about 30 years ago [17] and early e-HRM studies begin appearing around 1995 [39]. Interestingly, both research streams invoke potentially transformational outcomes for the role of human resource management within organizations. In the strategic HRM literature, scholars focus on strategic outcomes such as organizational performance [3], strategic alignment [37], and competitive advantage [48]. In the e-HRM literature, researchers expect internet-based technological innovations to assist in realizing the outcomes predicted in the strategic HRM literature. Organizational goals for e-HRM investments include cost reduction through streamlining HRM operations [22],

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improved effectiveness through providing better delivery of HRM services [34] and transformation of the HRM function to a strategic business partner [20].

Given the prominent role accorded strategic outcomes in the e-HRM literature, it is important that researchers and practitioners have a clear picture of the accumulated research evidence to date on this presumed relationship. The purpose of this study therefore is to apply an integrative evidence-based framework [33] to examine recent empirical studies on e-HRM to identify scientific research evidence concerning the nature of e-HRM's association with strategic HRM. We also review these papers to ascertain what e-HRM and strategic outcome relationships are supported across studies and what resources or contexts are important for e-HRM to be associated with strategic outcomes and to be accepted and used by stakeholders.

After presenting definitions of strategic HRM and e-HRM, in section 3, we present our evidence-based methodology for systematically selecting our sample of published empirical and case study evidence linking e-HRM and strategic HRM. We apply this methodology to direct our analysis of the evidence presented in our sample of published research in section 4. In the final section, we synthesize the evidence, noting common themes, gaps in our knowledge, and lessons learned.

2 Conceptualizing Strategic HRM and e-HRM

2.1 What is Strategic HRM

An early and widely accepted definition of strategic HRM is that it is "the pattern of planned human resource deployments and activities intended to enable an organization to achieve its goals." [49] A more recently proposed definition, derived from a growing body of research, reflects a more expansive perspective. Synthesizing multiple strategic HRM models including the universalistic [31], contingent [36-37, 49] configurational [18, 49] and contextual [25] perspectives, Martin-Alcazar, Romero-Fernandez and Sanchez-Gardy [25] define strategic HRM as "the integrated set of practices, policies and strategies through which organizations manage their human capital that influences and is influenced by the business strategy, the organizational context and the socio-economic context." This latter definition sets the strategic HRM phenomena in a broader context emphasizing important influential factors beyond the organization.

Lepak & Shaw's [19] literature review of strategic HRM in North America builds on the latter definition. They identify several specific distinguishing features of strategic HRM. First, strategic HRM is a macro-level concept and thus further specify the concept of organization to mean at a company, business unit or establishment level. Second, strategic HRM highlights the notion of fit among HRM practices, known as horizontal alignment, and vertical fit between HRM and other organizational factors, typically business strategy. Third, strategic HRM focuses on HRM systems, a bundle of HR practices that are either universally, contingently, or configurationally effective depending on espoused theoretical perspective. Finally, strategic HRM emphasizes organizational performance outcomes.

Lengnick-Hall and colleagues' (2009)[17] also contribute to an increased understanding of what the strategic HRM domain comprises. In a comprehensive chronological review of the strategic HRM literature, they identify three chronological stages. Early strategic HRM literature emphasized a contingency perspective in which fit between human resource policies and practices and various strategy elements was the focal point. Consequences of strategic HRM in this stream of research included organizational

performance contingent on vertical fit or predicted bundles of HRM practices based on intended business strategy. Thus this literature focused on describing the phenomena in terms of bundles of practices and the fit of HRM practices with each other and with other organizational contexts such as business strategy.

A second line of inquiry focused on strategic HRM as a source of important strategic contributions. Consequences of strategic HRM in this stream shifted focus from employee welfare as the key outcome to competitive advantage, human capital, social capital, organizational capital, intellectual capital and knowledge management as key outcomes. The focus of this stream of literature was on outcomes of the strategic HRM phenomena and the notion that the outcomes determined whether the HRM input was strategic.

More recently, another line of research emphasizes the importance of effective execution of HR policies and practices and ensuring that the strategic intent is realized. In this newer stream, divergence between intended and implemented strategic HRM practices are explored and suggest the possibility that the expected outcomes of a strategic HRM intervention might depend on what actually is implemented.

2.2 What is e-HRM

Several definitions of e-HRM exist in the academic literature. The two most cited definitions are provided by Strohmeier [39] [40][41] and Ruel and colleagues [34]. Ruel, Bondarouk and Looise [34] proposed an early popular definition in which e-HRM was defined as a way of implementing HRM strategies, policies and practices in organizations through the conscious and directed support of and with the full use of web technology based channels. Strohmeier [39] expanded this definition to be more specific about the technological and organizational contexts, defining e-HRM as the application of information technology for both networking and supporting at least two individual or collective actors in their shared performing of HR activities. In the remainder of the paper, we use a hybrid of these definitions in which e-HRM consists of intended and actual HRM policies, activities, services, and collaborations with individuals and organizations, which are delivered and enabled using configurations of computer hardware, software, and electronic networking capability.

3 Research Framework and Methodology

In this study, we use integrative synthesis which is an accepted evidence-based methodology to summarize the existing research literature [33]. Integrative synthesis involves the collection and comparison of evidence involving two or more data collection methods [33] . It investigates patterns across primary research studies, compensating for single-study weaknesses in research design to improve the internal and external validity of the various research findings. Integrative synthesis typically employs predetermined questions and selection criteria. Critical selection criteria include the relevance and construct validity of indicators obtained by different methods, all tapping what is presumed to be the same phenomenon. This method often pursues multiple questions allowing the review to address issues difficult to examine in the context of a single study. Integrative synthesis is not meta-analysis. It relies on judgment of the researchers, but around a structured framework and set of questions.

Below we define our research methodology in detail following the procedure described by Rousseau and colleagues, and Dibbern and colleagues [8, 33]. We begin first with identifying our predetermined questions and follow with our selection criteria. Our

selection criteria involved first specifying key construct search terms to identify relevant studies. We then specified factors that would insure relevance and construct relevance. Finally, we categorized each selected study by its theoretical foundations, type of relationship examined (e.g., type of validity), level of analysis, and empirical approach. We discuss this methodological process in more detail in the following subsections.

3.1 Integrative synthesis questions

Typical questions framing an integrative synthesis relate to effectiveness of interventions and cause-effect relationships. The key question framing our integrative synthesis is: What e-HRM and strategic HRM relationships are present and supported across studies? In our review of the evidence addressing this question, we examine the nature of the relationship between these two constructs. What does the evidence suggest concerning the causal order of the relationship? Does the evidence suggest e-HRM is the cause or consequence of strategic HRM outcomes [40]? Does the evidence support a deterministic view in which technology triggers organizational change or does the evidence suggest a more influential role for social and organizational actors [12, 28]? We also note how strategic HRM is conceptualized. Is it based on early stage theories, on strategic outcomes of strategic HRM, or later concerns with the juxtaposition of intended versus realized strategic outcomes? Finally, our synthesis addresses the feasibility of applying the findings from this literature. We therefore also examine what resources or contexts are important for the e-HRM and strategic HRM relationship to exist. What do stakeholders (HR managers, managers, employees, vendors, shareholders) experience and what issues are important to them?

3.2 Sample Selection

To identify an appropriate sample of published research evidence to include in our integrative synthesis, we started by searching for all published articles related to e-HRM in the past ten years (1999-2009). We searched in the primary business and psychology indexed databases, utilizing ABI Inform/Proquest, Business Source Premier, and PsycArticles. We developed an extensive list of search terms used in the field. Table 1 presents the search terms used and the number of articles identified using each of the search terms. Articles were coded based on the search term with which they were first located. Several of the articles were matched with multiple search terms but we did not code the additional matching search terms. Ten additional articles were identified by scanning reference lists of recently published research [e.g., Strohmeier, 2009]. In total, we identified 77 published research articles related to e-HRM.

In the next step, we applied several criteria to identify the set of articles most relevant to our research questions. We decided to retain only those articles that (1) were in peer reviewed publications, (2) included quantitative or qualitative data (no purely conceptual studies), (3) fit one or more definitions of e-HRM as reviewed above, (4) addressed the use of e-HRM in an organizational setting rather than taking a pedagogical approach of teaching students about e-HRM, and (5) were published in the same year or after Strohmeier's [39] recent literature review (2007 – 2009). At this stage, we did not consider the extent to which the articles addressed strategic HRM.

This screening process resulted in 20 articles that met all criteria. Our review of these articles is organized first by stated or implicit strategic HR perspective, thus addressing our key question. In the case of articles with an implicit strategic HR perspective, we used our judgement based on a close reading of the article to categorize any underlying presumed relationship. In most cases, although not the main focus of the paper, a

presumed relationship between e-HRM and strategic HRM is a stated justification for or implication of the research.

Then we discuss evidence by theoretical foundation, type of statistical relationship, level of analysis, and empirical approach. Articles included in the review are categorized in Table 2. Note that the column totals within a category (e.g., strategic HR perspective) do not necessarily add to 20 because some of the articles were categorized into multiple categories.

3.3 Strategic HR perspective

We organized our sample of e-HRM published studies by Lengnick-Hall et al.'s [17] chronological stages of strategic HRM research. Research in e-HRM that takes the contingency perspective examines a potential fit between different organizational characteristics and the use of e-HRM, either overall adoption or the use of different types or elements of e-HRM. Research founded in the strategic contributions stage examines strategic outcomes and thus the specific strategic outcomes or consequences associated with e-HRM. Finally, research in the third stage examines consistency or divergence between the intended and implemented HRM practices, and how the intended or presumed strategic impact could be limited by implementation problems. Much of the prior research in individual-level adoption of e-HRM technology is at this third stage. We also identified studies that simply focused on contextual factors that might affect whether intended outcomes are actually realized.

Search Term	Number of Articles Identified
B2E and HRM	1
e-HR	6
e-HRM	6
ERP and HRM	2
HRIS	31
HRM and Internet	4
Self-service	7
Virtual HRM	1
Web-based HRM	11

Table 1: Articles Identified Using Specified Search Terms

3.4 Theoretical foundation

Since our key questions involve investigating the types of relationships evidenced between e-HRM and strategic HR we categorized each study based on the theory used to develop the research model/hypotheses. Relevant theoretical foundations are found in the strategy, information sciences and strategic HRM literatures. Key theories in the

strategy research that are relevant to the e-HRM and strategic HR relationship include contingency theory, the resource-based view, and strategic evolution, value chain theories, and institutional theory. Theories from information science include technological determinism [28, 40], structuration theory [12], innovation diffusion theories [32], technology acceptance theories [6, 45], and information processing theory. Theories applied to strategic HRM include configurational and universalistic theories and behavioral theory [7, 15, 18, 31, 38, 47]. We looked to see if the research was based on a single theory or multiple theories, and also included an unspecified "other" category in our framework to cover other theories or unexpected findings, which provoked alternative theoretical explanations.

3.5 Type of relationship

For research to effectively inform evidence based management, we must be confident in the conclusions drawn from the study. There are four types of relationships between key constructs that research must address in order to meet satisfactory empirical standards. These four relationships are typically referred to as conclusion validity, internal validity, construct validity, and external validity. Conclusion validity establishes whether there is a relationship between two constructs. Internal validity establishes whether this relationship is causal and if so the direction of causality. Construct validity investigates whether measurement of the key constructs is sufficient to adequately assess the relationship. Finally external validity establishes how generalizable the relationship is and whether there are contextual contingencies that might affect the observed relationship. We classified our sample of studies by the type of relationship that received the most attention.

Study		Strategic HR Perspective				Theory?			Reference Theory													Relationship		Level of Analysis		Empirical Approach			
	Explicit								Strategy			Information Science					Organizational Science													
		Contingency Perspective	Strategic Outcomes	Intended vs Realized	Contextual	One main theory	Multiple	None	Contingency	RBV	Other	Determinism	Structuration	TAM	Diffusion	Information Processing	Other	Behavioral Theory	Exchange Theory	Other	Correlational	Causal	Macro	Micro	Cross sectional	Longitudinal	Case study-descriptive	Experimental
Teo, Lim, and Fedric	x		x			x									x							x		x		x			
Ruel, Bondarouk, and Van der Velde	x	x	x				x		x					x							x	x		x	x			
Hussain, Wallace and Cornelius	x	x	x	x	x	x			x												x		x		x			
Olivas-Lujan, Ramirez, & Zapata-Cantu				x	x			x															x				x	
Allen, Mahto, and Otondo				x			x							x						x		x		x				x
Dineen, Ling, Ash, and DelVecchio				x			x													x		x		x				x
Tansley and Newell (JMP)				x			x												x					x			x	
Tansley and Newell (ML)				x			x													x				x			x	
Alleyne, Kakabadse and Kakabadse			x				x													x				x			x	
Panayotopoulou, Vakola, and Galanaki		x	x					x															x		x			
Voermans and Van Veldhoven	x	x					x		x					x							x	x		x	x			
TOTAL 2007	4	4	5	6	2	2	7	2	3	0	0	0	0	3	1	0	0	0	1	4	4	4	4	7	5	0	4	2
Haines and Lafleur	x	x	x				x					x	x			x					x		x		x			
Lukaszewski, Stone, and Stone-Romero				x			x											x				x		x				x
Ngai, Law, Chan and Wat	x		x		x			x													x		x		x			
TOTAL 2008	2	1	2	1	1	0	2	1	0	0	0	1	1	0	0	1	0	1	0	0	2	1	2	1	2	0	0	1
Dineen and Noe				x			x													x		x		x				x
Payne, Horner, Boswell, Schroeder, and Stine-Cheyne				x		x												x				x		x		x		
Strohmeier and Kabst					x		x							x	x					x	x		x		x			
Marler, Fisher, and Ke					x	x								x					x		x	x		x	x	x		
Farndale, Paauwe, and Hoeksema	x	x	x					x		x										x			x				x	
Bondarouk, Ruël, and van der Heijden	x	x	x				x							x								x		x			x	
TOTAL 2009	2	2	2	2	2	2	3	1	0	1	0	0	0	3	1	0	0	1	1	3	2	4	2	4	2	2	2	1
OVERALL TOTALS	8	7	9	9	5	4	12	4	3	1	0	1	1	6	2	1	0	2	2	7	8	9	8	12	9	2	6	4

Table 2: Descriptive Analyses of Empirical Studies

3.6 Levels of analysis and empirical approach

Next we chose to examine the key relationships by the levels of analysis addressed in the research and then by empirical approach used to verify the type of theorized relationship within level. The level of analysis used in any study should be clearly linked to the theoretical foundation.

To adequately address the question of strategic HR, constructs of interest should be at the firm, division, or some other unit at the organizational level. Research in e-HRM may also be at the group, team or department level, examining group-level social constructs or perhaps differences between groups in implementation of new technology.

Then we evaluated the empirical approach used to verify the expected relationships within the specified level of analysis. Cross sectional samples and variance-based statistical analyses help establish conclusion validity, construct validity and external validity. Longitudinal samples, experimental designs and process-based statistical analyses better establish causal relationships or internal validity.

4 Literature Review and Analysis

The first finding of note is that less than half of the empirical research, eight out of twenty studies, conducted on e-HRM over the past several years has explicitly addressed strategic relationships or outcomes. The majority presumed some kind of strategic relationship. Based on Lengnick-Hall et al.'s [17] framework, we identified seven articles adopt a contingency perspective and nine that evaluated strategic outcomes associated with e-HRM. In some cases, we counted a study as both a contingency perspective and a strategic outcome when the strategic outcome represented HRM strategic effectiveness. Nine articles examined consistency or divergence between the intended and implemented HRM practices, and five focused on contextual factors that might affect whether intended outcomes are actually realized (note that some of the articles incorporated more than one perspective). In the last two categories, strategic outcomes were often implied or offered as a reason for conducting the research but were not directly examined in the study. We continued to assess all of the studies with our complete research framework to determine how the findings of these studies might inform practitioners and future research on the relationship between e-HRM and strategic HRM.

Six studies in our sample explicitly examined the relationship between perceptions of e-HRM effectiveness and perceptions of the HR function's strategic effectiveness and strategic business partner role. These studies presented a strategic contingent theoretical perspective with the underlying assumption that HR managers that provide strategic support to line managers also support the organization in reaching strategic objectives. E-HRM in these studies enables the HR function to become more strategically effective as described by Huselid, Jackson and Schuler [15].

Of the nine studies in the sample categorized as dealing with strategic outcomes, none provided explicit evidence concerning other strategic outcomes (e.g. improved human capital, competitive advantage, business performance) beyond improving perceptions of HRM's strategic effectiveness. Less than half of the studies (n = 8) were conducted at the organizational level of analysis.

4.1 E-HRM and strategic HR: contingency perspective

To date, the literature on e-HRM and strategic HRM assumes a contingent theoretical perspective in which the perceptual relationship between these two constructs is most frequently studied. Six of the studies we reviewed provide evidence of a significant relationship between individual perceptions (e.g. employees, HR managers, line managers, senior executives) of e-HRM effectiveness and perceptions of the strategic effectiveness of the HRM function. The second most common approach treats e-HRM as the cause of business process improvements that are assumed to be related to more effective, potentially more strategic, HRM practices.

Ruel, Bondarouk and Van der Velde [35] conduct a field study to determine whether an employee's assessment of various characteristics of e-HRM is related to perceptions of HRM's strategic effectiveness. Their study integrated Huselid and colleagues' measure of strategic HRM effectiveness within a technology acceptance model theoretical framework[5]. They surveyed 100 employees of the Dutch Ministry of Internal Affairs and found that employee participation in the development stage of e-HRM implementation predicted employee perceptions of e-HRM quality. They also found that e-HRM quality predicted employee perceptions of strategic HRM effectiveness. Similar to Ruel and colleagues, Voermans and van Veldhoven's [46] study of 356 Dutch employees of Philips, a Dutch multinational, provided additional evidence of a link between attitude toward e-HRM and perceptions of the quality of HRM as a strategic business partner.

Haines and Lafleur [13] surveyed Canadian HR managers across 210 firms to assess the relationship between the degree IT supported HR activities and HR managers' perceptions of HR's technical and strategic effectiveness. They found a positive relationship between the degree of IT support of HR activities and HR manager's perceptions of the organization's HR strategic effectiveness, and with the quality of HR's strategic and change agent roles as assessed using Ulrich and Brockbank's measure of strategic business partner and change agent role performance [44].

Hussain, Wallace, and Cornelius [16] found that slightly less than 50% of a random sample of companies in the UK use HRIS or other software exclusively in support of strategic HR usage tasks[1]. They claim their findings reveal wholesale adoption of HRIS in support of a full strategic partnering role, regardless of company size. Their results show, however, that while surveyed HR professionals believed that the usage of HRIS for strategic decision-making led to enhanced professional standing within and outside the organization, semi-structured follow-up interviews with organizational executives revealed a less positive assessment. Senior executives thought that HRIS use had not enhanced HR's professional standing within the organization, contrary to the views of HR managers' themselves.

Two very recent studies, however, suggest that expectations that e-HRM enables or supports HR managers in taking on more strategic business partner tasks are not founded [4, 11]. In a qualitative case study of an e-HRM module deployed in the Dutch Ministry of the Interior, Bondarouk and colleagues [4] found that line managers and employees did not appear to link e-HRM functionality with HRM strategic effectiveness. E-HRM made administrative/data management more accessible but it did

[1] Although they did not measure e-HRM specifically, we assume at least some of the HRIS fits the definition of e-HRM given the survey fielded in early 2000.

not improve the line managers' or employees' perception of HRM being more strategically effective. Ironically, the semi-structured interviews of managers and employees suggested HR managers continued to misdirect their efforts on non-employee value-added activities such as cost reduction and re-organization. Farndale Paauwe and Hoeksema [11] also found the deployment of an electronically enabled HR shared service centre resulted in less use of local HR generalists by line managers, contrary to the authors' expectation that the technology would free HR employees to spend more time strategically supporting line managers.

4.2 E-HRM and strategic outcomes

As described above, some studies examined perceptions of HR managers' strategic effectiveness or strategic business partner roles. However, none of the studies looked at whether e-HRM was related to other strategic outcomes such as competitive advantage, organizational performance, or improved HR outcomes such as increased human capital, reduced turnover or increased organizational commitment or job satisfaction. Instead the existing studies focus on factors one step removed from such strategic outcomes.

Ruel et al.'s [35] theoretical frame had an underlying deterministic presumption, which was that e-HRM would facilitate the strategic transformation of the HR function. However, they also examined whether the degree to which managers were involved in adapting the e-HRM at implementation predicted managerial perceptions of HRM's strategic effectiveness. Although they did not test whether perceptions of the quality of the e-HRM acted as a mediator, their study design implies that perceptions of e-HRM quality are an important outcome of potential strategic significance. Thus they treat e-HRM effectiveness, the mediating construct, as both an effect and a cause. It is an effect of managerial involvement in implementing e-HRM and it is a cause of managerial perceptions of HRM's strategic effectiveness.

Alleyn, Kakabadse and Kakabadse [2] take a novel approach by applying the customer service satisfaction profit chain [14] model combined with the concept of met expectations to argue that satisfaction with e-HRM technology will result in line manager satisfaction (line managers are HR's internal customers). The implication here is that by developing satisfied line managers who are HR customers, e-HRM is thus related to eventual greater productivity and retention of line managers. Their interviews suggest that when line managers' expectations of the e-HRM are met they express satisfaction with e-HRM and their satisfaction with the HR function increases. On the other hand, unmet expectations resulted in dissatisfaction with both the e-HRM and the HRM function overall.

4.3 E-HRM as the strategic outcome: an alternate causal ordering

In a review of early e-HRM consequences, Strohmeier [40] calls into question the appropriateness of assuming a deterministic view of e-HRM in which e-HRM determines organizational outcomes. He argues the causal ordering could be reversed and thus suggests that e-HRM itself is the result of strategic decision-making. With this perspective, researchers are focused on understanding what social agents and contextual factors determine how a technology is developed and designed and whether and how it is deployed. Thus e-HRM is a strategic outcome of strategic HR and not the other way around.

Haines and Lafleur [13] also argue that outcomes of IT do not deterministically change an organization but depend on the extent to which IT is viewed as useful and thus adopted and adapted to improve organizational information processing capability. Hussain, Wallace and Cornelius [16] argue that strategic pressure on the HR function within organizations is implicated in HR managers' use of HRIS to improve their strategic decision making capability and professional image within the organization. This theoretical perspective presumes e-HRM is the outcome of strategic choices on the part of HR managers with the intended effect of improving their strategic capability and image.

Two exploratory studies, one of firms in Hong Kong [26] and one of firms located in Greece [29] examined reasons why firms used e-HRM. Both studies found the key reason related to improving communication between HR and employees and between managers and employees. Strategic outcomes were of secondary importance and generally related to achieving reduced HR costs. Teo, Lim and Fedric (2007) examined e-HRM adoption as an outcome among firms located in Singapore. They looked to see if innovation, organizational, and environmental characteristics of the firm would impact adoption of e-HRM systems. Findings suggested that the organizational characteristics were related to adoption while the more strategic predictors such as competitive pressure were not.

In a very recent study Farndale, et al. [11] explored HR shared service centres (SSC) used by 15 firms located in the Netherlands. They argue that a SSC is a natural progression of e-HRM technologies because SSC are characterized by electronic communications through an internet-based infrastructure that is combined with a call center, enabling the consolidation of corporate activities into fewer locations while spreading information to a broader audience. As Farndale and colleagues note, "a shared-service centre is not an end in itself; it is a means to transforming the whole function of HR to make it more strategic….Ultimately, the decision to create an SSC is largely a factor of corporate strategy. The decision to bring HRM administrative tasks in a single location to provide services across business divisions or locations indicates a certain desire on behalf of the organization to consolidate its field of operations.[11]" Thus the deployment of e-HRM represents an outcome of a corporate strategy to consolidate HRM administrative tasks with the primary objective to improve customer (e.g., manager and employee) service at reduced costs.

4.4 E-HRM and strategic HRM: Intended vs. realized implementation

In this section, we examine the extent to which strategic intent of e-HRM technology was effectively implemented. As noted by Tansley and Newell, the strategic intent for e-HRM may be present, but there are many complications in system development and implementation that may stand in the way of effective use [44, 45]. Nine of the papers directly shed light on this part of our question. The two case studies by Tansley and Newell provided a detailed context for understanding, for those who have never been involved in implementation of e-HRM, how complex the process really is. They studied two different development teams to examine factors that can help these teams realize the intended goals of e-HRM. They found that leadership competencies were very important, such as the ability to bring together individuals from different role perspectives (e.g., IT and HR). Project leaders in this context must be able to identify, manage and dispel political issues that have potential to derail the project.

The experimental and quasi-experimental papers included in our review [1, 9-10, 21] offer a different perspective on the intended/realized question. These papers sought to

examine the effectiveness of specific aspects of the e-HRM systems (recruiting, performance appraisal, and broader HR data storage) in a controlled environment to see if they had the intended effects before implementing the systems more broadly. Three papers examined the use of e-HRM to improve recruiting outcomes [1, 9-10]. Allen, Mahto and Otondo conducted an experimental study looking at how the amount of information presented to potential job applicants would affect attitudes toward the organization and subsequently, intentions to apply for a position. Dineen and colleagues [9-10] also examined information provided to potential job applicants, focusing on provision of customized information from a person-organization and person-job fit perspective. All of these studies found that appropriate, active use of technology could be used to enhance applicant interest in a job or organization, or even enhance the quality of the overall applicant pool by providing customized data about person-organization and person-job fit. Another paper examined implementation of an online performance appraisal (PA) system (Payne, et al.)[30]. This was a quasi-experimental study in a large organization that looked at perceptions of a new online performance appraisal system compared to a more traditional system. This study found that with the online system employees perceived managers to be held more accountable and employees reported participating more in the process, two indicators of a more effective PA system. However, Payne, et al. also found employees were equally satisfied with the paper and pencil and online systems, and actually reported that the online appraisals were of lower quality than the paper and pencil ones received the previous year. This was certainly not an intended goal of the organization.

Lukaszewski et al. [21] examined privacy concerns with e-HRM data storage. They found that employees had greater concerns about the privacy of data stored in an e-HRM system when data sensitivity was higher (e.g., with medical data). This is another unintended outcome that needs to be examined further.

4.5 e-HRM and strategic HRM : Contextual factors

Another common theme in many of these studies is that there are important contextual factors upon which e-HRM acceptance and use by stakeholders depends. Although these contextual factors were often not the specific focus of the study, several researchers concluded that e-HRM acceptance by stakeholders depends on degree of involvement in design and implementation of e-HRM [2, 35]; the perceived usefulness of the e-HRM technology [23-24, 46]; whether expectations were met [2]; degree of managerial coercion [23] on training/ perceived organizational resources [24, 46] and finally to perceptions of privacy or data security related to acceptance of e-HRM, with inconsistent results [21, 30]. We discuss these findings because e-HRM certainly cannot achieve strategic outcomes if it is not accepted and used by stakeholders. In addition to factors that might affect e-HRM acceptance, several studies identified contexts or resources important for e-HRM to be associated with strategic outcomes. These contextual factors included organizational size [16, 41] union presence [13]; environmental infrastructure [27] and national culture [27].

In the current literature, larger organizations are more likely to adopt e-HRM systems and tend to have more positive outcomes [43]. From the motivational perspective, Hussain et al. [16] examined whether organizational size was an important factor in the degree to which HR managers felt compelled to invest in HRIS to improve their strategic capabilities. They found that size was not a significant differentiator.

One additional contextual factor studied in seven of the papers is the nationality of the firm adopting the e-HRM technology. Nationality was held constant in six of the studies

(Singapore, Hong Kong, Greece, Mexico, the Netherlands) and was used as an explanatory factor in one study [41]. The studies using a single-country sample appeared to do so for convenience of sampling, as no theoretical arguments were offered for constraining the sample in that way. It is important to note that even within these single-country studies, a large percentage of MNCs were included. To the extent that adoption and use of e-HRM occurs at the firm level, these studies may in fact represent a broader, more global sample.

In contrast, others (e.g., [41]) have argued that national context will directly affect adoption and use of e-HRM due to national differences in human resource management laws, education systems, industrial relation systems, legislation addressing storage and use of electronic data, and level of economic development. Strohmeier and Kabst [41] found rather unexpected results related to national context, as former Eastern European countries in their sample were actually more likely to have adopted e-HRM than Western European countries.

Olivas-Lujan and colleagues' [27] case studies of 4 large Mexican multinationals examined the extent to which key contextual variables, competitive environment, external telecommunications infrastructure and national cultural norms affected how e-HRM was used within organizations. For example, deficient telecommunications infrastructure in more remote regions of Mexico constrained one company's use of e-learning to enhance its employees' customer service skills and behaviours. Their qualitative descriptions suggest these factors might affect how e-HRM was deployed but the degree, significance, and nature of these relationships were not addressed.

Tansley and Newell [42-43] took a third approach to examining the impact of nationality on implementation of e-HRM. In their case studies, they noted that staffing implementation teams with employees from different countries increases the challenges inherent in accomplishing such an effort. Development and implementation of e-HRM is challenging enough with a cross-disciplinary team (represented by IT and HR functions) and the national diversity added another layer of complexity to the projects.

Another contextual factor that may be related to the strategic impact of e-HRM is the breadth of the technology and number of HR processes affected. The e-HRM technology reviewed in this paper ranged from single function systems for recruiting and performance appraisal to broad HRIS packages[2]. It seems reasonable to expect that the broader e-HRM systems have the potential for greater strategic impact. However, they may also come with more risks and technology adoption concerns.

4.6 Levels of analysis and empirical approach

Only eight of the studies examined macro-level questions about e-HRM and strategic HRM. The majority of the studies were focused on individual level reactions to such systems or team leader behaviors related to effective e-HRM projects [42-43]. The underlying assumption of these papers, therefore, is that there is a relationship between e-HRM and strategic HR and that individual level acceptance of e-HRM is an important issue to study. These e-HRM studies are more suited for understanding the conditions in which e-HRM will be accepted and effectively used by individual stakeholders. They

[2] We intentionally excluded e-learning from this analysis, as that literature focuses more on individual learning than on the strategic benefit, data management, and user acceptance issues in the e-HRM literature.

cannot address the primary question of what relationship exists between e-HRM and strategic HRM.

In terms of research design, six of the studies used the case study approach to examine issues around e-HRM in detail within one or just a few organizational groups. Of the remaining empirical studies, nine were cross-sectional in nature, two were longitudinal, and four were experimental. This variation in research design is generally a positive feature of this set of papers, as each approach has strengths in answering specific kinds of questions. At early stages of an area of inquiry, it can be very useful to play different approaches off one another, even alternating approaches to better understand the phenomena being studied. Unfortunately, we did not see this cross-fertilization of research approaches, with research groups pursuing a particular approach to the exclusion of others.

We also examined factors related to construct validity, internal validity, and external validity in each of the studies to help evaluate the existing evidence regarding e-HRM and strategic HRM [34]. Construct validity varied widely across the studies. Some studies used well established measures for their constructs and performed structural equation modelling to demonstrate good fit of their measurement models, giving us more confidence in their measures [e.g., 1,9,10,22,24]. Others were forced to rely on measures developed by others when using an industry-wide survey [43]. While we applaud the use of large samples across industries, it is critical to ensure that core concepts such as presence of an HR strategy are adequately measured. We also question the construct validity of some measures of e-HRM implementation [e.g., 43] including the binary measures.

Naturally, external validity was limited in the case study and experimental papers. One factor that appears to limit external validity for all the papers is differences in e-HRM systems that are not always specified. Having a clear system for describing and categorizing key features of e-HRM systems would likely help with generalizing results across situations and studies.

Finally, no studies were able to establish internal validity and therefore causal ordering at the macro-level of analysis. Of the 20 studies examined only 8 were at a macro-level of analysis and of these, only 5 provided empirical evidence for a correlational relationship between e-HRM and strategic HRM and none provided appropriate empirical support for establishing causal ordering.

5 Discussion and Conclusions

Our evidence-based examination of e-HRM and strategic HRM relationships across 20 studies in peer-reviewed literature over the last 2 years reveals several interesting themes for practitioners to evaluate gaps in the literature that should provoke interesting avenues for scholars to explore in future research.

5.1 Key themes

The majority of empirical studies concerning e-HRM and strategic HR have examined the relationship between perceived characteristics of e-HRM and perceived strategic effectiveness of the HR function or HR managers. The evidence consistently suggests there is a significant, positive relationship. All these studies depict a relationship in which e-HRM perceptions predict strategic HR effectiveness. Thus positive (negative) perceptions of e-HRM are associated with positive (negative) perceptions of HR's strategic effectiveness. Although these cross sectional and case study analyses assume

the above causal ordering, there is no evidence to counter the reverse relationship. That is, it is also possible that positive (negative) perceptions of strategic HR effectiveness predict positive (negative) perceptions of e-HRM effectiveness. Teasing out the causal order would make a very useful and interesting contribution to this literature.

A second underlying theme in this literature is that HR managers expect e-HRM deployments to improve their strategic capabilities and enable them to become strategic business partners. Results on whether these expectations are actually realized are mixed. Early exploratory studies suggest such a strategic outcome is realized while more recent studies call this expectation into question.

A third theme is that none of the studies looked at whether e-HRM was related to other strategic outcomes such as competitive advantage, organizational performance, or improved HR outcomes such as increased human capital, reduced turnover or increased organizational commitment or job satisfaction. Instead the existing studies focus on factors one step (or more) removed from such strategic outcomes.

Finally, a fourth common theme in many of these studies is that there are important contextual factors upon which e-HRM acceptance and use by stakeholders depends. In addition to factors that might affect e-HRM acceptance by stakeholders, several studies identified contexts or resources important for e-HRM to be associated with strategic outcomes.

5.2 Gaps and future research

Our examination of the current published empirical research reveals at least four gaps in this research stream. The first noticeable gap in the literature is the lack of attention to strategic outcomes. We found there was generally an assumption of the strategic value of the e-HRM system, but few studies directly examined the assumption. In our opinion, this relationship is not well enough established to consider it a well-founded assumption. Thus, future research designs should consider where possible the measurement of strategic outcomes such as better knowledge management, more productive human capital, better organizational performance and so on.

The second gap we identified in the literature is a lack of longitudinal research. Only two of the 20 studies used a longitudinal design. This makes it difficult to disentangle issues of causality in the relationship between e-HRM and SHRM, as the direction of the relationship depends on the theoretical perspective underlying the study design rather than testing the relationship empirically. Interestingly, as more and more organizations adopt e-HRM and complete their implementation, we may be losing the opportunity to directly study the causal relationship between e-HRM adoption and SHRM. The time may be coming in which we need to reframe the research agenda around different characteristics of e-HRM rather than simply existence of e-HRM.

Another gap was the somewhat limited application of theory to the research questions. We considered only four of the studies we reviewed to be lacking theory altogether, but we need a stronger theoretical foundation for e-HRM research in general to help make sense of the literature, strengthen the research conducted, and facilitate effective accumulation of knowledge. The most commonly used theory across this group of studies was the technology acceptance model (TAM), a well-used theory that helps explain adoption of new technology. However, TAM is only tangentially related to strategic issues.

The last gap we see is the need for more empirical, field-based research on e-HRM and SHRM. Single organization-based case studies and experimental research accounted for nearly half (10 of 20) studies we reviewed. These approaches have helped provide a good foundation for future researchers to design more empirical, field-based research to test the theories and models that have been developed through case studies and experiments. This will provide a better evidence for practitioners to know what really works in practice.

5.3 Conclusion

In conclusion, this evidence-based review of the intersection between e-HRM and strategic HRM has led us to four primary findings in the literature: 1) implementation of e-HRM is associated with perceptions of strategic effectiveness of HR (both positive and negative), 2) there is very limited empirical evidence supporting the expectation that e-HRM s related to other strategic outcomes, 3) there is considerable evidence indicating a contextual factors are likely to be key moderators of the relationship between e-HRM and strategic HRM outcomes, and finally, 4) there are considerable gaps in the cumulative literature that need to be addressed in order to provide strong guidance to practitioners. There are many opportunities to continue and refine this important area of research, and we believe this review provides a foundation and strong motivation for moving ahead.

References

[1] Allen, D., Mahto, R.&Otondo, R. (2007). Web-Based Recruitment: Effects of Information, Organizational Brand, and Attitudes toward a Web Site on Applicant Attraction. Journal of Applied Psychology, 92(6). 1696-1708.

[2] Alleyn, C., Kakbadse, A.&Kakbadse, N. (2007). Using the Hr Intranet: An Exploratory Analysis of Its Impact on Managerial Satisfaction with the Hr Function. Personnel Review, 36(2). 295-310.

[3] Becker, B.Huselid, M.A. (1998). High Performance Work Systems and Firm Performance. Research in Personnel and Human Resources Management, 16. 53-101.

[4] Bondarouk, T., Ruël, H.&van der Heijden, B. (2009). E-Hrm Effectiveness in a Public Sector Organization: A Multi-Stakeholder Perspective. International Journal of Human Resource Management, 20(3). 578-590.

[5] Davis, F.D. (1989). Perceived Usefulness, Perceived Ease of Use and User Acceptance of Information Technology. MIS Quarterly, 13(3). 319-340.

[6] Davis, F.D., Bagozzi, R.P.&Warshaw, P.R. (1989). User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. Management Science, 35(8). 982-1003.

[7] Delery, J.E. (1998). Issues of Fit in Strategic Human Resource Management: Implications for Research. Human Resource Management Review, 8(3). 289-309.

[8] Dibbern, J., et al. (2004). Information Systems Outsourcing: A Survey and Analysis of the Literature. ACM SIGMIS Database, 35(4). 6-102.

[9] Dineen, B., et al. (2007). Aesthetic Properties and Message Customization: Navigating the Dark Side of Web Recruitment. Journal of Applied Psychology, 92(2). 356-372.

[10] Dineen, B.Noe, R. (2009). Effects of Customization on Application Decisions and Applicant Pool Characteristics in a Web-Based Recruitment Context. Journal of Applied Psychology, 94(1). 224-234.

[11] Farndale, E., Paauwe, J.&Hoeksema, L. (2009). In-Sourcing Hr: Shared Service Centres in the Netherlands. International Journal of Human Resource Management, 20(3). 544-561.

[12] Giddens, A. (1984). The Constitution of Society. Berkeley: University of California Press.

[13] Haines, V.Y.Lafleur, G. (2008). Information Technology Usage and Human Resource Roles and Effectiveness. Human Resource Management, 47(3). 525-540.

[14] Heskitt, J.Schlesinger, L.A. (1994). Building Service, Driving Profits. Harvard Business Review, (March-April).

[15] Huselid, M.A., Jackson, S.E.&Schuler, R.S. (1997). Technical and Strategic Human Resource Management Effectiveness as Determinants of Firm Performance. The Academy of Management Journal, 40(1). 171-188.

[16] Hussain, Z., Wallace, J.&Cornelius, N.E. (2007). The Use and Impact of Human Resource Information Systems on Human Resource Management Professionals. Information and Management, 44. 74-89.

[17] Lengnick-Hall, M.L., et al. (2009). Strategic Human Resource Management: The Evolution of the Field. Human Resource Management Review, 19(2). 64-85.

[18] Lepak, D.A., et al. (2006). A Conceptual Review of Human Resource Management Systems in Strategic Human Resource Management Research. Research in Personnel and Human Resources Management, 25. 217-271.

[19] Lepak, D.P.Shaw, J. (2008). Strategic Hrm in North America:Looking to the Future. The International Journal of Human Resource Management, 19(8).

[20] Lepak, D.P.Snell, S.A. (1998). Virtual Hr: Strategic Human Resource Management in the 21st Century. Human Resource Management Review, 8(3). 215-234.

[21] Lukaszewski, K., Stone, D.&Stone-Romero, E.F. (2008). The Effects of the Ability to Choose the Type of Human Resources System on Perceptions of Invasion of Privacy and System Satisfaction. Journal of Business and Psychology, 23(3/4). 73.

[22] Marler, J.H. (2009). Making Human Resources Strategic by Going to Te Net: Reality or Myth? The International Journal of Human Resource Management, 20(3). 515.

[23] Marler, J.H., Fisher, S.&Ke, W. (2009). Employee Self-Service Technology Acceptance: A Comparison of Pre-Implementation and Post-Implementation Relationships. Personnel Psychology, 62(2). 327-341.

[24] Marler, J.H., Liang, X.&Dulebohn, J.H. (2006). The Effect of Technology Training on Technology Acceptance. Journal of Management, 32. 721-742.

[25] Martin-Alcazar, F., Romero-Fernandez, P.M.&Gardey, G.S. (2005). Strategic Human Resource Management:Integrating the Universalistic, Contingent, Configurational and Contextual Perspectives. International Journal of Human Resource Management, 15(5). 633-659.

[26] Ngai, E., et al. (2008). Importance of the Internet to Human Resource Practitioners in Hong Kong. Personnel Review, 37(1). 66-84.

[27] Olivas-Lujan, M.R., Ramirez, J.&Zapata-Cantu, L. (2007). E-Hrm in Mexico: Adapting Innovations for Global Competitiveness. International Journal of Manpower, 28(5). 418-434.

[28] Orlikowski, W.J. (1991). The Duality of Technology: Rethinking the Concept of Technology in Organizations. Organization Science, 3(4). 398-427.

[29] Panayotopoulou, L., Vakola, M.&Galanaki, E. (2007). E-Hr Adoption and the Role of Hrm:Evidence from Greece. Personnel Review, 36(2). 277-294.

[30] Payne, S., et al. (2009). Comparison of Online and Traditional Performance Appraisal Systems. Journal of Managerial Psychology, 24(6). 526.

[31] Pfeffer, J.Veiga, J. (1999). Putting People First for Organizational Success. Academy of Management Executive, 13(2). 37-48.

[32] Rogers, E.M. (1983). Diffusion of Innovations. Third ed. New York: Free Press.

[33] Rousseau, D.M., Manning, J.&Denyer, D., *Evidence in Management and Organization Science*, in *The Academy of Management Annals*, J.P. Walsh and A.P. Brief, Editors. 2008, Taylor & Francis Inc.: Philadelphia. p. 475-515.

[34] Ruël, H.J.M., Bondarouk, T.V.&Looise, J.K. (2004). E-Hrm: Innovation or Irritation. Explorative Empirical Study in Five Large Companies on Web-Based Hrm. Management Revue, 15(3). 364-380.

[35] Ruël, H.J.M., Bondarouk, T.V.&Van der Velde, M. (2007). The Contribution of E-Hrm to Hrm Effectiveness. Human Relations, 29(3). 280-291.

[36] Schuler, R.S. (1992). Strategic Human Resources Management: Linking the People with the Strategic Needs of the Business. Organizational Dynamics, 21(1). 18-32.

[37] Schuler, R.S.Jackson, S.E. (1987). Organizational Strategy and Organization Level as Determinants of Human Resource Management Practices. Human Resource Planning, 10(3).

[38] Snell, S., Shadur, M.A.&Wright, P.M., *Human Resources Strategy: The Era of Our Ways*, in *The Blackwell Handbook of Strategic Management*, M.A. Hitt, R.E. Freeman, and J.S. Harrison, Editors. 2001, Blackwell Publishers Ltd.: Oxford. p. 627-649.

[39] Strohmeier, S. (2007). Research in E-Hrm: Review and Implications. Human Resource Management Review, 17(1). 19-37.

[40] Strohmeier, S. (2009). Concepts of E-Hrm Consequences: A Categorisation, Review and Suggestion. International Journal of Human Resource Management, 20(3). 528-543.

[41] Strohmeier, S.Kabst, R. (2009). Organizational Adoption of E-Hrm in Europe: An Empirical Explanation of Major Adoption Factors. Journal of Managerial Psychology, 24(6). 482.

[42] Tansley, C.Newell, S. (2007). A Knowledge-Based View of Agenda-Formation in the Development of Human Resource Information Systems. Management Learning, 38(1). 95.

[43] Tansley, C.Newell, S. (2007). Project Social Capital, Leadership and Trust: A Study of Human Resource Information Systems Development. Journal of Managerial Psychology, 22(4). 350.

[44] Ulrich, D.Brockbank, W. (2005). Hr: The Value Proposition. Boston: Harvard Business School Press.

[45] Venkatesh, V., et al. (2003). User Acceptance of Information Technology: Toward a Unified View. MIS Quarterly, 27(3). 425-478.

[46] Voermans, M.Veldhoven, M.v. (2007). Attitude Towards E-Hrm: An Empirical Study at Philips. Personnel Review, 36(6). 887-902.

[47] Wright, P.M. (1998). Introduction: Strategic Human Resource Management Research in the 21st Century. Human Resource Management Review, 8(3). 187-191.

[48] Wright, P.M., Dunford, B.B.&Snell, S.A. (2001). Human Resources and the Resource-Based View of the Firm
Journal of Management, 27. 701-721.

[49] Wright, P.M.McMahan, G.C. (1992). Theoretical Perspectives for Strategic Human Resource Management. Journal of Management, 18(2). 295-320.

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SESSION B

Topic: **HRIS Personel**

Chair: **Miguel Olivas-Lujan**

The HRIS Specialist: Resourcing the 'Right Kind' of Human Capital.

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Abstract. *The role of human resource information systems has evolved over the last twenty years such that sophisticated software is now available to organisations regardless of their size. Whilst there is a growing scholarly interest in the ways in which technology has begun to have a significant impact on the way in which HR work is undertaken, there is still a limited understanding of the human capital necessary to undertake this work. Initially this paper considers the limited literature pertaining to the human capital of the HRIS specialist to date. Using NVivo 8 to facilitate analysis, the paper continues by offering a descriptive overview of 41 advertisements placed on one web board over a fifteen month period. The paper concludes by offering a generic framework for developing human capital for a HRIS specialist and suggestions as to how this can be applied in practice, offering suggestions for further study.*

Keywords: HRIS; Human Capital; Resourcing; NVivo; Language.

1 Introduction

What is the balance of skills and knowledge organisations are seeking for human resource information system (HRIS) specific roles in the twenty-first century? In order to begin to address this question it is appropriate to consider how the development of HRIS in the last twenty years. Although it can be argued that the introduction of information systems into many work areas has had an impact on the work done, here it is suggested that the introduction of human resource information systems (hereafter, HRIS) has caused a paradigm shift in the work of the human resourcing professional, requiring individuals to acquire and utilise new knowledge and skills – human capital – that are not historically associated with an HR body of specialist knowledge. Ongoing work has defined *individual human capital* as the 'innate attributes (formal education, skills and experience) owned, developed and created tacitly by an individual that are productive in an economic context and taken with that individual when they leave the firm' [1] and it is this that is referred to in this paper

The historical human capital of HR professionals enables a range of HR activity including resourcing, selection, performance management, training and development, leading to the development of specialist human capital in these areas. Given the current economic climate, this human capital is receiving greater attention in current

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practitioner literature, with particular attention paid to that which enables talent management, where the focus is on retaining and developing individuals that are likely to be able to contribute to the long-term advantage of an organisation. The technological developments in recent years have added another opportunity for HR specialists highlighting the potential for a new remit within the HR role, highlighting the debate as to whether HRIS work should be placed within the HR or the information systems function and explore the impact on the human capital of HR and information systems roles. However the concern of this paper is whether the HR professional has the requisite human capital to rise to the technological challenges thus presented.

The historical evolution of HRIS is succinctly documented in other places [2-5]. Although there is a growing body of HRIS literature [for example 2, for example 6], there is limited discussion of the human capital associated with HRIS; to date the literature has mainly focused on the infrastructure and applications for HRIS. Therefore it is apposite to give a short historical review here with particular reference to how the human capital of the HR professional has developed.

The emergence of human resource information systems 1960s, 1970s and 1980s was concerned with the automation of transactional HR activities [7]. These tended to be information systems capable of producing a minimal number of basic reports. Initially there was a payroll focus and often HRIS were not user-friendly as most were located and managed from within information systems functions, where information systems specialists prepared any ad-hoc reports, often taking several weeks to produce. During the 1980s smaller 'stand alone' systems were introduced and located within HR departments, however their data capture, manipulation and reporting capabilities were still limited. Emerging HRIS did not have an immediate impact on the human capital of HR professionals and delays did lead to some frustration, particularly concerning the need for timely reporting. The main focus of the HR role with regard to HRIS during this period was one of caretaker and administrator and as such did not develop the HR professionals' human capital in any noticeable way. It was not easy to make changes to these physically distant systems, therefore the capability of HRIS was often not exploited as much as it could have been; this was particularly true where the HRIS was 'owned' by the information systems function.

Early work from Hall and Torrington [8] identified four categories of HRIS users. The few 'Stars' "made full & imaginative use of the computer's potential to enhance the role and effectiveness of the personnel function" [8], however the majority were characterised as 'Plodders', who made some use of the 'electronic filing cabinet', and the 'Beginners', who at least had a system, but any usage was in its very early stages. Although subsequent work from Ball [9], who focused on smaller organisations, and the Chartered Institute of Personnel and Development [10, 11] suggest increased attention is being paid to how HRIS are used, there is still minimal scholarly consideration of the necessary HRIS human capital requirements.

During the 1990s the transactional capabilities of HRIS became more reliable and the introduction of transformational systems is noted [2-5], with particular reference to strategic activities such as human resource planning and talent management – activities that require different human capital, and are part of the HR professional qualification programmes in the UK. These professional qualification programmes also offer a limited grounding in some statistical and financial techniques, and in recent years this has incorporated learning around human resource information systems; for many providers and students, this is a challenging element of the qualification programme.

There is a limited and somewhat dated literature that specifically discusses the human capital of HR professionals within an HRIS context. Yeung and Berman (1997) state that, unlike other functions, there is a natural reluctance for the HR function to try and quantify its impact on the business. Perhaps this is because they do not have the human capital to design, specify and implement strategic HRIS [12], perhaps there are other reasons that need to be considered as well?

Historically HR have had some challenges which are brought into sharp focus when negotiating for capital projects such as new or upgrading the HRIS. Early HRIS were owned and managed by information systems professionals. This was understandable given that most were large, centralised, main frame systems that required some knowledge of code to design suitable applications and manage project implementations. This resulted in a focus on the virtues of information systems and underestimated the importance of creating an easy-to-use applications that will work with people rather than against them [13, 14]. Often information systems specialists fail to appreciate importance of human dynamics, the potential impact on the *way* in which is done, and the perspective of those who use the systems, such that these factors are overlooked or only partially solved due to financial constraints or competitive imperatives [15, 16] or simply that the process is mismanaged [17, 18]. Perhaps because of line managers' perceptions that HR specialists did not need (or want) to get involved in what is likely to be considered information systems policy making [19]; in approximately fifty percent of organisations, decisions to introduce new applications are taken without reference to HR [10].

There is considerable concern regarding the information-systems-orientated human capital of HR professionals [20-22], which does not seem to have changed in the last 20 years, despite a number of practitioner [23] and academic [11] calls for this to be addressed. Indeed early studies found HR managers to be technophobic, short-sighted, and complacent about the need to use information systems [22, 24-26]. Recent research from the CIPD suggests that this is still the case, with one respondent commenting, 'I don't have the expertise in the operational area under discussion so I would not have anything positive to contribute' [10: 17]. This implies that the integration of human resource information systems within the UK HR professional qualification programme during the last decade has not increased levels of confidence of HR specialists. There are commercial organisations in the UK that offer specialist generic human resource information systems training. Some of these organisations are associated with particular HR applications. Although some of these organisations offer assessed programmes, these assessments have yet to be ratified and accepted as generic professional qualifications across the HR profession.

Critical thinking and analytical skills have a long association with roles in information systems. There have been periodic calls for these skills, but there is a recognition that these are not generally associated with the human resourcing profession [1, 11, 23, 27-30]. These critical thinking and analytical skills can be acquired to some extent and with increasing numbers entering the HR profession having completed a first degree, many of whom are 'information systems literate', it is reasonable to assume that these are likely to be present for those qualified individuals appointed to HR roles. In as much as these skills are present, they are often not associated with an information systems perspective, but tend to be associated with human capital that centres on office-based applications. The most challenging module of the UK HR professional qualification programme for many students is the one that combines numerical, financial and, for the purposes of this paper, human resource information systems. As recently as 2007

Barron comments that “HR lacks the number-crunching skills” and that “what HR needs to do is to tell people what the data means” [31]. This situation is reinforced within roles whereby there are financial pressures over which there is limited control [32], a tension that is highlighted in the current economic situation.

Other literature promotes the view that HR needs to be more strategic in its endeavours and act as a ‘change agent’ [33, 34]. HR specialists are increasing likely to be in positions that provide opportunities to act as particularly effective ‘new technology change agents’ due to a cross-organisational brief [35]. HRIS can be a “driving force in the transformation of the HR function” (Ruël 2009) utilising technology to transform data into strategically valuable information [36]. Studies continue to identify technological expertise as a core HR competence [37-39] and suggest that this can have a transformatory impact on the human capital of successful HR professionals [40] and a recent study from the CIPD [11: 36] in the UK states that “the movement of HR practitioners into this advisory or consultancy role not only requires consultancy skills but also requires a certain degree of data analysis skills so that they can read and interpret HR data effectively”.

Another recent development in larger organisations utilising a HR shared service centre (SSC) is a growing trend towards dedicated HR information specialists who have human capital associated with both a HR specialism and information systems specialism [1]; these examples are still rare. For smaller organisations, where HR professionals are likely to be characterised as ‘generalists’, this human capital set is less likely to be apparent. In the same way that there is a critical number of employees prior to employing an HR specialist, it is likely that this is equally true for an HRIS specialist.

With the shift towards specialist roles within human resourcing and a developing literature on talent management [41], it is timely to consider the search for the ‘right kind’ of human capital required for an HRIS specialist role or part of the generalist HR role; this premise is supported by the professional institutes in the UK [11] and the USA [42]. This historical review illustrates the fragmentary and dated state of the literature on the human capital of HR professionals as it pertains to HRIS work in the last twenty years. The literature implies that those undertaking HRIS work can be described as ‘hybrids’; they have developed and now require human capital from several disciplines in order function at both operational and strategic levels.

For this researcher, the original interest in the human capital of the HRIS specialist is the result of a number of years working in corporate roles, teaching on the UK and international CIPD HR professional qualification programmes, and a long-term research interest which invites scholarly curiosity in HRIS [1, 27, 43-46] where it is clear that HR specialists do not demonstrate significant levels of HRIS human capital. This paper seeks to describe the human capital of the HR specialist sort by organisations and offer a contribution to the search for the ‘right kind’ of HRIS human capital by addressing the question: What is the balance of skills and knowledge organisations are seeking for HRIS specific roles?

Having considered the literature pertaining to the human capital of the HRIS specialist to date, this paper continues by offering a descriptive overview of forty-one job advertisements placed on one UK-based web-board over a fifteen month period. The paper offers a generic framework for developing human capital for a HRIS specialist and suggestions as to how this can be applied in practice. In addition the paper seeks to promote other scholarly interest in this under-researched area.

2 The Study

Many research studies seek to identify the appropriate human capital of particular professions by conducting large scale postal or more recently electronic surveys. Alternatively researchers may chose to interview individuals or small focus groups of individuals. In these instances researchers are often seeking the 'ideal' or 'desirable' human capital. These approaches are based on collective, sometime subjective perceptions and they reflect what is perceived to be desirable. It is also possible that these studies indicate what respondents perceive is the response that the researcher is seeking, thus bias is embedded. Therefore rather than rely on potentially subjective data, it is useful to examine what is 'actually' sought by organisations recruiting for specific human capital using descriptive data drawn directly from organisational job advertisements to determine the degree to which this is likely to be achievable.

The empirical basis for this paper is located within job advertisements posted on a UK-based recruitment website resourcing HR professionals between June 2008 and September 2009. This website was chosen as it is well-known within the profession and this geography and specifically advertises direct to those in the HR profession. In the preceding years there have been a number of such advertisements and although these were noted in terms of scholarly curiosity, no action was taken June 2008 when the first advertisements were captured for future study.

The advertisements were placed by different sources, primarily recruitment agencies and occasionally one or two large organisations. In the first instance a key word search was made for any advertisement with 'HRIS' or 'human resource information system' in its details, either in the job title or in the descriptive elements of the text. An 'alert' was set up such that jobs that fit the criteria were automatically emailed to the researcher so that notification and data collection was not reliant on active interaction with the recruitment website: the aim was to reduce researcher bias and to ensure that advertisements were not missed. In total forty-one discrete jobs were advertised during the fifteen months. It is noted that some jobs were advertised more than once during this period, however each job is only counted once for the purpose of this paper and details of jobs that were re-advertised are noted, along with any jobs that were readvertised with some changes in the new advertisement. As this paper is using secondary data that is publically available at the time of collection, there is no restriction in terms of sample size, as is sometime the case with survey-based research and interview-based research.

Details of the jobs advertised were emailed directly as part of a slightly wider ranging list. This was not requested, but presumably activated by the web site in case the reader was interested in other associated jobs. This means that on most occasions a decision was made as to whether to include a particular job advertisement within this data set. Job advertisements excluded at this point include those whose primary role comprised a significant focus on generalist HR activities, compensation, payroll and benefits, or data input and thus included a small element of (mainly administrative) HRIS work. Only roles where the substantive focus comprised HRIS work are considered here.

The details of an included advertisement were copied into a word document and saved. It is not possible to use data directly from the source link as once the application deadline was passed, or the job was filled, the advertisement was (automatically) removed from the website, making it impossible to return for retrospective clarification or further study. However, extreme care was taken when copying the data across such that even minor errors in the advertisement (for example spelling errors) were saved, as are details of the data source link. It is the *actual* words and phrases that are of interest

here and the strength of this approach is that the copies of the advertisements provide a description of what organisations actually state they are seeking and these constitute the data set for this paper. The advertisements are subsequently described as 'source' files in this paper; each source contains one job advertisement. Although the advertisements were not presented in the same format, there are some similarities in that most advertisements share some common features, for example: contract details; elements of the job description and person specification; general sector and/or organisational information, which assisted the initial analytical process.

Although attempts were made to contact some of the agencies advertising on the recruitment site, none replied, therefore it is impossible to track the length of time to fill a particular position, whether the role was filled at some point, readvertised in a different place or concurrently with the web board. For almost all the positions, applications needed to be sent via the website, usually by attaching curriculum vitae such that telephone contact was discouraged in the first instance.

In order to facilitate analysis, NVivo 8 (hereafter referred to as NVivo), a computer assisted qualitative data analysis software (CAQDAS) is used. CAQDAS are designed to assist qualitative researchers at various stages of a research project, including the initial design, data collection and data management, initial and on-going analysis, model building and visual representation of the research. CAQDAS is enabling technology, so that the researcher can manage complex data in such a way as to make sense of the data and promote interpretation – it does not interpret the data or make any decisions about the data – its strength is that it makes these processes more straightforward and efficient for the researcher. This researcher is familiar with NVivo, therefore it made sense to continue to use it as a sense-making tool. An NVivo project was set up in the week of the first advertisement being identified.

The first task within the project was to set up a research journal, referred to here as a 'project journal' and is described as a 'memo' within the Source' section of NVivo: the contents of a memo can be linked to source data as well as other aspects of NVivo. The use of such a journal is recommended by many researchers [47-49, for example 50] and acts as a diary in the guise of a reflective journal, helping to track future tasks as well as those completed. It also acts as a place to record thoughts and questions (such as why there is an interest in this subject) that may be helpful later in the analytical process. Necessarily there is little structure to this diary apart from date notations, however the journal proved an exceedingly useful reflective tool for related study and analysis's. Coding is often seen as a central process within qualitative research methods. Coding is a process whereby parts of the data are identified as relating to a specific idea or example pertinent to the research themes.

Data can be reviewed by reference to specific codes so that any thematic patterns are made visible. Previous work by Williams *et al* [1] offers an initial coding structure for analysis. This research was located in a multi-national organisation implementing and maintaining the HR 'pillar' of an SAP global, enterprise-wide, information systems on their UK, Germany, Canada and the USA sites. Three constituent elements of individual human capital were identified in this research: *personal* human capital; *specialist* human capital; and *firm-specific* human capital – various attributes are associated with each of the three types of human capital (see Figure 1). In NVivo the three constituent elements are described as different types of 'codes': 'tree codes' or 'free codes' in the 'Nodes' section. This paper focuses on the attributes located at the node for *'specialist'* human

capital elements: human resourcing; financial; information systems; project management; and global exposure (see Figure 1 No.2).

1. **Personal attributes**
   Individual human capital is characterised by the repertoire of personal attributes (particularly values and beliefs, education, knowledge, skills, experience, commitment and motivation) owned, developed and created by an individual that are productive (or have the potential to be productive) in an economic context and taken with that individual when they leave the firm [51].
   Examples include values, beliefs, knowledge, skills, experience, commitment, motivation, and interpersonal skills.
2. **Specialist**
   Individual human capital can also be characterised by specialist attributes [52] that are observed in those who are considered 'experts' in their field and who are vital to the continued competitive success of organisation and an essential part of its core competence. These 'experts' have explicit and tacit knowledge and skills [53-56] that can only be found within particular professions and roles. Where specialist attributes of human capital exist they need to be attached to appropriate roles in an organisation with "different occupations . . . [requiring] investments in different kinds of human capital" [57: 175]; this is echoed in the work of Heijke et al [58].
   Examples include human resourcing, financial, information systems, project management, and global exposure.
3. **Firm-specific**
   Individual human capital finally can be characterised by firm-specific attributes, notably an individual's specific skills, experiences and learning that can only be gained and employed within a particular organisation and are not transferable outside of that sector or organisation [59]. This type of attribute is developed through long-term tenure within a particular organisation.

Figure 1: Constituent Elements of Individual Human Capital [1]

Different approaches to coding are noted by various scholars for example [60-65]. NVivo facilitates an inductive approach to coding. Given that initially data was collected without reference to a specific outcome, but as a result of long-term scholarly curiosity in HRIS and recent research [1, 43, 51], descriptive codes were used initially as they are based on predefined areas of interest resulting from this prior research [1].

As these initial codes were drawn from previous research, the constituent elements were allocated as 'tree codes' within a 'human capital' code and provided the initial coding structure. Descriptive notes are associated with each NVivo code such that a more detailed understanding is gained overtime. These codes are not considered 'fixed' and some were changed, deleted or merged with others. During the fifteen months each source data file was 'coded' according to the three types of constituent elements of individual human capital using the details noted in Figure 1. As the number of sources data files increased and new material and codes were added, it became necessary to revisit previously coded source files and recode as necessary. This is an important iterative process and contributes to the depth of analysis during the study period.

Each data source file was imported into NVivo within two to three days of the being received. In the first instance each source is set up as a 'case' within the 'Node' section. Within NVivo this term does not imply a case study approach [as described by 66] to the research, rather a 'case' is a way of expressing a unit of analysis. This means that 'attribute data' such as salary, location, and qualifications for each job advertisement, can be attached to a particular 'case'. In this way data collected about various data sources can be gathered together, given values, and later used for analytical purposes.

Subsequent to coding, various 'queries' were performed on the source data, using the cases to interrogate the data. The NVivo 'query' facility permits segments of data to be located that meet the criteria identified along with additional data depending on how the

query is structured. Examples of simple queries located all those roles that identified the associated geographical base, more complex queries compared the global reach of a role with the associated salary for that position. Queries, and their results, can be saved for future use or abandoned as the data builds, enabling reflection as the study progresses.

3 Findings and Discussion

This paper proceeds by concurrently presenting and critiquing the data focusing on 'specialist' aspects of the constituent elements of individual human capital. Previous work [1] identified these as comprising human resourcing, information systems, project management financial, and global ingredients. It is the blend of these constituent elements that is interesting here. In addition attention is paid to the combination of words and phrases that make up the main text of the job advertisements in order to foreground the complexities of the hybrid nature of the HRIS role. Bold and italic highlighting is used for imperative and definite words and phrases, and underlining is used for subjective words and phrases.

Each job advertisement source data summarised the essential features of the job being offered: the permanency of the position; its location; the required hours; the sector, and the salary range. Figure 2 summarises these features, noting the number of advertisements from which the data is drawn: not all the job advertisements are complete in terms of these essential features so direct comparisons for all the data sources are challenging. An initial overview suggests the majority of advertisements are for permanent, full time jobs, located in London within various sectors, with a salary mean average of £38,000 per annum with the highest remuneration being awarded in three independent positions with global reach. The majority of roles however are paid between £20-39,000 per annum, implying an operational rather than strategic remit; this is also reflected within the responsibilities sections of the advertisements, particularly at the lower end of the salary scale. Given the permanent nature of the contract offered, the majority of organisations seem keen to appoint someone who will potential add value in the long term and can make an immediate impact.

It is interesting that these positions are considered to be full time in nature as a more detailed consideration of the data reveals a strong emphasis on discrete projects, which may have the potential to attract individuals seeking more flexible work patterns. What is not clear, however, is whether these positions have a recognised career path within a talent pool (either as part of the human resourcing pillar or the information systems pillar) or whether the roles are perceived as specialist positions within discrete unconnected specialist silos. Previous work [1] suggests that opportunities for career enhancement may be limited dependent on the context, culture and perceptions of the role of HRIS within the organisation, and there is no indication in the advertisements as to how these positions 'fit' within the hierarchal structure of the organisation; this presents an interesting opportunity for future research.

Over forty percent of the roles are located within the London area. Although it is not clear from the source data, it is possible that these positions are based in organisations' head offices, even though there has been a noticeable shift of physical location in the last decade. Given the location of the majority of the roles, the salary range seems surprising low for (niche) specialists living and working in the London area. Further research is needed to investigate how these roles compare with the remuneration of other specialists in HR and information systems.

Category	No of adverts	Details			
Contract permanency &	24	Permenant Interim Temporary	19 2 3		
Contract type	38	Full time Part time	35 3		
Geographical distribution	39	London/City Manchester Birmingham Luxumbourg Northamptonshire	17 5 2 2 2	One each in … Berkshire, Birmingham, Bracknell, Edinburgh, Epsom, Leeds, Leicestershire, Liverpool, Luxembourg, Manchester, Northamptonshire, Nottingham, Reading, Sussex, Yorkshire	
Salary distribution	32	£000's 20-29 30-39 40-49 50-59 60-69 70-79	No 10 8 6 5 0 3	Mean average Min Max Note: Only sources stating annual salaries were counted as it is unknown how many days work is required in roles that state a day rate only.	£38,000 £21,000 £75,000
Sector distribution	16	Sector Charities Construction Energy Engineering Health	No 1 1 2 1 1	Sector Law Manufacturing Natural resources Public sector Technology	No 1 1 2 3 3

Figure 2: Overview of data from 41 job advertisements

3.1 Human resourcing

Previous research [1] identifies human resourcing as a relevant domain of human capital for these roles. Given that this recruitment web site is specifically aimed at HR professionals it is somewhat surprising to note that only eight of the job advertisements specifically sought previous experience within an HR role or function. Only one advertisement asked for applications from individuals with a CIPD qualification; five asked for applications from individuals with a first degree.

The extracts drawn from job advertisements in Figure 3 are quite general in character, the sources from which they are drawn do not specify the level or depth of experience preferred. Words and phrases in these extracts such as ‘worked in’, ‘understanding’, ‘passion’, ‘ideally’ and ‘exposed’ are surprising in their vagueness and imply a general appreciation of the HR remit. However, some words and phrases, such as those in bold italics, illustrate that for these eight roles there is a definite requirement for experience or exposure in the HR arena, implying that this type of human capital is valued and required within these organisations. There is almost a contradiction of meaning when the definite requirements and the seemingly vague phrases are combined. How is the potential applicant to interpret here?

… ***will have*** previously worked in resourcing …
… ***have*** a solid understanding of the HR space …
… ***must*** also have been exposed to HR or have a passion for HR …
… ***have*** solid experience of working within an HR and/or Payroll environment …
… Knowledge of HR practices, ideally gained through working in an HR generalist role
… ***will also have*** worked within a similar role within an HR or Shared Service Centre capacity

Figure 3: Extracts from job advertisements seeking previous HR experience

The complexity of the work discussed elsewhere in the advertisements suggests that although most of the roles are functionally and physically located within the human resourcing remit reporting to HR line management, the focus of the actual role relating to HRIS does not appear to require significant levels of HR knowledge and expertise. It is possible therefore that recruitment web sites aimed at the HR specialist may not be the most appropriate media to produce high levels of applications; further research comparing differing web sources may inform this question.

Twenty-nine of the advertisements asked for knowledge of specific HRIS applications (see Figure 4); a range of solutions are noted and twenty-three of the advertisements seeking experience working with the market leaders (Oracle, PeopleSoft and SAP). Thirteen of the advertisements state that a core element of the roles is involvement in upgrading current systems, migrating from an existing system to a new system, or investing in new solutions. It is not entirely transparent from the advertisements whether the implementation of a 'new' information system suggests replacement of current technologies where there was not system in place previously or whether the role is around the migration from one system to that offered by a different provider. Although the other advertisements are centred on provision of HRIS solutions, the vagueness and brevity of some other content continues to surprise.

However there are clear indications that organisations are seeking to appoint experienced HRIS specialists who can have an immediate impact in the workplace. Figure 5 illustrates extracts from different source data; nevertheless some of the words used are very subjective. What does 'considerable' experience mean? How is a 'sound knowledge' measured? What is a 'sound' or 'good' knowledge of HR systems? What does 'a strong awareness' mean? What does 'exposure' mean? How are 'competency' and a 'proven track record' being assessed? Once again there are some imperatives (indicated by words and phrases in bold italics) that when combined with the subjective (underlined) words and phrases may lead to confusion for the applicant. The implication is that the resourcing decision is likely to be equally subjective and given the overall vagueness of many of the advertisements, there is some concern regarding the knowledge of those making the resourcing decision.

Category	No of adverts	Details		
HRIS applications	29	Applications specifically mentioned …	Applciations	No
			Oracle	8
			SAP	8
			Peoplesoft	7
			Northgate Arinso	2
			Resourcelink	2
			Snowdrop	1
			Trent	1
Core element of the role	13	Element	No	
		Upgrading	2	
		New system/module	10	
		Migration	1	

Figure 4: Overview of data from 41 job advertisements requiring previous experience of HRIS

- … considerable experience of HRIS …
- … sound knowledge of HRIS systems …
- … with a good knowledge of HR systems …
- … ***will be*** an experienced HR MI professional …
- … be an experienced HR systems […] operator …
- … strong awareness of HR Systems is essential …
- … an experienced HR & Payroll systems professional …
- … project/programme management of HRIS system integration …
- … HR systems experience gained within a professional services organisation …
- … ***will have*** a proven track record delivering […] the introduction and roll out of HR IT Systems
- … be competent across a range of IT systems/HRIS and management information reporting
- … exposure to HR or Payroll related technology, ideally with some HR MI Reporting experience
- … ***will be*** an experienced HR & Payroll Systems/Software Project Manager with a client facing and relationship management background …

Figure 5: Extracts from job advertisements seeking previous HRIS experienceInformation systems

A second body of human capital identified in previous research [1] for these roles centres on information systems. Essentially HRIS are specialised information systems, therefore it is logical to suggest that knowledge and experience of information systems represent a significant contribution to the human capital of a HRIS specialist. However not one of the job advertisements required any form of information systems qualification or technical qualification. Again, examples of extracts from the job descriptions (see Figure 6) focus on previous experiences and are subjective in character; these continue to prompt questions about the precise nature of the individual human capital required. One job advertisement does state that the individual appointed "will be the nominated SQL server 'expert'", but there is no indication as to the relevant previous experience or qualification that is likely to support this responsibility. It is possible that this individual would have responsibility, but limited or no technical underpinning 'know-how' [67].

The extracts from the job advertisements offered in Figure 6 constitute all the specific references made to previous work experience of 'information systems'. Again the language used is very general and subjective in construction, for example 'keen' and 'understanding', combined with the imperatives of 'you must' and 'will have'. One advertisement indicates that the position is suitable for someone interested in moving

into HRIS systems role, but does not indicate any particular knowledge set that would be drawn on.

… ***you must*** have a background in MI …
… for someone who is keen on moving into the field of management information systems …
… The ideal candidate ***will have*** a thorough understanding of IT systems and processes and functions …

Figure 6: Extracts from job advertisements seeking previous information systems experience

3.2 Project management

A third body of knowledge identified in previous research [1] centres on project management. Twenty-two sources refer specifically to this body of knowledge – more than any aspect of specialist human capital (see Figure 7). These extracts have been further sub-divided: management/leadership skills; client relationships; technical acumen; specific HRIS applications; and qualifications. These advertisements recognise the differing elements within a HRIS project and appear to associate these aspects with different levels of human capital at different hierarchal levels.

There is a noticeable shift within some of the advertisements from the loose and subjective tone of the language noted in previous sections of this paper to more precise terminology where the focus is on project management. There are more examples seeking specific experiences, for instance: 'gained from client facing projects'; 'change management and relationship management skills are absolutely key'; 'proven track record in HR systems project delivery'. The roles require individuals to be able to liaise with different professional functions, external and internal clients. Within some advertisements HR specialists are positioned as the 'client' which may suggest the role is located outside of the HR function; in others the 'clients' are line management and other areas of the organisation, possibly implying the HRIS role is located within the HR function: this is not clear from the data sources. Overall organisations may construe HRIS within a project framework and then associate with HR and information systems bodies of knowledge; this requires further research.

As in previous discussions in this paper there is a distinct absence of the need for any form of qualification, with one notable exception where on advertisement specifically mentions that 'ideally' they are seeking an application from an individual with PRINCE2 certification.

3.3 Financial

Although previous research [1] identities financial human capital as relevant to the role of HRIS specialists, this data set does not make any specific reference to appropriate experiences or qualifications required in these organisations. However it is likely that they would be useful in some of the roles which are either located within the financial sector or that require significant liaison with internal financial functions (see Figure 8). It is worth noting that an important element of managing successful HRIS projects is financial key performance indicators. Therefore this element is implicit within the project management elements of HRIS human capital.

Management/leadership

- project management skills …
- project co-ordination skills …
- effective project leadership […] skills
- project lead for HR process review and redesign project …
- project management experience gained on client facing projects?
- ***requires*** an individual with strong project management experience …
- ***proven experience*** as a project manager, ideally from a HR consultancy …
- ***will be*** a HR technical visionary, with outstanding project management skills …
- ***to lead*** implementation teams
- you ***have to have*** proven project management experience and exposure to implementing HR / talent management systems would be advantageous …

Client relationships

- candidates ***will have*** a track record of delivery in a customer facing role
- an experienced […] project manager with a client facing and relationship management background […] with the ability to set targets and delegate within a project environment.
- lead […] successful client facing transformation …
- change management and relationship management skills are absolutely key

Technical acumen

- functional team member of the […] upgrade project - responsible for analysis, design, implementation & support of designated products within the project.
- seeking an enthusiastic professional with a keen interest in HR systems and project support …

Specific HRIS applications

- [transformation of] HR & payroll software technology
- [support] the successful implementation of the e-self service module
- experience of project managing in an HR & payroll environment
- ***will have*** a proven track record delivering HR projects including the introduction and roll out of HR IT Systems

Qualifications

- Ideally PRINCE2 certified, you'll be a proven track record in HR systems project delivery …

Figure 7: Extracts from job advertisements seeking previous project management experience.

Financial sector

- our client in the financial services sector is seeking […] to join their team …
- an excellent opportunity has arisen […] at a leading financial services organisation
- the client, an international financial services organisation, has a requirement for …
- This global finance business is at the forefront of …
- Considerable experience of HRIS, preferably within financial services or similar environment …
- Leading financial services client …

Internal liaison

- liaise with local finance team …
- liaison with finance …
- the role will offer support to the […] finance teams […] building strong relationships with both teams and acting as the link to …
- partner with […] finance etc, as required

Figure 8: Extracts from job advertisements seeking previous financial experience.

3.4 Global exposure

The final area noted in previous research [1] focuses on the global nature of specialist human capital. Ten of the job advertisements specifically note the global nature of the HRIS role. Five of the ten roles that require global experience commanded a salary of over £45,000 per annum, and include the more strategic roles [33, 34] at £75,000 per annum. The language employed in these advertisements suggests global experience is a significant element of the role and that very particular human capital is required.

- … it is likely experience will have been developed within global organisations and candidates ***will be*** used to working in complex matrix organisations …
- … keen to invest and develop in an individual who is looking [for] a position that involves taking ownership of global projects.
- … work on HR [IS] projects […] across the global operation, for both internal and external clients …
- … Proven experience of managing successful implementation and delivery of global [HRIS] projects …

Figure 9: Extracts from job advertisements seeking previous global experience

4 Some concluding observations

This paper began by asking a question: what is the balance of skills and knowledge organisations are seeking for human resource information system (HRIS) specific roles in the twenty-first century? The paper acknowledges the significant impact HRIS is having on the human resourcing work in the first decade of the twenty-first century, suggesting that it is now appropriate to consider the impact on the human capital appropriate for the role of HRIS specialist given the limited scholarly interest to date. Using NVivo as the primary tool for analysis, an overview of forty-one job advertisements placed on a recruitment web board over a fifteen month period is examined to identify the blend of constituent elements of individual human capital for the HRIS specialist.

The literature presents a mixed view of the constituent elements of the HRIS human capital to date, however recent work [1] offers a useful framework for further study. The framework comprises five constituent elements consisting of human resourcing, information systems, project management, financial and global reach. Although the constituent elements of individual human capital with regard to the HRIS role have been recognised in this previous work, this analysis of advertisements for HRIS roles suggests that organisations are not placing and equal emphasis on these elements. The data for this study is drawn from one web board in one county. Further research is needed to identify whether these five constituent elements are a useful framework for constructing the specialist human capital elements for HRIS roles in other geographies.

The analysis in this paper suggests that currently organisations are seeking experienced as opposed to academically qualified individuals. Although some organisations are seeking degree-level qualifications, there does not appear to be a particular disciplinary focus to the degree required. Given the lack of attention to specific qualifications, does this suggest that organisations do not know what qualification is appropriate, or that there is not appropriate qualification? Thus one implication of this study is that there is an opportunity for academic institutions, as opposed to institutions which have a commercial imperative, to address this gap.

Some organisations are looking for applicants looking to move cross-functionally into the HRIS role and appear willing to invest in their training and development; their focus is on finding early careerists who are interested and have a passion for this type of work.

However, the majority of organisations in this study seek experienced candidates who have undertaken HRIS work in the recent past. This suggests organisations need talented individuals that can make an immediate impact on the workplace, but leaves unanswered the question as to how individuals can access these experiences in the first instance as organisations do not appear to seek applications for a 'learning' role, or 'first position' role.

Seventy percent of the advertisements seek experience with specific HRIS applications. These are complex applications supporting different pillars of HR work. There is a lack of clarify in most advertisements concerning the specific modules that need supporting. An applicant may have experience with one module but not with another. This lack of clarity within the advertisement may lead to delays and time being wasted in the recruitment and selection process. This is particularly pertinent where there is a need for individuals to have an immediate impact.

Overall the language used within the advertisements could lead to a variety of interpretations from both the organisations' and applicants' perspective. There is a combination of imperative in words and phrases such as 'you must have', etc, and vagueness in 'exposure', etc. Do applicants actually know what they are applying for? It is disappointing that there is no opportunity within this study to determine whether this lack of clarity has had an impact on response rates and time-to-hire metrics.

For future study it would be useful to investigate how the remuneration offered for HRIS role compares with specialist roles in HR and information systems. If there are difficulties in recruitment for these specialist niche roles, especially for the roles that were re-advertised, are the salary rates part of the reason. Comparative work for roles in other geographies may help to support a deeper understanding of the UK context and work will continue on this project.

The development of the HRIS role as a specialist form of human capital is clearly evident in the forty-one job advertisements discussed here. As HRIS applications become ever more sophisticated it is reasonable to suggest that there is a need for associated human capital. This paper offers a generic framework for examining individual and team HRIS *specialist* elements to determine the 'right-kind' of individual human capital. The question of what is the balance of skills and knowledge – the 'right kind' of human capital – organisations are seeking for human resource information system (HRIS) specific roles in the twenty-first century is clearly not easily answered, however the analysing framework offered here is a step toward understanding what is it that organisations are actually seeking.

References

1. Williams, H., Tansley, C., and Foster, C., *HRIS Project Teams Skills and Knowledge: A Human Capital Analysis*, in *Handbook of Research on E-Transformation and Human Resources Management Technologies: Organizational Outcomes and Challenges*, Bondarouk, T., Ruël, H., Guiderdoni-Jourdain, K., and Oiry, E., Editors. 2009, Information Science Reference (an imprint of IGI Global): London. p. 135-152.
2. Kavanagh, M.J. and Thite, M., *Human Resource Information Systems: Basics, Applications & Future Directions*. 2009, Thousand Oakes, CA: Sage Publications.

3. Hendrickson, A.R., *Human Resource Information Systems: Backbone Technology of Contemporary Human Resources.* Journal of Labor Research, 2003. **24**(3): p. 381-394.

4. Hussain, Z., Wallace, J., and Cornelius, N.E., *The use and impact of human resource information systems on human resource management professionals.* Information & Management, 2007. **44**(1): p. 74-89.

5. Kavanagh, M., Gueutal, H., and Tannenbaum, S., *Human Resource Information Systems; Development and Application*. 1990, Boston, MA: PWS-KENT.

6. Bondarouk, T., RuëI, H., Guiderdoni-Jourdain, K., and Oiry, E., *Handbook of Research on E-Transformation and Human Resources Management Technologies: Organizational Outcomes and Challenges*. 2009, London: Information Science Reference (an imprint of IGI Global).

7. Zuboff, S., *In the Age of the Smart Machine*. 1988, New York: Basic Books.

8. Hall, L. and Torrington, D., *How personnel managers come to terms with the computer.* Personnel Review, 1989. **18**(6): p. 26-31.

9. Ball, K.S., *The Use of Human Resource Systems: A Survey.* Personnel Review, 2001. **30**(6): p. 677-693.

10. CIPD, *People Management and Technology: Progress and Potential*. 2005, CIPD: London.

11. CIPD, *HR and Technology: Impact and Advantages, Research into Practice*. 2007, Chartered Institute of Personnel and Development: London.

12. Beaumont, J.R., Kinnie, N.J., Arthurs, A.J., and Weatherall, C.B., *Information technology and personnel management: issues and educational implications.* 1992, Unpublished paper, School of Management, University of Bath.

13. Hurst, B.E., *Facilitating change: The key to success.* CIO, 1991. **3**(4): p. 39-46.

14. Krebs, V., *Planning for information effectiveness.* Personnel Administrator, 1988. **33**(9): p. 34-42.

15. Chong, P.K.C., *Technology transfer and human resource development.* Journal of Technology Management, 1992. **19**: p. 117-131.

16. Seilheimer, S.D., *Importance of the human factor in the information system life cycle.* Journal of Systems Management, 1987. **38**(7): p. 24-27.

17. Clegg, C. and Kemp, N., *Information technology: personnel, where are you?* Personnel Review, 1986. **15**(1): p. 8-15.

18. Martinsons, M.G., *Benchmarking Human Resource Information Systems in Canada and Hong Kong.* Information Management, 1994. **26**: p. 305-316.

19. Templer, A., *Human resource managers and the new technology agenda.* Journal of General Management, 1989(2): p. 73-80.

20. Broderick, R. and Boudreau, J.W., *Human Resource Management, Information Technology, and the Competitive Edge.* Academy of Management Executive, 1992. **6**(2): p. 7-17.

21. Legge, K., *Information technology: Personnel management's lost opportunity?* Personnel Review, 1989. **18**(5): p. 2-61.

22. Kinnie, N.J. and Arthurs, A.J., *Personnel specialists' advanced use of information technology: evidence and explanations.* Personnel Review, 1996. **25**(3): p. 3-19.

23. Roberts, B., *What does it take to develop an HRIS professional*, in *HR Magazine*. 1999. p. 110-114.

24. Bird, J., *Managing information technology: Micro myopia.* Management Today, 1992(February): p. 101-102.

25. Torrington, D. and Hall, L., *How personnel managers come to terms with the computer.* Personnel Review, 1989. **18** (6): p. 26-31.

26. Kossek, E.E., Young, W., Gash, D.C., and Nichol, V., *Waiting for innovation in the human resource department; Godot implements a human resource information systems.* Human Resource Management, 1994. **33**(1): p. 135-159.

27. Williams, H., *Job Analysis and HR Planning*, in *Human Resource Information Systems: Basics, Applications, and Future Directions* Kavanagh, M.J. and Griffith, M.T., Editors. 2009, Sage Publications: London.

28. O'Connell, S.E., *Defining the job and pay of an HRIS manager.* HR Magazine, 1995. **40**(1): p. 33-35.

29. Hall, R., *Enterprise resource planning systems: transforming work organisation?* Strategic Change, 2002. **11** (5): p. 263-270.

30. Hall, R., *The integrating and disciplining tendencies of ERPs: evidence from Australian organizations.* Strategic Change, 2005. **14** (5): p. 245-254.

31. Redford, K. *Deloitte survey finds HR is still failing to gain recognition from company executives*. 2007 [cited 2007 27 June 2007]; Available from: http://www.personneltoday.com/Articles/2007/06/18/41126/deloitte-survey-finds-hr-is-still-failing-to-gain-recognition-from-company-executives.html.

32. Legge, K., *The Role of Personnel Specialists: Centrality or Marginalization?*, in *Human Resource management & Technical Change*, Clarke, J., Editor. 1993, Sage London.

33. Storey, J., *Developments in the Management of Human Resources*. 1992, Oxford: Blackwell.

34. Ulrich, D., *Human Resource Champions: The next agenda for adding value and delivering results*. 1997, Boston, Massachusetts: Harvard Business School Press.

35. Preece, D. and Harrison, M., *The Contribution of Personnel Specialists to Technology-Related Organizational Change.* Personnel Review, 1988. **17**(1): p. 13-19.

36. Lawler, E.E. and Mohrman, S.A., *HR as a strategic partner: what does it take to make it happen?* Human Resource Planning 2003. **26** (3): p. 15-29.

37. Hunter, R.H., *The "new HR" and the new HR consultant: Developing human resource consultants at Anderson consulting.* Human Resource Management, 1999. **38**: p. 147-155.

38. Brockbank, W. and Ulrich, D., *Competencies for the new HR*. 2003, Society for Human Resource Management: Alexandria, VA.

39. Schoonover, S.C., *Human resource competencies for the new century*. 2003, Schoonover Associates: Falmouth, MA.

40. Bell, B.S., Lee, S.-W., and Yeung, S.K., *The Impact of eHR on Professional Competence in HRM: Implications for the Development of HR Professionals*. 2006, School of Industrial and Labor Relations & Centre for Advanced Human Resource Studies, Cornell University. p. 1-26.

41. CIPD, *Talent: Strategy, Management, Measurement*. 2007, Chartered Institute of Personnel & Development: London.

42. Schramm, J., *HR Technology Competencies: New Roles for HR Professionals*, in *Research Quarterly*. 2006, Society of Human Resource Management

43. Williams, H., *How Can Human Resource Information Systems Inform and Enable Strategy Making?*, in *Human Resource Management*. 2000, Nottingham Business School, Nottingham Trent University: Nottingham.

44. Williams, H., *Strategic Planning for Human Resources*, in *Human Resources in Organisations*, Leopold, J., Editor. 2002, Pearson Education: Harlow.

45. Tansley, C., Holden, N., and Williams, H. *Knowing in Practice: Inter-cultural Participative Competence in Human Resource Information Systems Project Work*. in *Proceedings of the First European Academic Workshop on Electronic Human Resource Management*. 2006. University of Twente, The Netherlands.

46. Tansley, C., Newell, S., and Williams, H., *Effecting HRM-style practices through an integrated Human Resource information system: an e-greenfield site?* Personnel Review (Special Issue: Managing the Employment Relationship in Greenfield sites), 2001. **30**(3): p. 351-370.

47. Bazeley, P., *Qualitative Data Analysis with NVivo*. 2009, London: Sage Publications.

48. Bryman, A., *Social Research Methods*. 3rd ed. 2008, Oxford: Oxford University Press.

49. Lewins, A. and Silver, C., *Using Software in Qualitative Research: A Step-by-Step Guide*. 2007, London: Sage Publications Ltd.

50. Symon, G., *Qualitative Research Diaries*, in *Essential Guide to Qualitative Methods in Organizational Research*, Cassell, C. and Symon, G., Editors. 2004, Sage Publications Ltd: London. p. 98-113.

51. Williams, H., *How do organisations make sense of their talent as valued assets? The Literature*, in *Human Resource Management*. 2008, Nottingham Business School, Nottingham Trent University: Nottingham.

52. Lepak, D.P. and Snell, S.A., *The human resource architecture: toward a theory of human capital allocation and development.* Academy of Management Review, 1999. **24** (1): p. 31-48.

53. Polanyi, M., *Personal Knowledge. Towards a Post Critical Philosophy*. 1958, London: Routledge.

54. Polanyi, M., *The Tacit Dimension*. 1966, London: Routledge & Kegan Paul.

55. Polanyi, M., *The Tacit Dimension*. 1967, New York: Doubleday & Co.

56. Polanyi, M., *Knowing and Being*. 1969, Chicago: University of Chicago Press.

57. Polachek, S. and Siebert, W., *The economics of earnings*. 1993, Cambridge, England: Cambridge University Press.

58. Heijke, H., Meng, C., and Ramaekers, G., *An investigation into the role of human capital competences and their pay-off.* International Journal of Manpower, 2003. **24** (7): p. 750-773.

59. Bingley, P. and Westergaard-Nielsen, N., *Returns to Tenure, Firm-specific Human Capital and Worker Heterogeneity.* Journal of Manpower, 2003. **24**(7): p. 774-788.

60. Strauss, A. and Corbin, J., *Basics of Qualitative Research: Techniques and procedures for developing grounded theory*. 2nd ed. 1998, London: Sage.

61. Richards, L., *Handling Qualitative Data: A Practical Guide*. 2005, London: Sage Publications.

62. Layder, D., *Sociological Practice: Linking Theory and Sociological Research*. 1998, London: Sage Publications.

63. Mason, J., *Qualitative Researching*. 2002, London: Sage Publications.

64. Miles, M.B. and Hubermann, A.M., *Qualitative Data Analysis: An Expanded Sourcebook*. 2nd ed. 1994, London: Sage.

65. Seidel, J., *The Ethnograph v50: A User's Guide*. 1998, London: Sage Publications.

66. Yin, R.K., *Case Study Research: design and methods*. 3 ed. Vol. 5. 2003, London: Sage.

67. Raub, S.P., *Towards a knowledge-based framework of competence development*, in *Knowledge Management and Organizational Competence*, Sanchez, R., Editor. 2001, Oxford University Press: Oxford. p. 97-113.

Talent management and the HRIS specialist: A narrative analysis

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Abstract. *Researchers are required to make methodological choices about the underlying nature of phenomena being investigated, which appropriate research methods to use and how to present valid evidence. Information systems (IS) is a discipline originally rooted in a single overarching perspective, the positivist/realist domain, but critics of such a narrow view have encouraged a move towards more interpretive approaches in order to understand human thought and action in social and organisational contexts. Addressing this gap, we demonstrate, using examples from case study and ethnographic research on human resourcing information systems (HRIS), how four analytical 'tools' (contextual narrative, personal narrative, template analysis and evaluation) can be used to interpret respondents' accounts. It is found that narratives can provide a meaningful description of events and experiences through time and go some way to encourage an informed consideration of alternative approaches to the positivist research dominating the IS domain. Critical reflections of narrative analysis are also provided in the paper.*

Keywords: Qualitative; ethnography: talent; narrative; template analysis.

1 Introduction

Those engaging in social science research have a range of research perspectives to choose from [1, 18; 48; 51], offered by researchers from different disciplines (sociology, anthropology, psychology, administrative science). However, such a range of traditions has not been widely evident in the arena of IS research [50], which was originally rooted in a single overarching perspective (the positivist/realist domain) that exhibits a single set of philosophical assumptions regarding the underlying nature of phenomena being investigated, the appropriate research methods to be used and the nature of valid evidence. Critics of such a narrow view [65, 66, 34] encourage a move towards more interpretive approaches [49] as they can help IS researchers to understand human thought and action in social and organisational contexts [41]. To aid these fresh approaches to studying IS work in greater depth, Currie and Gallier [23] also recommend utilisation of methodological approaches from other disciplines. However, this has only happened to a small degree in IS research [5, 6].

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In this paper we present a *methodological story*, derived from two studies (on talent management and human resource information systems (HRIS)) undertaken between 2007 and 2009. This story consists of a reflexive journey of our interpretive research practices derived from narratives from nine talent management case studies in the first instance and a longitudinal ethnography in the second instance, where we examined talent management at project team level on the HR component of a global, enterprise-wide information system. We demonstrate the utility of such 'tools' as template analysis, context narrative and personal narrative analysis for understanding the context and lived meaningful experience of those involved in IS work. We also discuss how such research might be evaluated. This has produced lessons for talent management practices generally, with prescriptions for the study of IS work in particular.

1.1 Narrative approaches and IS research

The 'linguistic turn' across the social sciences has generated an increasing interest in stories and narratives [31, 32, 55]. Narrative has been construed as 'the meaning structure that organizes events and human actions into a whole, thereby attributing significance to individual actions and events according to their effect on the whole' [52, p18]. Hinchman and Hinchman similarly take narratives to be 'discourses with a clear sequential order that connect events in a meaningful way for a definite audience and thus offer insights about the world and/or people's experiences of it' [37, xvi]. One constant debate is whether there should be delineation between a narrative and a story. Scholars have not reached 'consensus on how stories and narratives may be distinguished from definitions, proverbs, myths, chronologies and other forms of oral and written texts', but rather their 'key concern is with accounts of sequenced events, with plots that weave together complex occurrences into unified wholes that reveal something of significance [14, 15, 32, p195, 16, p324].

Whilst there has been 'a long literary tradition of studying the art of narrative' [27, p3], the application and analysis of narratives in human and social sciences is also extensive [2, 3, 29, 37, 47, 57], although not without critical debate [54]. Narrative analysis has been undertaken on a variety of topics: ill health, with its impact on individual identity [42, 40, 20]; sexuality in modern society [53] and management [13, 24, 25; 28]. Whilst there has been some narrative analyses in the area of information systems development (see Brown [14] on IT implementation; Brown et al. [13] on games software project team work and Wagner and Newell [64] on ERP implementation for example), little, if any, has been undertaken on HRIS work or, indeed, talent management initiatives of IS specialists.

1.2 Conceptual distinctions of narrative

We follow Polkinghorne's suggestion that "'Narrative"' in the singular is used to refer to the general narrative process or form, whereas "Narratives" as a plural refers to the diverse individual stories, which differ in content and plot line' [52, p188]. With regard to narrative, various conceptual distinctions have been made between different types of narrative for the analytical task. Elliott advises there are three key features of narratives: *chronological* (as temporal representations of sequences of events); *meaningfulness* and that they are inherently *social,* in that they are produced for a specific audience [27, p4].

1.2.1 Narrative orders

Carr [19] provides two 'orders' of narrative. First order narratives relate to the 'stories that individuals tell about themselves and their own experiences…The special

significance of these ... is that they can be understood as in some senses constitutive of individual identities [hence 'ontological'] [19, p12]. Second-order narratives are not necessarily individually-based but, rather, are those accounts we as researchers construct in order to present our interpretation of social, cultural and historical knowledge. Elliott gives Abbott's [4] account of the formation of a profession as an example of a second-order narrative [27, p12]. Somers and Gibson [58 in 27, p12] prefer alternative terms 'ontological narratives' and 'representational narratives'. For our study we coined the terms *personal narratives* which reflects Carr's first order narrative definition and *contextual narratives* to denote the existing conditions of the milieu or social, cultural and historical environment in which the actors telling the narratives enact their practices.

1.2.2 Contextual narratives of talent management

With regard to *contextual narratives*, we begin our methodological story by focusing on our research on talent management. The term 'talent management' became common parlance at the end of the 1990s when used by McKinsey consultants in their report, 'The War for Talent' [8]. The profile of talent management was raised as organisations responded to increasing competition for those high performers with high potential across sectors at all levels, including graduates, individuals with a particular aptitude for leadership or the next CEO. As 'talent' came to be perceived as the primary source of competitive differentiation, organisations started to think about the steps they needed to take to ensure they identified, developed and retained the 'brightest and the best' people. Talent management practice was initially linked to recruitment then changed to encompass all HR activities but is still rather focused upon high performing individuals with senior leadership potential.

In 2007, the Chartered Institute of Personnel and Development (CIPD) provided a definition of *talent* as 'those individuals who can make a difference to organisational performance, either through their immediate contribution or in the longer term by demonstrating the highest levels of potential' [21, pxi]. Similarly, their research into the processes of *talent management* also identified a wide range of practices that tended to be organisation-specific and dependent upon the context within which talent management was taking place. But once more a definition was derived from various examples of successful practice in this and other research projects as: 'The systematic attraction, identification, development, engagement/retention and deployment of those individuals with high potential who are of particular value to an organisation' [21 pxi].

In our study we examined nine organisations representing a wide range of sectors which included manufacturing, finance, hospitality, e-business, the NHS and local government to highlight different issues and challenges for talent management. Our aim was to obtain *contextual narratives* of a broad range of stakeholders to understand how they defined talent and what they were doing in managing and nurturing this talent. Over 100 face-to-face interviews were undertaken with senior executives, HR directors, HR professionals, talent management specialists, line managers and individual employees. Our research protocol was constructed from a literature review and a focus group discussion with 10 leading 'expert' practitioner HR directors. Interviews in organisations were supplemented with employee focus groups. At this stage we interviewed specialists from the finance and other functional groups such as sales and marketing, although they were targeted as leadership material rather than 'pure' functional specialists. Strangely, we were given no access to specialists from the IS discipline at any level of the case study organisations.

1.2.3 Methods for identifying/constructing contextual narratives

Data was transcribed, loaded into an NVIVO database [56] and analysed to identify narratives about organisational talent management initiatives. We used a grounded theory approach [36] to assign initial concepts and theme codes about talent management generally to all the research data. We analysed the three types of coding during the analysis. For example, 'open coding' was used to examine the data and assign codes by giving conceptual labels to the phenomena as they were discovered (e.g. 'organisational talent'). We compared the concepts being examined with those that had already been devised from the initial expert focus groups and coded whilst keeping an open mind during this process to avoid the concepts inherent in the data being obscured by any predetermined theoretical basis (such as those found in the domain of human resource management (HRM)).

We then provisionally combined the concepts into related categories to reduce the number of concepts to be handled (such as 'talent') and provide a stronger conceptual basis to the themes discovered. Next, 'axial coding' commenced where we examined each category in terms of: the conditions that cause it, the context in which it occurs, actions and interactional strategies by which it is managed or handled and the consequences which arise from the category. By examining these factors, it becomes possible to link categories and to verify the linkages by testing them against the data. This enables the researcher to ground their theory on the data. The final result of axial coding is a very rich description of the phenomenon being researched. From this we began to produce case study reports of contextual narratives for each organisation for collation in the final research document. As the research was geared to practical recommendations rather than actual theory we did not undertake the final stage of 'selective' coding, which enables the development of a grounded theory by integrating the categorized material into a theory which accounts for the phenomenon being researched. (This integration is done by selecting one of the categories as the focus of interest and making it the 'core category' or 'story line' around which the rest of the categories are organized. This creates a theoretical framework, which is validated against the data).

1.3 Displaying the findings: Template analysis

In order to make sense of the rich data from the case study research we chose template analysis to display emerging themes. The term "template analysis" refers to a particular way of thematically analysing qualitative data [see 69]. The data invariably comes from interview transcripts, but may be any kind of textual data, including diary entries, text from electronic "interviews" (e-mail), or open-ended question responses on a written questionnaire. Template analysis involves the development of a coding "template"; that is to say, broad themes (e.g. "Employer branding") encompass successively narrower, more specific ones (e.g. "employer value propositions"). Such a template has three levels but here we present an example of the coding template which summarises themes identified by the researcher(s) as representing the talent management themes overall and some of the practices. We can see that with template analysis hierarchical coding is emphasised. In column one are the *a priori* codes we constructed from the original talent management research material. In column two are the specific themes we found relating to the talent management processes in the case study organisations. This helped to provide a structure to focus the next steps of the HRIS study. The template analysis in table 1, below, shows some of the categories:

Key theme	Practices
1.Constructing talent categories	1. Defining ‘talent’ as those with leadership potential only 2. Exclusive labels for talent (e.g., ‘high performers’; ‘rising stars’; ’emerging talent’; ‘entry level talent’).
2. Acquiring talent	1. Ascertaining talent supply and demand inside and outside of the organization 2. Talent review panels identify talent for succession planning of two or more levels of promotion 3. Employer branding 4. Succession planning 5. Recruitment strategies, policies and practices 6. Selection strategies, policies and practices
3. Developing talent	1. Leadership development only 2. Regular ‘talent reviews’ of individual development needs, plans and objectives in key workforce groups linked to a coherent succession planning process. 3. Coaching, mentoring, job rotations and international transfers frequently used as career development tools in preference to investment in formal post graduate educational programmes.
4. Managing talent	1. Active inclusion of succession planning and leadership development in the talent management strategy 2. Developing clear policies and resource planning for identification, nomination, selection, engagement and retention of internal and external talent 3. Employer branding has a strong and positive image in the marketplace 4. Review panels to identify talent across the organisation 5. Performance management processes designed to provide robust evidence about individual’s high performance 6. Provision of regular feedback on performance 7. Line managers involved in all areas including coaching, mentoring and trained in giving performance assessments

Table 1: Template analysis: two out of three levels of talent management themes

1.3.1 Talent management and the IS specialist

A key finding which had not been part of the original study protocol was that in over 80% of the interviews with line managers and HR respondents there was a concern that their talent management processes did not facilitate the inclusion of specialists who

were not suitable or did not want to pursue management roles. This prompted the researchers to embark on a new study with a different organisation to those in the original study in order to explore the extent to which those working specifically in the IS domain were taken into account in talent management programmes.

We had been undertaking ethnographic research with 'Flow plc.', for over a decade in project teams developing global HRIS. Flow plc. is a leading power-systems company manufacturing in 20 countries, employing approximately 38,000 people worldwide and serving customers in 150 countries. The HRIS project leader offered to provide further funding for a study to consider talent management issues related to his project team members, who were involved in developing global HR information systems. Gathering new research material from this organisation would enable us to collect another, more specific, data set, apply it to the initial template and modify it in the light of careful consideration of each transcript. Once a final version was defined, and all transcripts coded to it, the fully completed template would then serve as the basis for our interpretations and illuminations of the data set and we could then write up the findings. However, we had a way to go yet.

2 Ethnographic work and the challenges of interpreting fieldwork in the HRIS culture

Van Maanen [63, p1] described ethnography as the coming together of fieldwork and culture, resulting in a written representation of that culture. He describes cultures as comprising the knowledge that members ('natives') of a given group are thought to more or less share. This knowledge subsequently informs, embeds, shapes and accounts for the routine and not-so-routine activities of the members of that culture [22, 11, 60]. Ethnography has long been a recognised research method for studying information systems work on topics ranging from ethnography in systems design [38] to critical ethnography studies on IS developments as an inherently political activity [9]. In particular, using an ethnographic approach to study project teams as they develop and implement their systems can enable enhanced understanding about local project routines and the complex problems that practitioners face during their daily work routines and help account for how practitioners address these problems.

2.1 A contextual narrative about Human Resource Information Systems

Over the years, to orient our research with our sponsor, Flow plc., we had constructed a *contextual* narrative about the development of HR information systems (HRIS). HRIS are increasingly being used to ensure human capital data is utilised in a strategic way to both collect relevant data and enable the sharing of common data across the enterprise in a real-time environment [12]. However, these can involve major technical and organisational challenges, for example, from business process reorganisation, and this often involves delays and budget over-runs and result in major organisational challenges [59]. One possible reason for this is that talent management for those working on international project teams is not in place, with a number of gaps being identified [68]. Firstly, the 'hybrid' knowledge and skills requirement of functional HRIS teams, typically composed of both IT personnel and representatives from the departments where the system is going to be used, are generally not acknowledged and understood. Secondly, there is often a lack of understanding of the key roles required on the project and lack of appreciation of the relational knowledge and skills required of HRIS specialists in order that the system provided meets their clients' needs [61, 30]. Thirdly,

there is little aligned appreciation of a 'supply chain' model to the attraction, development, engagement, mobility and reward of team talent.

In order for HRIS to be used effectively both now and in the future, it is clear that those designing, implementing and operating those systems need to be recognised as core staff fulfilling business/operation-critical roles who have specific talents which can enable systems for the provision of effective strategic HRM. The strategic importance of these 'niche' roles is not recognised either by HR management or within organisational talent management systems. We suggest that the reason for this is that the elements and importance of these roles are not understood and we had two key questions to explore in the next stage of our research:

1. How is the 'talent' of specialists in the HR IS domain defined in practice in comparison to generalised talent management initiatives?
2. How is HRIS talent nurtured and their careers developed?

3 Conducting the ethnography

In Flow plc., focusing upon specialist talent, we conducted 25 interviews with stakeholders from their HR and IT functions in the UK, Germany, Canada and the USA, each lasting up to two hours and tape-recorded. Ten interviews were with members of the HRIS team at the corporate headquarters and their HR and finance 'clients', the other interviews were undertaken by telephone. Those not interviewed included the IT supplier's consultants, country business managers and employees who were not part of the global HRIS programme. Extensive notes were also taken of informal discussions and telephone calls with various members of the HRIS team. All interviews were undertaken using a narrative interviewing convention with a chronological underlying form. In this study the use of narrative in examining lived experience as it happened provided a unique opportunity to see how 'continuity and change are emplotted in narrative form…where "a good-enough" narrative contains the past in terms of the present and points to a future that cannot be predicted, although it contains the elements out of which the future will created' [39, p35].

However, given the 'alternative' interpretive nature of this study, we had to take care that appropriate methods of evaluating the research are undertaken. Here we use Bryman and Bell's [17] criteria for evaluating qualitative research as a checklist for undertaking 'alternative' interpretive research in IS:

Criteria	Evidence from the HRIS study
Authenticity	Frequency of ethnographic researchers on Flow plc's company premises meant that narrative findings were fed back to the project team on a regular basis. This raised awareness of relevant issues amongst the HRIS team, enabled reflection on their practice as a result of reading their own narratives and encouraged changes to the perception of the researchers on the situations occurring. This provides for authenticity in the narratives produced from the study.
Trustworthiness Credibility	When respondents from the HRIS team were asked to read their own narratives in the interview transcript, we requested they highlight any issues they felt they missed or did not report correctly in their account. If necessary, amendments were then made to the transcripts. Informal meetings were also held to ask team members for feedback on observations the ethnographers had made about the project team and talent management.
Trustworthiness Transferability	Rich descriptions were achieved by asking each respondent, where relevant, to use real-life examples and to describe their experiences of this in detail. Probing questions were asked. Narrative construction was undertaken by supplementing individual descriptions with observations made by the ethnographers, meeting discussion notes, notes from informal discussions and telephone calls with the HRIS team.
Trustworthiness Dependability	The ethnographer always has to be vigilant that she is not sacrificing 'truth' for dramatic effect (Denzin, 1997, p142). Electronic and written records were made throughout the research process and shared between the research team, with academic colleagues auditing the process. The records detailed how decisions were made e.g in relation to the respondent sample, interview questions and what to observe.
Trustworthiness Confirmability	A research protocol was used to ensure consistency across the interviews. Respondents were asked to comment on their transcripts and observations the research team had made and any amendments made. The ethnographic nature of the study also meant that the ethnographers were aware of any internal politics which may have influenced the researchers' objectivity.

Table 2: Alternative criteria for evaluating qualitative interpretive research (Bryman and Bell, 2003)

It has been proposed that the validity and reliability of qualitative, interpretive research can be evaluated based on two key criteria: trustworthiness and authenticity [44, 45, 17]. Authenticity refers to the wider impact the research might have and in this sense shares similarities with action research [9]. Trustworthiness consists of four elements. Bryman and Bell [17] describe the first element 'credibility' as being concerned with the feasibility of the account and the extent to which the researchers have consulted the

respondents to check that they have understood their accounts correctly (respondent validation). The second element refers to 'transferability' and the degree to which the rich descriptions provided by the respondents could be applied to other settings. 'Dependability' is the third element. This considers how the research has been conducted and whether records of the different stages have been kept (such as interview transcripts, field notes and data analysis decisions). It also relates to the extent to which this process is audited by peers. According to Bryman and Bell [17] the final element 'confirmability' considers whether the researchers have remained objective throughout the research process.

4 Analysing narratives from ethnography

Ethnographic narratives are highly reflexive in content and in construction. They involve self reflection and critical interpretation, with the researcher interpreting the interpretations of others. In this part of our methodological story we foreground Elliott's highlighting of three key features of narratives: *chronological* (as temporal representations of sequences of events); *meaningfulness* and that they are inherently *social*, in that they are produced for a specific audience [24, p4].

4.1 Chronology, meaningfulness and social specificity of personal narratives from Flow plc. HRIS

Throughout this ethnography the *chronological* aspect of narrative was engaged by asking questions such as 'Tell me about your experiences of the project from the day you became involved' and critical incident questions such as 'Tell me what has happened since we last talked' [10]. To identify *meaningfulness for the individual*, these questions were linked to probing questions, particularly about each interviewee's feelings about chosen critical incidents along the course of the project. For *social* specificity we gathered personal narratives embedded in contextual narratives reported in documentary materials such as house magazines, internal memorandum on company activities generally and global information systems developments specifically.

Contextual narrative analysis was still being undertaken during this. All tape transcripts, a number of contact and document summary sheets [46] and research journal notes were input into a qualitative software analysis database (NVIVO8), where they were coded for *narrative themes* to add to the template analysis at levels one, two and three. Next, emerging narratives across ontological groups over the history of the project were identified and then analyzed to identify key themes in relation to talent management issues perceived by individuals to be important, including concerns about career development.

In the next section we provide a contextual narrative analysis of HRIS within the organisation and then an example of a personal narrative analysis from one of the participants on the project. In constructing each personal narrative we drew upon Labov and Waletzky's [43] temporal framework with its six separate elements for analysing individual or personal narratives in order to provide a clearer frame for the analysis of first order narratives of the HRIS team members in our study:

A: the abstract (a summary of the subject of the narrative);

O: the orientation (time, place, situation, participants);

Ca: the complicating action (what actually happened);

E: the evaluation (the meaning and significance of the action);

R: the resolution (what finally happened); and lastly

C: the coda, which returns the perspective to the present

4.2 Contextual narrative of Flow plc's talent management

With regard to talent management generally in Flow plc., management and leadership development teams had constructed a contextual narrative about managing talent. In the first instance they were *implementing rigorously designed talent management strategies*. Whereas talent management had previously consisted of separate HR activities to engage and nurture talent , their strategy was now about *using all three recruitment, performance management or leadership development to get the best results*. The narrative continued that *the growth of talent management from all of these initiatives is also driven through solid executive board support and an awareness of how closely talent management initiatives need to be linked to the goals of the organisation*. However, one jarring aspect of this contextual narrative is that *talent is only taken to be those who have potential to progress to senior executive level*, with specialists such as scientific, engineering, IS or HR specialists not considered for talent pools.

4.2.1 HRIS implementation in Flow plc.

Flow plc. found itself in the invidious position of operating many legacy systems across functions, with 1600 for HR alone. It was decided to implement an enterprise resource planning system which would reduce wasteful repetition and align data management across functions. The HR component of the system had a number of different elements: personnel administration; organisation management; reward; time management; payroll; resourcing; travel and expenses; training and events management; global mobility; occupational health and reporting and personal development. Stakeholders involved in the project included: business managers, HR clients as system users, IS project managers, IS designers, HR IS developers and maintainers and several external to the organisation, such as consultants.

Flow plc. experienced a number of challenges in competitive international and local labour markets in attracting and identifying talent with key skills or with high professional, technical and/or leadership potential. Their recruitment processes encompassed external candidates and internal recruitment through intra-, inter- and cross-functional moves, secondments and rotations. Many see talent management programmes as capitalising on internal talent. And so it was the case here that it was decided that HRIS team recruitment would be from within Flow plc. and the project team leader used his network to identify 'suitable people' so there were names against various jobs.

The Flow plc HRIS development team responding to client needs had grown organically over the last 10 years, rather than being designed and developed strategically. This growth had been driven both by embracing and expanding SAP HR technology and functionality in the UK and the addition of different parts of the business operating in different countries (USA, Canada and Germany). This meant there were eight members on the UK central HR IS team and six in HRIS teams in other geographies. Among the recruits was Phil.

4.3 Personal narrative analysis: A Flow plc HRIS project team member

Phil had been with the company in roles other that HRIS for 37 years, such as working with the organisation's financial systems, in HR, as a systems analyst and being responsible for the finance component of ERP. Although there were formal company recruitment practices, staff on IS projects tended to be recruited by word-of-mouth. And so it was that Phil was informally recruited to his present role to act as a trouble-shooter for the HRIS team since the team were experiencing problems integrating data from the German business unit. Here is an extract from his personal narrative which explores his recruitment to the HRIS project team, analysed according to Labov and Waletzky's [43] temporal framework.

Element	**Evidence**
A	When my last ERP project finished in 2003 I started to look to the future.
O	My boss said basically, you are on maintenance; we've got nothing on the horizon in finance. And they knew I liked challenges. So in the development reviews we discussed it. And I knew they were having problems with integration issues in Germany. John [HRIS project team manager], who I'd known from when he first came in the company, I was talking to him about it.
Ca	And then John rang me and asked me if I wanted a job with him. There aren't many people like me who come from finance to HR and vice versa. Apparently he was told through the development review process that I was looking for project work. He just said I guess I'm just going to give you a lot of rubbish to do really, all the difficult things, and I said that's fine with me. It was all to do with audits and a whole host of jobs including the trouble with the Germans and integrating their financial operating costs. He wanted me to be the Germany account manager, if you like.
E	It would be a feather in my cap so that's exactly why I went. I calmed the team down, and any time they had a problem I could deal with that straight away. John was a bit fearful but I'm the only one who understands how it all fits together. I spent a good few years in HR and finance.
R	And sure enough, John stopped getting the aggro from the team.
C	But we'll just have to see how it goes now though because I'm getting on a bit, and I'm only good for a few more years. I'm 59 in January. I'm looking perhaps at another 3 years, but that's it.
Key:	A = abstract; O = orientation; Ca = Complicating action; E = evaluation; R = resolution; C = coda

Table 3: Personal narrative analysis

We see here how Phil's narrative is *chronological*, in that it takes us across the time scale of the recruitment process and beyond. Distinctive to Phil's personal narrative was his *meaningful* way of presenting his joining the project as a tale of his rescuing a

difficult situation through his personal attributes and his extensive knowledge and experience. Finally, although there were company policies for formalised recruitment practices, we found time and again that Phil's story of being recruited through a process of serendipity was a common one and he would have spoken to the condition of many others in IS teams as his narrative had *social* meaning.

Collating the various narratives of the interviewees on the project we were able to add to the elements at third level of the template analysis (we show only two rows as an example):

Key theme	Practices	IS talent
1. Constructing talent categories	Defining 'talent' as those with leadership potential only Exclusive labels for talent (e.g., 'high performers'; 'rising stars'; 'emerging talent'; 'entry level talent').	No shared organisational definition of, or special 'labels' for 'specialist' (non-managerial) talent No recognition that talent exists at team level as well as individual level
2. Acquiring talent	1. Ascertaining talent supply and demand inside and outside of the organization 2. Talent review panels identify talent for succession planning of two or more levels of promotion 3. Employer branding 4. Succession planning 5. Recruitment strategies, policies and practices 6. Selection strategies, policies and practices	1. & 2. Reactive human resource planning for specialist talent 2. No clear perspective available across the organisation. 3. Employer brand shows no IS staff 'employment promises' 4. No formal succession planning for HRIS jobs

Table 4: Level three completion of template analysis

5 Discussion

Researchers adopt narrative analysis for a number of reasons: an interest in people's lived experiences and an appreciation of the temporal nature of that experience; a desire to empower research participants and allow them to contribute to determining what are the most salient themes in an area of research; an interest in process and change over time; an interest in the self and representations of the self and an awareness that the researcher him- or herself is also a narrator [24, p6]. Personal narratives are important because 'a person's identity is not to be found in behaviour, nor ... in the reactions of others, but in the capacity to keep a particular narrative going. The individual's biography...must continually integrate events which occur in the external world and sort them into the ongoing 'story' about the self' [35, p54].

Narratives (understandings, meanings and stories) of organisational practice, then, are constructed and negotiated by researchers and the subjects of their studies through dialogic and reflexive processes relating practice, context, language, discourse and interaction. These narratives are: ongoing and open-ended; mediated through processes of interpretation, reflection and theorising and occurring in a dialogue with self and between self and others. In telling the ongoing story about self, individuals are interpreting and reflecting upon their 'real life' experiences as they engage with different forms of empirical material and draw upon concepts and theories in order to bring about new and critical understandings of organisational work .

5.1 Interpretation of narratives

Taking an interpretive ethnographic stance as we have shown here produces distinctive and problematic challenges for those trying to understand the 'lived experience of others' and raises concerns for the subjects, the producers and the consumers of ethnography [63]. Denzin [26] describes a triple crisis of representation, legitimation and praxis, with legitimation a key element requiring some rethinking in relation to the terms validity, generalizability and reliability (with 'truth' and verisimilitude problematic concepts here).

With regard to making truth claims, we take the position of pragmatists in our analytical presentation of contextual and personal narratives. Watson [67] helps us delineate three ways of understanding theories of truth. A *correspondence* theory of truth involves judging an item of knowledge in terms of how accurately it paints a picture or gives a report of what actually happened. A *coherence/plausibility* theory of truth involves an item of knowledge being judged in terms of how well it 'fits in with' everything else we have learned about this matter previously. A *pragmatist* theory of truth involves judging knowledge in terms of how effectively one would fulfil whatever projects one was pursuing in the area of activity covered by the knowledge, if we based our actions on the understanding of those activities which it offers.

By taking a pragmatist approach to the utilisation of contextual narrative analysis of the literature, we were able to develop a typology of talent management narratives to map against the first level narratives of HRIS specialist talent management on this project. By using template analysis for the *context narratives* from case studies of talent management generally and Labov and Waletzky's [43] framework to analyse a *personal narrative* from an ethnography of an HRIS project from HRIS specialists in particular, we have attempted to show how an examination may be undertaken of the critical incidents related to management of their talents.

6 Conclusions

Previous research on talent management has argued that a clear position needs to be taken on how the talents of all employees might be optimised, not just those who are chosen for the 'future leadership' talent pool [21, p5]. In the methodological story in this paper we reflexively considered our utilisation of narrative methods of research collection and analysis in two research projects on talent management undertaken between 2007 and 2009. The first consisted of case study research with nine organisations undertaking talent management. By using 'template analysis' [69] to identify a typology of narratives in the talent management *context*, we identified how systems designed in this way tended to focus only on those who were regarded as having leadership potential and neglected specialist talent.

We then took these findings to another research project we were involved in, an ethnography which was focused on the talent management of project teams working on a global, enterprise-wide IS designed for use by HR and management. Here we used analytical tools of contextual and personal narratives to demonstrate how findings can emerge from interpretive research material.

The investigation highlighted the contextual challenges of attracting and nurturing specialist talent for global project teams working on an enterprise-wide system operating beyond the usual functional HR department boundaries targeted at enabling significant innovation of HR business processes in the networked organisation. In order to test out our emerging propositions about specialist talent highlighted in the talent management template analysis, we used Lavor and Waletzky's [43] hierarchical framework to analyse *personal narratives* derived from that ethnography. This illuminated how such an individual, through his narrative, discursively made sense of his career transition as it emerged over time and in different geographical spaces

Through such insights, the narrative analyst can construct a rich, complex, multifaceted and aligned picture from the voices of situated individuals. As Giddens [35] would have it, in the post-traditional order of modernity, against the backdrop of new forms of mediated experience, self-identity becomes a reflexively organised endeavour. The 'reflexive project of the self which consists in the sustaining of coherent, yet continuously revised, biographical narrative, takes place in the context of multiple choice as filtered through abstract systems' [35, p5]. Highlighting the serendipitous nature of interpretive and ethnographic research shows that such 'alternative' methods of analysis have great value for the organisational analyst examining the IS domain.

References

1. ABBOTT A (1988) The System of Professions: An essay on the division of expert labor. University of Chicago, Chicago.
2. ABBOTT A (1990) Conceptions of time and events in social science methods. *Historical Methods* 23(4), 140 -150.
3. ABBOTT A (1992) From causes to events in social science methods. *Historical Methods* 20(4), 428-455.
4. ABBOTT A (1998) The causal devolution. *Sociological Methods and Research* 27(2), 148–181.
5. ALVAREZ R (2001) There's more to the story: using narrative analysis to examine requirements engineering as a social process. In *Proceedings of the 7th International Workshop on Requirements Engineering: Foundations for software quality*, June 4-5, Interlaken, Switzerland.
6. ALVAREZ R (2005) Taking a critical linguistic turn: Using critical discourse analysis for the study of information systems. In *Handbook of Critical Information Systems Research: theory and application* (HOWCROFT D and TRAUTH EM, Eds), pp 104-131, Edward Elgar, Cheltenham, Glos.
7. ASTLEY G (1985) Administrative science as socially constructed truth. *Administrative Science Quarterly* 30(4), 497-513.
8. AXELROD E, HANDFIELD-JONES H and WELSH T (2001) War for talent, part two. *McKinsey Quarterly* 2(9), 9 -12.

9. BASKERVILLE, R and WOOD-HARPER AT (1998) Diversity in information systems action research methods. *European Journal of Information Systems* 7 (2): 90-107.

10. BAUER M (1996) The Narrative Interview: Comments on a technique for qualitative data collection. London School of Economics and Political Science, London.

11. BECKER H (1980) Culture: A Sociological View. *Yale Review* 71, 513-27.

12. BONDAROUK T and RUEL HJM (2009) Electronic Human Resource Management: challenges in the digital era. *International Journal of Human Resource Management* 20 (3), 505 – 514.

13. BROWN AD, STACEY P and NANDDHAKUMAR J (2008) Making sense of sensemaking narratives. *Human Relations* 61, 1035-1062.

14. BROWN AD (1998) Narrative, politics and legitimacy in an IT implementation. *Journal of Management Studies* 35(1), 35–58.

15. BROWN AD (2000) Making sense of inquiry sensemaking. *Journal of Management Studies* 37(1), 45–75.

16. BROWN, A.D., GABRIEL, Y. and GHERARDI, S., 2009. Storytelling and change: an unfolding story. *Organization* 16(3), 323-333.

17. BRYMAN A and BELL E (2003) *Business Research Methods*. Oxford University Press, Oxford.

18. BURRELL G. and MORGAN G (1979) *Sociological Paradigms and Organisational Analysis*. Heinemann, London.

19. CARR D (1997) Narrative and the real world: an argument for continuity. In HINCHMAN, LP AND HINCHMAN, S (1997) *Memory, Identity, Community: The Idea of Narrative in the Human Sciences.* Albany: SUNY Press pp. 7-25

20. CHARMAZ K (1991) *Good Days, Bad Days: the self in chronic illness and time.* Rutgers University Press, New Brusnwick NJ.

21. CIPD (2007) *Talent: strategy, management, measurement*. Chartered Institute for Personnel and Development, London.

22. CONKLIN, H. (1968) 'Ethnography' in Sills, D.L. (ed.) *International Encyclopedia of Social Science.* Free Press New York.

23. CURRIE WL and GALLIER B (1999) Rethinking Management Information Systems: An interdisciplinary perspective. Oxford University Press, Oxford.

24. CZARNIAWSKA B (1998) *A Narrative Approach to Organization Studies*. Sage, Thousand Oaks, California.

25. CZARNIAWSKA B (1997) *Narrating the Organization*. University of Chicago Press, Chicago.

26. DENZIN N K (1997) *Interpretive Ethnography*. Sage, London.

27. ELLIOTT, J (2005) Using Narrative in Social Research. Qualitative and Quantitative Approaches. Sage, London.

28. FERNELEY E and SOBREPEREZ P (2009) An investigation into extracting and analysing stories. *International Journal of Organizational Analysis* 17(2), 121-138.

29. FINNEGAN, R (1992) Oral Traditions and the Verbal Arts: a guide to research practice. Routledge, London.

30. FOSTER C and TANSLEY C (2008) Developing a project team brand: implications for practice. In *Proceedings of the Academy of Marketing Annual Conference: Reflective Marketing in a Material World*, Aberdeen Business School, The Robert Gordon University, Aberdeen.

31. GABRIEL Y (1995) The unmanaged organization: stories, fantasies and subjectivity. *Organization Studies* 16, 477–501.

32. GABRIEL Y (2000) Storytelling in organizations, facts, fictions, and fantasies. Oxford University Press, Oxford.

33. GABRIEL Y (2008) Organizing words, a critical thesaurus for social and organization studies. Oxford University Press, Oxford.

34. GALLIERS RD and SWAN JA (2000) There's more to information systems development than structured approaches: information requirements analysis as a socially-mediated process. *Requirements Engineering Journal* 5(2), 74-82.

35. GIDDENS, A (1991) *Modernity and Self-Identity*: Polity Press, Cambridge.

36. GLASER B and STRAUSS A (1967) The Discovery of GroundedTtheory: strategies for qualitative research. Aldine Publishing Company, Chicago.

37. HINCHMAN, LP AND HINCHMAN, S (1997) Memory, Identity, Community: The Idea of Narrative in the Human Sciences. SUNY Press, Albany.

38. HUGHES J, KING V, RODDEN T and ANDERSON H (1994) Moving out from the control room: ethnography in system design. In *Proceedings of the 1994 ACM Conference on Computer supported cooperative work*, p 429-439, Chapel Hill, North Carolina.

39. JOSSELSON, R. and LIEBLICH, A. (Eds.) (1993) *The Narrative Study of Lives* Sage, Newbury Park, CA.

40. KELLY, MP and DICKINSON, H. (1997) The narrative self in autobiographical accounts of illness. *Sociological Review* 45 (2) 254 – 278.

41. KLEIN HK and MYERS MD (1999) Set of principles for conducting and evaluating interpretive field studies in information systems. *MIS Quarterly* 23(1), 67-93.

42. KLEINMAN, A (1988) The Illness Narratives: suffering, healing and the human condition. New York: Basic Books.

43. LABOV W and WALETSKY J (1997 /1967). Narrative analysis: Oral versions of personal experience. *Journal of Narrative and Life History* 7(1-4), 3-38

44. LINCOLN, YS and GUBA, E (1985). *Naturalistic inquiry*. Sage, New York.

45. LINCOLN, YS and DENZIN, NK (eds.) (1994) *Handbook of Qualitative Research* Thousand Oaks Sage.

46. MILES M and HUBERMAN M (1994) *Qualitative Data Analysis: an expanded sourcebook.* 2nd ed. Sage, London.

47. MISHLER, EG (1995) Models of narrative analysis: a typology. *Journal of Narrative and Life History*. 5 (2) 87-123.

48. MORGAN, G (1980) Paradigms, metaphors, and puzzle solving in organization theory. *Administrative Science Quarterly*, 25, 605-622.

49. MYERS MD and YOUNG LW (1997) Hidden agendas, power and managerial assumptions in information systems development: an ethnographic study. *Information Technology & People* 10(3), 224-240.

50. ORLIKOWSKI, WJ and BAROUDI, JJ (1991) Studying Information Technology in Organizations: Research Approaches and Assumptions. *Information Systems Research* (2), pp. 1-28.

51. PFEFFER, G (1982) *Organizations and Organization Theory*. Pitman, Marshfield, MA,.

52. POLKINGHORNE DE (1988) Narrative Knowing and the Human Sciences. SUNY, Albany.

53. PLUMMER, K (1995) Telling Sexual Stories: power, change, and social worlds. London Routledge.

54. RIESSMAN, CK (1993) *Narrative Analysis*. Thousand Oaks, CA. Sage.

55. RHODES C and BROWN AD (2005) Narrative, organizations and research. *International Journal of Management Reviews* 7(3), 167–88.

56. ROUSE, A and DICK, M (1994) The Use of NUDIST, a computerized analytical tool, to support qualitative information systems research. *Information Technology & People* 7(3), 50-62.

57. SOMERS, MR (1994) The narrative construction of identity: a relational and network approach, *Theory and Society*, 22: 605-649.

58. SOMERS, MR and GIBSON, GD (1994) Reclaiming the epistemological "Other": narrative and social constitution of identity n C. Calhoun (ed) *Social Theory and the Politics of Identity*. Blackwells, Cambridge, MA pp37-99.

59. STROHMEIER S (2007) Research in e-HRM: review and implications. *Human Resource Management Review* 17, 19–37.

60. SWIDLER, A (1986) Culture in action: Symbols and strategies. *American Sociological Review*, 51, 273-286.

61. TANSLEY C, WILLIAMS H and FOSTER C (2008) Global HR IT development teams as liminal teams. In Proceedings of the *12th International Workshop on Team Working (IWOT 12)*, Aston Business School, Birmingham.

62. UNIVERSITY OF HUDDERSFIELD (2009) Template analysis. Available at http://www.hud.ac.uk/hhs/research/template_analysis/ (Accessed 29/01/10)

63. VAN MAANEN, J (Ed) (2005) Representation in Ethnography: In Other Wor(l)ds. Sage, London.

64. WAGNER, E and NEWELL, S (2006) Repairing ERP: Producing Social Order to create a working information system. *Journal of Applied Behavioral Research* 42(1), 40-57.

65. WALSHAM G (1993) Interpreting Information Systems in Organizations. Wiley, Chichester.

66. WALSHAM G (1995) Interpretive case studies in IS research: nature and method. *European Journal of Information Systems* 4(2), 74-81.

67. WATSON, T.J. (1998) Personal communication with [Author 1].

68. WILLIAMS H, TANSLEY C and FOSTER C (2008) Skills and knowledge of HR IS project teams: a human capital analysis. In Proceedings of the *Second European Academic Workshop on E-Human Resource Management: "e-HRM: barrier or trigger for HRM transformation?"* Aix en Provence (Carry le Rouet), France.

69. http://www.hud.ac.uk/hhs/research/template_analysis/. Nigel King, School of Human and Health Sciences, University of Huddersfield. Accessed 21 April, 2010.

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SESSION C

Topic: **e-Recruitment**
Chair: **Tanya Bondarouk**

The Effect of E-recruitment On the Recruitment Process: Evidence from Case Studies of Three Danish MNCs

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Abstract. *The aim of this research is to determine whether the introduction of e-recruitment has an impact on the process and underlying tasks, subtasks and activities of recruitment. Three large organizations with well-established e-recruitment practices were included in the study. The case studies were conducted in Denmark in 2008-2009 using qualitative research methods. The findings indicate that e-recruitment had a noticeable effect on the overall recruitment process in the studied organizations. The investigation revealed changes in the sequence, divisibility and repetitiveness of a number of tasks and subtasks. The new process design supported by information and communications technologies was identified and is presented in the paper. This process allowed recruiters in the study to perform recruitment tasks more efficiently. However, practitioners should be aware of the increasing demands of the quality of online communication with applicants, and with it the electronic communication skills of recruitment professionals.*

Keywords: recruitment, e-recruitment, web-based recruitment, online recruitment, staffing, e-HRM

1 Introduction

The first decade of the twenty-first century saw rapid growth in the use of online recruitment [25] and the transformation of electronic recruitment into one of the fastest growing recruitment techniques [23:119]. The most often reported benefits of electronic recruitment include wider applicant outreach [19], faster information exchange between potential employees and employers [38], lower costs of advertising [41], data accessibility and availability [39], reduced costs of communications [27], and improved organizational attraction [36:284]. The drawbacks of e-recruitment are associated mainly with résumé overload [11:85], increased diversity in quality of candidates [3], lack of personalized response to applicants [8], and issue-related candidate confidentiality [25]. Nevertheless, an online hiring process is regarded as being more cost efficient, and the fastest route to finding the right candidates, than traditional paper-based recruitment [27].

Despite the widespread use of e-recruiting methods, a gap seems to have developed between research into and the practice of e-recruitment [1; 39]. Of the increasing

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number of research contributions, many focus on the design of corporate recruitment websites [29], applicants' perceptions of career websites [5; 9; 16; 39], and e-recruitment system design [14; 26]. Although recruitment by and for organizations is intended to improve organizational performance [2:124], academic research on the subject from an organizational perspective is still relatively sparse [33; 34], possibly because scholars are struggling to keep pace with the sheer rapidity of change [1]. The organizational perspective is understood here as the process of organizing and performing recruitment tasks and activities within organizations and in the context of organizational environment.

The purpose of this study is to identify how e-recruiting affects the overall recruitment process, and whether it causes changes in the nature and sequence of tasks associated with the traditional recruitment of external candidates. The research contributes to the body of knowledge on the subject of e-recruitment, and is relevant for both academia and practitioners.

Case studies of three large multinational Danish companies were carried out in 2008 and 2009. The companies had extensive experience of e-recruiting and deployed a broad range of electronic means in their recruitment practices. The introduction of e-recruitment technology and sources in the case companies affected both recruitment activities and the sequence of some recruitment tasks and subtasks. A new task that of maintaining a corporate career website, was also added to the process.

The remainder of the paper is structured as follows: The next section discusses the theoretical starting point of the study. This is followed by an outline of the research design. The following two sections contain a presentation of the findings and a discussion of the key conclusions. Finally, I briefly discuss the implications for theory and practice.

2 Research Background

There is wide agreement among scholars about the growing importance of organizational recruitment in the development of human capital and strategic human resource management [9; 28; 31]. Given that the primary objective of recruitment is to identify and attract potential employees [2:10], recruitment can be defined as practices and activities carried out by an organization for the primary purpose of identifying, attracting and influencing the job choices of competent candidates [2: 5; 30:178; 35]. Recruitment activities are either directed towards external candidates from outside organizations or towards current employees, in which case it is called internal recruitment. The focus of this study is solely on the process of recruiting external candidates, since internal recruitment often involves other issues, such as career planning and development [2:4].

E-recruitment can be understood as recruitment carried out by the use of various electronic means. Online, Internet, or web-based recruiting can be defined as the use of the Internet to identify and attract potential employees [34], e.g. advertising a vacant position and attracting a pool of applicants through corporate websites and Internet job boards [4]. An e-recruitment system is a back-office system for administrating the recruitment process, and is normally designed to allow applicants to submit their data electronically. E-recruitment can thus be perceived as an umbrella term covering recruitment activities performed using various electronic means and the Internet, including online recruitment and e-recruitment systems.

The recruitment process can vary in complexity and degree of difficulty depending on the recruitment objectives and the recruitment sources chosen [6]. The most commonly used sources for external recruitment are newspaper ads, private and public employment agencies, Internet job boards, corporate websites, employee referrals, colleges and universities, search firms, job fairs, etc. [36:280]. As e-recruitment uses online job ads as the recruitment source, the focus here will be solely on the recruitment process for sourcing applicants from advertising.

Traditional recruitment, which uses formal sources like job advertising, starts with the identification of required applicants, their location and placement in the labour market, and proceeds with activities to attract and persuade qualified applicants to apply. Job applications are then received, screened, and sorted, leading to the drawing up of a shortlist. The process ends with communicating the pre-screening results to applicants. A summary of this type of recruitment process tasks, subtasks and activities is presented in Figure 1.

In this study, recruitment is treated as a business process [37: 328], defined by Davenport and Short [10] as a set of logically related tasks performed to achieve a defined business outcome for internal or external recipients. A business process occurs across or between organizational subunits and is independent of formal organizational structure. In the case of recruiting, this process is normally performed for either internal customers – line managers and executives from various parts of the organization - or external ones, resulting in a shortlist of candidates which customers can choose from (ibid.).

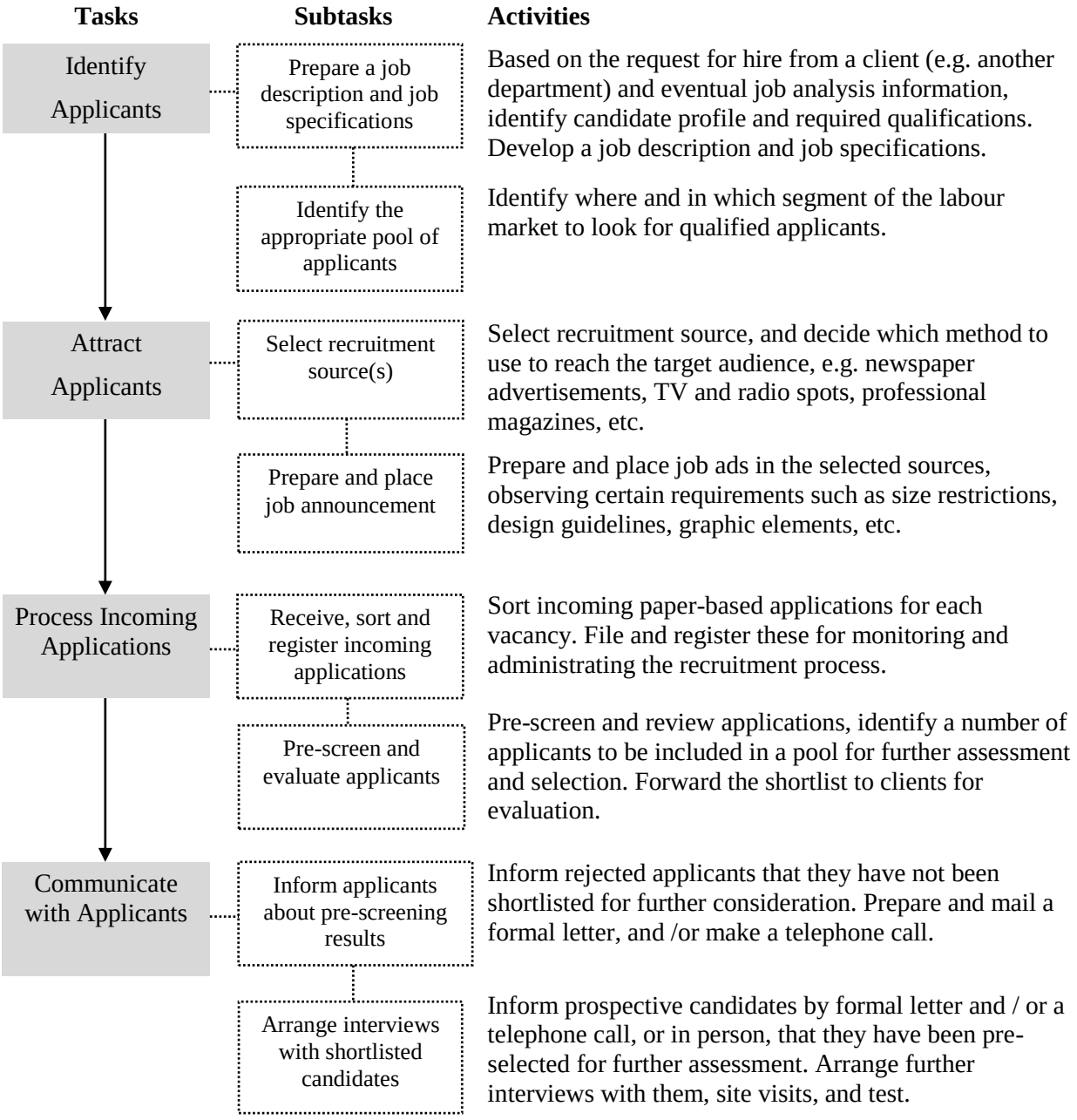

Figure 1. Traditional paper-based recruitment process using job advertising Adapted from Barber [2], Breaugh & Starke [6], Bartram [3], Dessler [11], Millmore et al., [31], and Newell [32]

A business process change can be caused by many factors and affect organizations in many ways . In order to better understand the complexities related to such changes, Kettinger and Grover [21] propose a descriptive model of business process change (BPC) based on research contributions from other scholars and their observations of practice. The model rests on the assumption that an organization is a complex, social system consisting of mutually interrelated and self-adjusting subsystems of organizational change, namely task, technology, people, and structure [20; 24]. The BPC model is strategy-driven, and adds process, products and services [21].

Figure 2 shows my adaptation of the BPC model to the recruitment process. Following the model's logic, introducing ICTs to the recruitment process, as in the case of e-recruitment, would not only affect business process tasks, but also people, management and structure.

A study of peer-reviewed journal manuscripts on e-recruitment, online and web-based recruitment, and e-recruitment systems identified only a few research contributions on e-recruitment from an organizational or business process perspective. Some of these research contributions are discussed below, and a summary provided in Table 1. And, as noted by Parry and Tyson [33], there has been little empirical research to determine whether e-recruiting leads to radical changes in recruiting practices.

In his study on Internet recruiting, Cappelli [8]examines different service providers, new technologies, and companies' recruitment strategies . In his view, the e-recruiting process consists of three major steps: attracting, sorting, and contacting candidates. The first step involves the appropriate design of web pages, using electronic networks for promotion, tracking potential candidates on the Internet and in on-line databases. The next step – sorting – involves the screening of candidates with the help of sophisticated on-line tests. In the third step, contacting candidates, e-recruitment systems are a big help, since they enable communication tasks to be automated (ibid.).

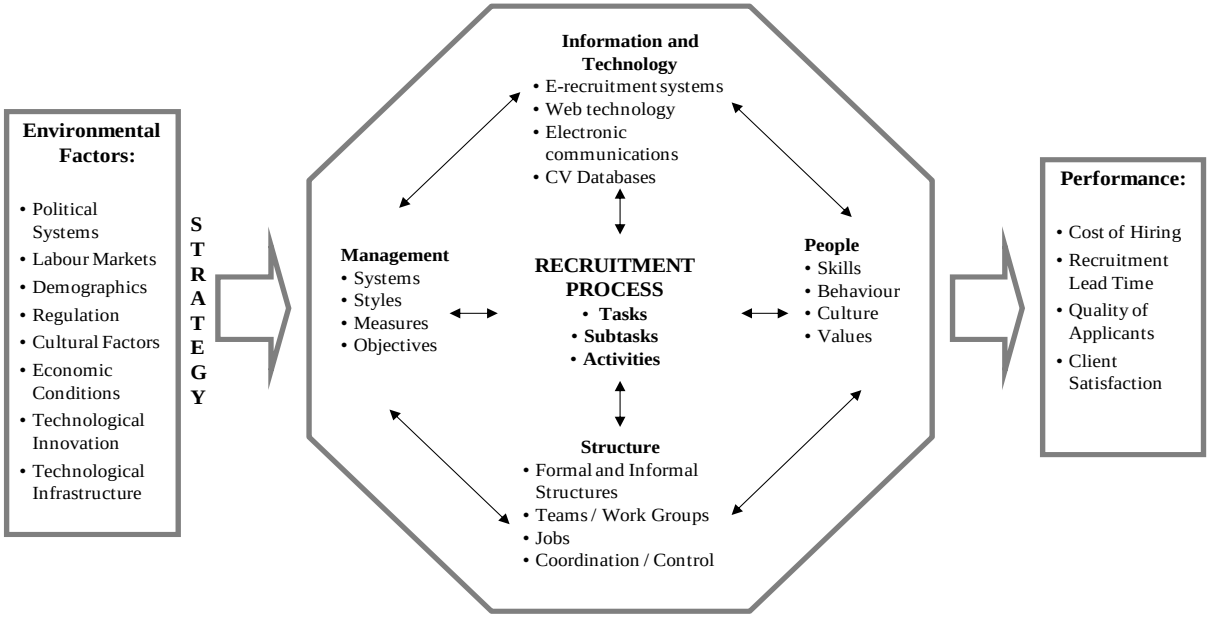

Figure 2. Recruitment process change model
Elaborated and adapted from Kettinger & Grover [21], and Kettinger, Teng & Guha [22]

Lee [25], who has studied the evolution of e-recruitment systems and analysed the corporate career websites of Fortune 100 companies, emphasises that e-recruiting has fundamentally changed the corporate recruiting process from batch mode to continuous mode, suggesting a major change in the business process. Unlike the traditional paper-based recruiting process, e-recruiting allows around-the-clock collection and processing of job applications. Thus, a modern e-recruiting process is a two-way communication process, web-enabled, time- and space-independent, and a ubiquitous system for both job seekers and recruiters (ibid.).

Based on a review of the literature, Singh and Finn [38] conclude that the increased use of ICTs in recruitment has had a fundamental impact on all aspects of an organization's recruitment function, including people, processes, organizational structures, and forms. They suggest that new processes are needed to lower costs, accelerate transactions, improve efficiency, and provide better service. One example of such processes is the automated, web-based, pre-screening of applicants.

Article	Changes in the recruitment process	Changes in the recruitment process performance
Cappelli [8]	The recruitment process turns into a marketing process of selling jobs, with more activities and resources dedicated to building company reputation, Internet communications, and relationship marketing. Automation of the entire recruitment process. Introduction of sophisticated on-line screening systems. Automated systems for contacting applicants.	Shorter recruitment cycles. Bigger pool of experienced candidates. Efficient selection of best candidates.
Lee [25]	Change from batch mode to continuous mode, with some activities being performed concurrently. Automated pre-screening. Long-term candidate relationship management.	Cost savings, better efficiency, increased convenience for recruiters and clients, and shift of focus on effectiveness.
Singh and Finn [38]	Introduction of new processes, e.g. web-based pre-screening. "Just-in-time" recruiting on demand.	Lower costs per hire. Shorter recruiting lead times. Improved quality of candidates.

Table 1. Summary of previous research into the main effects of e-recruitment on the recruitment process

3 Research design

For various reasons, it was decided to base this research on case studies [40], in particular because they allow the researcher to study processes in their social context [18: 323]. Prior to the study proper, I carried out an exploratory study on the organizing principles of e-recruitment, during which I selected three large organizations with well-established e-recruiting practices which could potentially allow a case-by-case comparison [12] and permit theoretical sampling.

I used the recruitment process as the unit of analysis and focused only on the business process. My interest was primarily in whether e-recruitment had an effect on the traditional recruitment process, its tasks, subtasks and activities. If the introduction of e-

recruitment had resulted in changes in process tasks and subtasks, then it would have meant dramatic or at least significant changes in the overall recruitment process. If the changes had occurred only at the level of activities, the changes would be considered incremental. I was thus looking for possible changes in the tasks, subtasks and activities of the business process of recruiting which could be attributed to the use of electronic recruitment.

The companies selected for the study are all multinational corporations (MNCs) originating from, and with headquarters in, Denmark. To ensure confidentiality of the collaborating organizations and their respondents, the companies in this paper have been given fictitious names - Scandifin, Danadrinco and Energowing. Some general information about the case companies is provided in Table 2. At the time of the study, the case companies had been using Internet recruitment and e-recruitment systems for over 5 years.

Fictitious name	Primary Industry	Ownership	Number of Employees
Scandifin	Banking and investment	Shareholding company	33,000+
Danadrinco	Alcoholic and non-alcoholic beverages	Shareholding company	45,000+
Energowing	Design, production, and installation of energy systems	Shareholding company	20,000+

Table 2. Case companies

Data were first collected at Scandifin, and later, following the replication logic [40: 47-48], at Danadrinco and Energowing . In all three case studies, the recruitment process was embedded in a specific unit: at Scandifin and Danadrinco it was in the HR departments responsible for recruiting in Denmark only, while at Energowing it was in the unit responsible for recruitment for a major division. All the data were collected in Denmark in the years 2009 and 2010. Following Yin [40: 39-53], this research design can be defined as a multiple embedded case study, and is regarded as being cross-sectional.

The data for each case were collected from multiple sources available to the researcher, and were predominantly qualitative [15: 465]. Qualitative data was considered to be more suitable, since it can provide insights into complex social processes [13], such as the recruitment process in this study.

I conducted face-to-face semi-structured interviews with a number of key informants, including HR partners and brand managers, recruitment partners, and others, who were involved in recruitment process tasks. All face-to-face interviews with key informants, normally 2-4 persons per case study, were conducted onsite, digitally recorded, and subsequently fully transcribed. The interviews lasted between 1 and 2 hours.

As the three case organizations used various technological solutions in the recruitment process, I reviewed the functional characteristics of their e-recruitment systems and interviewed representatives of the companies' technology providers. In addition, I made a number of observations at two job fairs and two HR fairs in Denmark, where I had the chance to meet and interview representatives of major job portals and job databases

used by the companies for online recruiting. Notes on observations and conversations were then recorded.

In order to get a more comprehensive idea of how online recruitment methods were used at the studied companies, I analysed the content of corporate recruitment web pages and the job ads that the case companies placed on their websites. Thus, a blend of qualitative methods, techniques, and data sources available at the time of the research were utilized during the study.

The overall data analysis was deductive. The fully transcribed interviews were exported to QSR nVivo - software for the analysis of qualitative data. Most of the brochures, texts, and other secondary text data were scanned and also exported to the nVivo project. The data were then sorted in sets for each case, coded, and triangulated. The coding started with provisional categories, referring to recruitment tasks and subtasks, and proceeded with more specific codes related to activities. The findings were then summarized and analysed using the method of case-to-case comparison.

4 Findings

4.1 Scandifin

Scandifin is a corporation consisting of Scandinavian banks, insurance companies and investment funds, merged and incorporated in 2000. Its main activities include personal and corporate banking, capital markets, savings and asset management, and running pension funds. With a customer base of around 10 million, Scandifin is one of the 15 largest private financial institutions in Europe. It runs 1400 bank branches in Scandinavia and Eastern Europe and has a total full-time staff of 33,000 employees.

The recruitment team in this study was based at Scandifin's headquarters, in the HR department under the supervision of the senior HR partner. The team handled all Scandifin's recruitment in Denmark, including temporary jobs and traineeships. Job ads, including online ones, were the main recruitment source for around 300 to 500 vacancies a year.

The Danish office started using corporate websites and Internet job advertising as a recruitment source in the late 1990s. In the early 2000s, Scandifin acquired an e-recruitment system from a Scandinavian application service provider (ASP), which also hosted and serviced the system. This meant that it could be quickly implemented, since it did not require any installation and maintenance onsite. Scandifin merely had to link its career website to the e-recruitment system when posting new job ads. The system was web-based, and, using a standard Internet browser and a login, it gave instant access to data from any location with a computer and Internet connection. From then on, Scandifin no longer accepted paper-based applications, and systematically directed prospective applicants to their career website for further information and submission of applications, whether unsolicited or for an advertised position.

According to the interviewed recruiters, Scandifin's career website became an efficient source of communication with candidates. One of the interviewees said: "... On our website one can log in and subscribe to [receive] job announcements. This is one of the first functionalities we implemented, and we have continued doing this for 10 years... At some point we reached 3000 subscribed users... It is a very effective place for hiring, say, students... Student jobs can be 100 different things, and once they find out which job they want, they can write an application explaining why they think they are the right ones for the jobs. For many years we have not processed unsolicited applications for

student jobs...instead we ask them [i.e. students] to keep an eye on our website where all jobs announcements get posted, and where it is easy to subscribe to email notifications...” (own translation).

Most of Scandifin’s job ads were placed on the corporate career website and a number of job portals. Sometimes, recruiters chose to use printed media for advertising jobs, although this was for other reasons than attracting applications from qualified candidates. Scandifin’s use of printed media was mainly for reasons of employer branding and maintenance of corporate reputation. One of the interviewed recruitment partners explained why Scandifin still used printed media: “... If there is a vacancy, e.g. in Aarhus or Skive, and there is a local free newspaper distributed weekly to all households, then sometimes our local branches place a job ad there. You could say that this is a bit of local marketing...There are also industry magazines... Most employees in Danish financial institutions receive NN (a financial magazine) 10 times a year, but placing a [job] ad there does not usually generate any applications …” (own translation).

Overall, Scandifin’s recruiters were satisfied using e-recruitment in the recruitment process. The main benefits mentioned were streamlined communication with applicants, less paper administration, ease of accessing applicant data, reduced labour intensity in processing résumés, and a shorter recruitment cycle.

4.2 Danadrinco

Danadrinco is part of an international group of companies, with more than 45,000 full-time employees in 25 countries. The company has 2,000 employees in Denmark, mainly in running corporate headquarters, production, and the distribution of alcoholic and non-alcoholic beverages.

In 1996, Danadrinco introduced an e-recruitment system supplied by a major international HR technology and Internet job portal provider. The system was used for all Danadrinco’s internal and external recruitment, including when handled by a third party, e.g. employment agencies and search bureaus. As explained by the company recruiters, the main reason was purely administrative - to keep track of all new employees and their flow and status.

The recruitment partners and their assistants worked out of the HR department, carrying out a number of HR-related tasks. Annually, they handled 130-150 recruitments, of which about 100 were sourced externally through job advertising. The majority of job ads were placed online on Danadrinco’s corporate recruitment webpage and external Internet job portals. One of Danadrinco’s recruitment partners described Danadrinco’s choice of sources in the following way: “... 80% of all vacancies are sourced through the Internet and the remaining 20 through head-hunters... Of the job ads which we place during a standard recruitment process, only 5% are placed in printed media. And this is a drastic change compared with just 5 years ago. Basically, either we do it on the Internet, or we go to a head-hunter...” (own translation).

All incoming applications to Danadrinco were sent electronically. The corporate career webpage could either be used to apply for a concrete vacancy or to send an unsolicited application. Each application submission was automatically confirmed by email. The e-recruitment system was web-based, and Danadrinco’s recruiters and line managers could access vacancy-related data and incoming applications from any geographical location through a web browser.

Danadrinco's recruiters were generally satisfied with the e-recruitment system. The benefits mentioned included a reduced administrative burden, shorter recruitment lead time, ease of follow-up on each case and individual applicant, and the benefits of outsourcing some applicant screening and communication tasks to line managers. One of Danadrinco's recruitment partners recalled his previous experience with another employer: "...What I like most [about the e-recruitment system] is that it saves you from the administrative part. I remember my time with company N, where we counted how many times we typed the names and addresses of job applicants, and we managed to use 7 different systems during the process, for letters of acknowledgement, thank you letters, etc. The new system saves you from all this..." (own translation).

The disadvantages of using e-recruitment mentioned included the increased number of unqualified applicants, limitations imposed by job portals on the size and design of the job ads, and the lack of personal contact with applicants.

4.3 Energowing

Energowing is a multidivisional MNC with headquarters in Denmark. Its core business comprises R&D, and the manufacture, sale and maintenance of energy systems.

The recruitment team in this study came from one of Energowing's divisions in its core business operations. Recruiters were placed in the divisional HR department and reported to the divisional HR Partner, and Energowing's corporate vice president and corporate employer brand manager.

Energowing's recruiters used a wide range of recruitment sources in their staffing activities. The corporate career website and a number of Internet-based job portals were the main recruiting sources for external candidates. The corporate career website received the special attention of the corporate employer brand manager, who was responsible for conceptual design, content and updating. Unlike the other two companies, Energowing used professional online communities like LinkedIn for its employer-branding activities and job advertising. At the same time, Energowing had a strict corporate policy, which prohibited using online social networks, e.g. Facebook and MySpace, for either branding or recruitment.

Energowing used an e-recruitment system which was a modular part of a wider enterprise resource planning (ERP) system implemented universally throughout the company in Denmark and abroad. The system was installed centrally onsite and maintained by highly qualified IT personnel, and none of the company's units were allowed to make adjustments or changes. The interviewed recruiters expressed general satisfaction with the possibilities and functioning of the e-recruitment system, but complained about the system's complexity and excessive functionality, which in their view had a negative effect on the application experience of prospective candidates.

Unlike Scandifin and Danadrinco, at the time of the study Energowing continued to receive paper-based applications, though recruiters had to register and file them in the e-recruitment system manually. One of the HR partners explained the reason for this :"...There are not a lot of them [i.e. paper-based applications], and we receive them primarily from factory workers... It is OK that they are on paper. So we type them in ourselves. We do not ask candidates to do this, because I think that it's just arrogant. We cannot tell them that we want their applications but they must go home and submit them through the website. You just can't do that ..." (own translation).

Another concern about the e-recruiting system was the apparent lack of a personalized response to rejected applicants. As one of the recruiters put it: "I think that candidates feel like that they are just a number in a row, especially if they are not selected for the first interview. We have actually considered conducting telephone interviews with all the qualified candidates just to be closer to them... Even if they are rejected, a telephone interview might give them a positive image of Energowing anyway... It is important to me that applicants receive an explanation for why they were not hired, instead of just being rejected through the e-recruitment system. So, I would say that the main weakness of such a system is that candidates may feel impersonalized" (own translation). However, the same recruitment partner admitted that, due to the growing number of applications submitted electronically, telephoning all applicants was not feasible.

4.4 Case-by-case comparison of the recruitment process

A case-by-case comparison of the three companies' recruitment process, involving similarities and differences in tasks, subtasks and activities, is summarised in Table 3.

As can be seen from the summary, in all three companies, there were no e-recruitment activities prior to the task of attracting applicants. E-recruitment systems were then used for the preparation and submission of job advertisements from the system interface, enabling previous texts and job descriptions to be easily reused and reformatted for new vacancies and potentially new e-recruitment sources.

Online or web-based recruiting was the main recruitment source for the studied recruitment processes. All three case companies were largely reliant on their corporate career websites, and used them for communicating with prospective applicants and as the entry point for the online submission of job applications. All three companies had a localised Danish career website with the possibility to submit applications for positions outside the country. At Scandifin and Danadrinco, the task of providing and updating the content was the responsibility of the HR departments at headquarters, while at Energowing the career website was updated and maintained under the supervision of the corporate employer brand manager. In all three companies, new job ads were posted directly by divisional recruitment teams using their e-recruitment systems. All three studied organizations also had long-term agreements with a number of major Danish Internet-based job boards, and occasionally added other online sources, e.g. in the case of Energowing, online professional communities and networks.

Unlike with traditional paper-based recruitment, the processing and pre-screening of incoming applications could start and run concurrently with the activities for attracting candidates. As confirmed by the informants from the case companies, the screening of résumés was often initiated by line managers even before the deadline for applications. The timing and sequence of this subtask was strongly dependent on the line managers themselves.

None of the recruitment teams used automated screening of incoming applications; in fact, all the recruiters in the study rejected this as an option. The rationale behind this was well put by one of the informants from Scandifin: ... "We have 300-500 different jobs with a job description. And in my opinion, if we are to think seriously about screening questions, we have to look at each job individually, and also at each job description. We then need to evaluate what is important for us to know [about the candidates]... and the [screening] questions should be very precise and correctly formulated so that we can get correct answers. And even then we may not get the answers we want, as people interpret questions differently, and therefore also answer

differently... Therefore I think that it would be extremely resource-intensive to have to formulate [screening] questions for each job" (own translation).

In all three companies, communication with prospective candidates and job applicants started with job advertisements being posted on the Internet. This was due to job-seekers subscribing to automatic alerts on new job vacancies, which they received by email and/or SMS. In addition, the companies' e-recruitment systems always sent an e-mail confirming that they had received a job application. By means of the automation features of the e-recruitment systems, rejected candidates were often notified immediately about the result of the pre-screening even before the vacancies were formally filled. All three companies considered this to be an advantage, since it meant that recruiters did not have to keep them waiting unnecessarily long just to hear that they had not been selected for further assessment. In the case of Energowing, the system allowed applicants to create individual web pages on the employer's server, where they could submit their files and monitor the progress of their application. Recruiters were uncertain how much this feature was used, however.

After the pre-screening was completed, a number of candidates were contacted to arrange further assessment and selection activities. E-recruitment systems were used for this as well, but all the studied recruitment teams and their clients, i.e. line managers, would normally do this by telephone, and would use the system only for scheduling and tracking purposes. This electronic tracking ended with the employment of a selected candidate.

The technological solutions used by all three companies in the recruitment process enabled individual recruitment data to be integrated with other HR information systems, such as Talent Management and Employee Development systems, as well as with wider ERP systems, but none of the companies made use of this . The reasons differed for each company, and varied from the apparent lack of coordination between functional units to differences in the employee data required by departments.

Table 3. The recruitment process at the case companies

Task	Subtasks	Similar Activities	Divergent Activities	Recruitment Process Change
Identify applicants	Prepare a job description and job specifications	Based on the request for hire from line managers and job analysis information, recruiters draw up a candidate profile and required qualifications and develop a job description and job specifications.		No change.
	Identify the appropriate pool of applicants	Recruiters determine where to look for qualified applicants geographically and in which segment of the labour market to generate a substantial inflow of applications.		No change.
Attract applicants	Select recruitment source(s)	Recruiters choose among a number of online sources, e.g. job databases and job portals, with which they have a long-term agreement.	Scandifin: Specialised websites, e.g. financial institutions and the state regulator are sometimes used as sources. Danadrinco: Job portals outside Denmark are sometimes used as sources. Energowing: Professional (though not social) networks like LinkedIn are frequently used as a source.	Changes in activities. No change in the nature of the task or the subtask.

Task	Subtasks	Similar Activities	Divergent Activities	Recruitment Process Change
	Prepare and place job announcement	Recruitment personnel prepare and place job ads in the selected sources, observing certain requirements, e.g. size restrictions, design guidelines, graphic elements, etc. Job ads are posted on corporate websites.	Scandifin: Job ads from the corporate website are posted by Internet job portals and database systems.	Changes in activities. No change in the nature of the task or the subtask.
			Danadrinco: Job ads are posted automatically, through the e-recruitment system, in Internet job portals and databases.	Changes in the sequence of tasks – the task of communicating with applicants starts here.
			Energowing: Job ads are forwarded by email to the selected Internet job portals and databases and posted by them.	
Process incoming applications	Receive, register, and sort incoming applications	All incoming applications are received and sorted automatically through an e-recruitment system. The subtask is fully or almost fully automated.	Scandifin and Danadrinco: No paper-based applications accepted.	Changes in the sequence of subtasks, i.e. pre-screening may commence simultaneously, as well as continuation of the task of communicating with applicants.
			Energowing: Paper-based applications are registered and transferred into the e-recruitment system by an Energowing employee.	

Task	Subtasks	Similar Activities	Divergent Activities	Recruitment Process Change
	Pre-screen and evaluate applicants	Line managers and recruiters pre-screen and review applications using the data stored in e-recruitment system. They identify and rank a number of applicants to continue through assessment and selection. The rankings and eventual comments are stored in the e-recruitment system.		Changes in activities. No change in the nature of the task or the subtask.
Communicate with applicants	Inform applicants about pre-screening results	Rejected applicants receive an email sent through the e-recruitment system. Sometimes, they are contacted by telephone.	Scandifin and Danadrinco: Line managers are responsible. Energowing: Recruitment partners are responsible.	Changes in activities. No change in the nature of the task or the subtask.
	Arrange interviews with shortlisted candidates	Arrange further interviews, site visits, and test with them.	Scandifin: Line managers arrange interviews by telephone. Danadrinco: Further interviews are planned and arranged through electronic scheduling and e-calendar. Energowing: Recruitment partner arranges interviews by telephone.	Changes in activities. No change in the nature of the task or the subtask.

5 Discussion and conclusions

In the three studied organizations, the traditional recruitment process was completely replaced by e-recruiting. The investigation confirmed that the recruitment process as described in Figure 1 no longer existed in the studied organizations in its original form and design. The most significant differences identified were attributed to changes in the sequence of tasks and subtasks, and their increased divisibility, as well as in the nature of the related activities.

The detailed analysis of the recruitment process in the three case companies has shown that the introduction of e-recruitment affected process tasks and subtasks to a varying extent. For example, the subtask of receiving, sorting and registering incoming applications was significantly affected, since the e-recruitment systems did this automatically, apart from the one case when recruiters had to register and type in paper-based applications manually. Therefore, it can be concluded that this subtask is irrelevant where an e-recruitment system has been introduced and applications are accepted solely through the system's submission facility.

Due to the affordances (don't quite know what you mean by 'affordances' – do you mean 'cost' or 'functionality' or 'ease of use' or something completely different?) of the technology, communication with current applicants started simultaneously with the posting of job ads, and continued through the entire recruitment process. Apart from the apparent change in timing, the subtask of informing applicants about the pre-screening results was transformed into the subtask of informing them about the progress of their applications. Furthermore, in all case companies, the subtask of pre-screening incoming applications was often initiated shortly after job advertisements were posted online.

This meant that the tasks of attracting applicants, processing applications and communicating with candidates were often performed concurrently, supporting the findings of Lee [25]. However, this study found no evidence to support Cappelli's [8], Singh and Finn's [38] and Lee's [25] assumption that the pre-screening of candidates can be handled by sophisticated online systems, and none of the recruiters in the study regarded this option as being feasible.

According to the informants in the study, the introduction of e-recruitment has led to a number of performance outcomes, most of which were considered positive. Many informants mentioned the reduced costs of job advertising, improved recruitment lead times, ease of communication with candidates, and exposure to a wider candidate pool. The corporate websites were also very much appreciated as an effective way of branding the companies as an attractive place to work. These findings correspond with the results of Parry and Tyson [33] and a number of other research contributions.

Traditional paper-based recruitment by means of job advertising, as shown in Figure 1, is often viewed as a discrete, fixed process [17], initialized by an apparent need and request for new employees. It consists of tasks and subtasks which are fairly well-defined and repeated for each new vacancy, but which are sequential and not easily divisible. Such process design is viewed by organizational design researchers as being *complicated,* since it requires the coordination of connected processes and continuous attention [7: 111-114]. The recruitment process investigated in the study rests on the process design, which is characterised by a high level of repetitiveness and a medium to high level of divisibility, as a number of tasks and subtasks can run con-currently, or even be performed independently. Such task design can be defined as *orderly* [7: 112-

113]. The orderly design has a major advantage over the complicated design in its task divisibility, inasmuch as problems encountered in performing one task do not necessarily prevent progress in other tasks. This therefore requires less coordination and is more efficient (ibid.).

One of the highly divisible tasks, which emerged together with the spread of the Internet and the use of e-recruiting, is that of maintaining career websites. This is an ongoing task and is independent of individual hiring cycles, yet it is interrelated with the objectives and outcomes of each individual recruitment cycle. Therefore, the task of maintaining corporate career websites is added to the new recruitment process, as shown in Figure 3. The move from complicated to more orderly task design might explain why recruiters in all three companies reported a reduced administrative burden and less coordination of the recruitment process.

As can be seen in Figure 3, with the new process, the task of communicating with candidates becomes one of the focal tasks, because it "binds" several tasks and subtasks in the process and is performed practically throughout the entire recruitment process. This may explain why, in two cases companies, HR departments were hiring communication experts, e.g. an Employer Brand manager at Energowing and a new graduate in corporate communications at Scandifin, suggesting changes in required skills and personnel competencies.

6 Limitations and implications

The above research has some limitations. The main purpose of the study was to determine whether the introduction of e-recruitment had affected the overall recruitment process. Therefore it did not address in depth any changes related to management, formal and informal structures of the recruiting teams, etc. Although applicants are the other major player in the recruiting process [2:7], they were not included in this study either. Furthermore, the reasons for adopting e-recruitment were not investigated.

Practitioners considering introducing online recruiting and e-recruitment systems might feel apprehensive about the less consecutive nature of the recruitment tasks in the new process and the need to learn a new technology. However, this study does not reveal any specific problems for HR professionals using various e-recruitment technologies, and none of my respondents reported or complained about being forced to learn a lot of new technology. On the contrary, the e-recruitment systems were very easy to use, and when hosted by an external ASP, were up and running in literally no time. However, as communication with applicants plays a more significant role in the new process, recruiters should be aware of the increased demands associated with this task. In particular, special attention should be given to activities related to Internet communications and automated mailing. This was a concern expressed by many recruiters, and two of the case organizations made extra resources and specially educated staff available to deal with the issues of online communications.

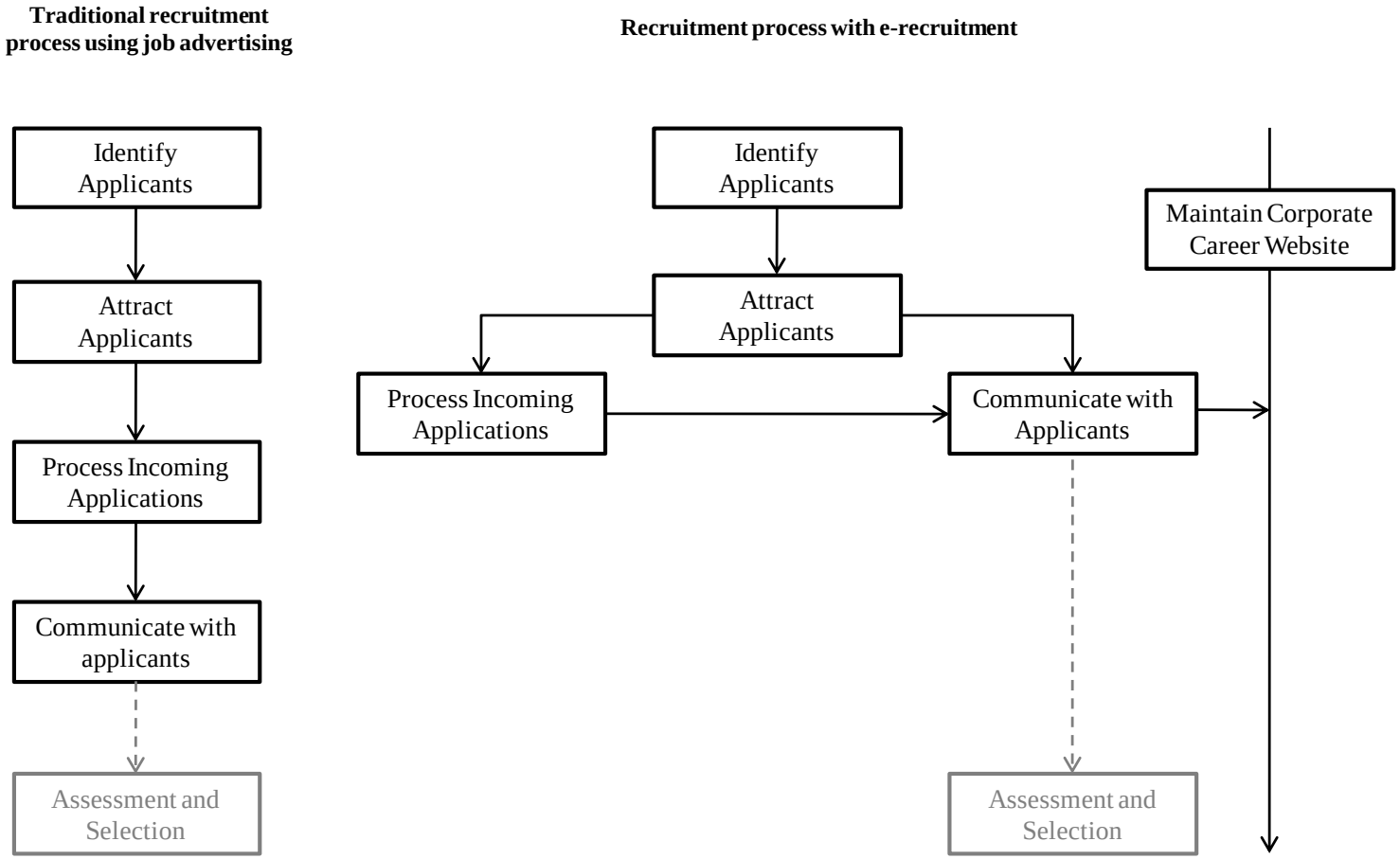

Figure 4. Traditional paper-based recruitment process vs. the (new) recruitment process with e-recruitment

The Business Process Change (BPC) model presented in Figure 2 suggests that, if there are changes in one of the subsystems, i.e. technology, personnel, management and structures, then the other subsystems will be also affected. This is a potential starting point for research into organizational design and management of HR departments and recruitment teams, and would address the question of how e-recruitment affects these subsystems. Lee [25], for instance, argues that management practices evolve together with e-recruitment systems. And Cappelli [8] suggests that changes related to the introduction of e-recruitment may be manifested in a decentralization of the hiring function, where line managers can find their candidates on job boards and other vendors. These propositions may constitute some relevant avenues for future research. This study finds that, although line managers began playing a bigger role in the tasks of pre-screening and communicating with candidates, there was no evidence to suggest that they were performing recruitment activities without the involvement of their recruitment partners.

Research at the macro-level can contribute to the field by determining how environmental factors attributed to society in general, e.g. culture, regulations, etc., affect organizations' recruitment strategies and practices. For example, Cappelli [8] argues that on-line recruiting is more than just an HR tool, but represents a change in the culture of how to get hired. If this is true, then companies without an e-recruitment-enabled process of hiring will have to review their strategies and practices to conform to the norms of the society in which they operate.

References

[1] Anderson, N. (2003). Applicant and Recruiter Reactions to New Technology in Selection: A Critical Review and Agenda for Future Research International Journal of Selection and Assessment, 11 (2/3), 15

[2] Barber, A. E. (1998): Recruiting Employees. Sage Publications.

[3] Bartram, D. (2000). Internet Recruitment and Selection: Kissing Frogs to Find Princes, International Journal of Selection and Assessment, 8 (4), 261-274

[4] Borstorff, P. C., Marker, M. B., & Bennett, D. S. (2007). Online Recruitment: Attitudes and Behaviours of Job Seekers, Journal of Strategic E-commerce, 5 (1&2), 1-23

[5] Braddy, P. W., Meade, A. W., Michael, J. J., & Fleenor, J. W. (2009). Internet Recruiting: Effects of Website Content Features on Viewers' Perceptions of Organizational Culture, International Journal of Selection and Assessment, 17 (1), 19-34

[6] Breaugh, J. A., & Starke, M. (2000). Research on Employee Recruitment: So Many Studies, So Many Remaining Questions, Journal of Management, 26 (3), 405-434

[7] Burton, R., DeSanctis, G., & Obel, B. (2006): Organizational Design: A Step-by-Step Approach. Cambridge University Press.

[8] Cappelli, P. (2001). Making the Most of on-Line Recruiting, Harvard Business Review, 79 (3), 139-146

[9] Cober, R. T., Brown, D. J., Keeping, L. M., & Levy, P. E. (2004). Recrutiment on the Net: How Do Organizational Web Sites Characteristics Influence Applicant Attraction? , Journal of Management, 30 (5), 23

[10] Davenport, T. H., & Short, J. E. (1990). The New Industrial Engineering: Information Technology and Business Process Redesign, Sloan Management Review, 31 (4), 11

[11] Dessler, G. (2006): A Framework for Human Resource Management. Pearson Education Inc.

[12] Eisenhardt, K. M. (1989). Building Theories from Case Study Research, Academy of Management Review, 14 (4), 532-550

[13] Eisenhardt, K. M., & Graebner, M. E. (2007). Theory Building from Cases: Opportunities and Challenges, Academy of Management Journal, 50 (1), 25-32

[14] Ettinger, E., Wilderom, C., & van Dick, R., (2009). Utilizing the Lead User Method for Promoting Innovation in E-Recruiting. in "Handbook of Research on E-Transformation and Human Resources Management Technologies: Organizational Outcomes and Challenges" (Bondarouk, T., Oiry, E., Guiderdoni-Jourdain, K., and Ruel, H., Eds.), IGI Global, Hershey, PA.

[15] Fitzgerald, L., & Dopson, S., (2009). Comparative Case Study Designs: Their Utility and Development in Organizational Research. in "The Sage Handbook of Organizational Research Methods" (Buchanan, D., and Bryman, A., Eds.), SAGE, London, UK.

[16] Goldberg, C. B., & Allen, D. G. (2008). Black and White and Read All Over: Race Differences in Reactions to Recruitment Web Sites, Human Resource Management, 47 (2), 217-236

[17] Halperin, K. (2009). The Fall and Rise of Recruiting, Journal of Corporate Recruiting Leadership, 4 (8), 16-19

[18] Hartley, J., (2004). Case Study Research. in "Essential Guide to Qualitative Methods in Organizational Research" (Cassell, C., and Birkbeck, G.S., Eds.), SAGE, London.

[19] Kay, A. S. (2000). Recruiters Embrace the Internet, InformationWeek, (778), 72-76

[20] Keen, P. G. W. (1981). Information Systems and Organizational Change, Communications of the ACM, 24 (1), 9

[21] Kettinger, W. J., & Grover, V. (1995). Toward a Theory of Business Process Change Management, Journal of Management Information Systems, 12 (1), 9-31

[22] Kettinger, W. J., Teng, J. T. C., & Guha, S. (1997). Business Process Change: A Study of Methodologies, Techniques, and Tools, MIS Quarterly, 21 (1), 55-98

[23] Lawrence, J. D., Sauser, L. D., & Sauser, W. I. J., (2007). Recruiting Strong Applicants: Process, Prospects, Challenges in "Human Resource Management: Contemporary Issues, Challenges, and Opportunities" (Sims, R.R., Ed., Information Age Publishing.

[24] Leavitt, H. J., (1965). Applying Organizational Change in Industry: Structural, Technological and Humanistic Approaches. in "Handbook of Organizations" (March, J.G., Ed., Rand McNally, Chicago, Ill.

[25] Lee, I. (2005). The Evolution of E-Recruiting: A Content Analysis of Fortune 100 Career Web Sites, Journal of Electronic Commerce in Organizations, 3 (3), 57-68

[26] Lee, I. (2007). An Architecture for a Next-Generation Holistic E-Recruiting System, Communications of the ACM, 50 (7), 81-85

[27] Lin, B., & Stasinskaya, V. S. (2002). Data Warehousing Management Issues in Online Recruiting, Human Systems Management, 21 (1), 1

[28] Liviens, F., & Chapman, D., (2009). Recruitment and Selection. in "The Sage Handbook of Human Resource Management " (Bacon, N.A., Wilkinson, A., Redman, T., and Snell, S., Eds.), SAGE, London, UK.

[29] Maurer Steven, D., & Liu, Y. (2007). Developing Effective E-Recruiting Websites: Insights for Managers from Marketers, Business Horizons, 50 (4), 305-305

[30] McKenna, M. J., & Beech, N. (2008): Human Resource Management Pearson Education Limited.

[31] Millmore, M., Lewis, P., Saunders, M., Thornhill, A., & Morrow, T. (2007): Strategic Human Resource Management: Contemporary Issues. . Pearson Education Ltd. .

[32] Newell, S., (2009). Assessment, Selection and Evaluation. in "The Strategic Managing of Human Resources" (Leopold, J., and Harris, L., Eds.), Pearson Education, Harlow, UK.

[33] Parry, E., & Tyson, S. (2008). An Analysis of the Use and Success of Online Recruitment Methods in the Uk, Human Resource Management Journal, 18 (3), 257-257

[34] Parry, E., & Wilson, H. (2009). Factors Influencing the Adoption of Online Recruitment, Personnel Review, 38 (6), 655-673

[35] Ployhart, R. E. (2006). Staffing in the 21st Century: New Challenges and Strategic Opportunities, Journal of Management, 32, 868-897

[36] Ployhart, R. E., Schneider, B., & Schmitt, N. (2006): Staffing Organizations: Contemporary Practice and Theory Lawrence Erlbaum Associates, Publishers.

[37] Reynolds, G. W. (1995): Information Systems for Managers. West Publishing Company.

[38] Singh, P., & Finn, D. (2003). The Effects of Information Technology on Recruitment, Journal of Labor Research, 24 (3), 395-408

[39] Sylva, H., & Mol, S. T. (2009), E-Recruitment: A Study into Applicant Perceptions of an Online Application System.

[40] Yin, R. K. (2003): Case Study Research: Design and Mehtods. Sage Publications.

[41] Zall, M. (2000). Recruiting and the Internet, Fleet Equipment, 26 (10), 39-43

Online Gaming Platforms to Apply for Jobs – Proposing a Research Model to Investigate Job Seekers' Behaviour

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Abstract. *Virtual worlds and serious online gaming simulations are expected to become more and more important in business contexts [27]. Our research evaluates the possible use of online games in the recruitment process by presenting two case studies of companies who implemented an online game to provide realistic job previews for potential applicants going with the opportunity to test and match their individual skill-set with a specific job profile they're interested in. Based on these results and the expectation by companies how job seekers might react when confronted with online games in a business environment we developed a research model for empirical evaluation hypothesising that the intention to use these online games are mainly driven by perceived usefulness, perceived ease of use, perceived selection fairness, perceived data security and perceived enjoyment.*

Keywords: E-Recruiting, Serious Gaming, E-Assessment, Self-Assessment, TAM

1 Introduction

Since the beginning of the digital age computer games are a popular application for users of information technology. In June 2009 one of the most popular games – Tetris – celebrated its 25th birthday. While the technical quality of information technology has significantly improved for leisure games since 1984 education and economy still struggle to transfer this quality to the development of serious games [30]. For the last two decades computer games were beside business applications another important part of the IT industry. However, gaming and serious applications were two distinguished parts. Nevertheless in the last years these two streams started to merge. In 2006 the SIM[3] Advanced Practice Council (APC) discussed the possibilities of "*serious gaming, which applies 3-D computer-simulated environments in business environments*" [27]. Being initial scepticism the 25 participating CIOs brainstormed a range of potential

[3] Society for Information Management

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business applications. Those identified included "*conferencing, collaboration, new employee orientation, training, facilities management, safety, brand development, customer feedback, product trials, and recruitment*" [27].

With the increasing diffusion of the internet and its related internet-based services the way corporations design and conduct their business processes has fundamentally changed especially driven by the increasing number of internet users. Especially as noted above virtual worlds, social network platforms (such as facebook.com) and serious gaming are expected as particular drivers for this development in corporations. For example e-commerce platforms (as magentocommerce.com) support the sales/marketing function in advertising and selling companies products on the Internet [21], trading platforms (as tradestation.com) help the finance department to deal in shares and even an IT averse department as HR gets increasingly supported by the use of such platforms especially for functions as staff recruitment [22]. Virtual worlds (as secondlife.com) or social network platforms (as linkedin.com) offer new options to get in touch and to attract potential candidates [32] or online game simulation help to efficiently select adequate candidates. In general IT has been identified as an important driver for cost and time reductions in the recruiting process [23, 33, 44].

The particular reason for this development lies in the increasing number of internet users over the past years as the internet becomes part of everyday life [38]. In 2008 more than 1.23 billion people worldwide used the internet [8]. In particular people do not solely use the internet for leisure and information seeking but also for other important aspects of their life [4] such as applying for jobs [28]. In the last ten years the way people apply for jobs changed from simply looking at job ads in printed media, sending an paper-based application, being interviewed and finally hopefully employed by the company to looking for job ads in the internet (on job boards such as monster.com or platforms such as linkedin.com) and sending an IT based application (e-mail or online application form [10]. In the course of this progress companies started to test candidates' suitability for specific job profiles using IT based methods over the last years [12, 35].

These basic ideas of e-assessment use online simulated business environments to test for the appropriateness of candidates within a serious game. Caligiuri especially discusses the possibility of realistic job previews using the concept of self-assessment in terms of question-answer procedures, where candidates can test themselves if they are appropriate for a job or not [12]. As first approaches have successfully shown adoption and usage on corporate side hardly anything is known about jobseeker's use and usage behaviour regarding online gaming simulations [31]. So we address the following research question:

What influences jobseekers' use of serious online games in the recruiting context?

We will answer this question by providing a two-step approach. First, we will discuss the possibilities of online games for realistic job previews by presenting the results of two case studies conducted with two companies who implemented already an online game for a realistic job preview (section 3). Based on these results and the general research background (section 2) we develop (section 4) a research model. A description of the research design for the empirical validation of the proposed model (section 5) and a general discussion (section 6) will conclude our paper.

2 Research Background

As the objective of our research is to discuss the applicant`s perspective of online games in recruitment we establish our research in the general research of serious online gaming and e-recruiting which are explained in the following sub-sections.

2.1 Serious Gaming

Serious games are those which are built on the one side to entertain users and on the other side to educate them in a particular topic [43, 46]. They especially "*adapt computer-gaming technology for business use*" [27]. However, those games are not easy to develop and building them is a challenge for game designers, researchers and practitioners [30]: "*Managing the development of a serious game requires the skills of many disciplines and sometimes painful processes that force team members to learn from their specialized colleagues*". People play not because they are personally interested in solving an instance of a particular problem but because they wish to be entertained [1]. For example, Chatham discusses the possibility to use online games for training [16] or Mayo for science and engineering education [39]. These early experiments of serious games (i.e. built in virtual worlds) can be categorized in three dimensions:

- using social presence capabilities,
- using visualization capabilities,
- using simulation capabilities [27].

The combination of an individual's social presence in a visualized simulated environment together with other models of categorization, selection and classification will provide rich insights for both researches on performance diagnostics and assessment. Although the current degree of serious gaming use in large scale corporations is still capable of development [18] and potential regarding recruiting performance determinants as time-to-hire and costs-per-hire is largely in the future, the technologies' development is fast and their maturing process rapidly. But as the potential of these serious online game simulations for corporations is very high corporations cannot ignore it. Within the next decade virtual worlds and serious online gaming environments are expected to be major platforms for business applications and opportunities especially for secondary business processes as HR Financial service institutions as ABN Amro or temporary employment agencies as Manpower, and Kelly Services, as well as the country of Luxembourg, have already used these platforms as successful recruiting channels [27].

As the objective of this paper is to discover online games in the domain of recruiting the next sub-section presents research related to e-recruiting.

2.2 E-Recruiting

2.2.1 Recruiting and applicant selection

During the last decades there has been a lot of research dealing with the recruitment process and the applicant selection procedure of companies [2, 33, 42]. Especially the greater competition for employees has led executives to think about how various components of the recruitment process might influence the attractiveness of the organization [45] and with the diffusion of the Internet the process of recruitment

changed dramatically [2, 13, 29]. Therefore the interest of researchers and practitioners in recruitment related topics increased. For example an analysis of the employer and job-seeker behaviour on the IT labour market showed that job ads are mainly posted on the internet, job-seekers apply for jobs predominately using online application forms or e-mail and job seekers more and more introduce themselves to companies by storing their resumes in databases of both social networking platforms (as linkedin.com) and online job boards (as monster.com) where employers can search in [28, 53].

Lee (2007) suggest a holistic e-recruiting system architecture to visualize companies the potential information systems and especially the internet offers to perform the recruitment tasks both more effectively and efficiently [36]. A first step towards an e-recruiting success model was proposed by [23] who showed that companies using IT in recruitment improved their recruitment process in terms of cost, time and applicant's data and overall quality. In general, research of e-recruitment shows that the way staff recruitment is conducted changed from a paper-based world to a mainly IT supported one. Especially the recruiting process step of candidate attraction and workflow management information systems are an important supporting function [33].

According to [34-35] the next step of IT support in recruitment is the selection sub-process. These "internet-supported processes for the evaluation and prediction of relevant biographical and psychological variables in order to assess the suitability of a candidate for a particular job" (p. 263) are defined as e-assessment [35].

The basic goal of e-assessment is to generate a limited shortlist of suitable candidates by means of the skills and abilities of the applicants with the requirements of the job profile [11]. The instruments used to diagnose suitability can be classified in terms of their methodology: attribute approach, simulation and biographical approach. The attribute approach can be used to assess personal characteristics regarded as relatively stable. The simulation approach is intended to capture the behaviour of an individual in situations of a kind that might be expected in the work environment and the individual's biographical approach is simply collecting data using for example an online application form [35]. E-Assessment can furthermore distinguish on the one side offering recruiters the possibility to select candidates and on the other side offering a self-selection to candidates (self-assessment [34].

Self-Assessment is based on the idea that a question and answer procedure can be devised that will help a person appraise and develop his/her knowledge about a particular topic" [52] (p.110). The primary motivation of self-assessment is not for an individual to satisfy his joy; rather, it is for the participant to appraise and develop him/herself. Caliguri and Phillips (2003) discussed the possibility of self-assessment procedures as method to provide a realistic job preview to applicants [12].

A realistic job preview is the provision of both favourable and unfavourable job-related information to job candidates [40]. Communicating a complete picture of the requirements of the jobs better allows a candidate to self-assess their likely fit with the position enabling candidates to make a better informed decision about applying for the position or not. The way in which these aspects are communicated can vary greatly. For instance, realistic job previews consist of verbal (e.g. discussions with current employees or recruiters), audiovisual (e.g. video clips of what the job will entail) and written materials (e.g. pamphlets, orientation books) [12]. Another possibility is the usage of online games to enable candidates in a playful environment to discover the

attitudes of a job they are interested in [34]. Therefore the next subsection describes the concept of online games in recruitment.

2.2.2 Online Gaming and Recruiting

Computer games offer many options for communicating complex concepts. Already in 1988 Webster discussed how computer tasks can be made more playful [51]. As discussed in the sub-sections before in case of recruitment practitioner see the possibility for serious online games [27] and some pioneers already implement them [34]. Online games are used especially in the simulation approach to capture the behaviour of an individual in situations of a kind that might be expected in the work environment. The simulations of the work environment can be used on the one side to provide a realistic job preview to job seekers and on the other side as a tool to diagnose the suitability of applicants and to select the most appropriate ones [11, 35]. Our research presented in this paper will focus on the job preview part of online games in recruitment.

3 Case Studies of Self-Assessment

We use a case study approach with two companies to introduce the concept of self-assessment within the recruitment context. We designed the case study following the guidelines by Yin [56] and Eisenhardt [24]. We conducted a two-stage interview with process-owners in each company to discover the context variables using a semi-structured interview and a fully structured one after one month. Context variables were based on general information systems acceptance literature [48-50] as well as recruiting selection acceptance literature [2, 5-6]. We considered these variables as the basis for our research model. We conducted the interviews to validate with the experience of HR managers which variables influences an individual's decision to use self-assessment systems. To support our results we have added further documents provided by the companies as meeting records and project descriptions. The resulting case study report was released by the companies. Based on these results we developed our research model discussing the results with the relevant literature in section 4.

3.1 Companies Background

The first company chosen for the case study is one of the largest global publishing houses with more than 14.000 employees in 24 countries. Despite the size of the enterprise difficulties concerning its employer brand were identified. The main reason for this situation is the weak awareness of the company's name compared with a wide range of very well-known products. Furthermore the observed company searches for new employees in the commercial area, but people do not expect a publishing house being an employer for commercial occupation. Addressing these challenges the company decided to implement a system for self-selection by candidates within its recruitment process.

The second company is one of the largest chemistry distributers in Europe. The main focus of the company is international trading with synthetics, specialty chemicals and chemical agents. In 2008 the company employed 650 people and had a turnover of 1 billion euro. The main focus in recruiting is on candidates for the apprenticeship programs due to the shortage of candidates available on the job market for professionals in the fields of chemical distribution and engineering. The apprenticeship program is designed for a combined business and chemical engineering education and is conducted

together with a university of applied science. Due to the specific job profile the company is challenged to find suitable candidates which do fit with the requirements of the apprenticeship program in the background of an unrenownedness of the company in general. Therefore the company decided to implement a system on the corporate career website to improve on the one side its attractiveness and on the other side to enable candidates to decide themselves if they will fit with the requirements of the apprenticeship program.

The next section discusses the expectation of the both companies how they suppose that candidates will accept the system, how candidates reacts after using the system and which challenges are important while considering to implement a self-assessment system for candidates.

3.2 Self-Assessment systems

Both companies implemented a self-assessment platform to address the described challenges which are designed in an online gaming environment in a virtual world. The platforms are built as online games where candidates can act as avatars in a simulated business environment and are confronted with typical tasks of the job they are interested in. The virtual environment is built similar to the real world of the company headquarters and real employees are included as simulated avatars. The systems are part of the websites of the companies and therefore accessible to everyone on the internet. Having performed a task, the participant gets a feedback about her/his abilities and fit with the requirements tested. Furthermore the candidate gets an idea of how the job and job environment looks like and therefore he/she is provided with a realistic job preview. Playing these online games the candidates assess their appropriateness and propensity to start a career or apprenticeship at the companies and decide after completing the tasks whether to apply for the job or not. The results of these self-assessments can only be seen by the candidates and are not stored for further use for the companies. As an ideal result of the self-assessment appropriate candidates who did not consider the companies as an employer before would now apply for a job realizing the interesting challenges the companies offer. On the other side candidates who intended to apply for a job in the past would now forbear from doing so, if they expected a different kind of work. Both scenarios would lead to better appropriateness of applicants as well as to a better personnel selection.

3.3 Candidates' reaction

Both projects were implemented in 2007 and designed to achieve a high user satisfaction. For the project managers it was important that the system offers candidates both a fun driven and enjoyable atmosphere while using the system. Therefore the system was implemented as an online game because the managers expected that the system will be easy to use for candidates if it is implemented as an online game.

Furthermore it is important that the candidates perceive that the selection process is fair and transparent as well as that the data collected is secure and not used otherwise as provided the HR managers of both companies explained their objectives for the platform design. For example as the HR manager of company 2 explained "*one candidate reported in the job interview that he applied for the job due to the self-assessment system because he enjoyed it and he got a good impression of the job and his appropriateness for it. Most of the candidates reported that they perceived the online game really innovative and cool.*"

The HR manager of company 1 pointed out that "*in job interviews the candidates reported that they enjoyed playing the game and they felt well during the job interview because they know me and the environment by playing the game. Most candidates where surprised that I had no idea of their game results as they expected that we would use the data in the job interview. Some candidates explicitly stated that the only concern they perceived while playing the game was what happens with the data the game is collecting.*"

Furthermore the manager of company 1 continued that "*the received applications are now more focused and most of the applicants have a clear expectation of us as an employer. The candidates who were employed reported after a while that they were surprised how good the feedback and job preview of the system is as they can realize now how the jobs really are and that they are not very different from the expectation they perceived after playing the self-assessment game*".

4 Research Model

Based on these case study results and the theoretical background of our research we will develop a research model explaining online gaming usage behaviour of self-assessments in a more general way. In the case study interviews we identified five reasons why a candidate might use a self-assessment system. First of all, the TAM constructs Perceived Ease of Use and Perceived Usefulness were identified to influence the Intention to Use a self-assessment system. Therefore the basic underlying model for our research model is Davis's TAM. Furthermore we identified Perceived Enjoyment, Perceived Selection Fairness and Perceived Data Security to have an influence on the intention to use a self-assessment system. In the following subsection we will discuss the hypotheses of our research model as we have identified them in the case study interviews and which are summarized in Figure 1.

4.1 Technology Acceptance Model

Technology acceptance research is one of the most important research streams in the information system discipline. The research stream has its root in Davis's technology acceptance model (TAM) [18-19], which hypothesize that user acceptance can be explained by two beliefs: perceived ease of use ("*the degree to which a person believes that using a system would enhance his/her job performance*", [18], p. 320) and perceived usefulness ("*the degree to which a person believes that using a system would be free of effort*", [18], p. 320). Based on TAM Davis et al. (1992) [20] discussed the extrinsic and intrinsic motivation to use computers in the workplace and added "*an important addendum to the model [TAM]*" ([47], p. 695) called Perceived Enjoyment ("*the extend to which the activity of using the computer is perceived to be enjoyable in its own right, apart from any performance consequences*", [20], p. 1113). Since 1989 technology acceptance research has lead to various extensions, refinements, replication and unification of technology acceptance models [55]. We will use the technology acceptance model to explain the usage behaviour of applicants regarded to self-assessment applications

As we identified perceived usefulness and perceived ease of use as important antecedents for the intention to use self-assessment systems we hypothesis following the proposition of Davis (1989) [18-19] that

H1: The Intention to Use (INT) a system has a direct, positive effect on the actual system usage (BEV).

H2: Perceived Ease of Use (PEOU) has a direct, positive effect on the intention to use.

H3: Perceived Ease of Use (PEOU) has a direct, positive effect on Perceived Usefulness.

H4: Perceives Usefulness (PU) has a direct, positive effect on the intention to use.

4.2 Perceived Enjoyment

Beside the two extrinsic variables PEOU and PU technology acceptance especially in the case of hedonic information systems [47] is driven by intrinsic motivational factors [20]. An intrinsically motivated user is driven by benefits derived from the interaction with the system per se [9]. According to our case study results users of self-assessment system are driven by the perceived enjoyment of the system as well. Therefore following the propositions by van der Heijden [47] we hypothesize that:

H5: Perceived Enjoyment (PE) has a direct, positive effect on the Intention to Use (INT).

H6: Perceived Ease of Use (PEOU) has a direct, positive effect in Perceived Enjoyment (PE).

4.3 Perceived Selection Fairness

Ryan and Ployhart (2000) summarized the research of perceived fairness of selection procedures of applicants [42] and Bauer [5] developed an selection procedural justice scale to evaluated the perceived selection fairness of instruments used by companies during the recruitment process.

Furthermore other research discussed in detail different aspects of applicants' views on the fairness of selection procedures. For example [40] evaluated rule violations and time of measurement as effects on applicants' reaction. Elkins and Phillips [25] discussed the perceived selection fairness of applicants in term of job context, selection decision and the expected decision outcome. In addition [26] discussed the perceived selection fairness form an organizational perspective.

First approaches of perceived selection fairness of applications related to IT based selection instrument can be found by [54]. They argue that applicants are more indented to use IT based measures if the offering company can ensure the selection fairness of the systems.

Therefore, according to Gilliland (1993) [26], we hypothesize for the perceived selection fairness of applicants while using a self-assessment system that it will affect on the one side the self perceptions such as perceived usefulness and on the other side the direct reaction of the application during the recruitment process. Hence our hypothesise are:

H7: Perceived Selection Fairness (PSF) has a direct, positive effect on Perceived Usefulness (PU).

H8: Perceived Selection Fairness (PSF) has a direct, positive effect on the Intention to Use (INT).

4.4 Perceived Security Risk

Known from research on e-commerce another important antecedent of intention to enter data on websites is the perceived risk that the entered data might be misused by companies or others [37]. While conducting self-assessments companies are technically able to collect data although most time they do not so applicants are concerned that their data is spread inside the company across different departments [34]. Therefore we assume that the perceived data security while using a self-assessment application has a direct effect on the intention to use it. Hence, our final hypothesis according to [37] is:

> *H9: Perceived Data Security (PSR) has a direct, positive effect on the Intention to Use (INT).*

Our research model to explain the usage behaviour of self-assessment platforms by job seekers containing the nine hypotheses developed by theory and case study research is illustrated in Figure 1.

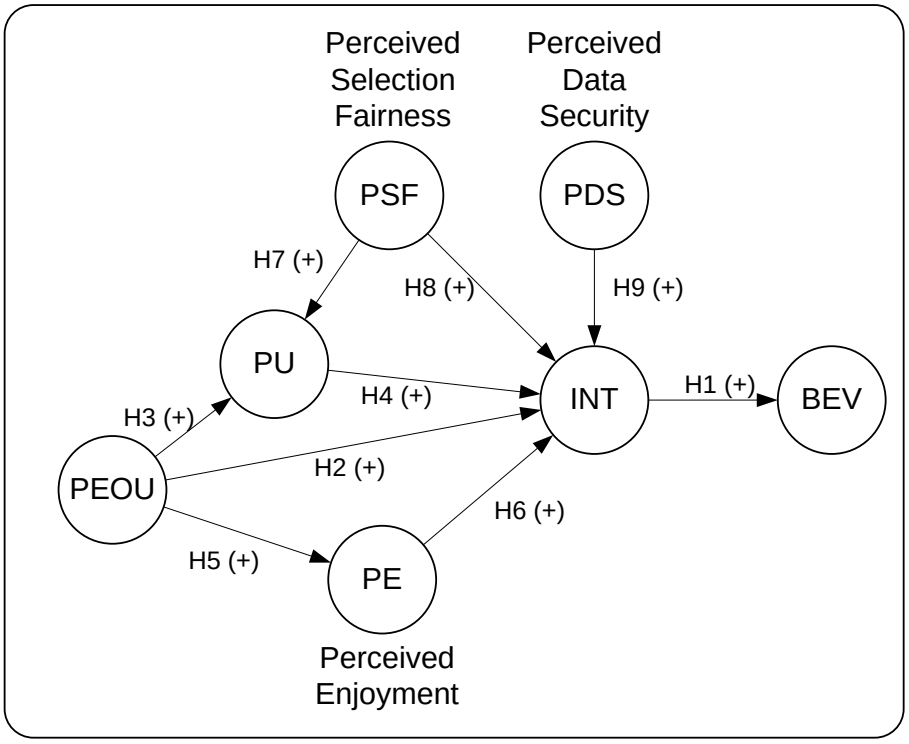

Figure 1: Research Model

How we intend to validate the proposed research model will be described in the following section.

5 Research Design

We will use an online questionnaire to empirically validate our hypotheses. Our research model will be operationalized and transferred into a structural equation model which will be analyzed using the Partial Least Squares (PLS) approach [3, 17]. Each construct is represented by a set of reflective indicators which are summarized in Table 1. The indicators were adopted from the relevant literature as discussed in section 4.

Perceived Ease of Use and Perceived Usefulness are based on Davis [18], Intention and Behaviour on Venkatesh et al. [49], Perceived Enjoyment on van der Heijden [47], Perceived Selection Fairness on Bauer [5], and Perceived Data Security on Lwin [37].

BEV-1	How often do you use self-assessment?
INT-1	I intend to use self-assessment in the future.
INT-1	I plan to use self-assessment in the future.
INT-2	I will use self-assessment in the future.
PDS-1	I think that my results of a self-assessment will be treated confidential.
PDS-2	I think that my results of a self-assessment will not be shared with other people.
PDS-3	I think that no other people have access to my results of a self-assessment.
PE-1	I think using self-assessment is without stress.
PE-2	I think using self-assessment is appealing.
PE-3	I think using self-assessment is enjoyable.
PEOU-1	Self-Assessment will increase my efficancy.
PEOU-2	Using self-assessments is easy to learn.
PEOU-3	Self-Assessments are easy to use.
PEOU-4	Self-Assessments are easy to operate.
PSF-1	Self-Assessments give good feedback of my appropriateness.
PSF-2	I trust the results of a self-assessment.
PSF-3	The results of a self-assessment are usable to draw a conclusion of my appropriateness.
PSF-4	Self-Assessments discover all important parts to provide good feedback.
PU-1	Self-Assessment will simplify my decision to apply for a particular job.
PU-2	Self-Assessments will improve my applications.
PU-3	Self-Assessments will improve the effectiveness of my applications.
PU-4	Self-Assessments will improve the quality of my applications.
PU-5	Self-Assessments will increase my chance to get hired.
Note: Bev will be measured on a 5-point Likert scale from very often to never, all other items from strongly agree to strongly disagree	

Table 1: Operationalization of constructs

The research participants will be invited using an e-mail broadcast. Therefore those job seekers who are registered on general platform for recruiting and business context will be contacted. We will include in our empirical analyse the data of those participants who indicate that they have already used an self assessment system or are used to the basic idea of these systems but did not used them already. The data is used to validate the measurement model of the constructs used and the power of the structural model.

Due to our methodology our proposed research might have limitations as every empirical field study. It only might represent a single example of jobseekers who already used self-assessments with a specific economy, country or cultural region. There might be differences for the intention to use with different settings. The results might differ for different age groups or career status. In addition, as we will collect data from participants at the same time using the same survey our results may be affected by common method variance [41]. Therefore we will apply methods to avoid common method variance as proposed for example by [41]. A limitation of our research as

presented is that we have only collected indirect data. These data are from the people who designed the self-assessment system and not from user itself. However, the HR managers reported the results of job interviews they have conducted.

6 Discussion

Virtual worlds, online communities and serious gaming are expected to change the way business is conducted in the next ten years [27]. Based on these expectations the objective of this research is, to extend the knowledge of gaming in business contexts by discussing the possibility to use online games in simulated business environments to enable jobseekers to evaluate themselves if they are appropriate for a particular job or not. The case studies with two corporations from Germany showed that self-assessments can be used as a tool for a realistic job preview. These job previews – implemented as an online games in a virtual world simulating real business scenarios – help jobseekers to decide themselves if they will apply for a job or not based on the information received by playing the online game. Furthermore the case studies showed that HR executives have different expectations of how candidates might react when confronted with online games in the recruitment context. The developed research model hypothesise that jobseekers are mainly influenced by their perceived usefulness and perceived ease of use of the system as well as perceived selection fairness, perceived enjoyment and perceived data security.

In terms of perceived usefulness jobseekers expect that using self-assessment will support them to apply with improved applications, simplify their decision whether to apply for job or not and improve the chance to get hired. Using these systems is in addition easy to learn and to execute. Therefore the classical TAM hypotheses are once more an important part to explain an individual's intention to use an information system.

In addition to TAM jobseekers are more intended to use self-assessments if the companies offering this option can communicate that there is no risk of misusing the data collected by the games. As the construct perceived data security shows it is important for candidates that they think that their data cannot be accessed by other persons and is treated confidential.

Perceived selection fairness is another important antecedent of the perceived usefulness of the self-assessments as derived from literature and additionally the case study results. Discussing perceived selection fairness related to an IT-based selection instrument in the recruitment process will enable research to provide some results how the reaction of candidates is different according to IT-based and non-IT-based solutions as the construct perceived selection fairness was only used for non-IT-based methods so far. The case studies of our approach showed that also for IT-based solutions perceived selection fairness is an important antecedent for the intention to accept an IT-based selection method.

Perceived enjoyment was hypothesized following [47] as a mediator for perceived ease of use and its effect on intention. According to our case studies and the related literature it seems to be that enjoyment as an intrinsic motivational factor is as important as the extrinsic ones in the context of online gaming to apply for jobs. The proposed research model might be useful to investigate if jobseekers particular intention to use e-assessment is more driven by the aim to find an adequate profession and less by the aim of individual enjoyment. Is it for jobseekers in general more important that companies

ensure data security, selection fairness, ease of use and usefulness of the system instead of offering really enjoyable systems?

In general the results might contribute to the technology acceptance literature by evaluating perceived selection fairness as an antecedent of perceived usefulness. Following the concepts of [7, 14-15, 31] future research might evaluate if perceived selection fairness is an inhibitor or enabler of the intention to use an information system and if the effect of perceived selection fairness is different for the group of adopters and non-adopters. Furthermore future research might contribute to the selection literature by applying a selection procedural justice scale to an IT based selection instrument and showed that perceived selection fairness is a driver of perceived usefulness.

Finally as mentioned in the introduction prior research approaches concerning the use and success of online gaming simulations were solely limited to the corporate side. With our model we provide a new view focusing on users' side by combining new constructs as perceived selection fairness or perceived data security and classic technology acceptance components as perceived usefulness and perceived ease of use. The results might influence the design of these systems regarding the importance for each of the factors discussed as evaluated with the applicants' data.

7 Conclusion

Self-Assessments built as online games in virtual worlds help jobseekers to make a decision on their own to apply for a job or not. Our research provides a research model that introduces these factors influencing an individual's self-assessment usage. As the results show an individual is particularly influenced by the perceived selection fairness, perceived data security, perceived enjoyment and the classic TAM constructs perceived usefulness and perceived ease of use.

References

[1] Ahn, L.v. and L. Dabbish, *Designing Games with a Purpose.* Commun. ACM, 2008. **51**(8): p. 58-67.

[2] Allen, D.G., R.V. Mahto, and R.F. Otondo, *Web-Based Recruitment: Effects of Information, Organizational Brand, and Attitudes toward a Web Site on Applicant Attraction.* Journal of Applied Psychology, 2007. **92**(6): p. 1696-1708.

[3] Bagozzi, R.P. and Y. Yi, *On the Evaluation of Structural Equation Models.* Journal of the Academy of Marketing Science, 1988. **16**(1): p. 74-94.

[4] Bargh, J. and K. McKenna, *The Internet and Social Life.* Annual Review of Psychology, 2004. **55**(1): p. 573-590.

[5] Bauer, T.N., D.M. Truxillo, R.J. Sanchez, J.M. Craig, P. Ferrara, and M.A. Campion, *Applicant Reactions to Selection: Development of the Selection Procedural Justice Scale (Spjs).* Personnel Psychology, 2001. **54**(2): p. 387-419.

[6] Bernerth, J.B., H.S. Feild, W.F. Giles, and M.S. Cole, *Perceived Fairness in Employee Selection: The Role of Applicant Personality* Journal of Business and Psychology, 2007. **20**(4): p. 545-563.

[7] Bhattacherjee, A. and N. Hikmet, *Physicians' Resistance toward Healthcare Information Technologies: A Dual Factor Model*, in *Proceedings of the Hawaii International Conference on System Systems (HICSS)*. 2007: Big Island, HI, USA.

[8] Bitcom. *Jeder Fünfte Mensch Ist Online*. 2008 [cited 2009 15.06.2009]; Available from: http://www.bitkom.org/de/presse/30739_51813.aspx.

[9] Brief, A.P. and R.J. Aldag, *The Intrinsic-Extrinsic Dichotomy: Toward Conceptual Clarity.* Academy of Management Review, 1977. **2**(3): p. 496-500.

[10] Bussler, L. and E. Davis, *Information Systems: The Quiet Revolution in Human Resource Management.* Journal of Computer Information Systems, 2001. **42**(2): p. 17.

[11] Buzzetto-More, N. and A. Alade, *Best Practices in E-Assessment.* Journal of Information Technology Education, 2006. **5**(1): p. 251-269.

[12] Caligiuri, P.M. and J.M. Phillips, *An Application of Self-Assessment Reaslistic Job Previews to Expatriate Assignments.* International Journal of Human Resource Management, 2003. **14**(7): p. 1102-1116.

[13] Cappeli, P., *Making the Most of on-Line Recruiting.* Harvard Business Review, 2001. **79**(3): p. 139-146.

[14] Cenfetelli, R.T., *An Empirical Study of the Inhibitors of Technology Usage*, in *Twenty-Fifth International Conference on Information Systems*. 2004.

[15] Cenfetelli, R.T., *Inhibitors and Enablers as Dual Factor Concepts in Technology Usage.* Journal of the Association for Information Systems, 2004. **5**(11-12): p. 472-492.

[16] Chatham, R.E., *Games for Training.* Commun. ACM, 2007. **50**(7): p. 36-43.

[17] Chin, W.W., *Issues and Opinion on Structural Equation Modeling.* MIS Quarterly, 1998. **22**(1).

[18] Davis, F.D., *Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology.* MIS Quarterly, 1989. **13**(3): p. 319-340.

[19] Davis, F.D., R.P. Bagozzi, and P.R. Warshaw, *User Acceptance of Computer Technology: A Comparison of Two Theoretical Models.* Management Science, 1989. **35**(8): p. 982-1003.

[20] Davis, F.D., R.P. Bagozzi, and P.R. Warshaw, *Extrinsic and Intrinsic Motivation to Use Computers in the Workplace.* Journal of Applied Social Psychology, 1992. **22**(14): p. 1111-1132.

[21] DeLone, W.H. and E.R. McLean, *Measuring E-Commerce Success: Applying the Delone & Mclean Information Systems Success Model.* International Journal of Electronic Commerce, 2004. **9**(1): p. 31-47.

[22] Eckhardt, A., S. Laumer, and T. Weitzel, *Who Influences Whom? Analyzing Workplace Referents' Social Influence on It Adoption and Non-Adoption.* Journal of Information Technology, 2009. **24**(1): p. 11-24.

[23] Eckhardt, A., A.v. Stetten, and S. Laumer, *Role of It in the Recruitment Process*, in *Proceedings of the special interest group on management information system's 47th annual conference on Computer personnel research*. 2009, ACM: Limerick, Ireland.

[24] Eisenhardt, K.M., *Building Theories from Case Study Research.* Academy of Management Review, 1989. **14**(4): p. 532-550.

[25] Elkins, T.J. and J.S. Philips, *Job Context, Selection Decision Outcome, and the Perceived Fairness of Selection Tests: Biodata as an Illustrative Case.* Journal of Applied Psychology, 2000. **85**(3): p. 479-484.

[26] Gilliland, S.W., *The Perceived Fairness of Selection Systems: An Organizational Justice Perspective.* Academy of Management Review, 1993. **18**(4): p. 694-734.

[27] Ives, B. and I. Junglas, *Apc Forum: Business Implications of Virtual Worlds and Serious Gaming.* MIS Quarterly Executive, 2008. **7**(3): p. 151-157.

[28] Keim, T. and T. Weitzel. *Strategies for Hiring It Professionals: An Empirical Analysis of Employer and Job Seeker Behavior on the It Labor Market*. in *Proceedings of the 2006 Americas Conference on Information Systems (AMCIS)*. 2006. Acapulco, Mexico.

[29] Keim, T. and T. Weitzel, *The Adoption of Hris for Personnel Recruitment*, in *Encyclopedia of Hris: Challenges in E-Hrm*, T. Torres and M. Arias, Editors. 2008, Idea Group.

[30] Kelly, H., K. Howell, E. Glinert, L. Holding, C. Swain, A. Burrowbridge, and M. Roper, *How to Build Serious Games.* Commun. ACM, 2007. **50**(7): p. 44-49.

[31] Lapointe, L. and S. Rivard, *A Multilevel Model of Resistance to Information Technology Implementation.* MIS Quarterly, 2005. **29**(3): p. 461-491.

[32] Laumer, S., A. Eckhardt, and T. Weitzel. *Recruiting It Professionals in a Virtual World*. in *12th Pacific Asia Conference on Information System (PACIS 2008)*. 2008. Suzhou, People's Republic of China.

[33] Laumer, S., A. Eckhardt, and T. Weitzel, *Status Quo and Trends in E-Recruiting - Results from an Empirical Analysis*, in *International Conference on Information Resources Management (CONF-IRM)*. 2009: Dubai, United Arab Emirates.

[34] Laumer, S., A.v. Stetten, A. Eckhardt, and T. Weitzel. *Online Gaming to Apply for Jobs –the Impact of Self- and E-Assessment on Staff Recruitment*. in *42th Hawaii Conference on System Sciences*. 2009.

[35] Laumer, S., A. von Stetten, and A. Eckhardt, *E-Assessment.* Business & Information Systems Engineering, 2009. **1**(3): p. 263-265.

[36] Lee, I., *The Architecture for a Next-Generation Holistic E-Recruiting System.* Communications of the ACM, 2007. **50**(7): p. 81-85.

[37] Lwin, M., J. Wirtz, and J.D. Williams, *Consumer Online Privacy Concers and Responses: A Power-Responsibility Equilibrium Perspective.* Journal of the Academy of Marketing Science, 2007. **35**(4): p. 572-585.

[38] Manasian, D., *Digital Dilemmas: A Survey of the Internet Society.* The Economist, 2003. **Jan**(25): p. 1-26.

[39] Mayo, M.J., *Games for Science and Engineering Education.* Commun. ACM, 2007. **50**(7): p. 30-35.

[40] Ployhart, R.E. and A.M. Ryan, *Applicants' Reactions to the Fairness of Selection Procedures: The Effects of Positive Rule Violations and Time of Measurement.* Journal of Applied Psychology, 1998. **83**(1): p. 3-16.

[41] Podsakoff, P.M., *Common Method Biases in Behavioral Research: A Critical Review of the Literature and Recommended Remedies*, in *Journal of Applied Psychology*. 2003. p. 879-903.

[42] Ryan, A.M. and R.E. Ployhart, *Applicants' Perceptions of Selection Procedures and Decisions: A Critical Review and Agenda for the Future.* Journal of Management, 2000. **26**(3): p. 565-606.

[43] Steinkuehler, C.A., *Learning Massively in Multiplayer Online Games*, in *Proceedings of the 6th International Conference on Learning Sciences*. 2004: Santa Monica, CA, USA.

[44] Strohmeier, S., *Research in E-Hrm: Review and Implications.* Human Resource Management Review, 2007. **17**: p. 19-37.

[45] Turban, D.B., M.L. Forret, and C.L. Hendrickson, *Applicant Attraction to Firms: Influences of Organization Reputation, Job and Organizational Attributes, and Recruiter Behaviors.* Journal of Vocational Behavior, 1998. **52**(1): p. 24-44.

[46] Underwood, J.D.M., P.E. Banyard, and M.N.O. Davies, *Students in Digital Worlds: Lost in Sin City or Reaching Treasure Island?* BJEP Monograph Series II, Number 5 - Learning through Digital Technologies, 2007. **1**: p. 83-99.

[47] van der Heijden, H., *User Acceptance of Hedonic Information Systems.* MIS Quarterly, 2004. **28**(4): p. 695-704.

[48] Venkatesh, V. and H. Bala, *Technology Acceptance Model 3 and a Research Agenda on Interventions.* Decision Sciences, 2008. **39**(2): p. 273-315.

[49] Venkatesh, V., M.G. Morris, G.B. Davis, and F.D. Davis, *User Acceptance of Information Technology: Toward a Unified View.* MIS Quarterly, 2003. **27**(3): p. 425-478.

[50] Venkatesh, V., C. Speier, and M.G. Morris, *User Acceptance Enablers in Individual Decision Making About Technology: Toward an Integrated Model.* Decision Sciences, 2002. **33**(2): p. 297-316.

[51] Webster, J., *Making Computer Tasks at Work More Playful: Implications for Systems Analysts and Designers*, in *Proceedings of the ACM SIGCPR conference on Management of information systems personnel*. 1988, ACM: College park, Maryland, United States.

[52] Weiss, E.A., *Sefl-Assessment.* Communiaction of the ACM, 1990. **33**(11): p. 110-132.

[53] Weitzel, T., A. Eckhardt, and S. Laumer, *A Framework for Recruiting It Talent: Lessons from Siemens.* MIS Quarterly Executive (MISQE), 2009. **8**(4): p. 175-189.

[54] Wiechmann, D. and A.M. Ryan, *Reactions to Computerized Testing in Selection Contexts.* International Journal of Selection and Assessment, 2003. **11**(2-3): p. 215-229.

[55] Williams, M.D., Y.K. Dwivedi, B. Lal, and A. Schwarz, *Contemporary Trends and Issues in It Adoption and Diffusion Research.* Journal of Information Technology, 2009. **24**(1): p. 1-10.

[56] Yin, R.K., *Case Study Research: Design and Methods*. 2003, Thousand Oaks, London, New Dehli: Sage Publications, Inc.

Websites in the Recruitment Context: A Conceptual Model

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Abstract. *Recruiters are increasingly turning to the Web in order to compete in the "war for talent". This paper develops a conceptual framework comprising antecedents of websites' attractiveness and its influence on application behavior. We show the contribution aesthetics, content, navigation, interactivity and data security make to the attractiveness of a website. Furthermore, we state that employer knowledge serves as a partial mediator between a website's attractiveness and the application tendency. Employer knowledge, on the other hand, is directly influenced by the aesthetics and the content of the webpage.*

Keywords: Web-based recruiting; Website characteristics; Employer knowledge; Elaboration Likelihood Model

1 Introduction

Valuable staff is highly important for organizational success. Companies are therefore increasingly turning to the Web to compete in the "war for talent" [29, 61].

In their study, Chapman and Webster [24] show that the Web is one of the most popular means when recruiting employees for various positions and across industry sectors. However, when making use of Web-based recruiting, companies have to take into account a great number of applicants who do not match the specific job requirements and/or do not fit into the company culture [24]. Hence, simply having a career website is not necessarily going to result in a successful recruitment. A career website needs to attract those potential employees that are best qualified while sending out the clear signal not to apply to unqualified applicants at the same time. So far, our knowledge about how to build such an attractive website and about its impact on application behavior is limited. Although first laudable steps to explain the effects of different website characteristics have been pursued [e.g. 35], we still lack profound insights into Web-based recruiting. Moreover, the role of employer knowledge in Web-based recruiting has been mostly omitted. Accordingly, we do not know how important prior knowledge about a potential employer is or in what way Web-based recruiting might contribute to building a strong employer brand. To address these research gaps and to provide guidance for future studies we try to contribute to the recruiting literature by developing a conceptual framework about antecedents and impact of website attractiveness and the mediating role of employer knowledge.

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The structure of the remaining paper is as follows: As an introduction, the different types of Web-based recruiting and their advantages and disadvantages will be presented. Additionally, we will critically investigate the factors influencing a website's attractiveness. Although current studies show that career websites play a major role in recruiting, little is known about their impact on potential applicants [26]. Thus, we want to contribute to current Web-based recruiting literature by developing a conceptual framework about the antecedents of website attractiveness, its impact on application tendency and the role of employer knowledge in this process. In this respect, we will take results from other studies into consideration and discuss them in detail. Based on our conclusions, we will present implications for research and industry at the end of this paper.

2 Web-based recruiting

Web-based recruiting is the search for employees via the company website, job exchange or career portals, and resume databases [77]. Thematically, web-based recruiting belongs to the external recruitment since the main goal of career portals or an own website is to attract people from the external job market. It is, however, also conceivable to implement an in-house career portal, for example via the Web.

Company websites may present different kinds of useful information about the company and its available jobs [45]. The person interested in the job has the possibility to either apply via an online application form, via email or, quite conventionally, via mail. Just like in newspapers, different job offers from various companies are published in online job exchanges like www.monster.com or www.stepstone.de. Job exchanges also give applicants the opportunity to create and upload resumes, which can later on be found by various companies. Those companies often have to pay a fee for this service [44, 45].

Companies can search for new employees in different ways [44]. Web-based recruiting, however, can offer advantages over the conventional forms of recruitment such as newspaper ads or employee recommendations.

Some parts of the recruitment process can be automated which results in a shorter application process. This might save resources within the Human Resources Department [77]. The estimate is that the costs of Web-based recruiting amounts to only one twentieth of the costs of other forms of recruitment [21]. In general, the costs of an internet advertisement can be compared to the costs of a small ad in a local newspaper [43, 44]. In addition to that, only one-time costs will arise for the implementation of a career section on the company's website. However, Web-based recruiting not only helps the companies save money but the applicants will also be able to achieve a cost benefit. Through an online application or an application via email, they will e.g. be able to save the expenses for the application and its postage [44].

Moreover, Web-based recruiting has a better coverage and effectiveness than traditional recruitment forms [32, 37]. Potential applicants are able to visit job-offering websites at any time and from all over the world [53, 77]. That way, they can easily find detailed information about a company and its respective job offers. This makes a previous self-selection, i.e. an evaluation on whether a certain job opening is adequate or not, a lot easier for the applicants. Another crucial advantage of Web-based recruiting is its possibility to interactively present information. Stylistic means such as activating pictures and colors may emphasize important information [53]. In addition, it is easy to document the entire recruitment process [77]. Consequently, the whole application

process becomes clearer and mistakes, such as not responding to an application, can be avoided.

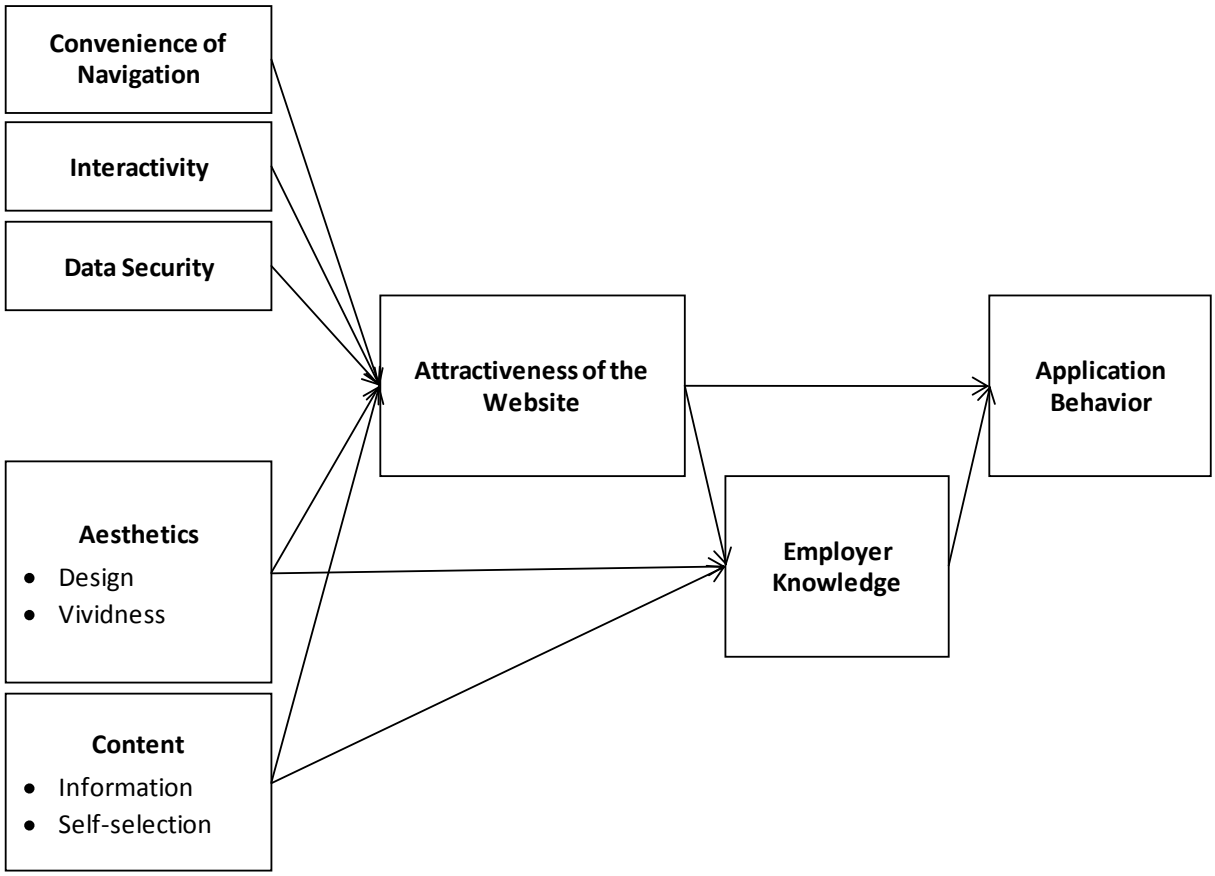

Figure 10: Conceptual model

3 The Company Website

Applicants usually expect to have rather low chances to get a job by applying over a company's website. In contrast to this, companies publish most of their job openings on their homepages. In order to address as many applicants as possible and to achieve a sufficient number of eligible applications, an attractive website is essential. A website is attractive when potential and eligible applicants think of it as being appealing and are able to recall the information presented on the website. In order to achieve this, one has to consider elements such as design/aesthetics, content, navigation, interactivity and data security.

3.1 Company Website Aesthetics

Design

Especially pictures, free spaces, fonts and colors are part of the design of a website [27]. As Braddy, Foster-Thompson, Wuensch and Grossnickle [12] show in their study, the design is of crucial importance when it comes to online job advertisements. Job openings presented in an appealing font and color and with a clearly arranged layout are

found to be far more attractive than advertisements written in a continuous text in black-and-white (notice that the format of the text alone will not be able to improve the evaluation of the website).

In order to convey a consistent impression of a website, a uniform design is important [27]. This connects the visual components to each other, which again has a positive influence on the aesthetics [75].

A consistent impression of a company's website can be created by connecting all design elements (color, texts, pictures) properly and harmoniously to each other. On top of this, the design elements used should correspond to the content of the website. Consequently, the career section should also match the other website components in order to create a uniform company website [27].

Vividness

Together with the design, the vividness creates the overall impression of the website. The vividness describes the extent of features of a website, which are supposed to entertain the user [27]. Therefore, a website that is called vivid should appeal to several senses in order to provide a unique experience for the user [31]. The experience will become even more vivid by implementing pictures, music, videos and animations [27].

Steuer [70] defines vividness as the ability of a medium to construct a surrounding that is able to appeal to various senses with the help of features such as music or videos. Furthermore, he subdivides vividness into two dimensions: sensory width and sensory depth. The sensory width describes the number of senses that a medium can possibly appeal. The sensory depth, however, describes how precisely the different senses can be appealed.

3.2 Company Website Content

While an appealing website will attract many applicants regardless of their person-organization (P-O) fit, a well structured content will enable self-election processes and by doing so mainly attract well fitting applicants [52]. Companies are confronted with the difficult task of encouraging adequate job seekers to apply while setting hurdles for inadequate candidates [35]. Adequate candidates have a high P-O fit, i.e. a high concurrence between the values of the applicant and the company [36, 50]. In order to address adequate job seekers more precisely, so-called „Realistic Job Previews"(RJP) are an appropriate instrument. RJPs draw a balanced picture of a company, which shows both positive and negative aspects of the offered job [41, 71]. Various studies assume that RJPs contribute to a higher job satisfaction, less fluctuation and better job performances [15].

Information and Self-Selection

Information is important for website's attractiveness and relevance [74]. Salary, educational opportunities or location of the company should be part of the provided information [63]. Generally, two different kinds of information exist: information about the advertised job and about the company itself. Both types of information are important for the decision-making process of potential applicants [23]. Allen, Otondo and Matho [4] confirm the prominent role of information about both the job and the company.

Thus, information presented on the website does not only have an impact on the existing image of the enterprise but also affects the positive perception of the website [4].

According to the Signaling Theory, job seekers have incomplete information about the company and the potential job. Thus, they will search information from every possible source in order to reduce uncertainty [69]. Barber and Roehling [7] confirm this argumentation, by showing that job seekers tend to compensate for missing information with personal assumptions. Hence, more information can make the company appear more attractive because it decreases the job seeker's uncertainty [4, 14].

Information focused on specific target-groups motivates potential applicants to think about their person-job fit [36, 62]. A pool of qualified applicants is therefore rather the result of self-selection - in terms of refraining from applying on account of an insufficient identification with the job - than a result of increased applications on account of a higher job-identification [36].

On a company website, information about the company and its job openings are crucial and the company itself can arrange type and scope of the information presented [4] without having to stick to the expensive space and formatting rules of newspapers. Job seekers anticipate this and expect a higher degree of as well as more detailed information on a company's website.

3.3 Impact of Website Aesthetics and Content

The Elaboration Likelihood Modell (ELM) is a useful theoretical framework to explain how job seekers process information and received remarkable attention within recruitment research [35]. The ELM describes two ways of processing information [39]: the central and the peripheral processing. The central way is a rather cognitive processing of content-related arguments. In order to process these arguments, (already) existing information is taken into consideration [39]. Therefore, the receiver needs to be motivated and able to understand the message [35]. However, if a receiver is unable or little motivated to carefully examine a message, the peripheral way of processing is activated [39]. Here, attitudes and/or opinions are formed based on peripheral information such as aesthetics. The content of the message plays only a minor role. [39]. In contrast to the central processing, the peripheral processing causes a less intensive opinion formation and the information received will not be constantly memorizable [35].

In terms of a company's website, the ELM implications show that aesthetical features of a website are more likely to support a peripheral processing and are therefore not able to convey the message of the career section [35].

This notion stands in contrast to other studies. In their study, Childers and Houston [25] conclude that aesthetical features can attract the attention of individuals to the website. Thus, information is memorized for a longer period. Zusman and Landis [78] conclude that pictures linked to the information support the processing of this information. Cober et al. [27] show that the overall impression of a website determines whether a user decides to concentrate on the website any further or not. These results are in accordance with the study of Coyle and Thorson [31], which states that a high amount of vividness on a website helps to generate a stable attitude. Dineen et al. [35] suggest that aesthetics can help the job seeker to process recruitment information just as aesthetics help the consumer to sort out certain advertisements and accept others instead. Studies by Allen et al. [5] and Rynes and Miller [65], however, show that information alone affects the potential applicant positively. Information about both the job and the company

positively influence the website's attractiveness [5, 4]. In addition, the verbal protocol analysis by Barber and Roehling [7] proves that job seekers pay attention to the information provided in job advertisements.

Those divergent results can be explained by the fact that most studies focus either on the content or on the aesthetics of a company website. Yet, it is possible that one message can cause a central and a peripheral processing, for example if a website owns relevant information as well as an appealing design [35].

One can assume that job seekers are in the first place interested in the job openings of a website and that they are able to process this information. Therefore, it is likely that relevant information by itself can motivate the potential applicant to reflect on a website's content intensively. The job seeker, however, will be able to memorize the information a lot easier and longer if the website links relevant information and appealing aesthetics. Unattractive aesthetics may result in a peripheral processing of the information [35] while an aesthetical website will foster a central processing route. Hence, a website with appealing aesthetical features and relevant information allows for a better self-selection and reduces the gap between perceived and actual person-job or P-O fit [51]. As a conclusion, one can state that a company website, which contains aesthetical features as well as target-group oriented information, appears more attractive. Moreover, the central route of processing due to aesthetics and content helps to build employer knowledge, leading us to propose, that:

Proposition 1a: The more aesthetical a company website appears, the more attractive it is perceived.

Proposition 1b: The aesthetics of a company website influence the employer knowledge positively.

Proposition 2a: The more target-group oriented information a website contains, the more attractive it is perceived.

Proposition 2b: Target-group oriented information on a company website influences the employer knowledge positively.

3.4 Speed and Navigation

Speed can influence the applicants' perception positively [66]. Delays in the application process may cause the loss of the applicant's interest [63] or could signal lacking competence of the company [63]. Especially for job seekers with little experience in the computer area, speed plays a crucial role during the application process [66]. If it takes too much time to get a response from the company, there is the risk that applicants will already have accepted another job offer [63].

Besides a quick response to application reception, a fast and easy navigation of the company website is fundamental. Palmer [60] defines navigation as a system that allows users to obtain information and to systematically move from one position to another.

Visitors of a website always want to know where they are, where they have been, and what further information they could get. Additionally, an unclear navigation structure can result in the applicant getting lost and therefore leaving the website before he has been able to find the relevant information. The „Two-Click-Rule" by General Electric states that it must not take more than two clicks to find the relevant information [40].

A quick and easy navigation simplifies the search for information on a website and positively affects how the website is perceived [28]. Braddy et al. [12] divided

participants into two groups: One group tried to find a job opening on a website with easy navigation, the second group searched on a website with difficult navigation. The first group was able to find the opening quickly which left a positive impression on them [12]. Accordingly, we state that:

Proposition 3: The easier the navigation of a website, the more attractive it is perceived.

3.5 Interactivity

As far as websites are concerned, the applicant not only has the opportunity to contact the company in case of questions, he also has the opportunity to apply online or take part in an online assessment test [55]. Besides type and scope, the speed of communication is a major part of the interactivity, for example in terms of a quick acknowledgement of the receipt of an application [55]. This is in accordance with the definition by Blattberg and Deighton [11] who define interactivity as direct and honest communication between a company and an individual, independent of time and space.

Concerning the impact of interactivity, empirical studies come to divergent conclusions. Coyle and Thorson [31] did not find a positive influence of interactivity on the perception of a website. McMillan and Hwang [56] come to different results. They confirmed that interactive websites increase the activity and the processing of information. This can positively affect the subjective perception of the website. Liu and Shrum [54] found that an interactive online experience attracts far more attention and facilitates the cognitive processing more than traditional media.

A possible reason for divergent results is that interactivity is often defined on the basis of the mere presence or absence of certain features [49, 68, 70]. However, simply adding some applications does not guarantee a high degree of interactivity [68]. Interactivity is rather determined by the actual use of the present applications and by how easily a person navigates the website [72]. Until interactive applications are finally used, their mere presence does not influence the user's perception [68]. If a job seeker, who is looking for contact information, reaches one website with five and another website with two links, it is probable that not one of the five links but one of the two links will lead to the information requested. Although the five-link website is more interactive according to a quantitative definition of interactivity, the job seeker will find the website with two links more interactive [57]. However, taking controversial notions about interactivity into consideration, we propose that:

Proposition 4: The more interactive a company website is, the more attractive it is perceived.

3.6 Data Security

Data security is of main concern for website users [48]. Here, the concern in terms of personal information relates to the perception of procedural justice or - to be precise - to the perceived fairness of the process: the lower the concern about personal data, the higher the perception of procedural justice [8, 9, 38, 76]. Harris, van Hoye and Lievens [45] showed that people are generally reluctant to reveal work-related information because they perceive an absence of data security. Alge [3] reveals that simultaneously to a decreasing intrusion of an individual's privacy, the perception of procedural justice increases. Thus, worries about personal data have an impact on the perception of the procedural justice. Furthermore, this can cause a reaction of the applicant [9]. The impression of being treated unfairly can cause negative actions such as the rejection to

apply or a negative evaluation of the company [46]. Moreover, the job openings could possibly get less attractive [46]. Therefore, we propose that:

Proposition 5: The higher the security of data is perceived, the more attractive especially inexperienced users will perceive the website.

4 Impact of the Company Website's Attractiveness on the Application Behavior

A number of factors influence the application decision. According to Gatewood et al. [42], the job seeker is initially evaluating available information from various recruitment sources. In this respect, an attractive website is very important since it often establishes a first contact between the job seeker and the company [78]. The website can furthermore assist to clarify unknown characteristics of the company such as professionalism, organization or intelligent technologies [4]. Thus, a company's website is able to contribute to the first impression essentially.

From an applicant's perspective, means of recruitment are often representative for the whole company [65]. Regarding a company website, this means: the more structured and organized the website of a company appears, the more will the job seeker assign these characteristics to the company itself [13].

The means of recruitment should be positively recognized in order to attract the job seeker's attention and to present employment opportunities [7]. With regard to the company's website, it is therefore important to offer sufficient information as well as an appealing environment to the potential applicant. That way, the job seeker will perceive the website as positive and will develop an interest in the offered job.

Summing up, one can say that the impression of a company website is a crucial factor in the applicant's decision-making process [78]. Various scientific results are in accordance with this view. Zusman und Landis [78], Braddy et al. [12], and Barber and Roehling [7], for example, showed that aspects such as aesthetics, easy navigation and offered information could contribute to the attractiveness of a company website and thus influence the application behavior.

Proposition 6: The more attractive a company website is perceived, the more it influences the application decision of the applicant.

5 The Role of Employer Knowledge

Brand-Equity-Theory explains how the intention to buy a product is influenced by the knowledge about the (corporate or product) brand [4, 16]. According to the Brand-Equity-Theory, there are two main dimensions of the company brand: familiarity with the company and the image of the enterprise [4]. The familiarity with the company describes the ability of a job seeker to recall the name of the company in question easily. The image of a company is shaped by perceptions, features and associations, which persons link to the company brand [47].

This also applies to the recruitment context. The development of company-specific features is of major importance in order to create trust and credibility [2]. When it comes to deciding which job to accept, applicants take especially those impressions into consideration that they have gained while observing a company's way of recruiting. In order to evaluate potential employers, applicants use all available information (e.g. by newspaper ads, websites or job fairs [42]. That kind of information is called the

employer knowledge or employer image [30]. As it has already been noted with regard to the Brand Equity Theory, it is of major importance to connect unique images of the company as an employer to current, potential and former employees [73]. One can conclude that a positive image as an employer can increase an enterprise's attractiveness. This manifests itself, for example, in the size of the pool of applicants [10, 19]. Therefore, we state that:

Proposition 7: The employer knowledge has a positive effect on the application decision.

One supposes that websites positively influence the behavior of the applicants through detailed information. By offering various positive job information as well as values and features which are not directly communicated through recruitment ads, high-information forms of recruiting such as job and career websites have an impact on the potential applicants [22]. The huge amount of available information catches the applicants' attention and increases the perceived reputation of the company [19]. On account of those effects, such as an increase of the company's reputation and of the job information, a positive overall effect on the image or employer knowledge is probable.

Taking into consideration the definition of media richness by Daft and Lengel [33], who state that media richness is the ability of information to change understanding within a time interval, one can argue that existing misunderstandings in terms of characteristics of a company can be changed and adjusted by means of media with informational content (websites). Finally, this results in a higher familiarity with both the message and the company [33, 67]. Hence, one can assume that the attractiveness of a website can positively influence the image of the employer. Moreover, by directly addressing applicants, one can create positive attitudes towards the company [58] as well as a unique image [1, 2, 47]. In conclusion, we propose that:

Proposition 8: The attractiveness of a website has a positive effect on the employer knowledge.

6 Discussion

This paper contributes to a deeper understanding of the role of a company's website in the recruitment process by presenting a model and its corresponding propositions. The model argues that factors such as aesthetics, content, navigation and data security will make a website appear more attractive. By doing so, orientation on the website is facilitated and relevant information is found more easily. Thus, the user of the website has the possibility to make a well-grounded application decision. Furthermore, we state that the image of the employer serves to a certain extent as a mediator between the attractiveness of the website and the intention to apply. The aesthetics and content of the website are also directly affecting the image of the employer.

In order to establish a theoretic basis we applied marketing theories. The ELM was employed in order to describe the effectiveness of aesthetics and information on a company website. We were able to show that the ELM also applies to the recruitment context. Appealing aesthetics and relevant information for the job seeker may activate both a peripheral and a central processing and therefore be able to support the job seeker in his decision on whether to apply or not.

Our review shows that the relevance and the quality of the information gained through interactive applications play a major role. However, one needs to keep in mind that if a website has too many interactive elements, it could challenge the perception of the user

too much and the central processing of information could hamper. As a consequence of this, users could possibly be distracted from central information and process the content rather peripherally. This is more likely to happen among inexperienced users, who can easily be distracted and who are generally facing problems in processing information through interactive applications [55]. Hence, with regard to a company website, it is important to scrutinize which interactive applications will actually be useful for the job seeker. Simply adding applications will not guarantee a perception of interactivity and may even be counterproductive.

Furthermore, we show that speed and an easy navigation can contribute to the attractiveness of a company website. It should, however, be noted that these factors are especially important for job seekers with little computer experience [66]. Therefore, the company has to figure out which applicants they want to address with a certain job opening. If computer knowledge and internet skills are not required, it can be reasonable to simplify the navigation of the website with support during the online application process.

Additionally, the perceived security of personal data and the perception of procedural justice play a major role for the application process. If a potential applicant feels treated fairly, his application decision may be positively influenced [9]. Conversely, an applicant who does not feel safe or thinks that he is being treated unfairly will possibly refrain from an application.

Information offered on the company website is pivotal when directly addressing job seekers with a high P-O fit. RJPs are one way to convey information. Thus, potential applicants have the opportunity to find out by themselves whether there is a high P-O Fit or not. The more realistic the presentation of the job and the company is, the easier it is for a potential job candidate to compare the job requirements to his skills and preferences. This gives him the possibility to apply only for those jobs that offer a subjective fit. The level of the fit between company and applicant or, more precisely, between the job expectations of the applicant and the offered benefits has decisive consequences. The P-O Fit causes a multitude of positive organizational effects such as a better performance and a stronger loyalty towards the employer [20, 59]. Moreover, a high P-O fit is related to the so-called "organizational citizenship behavior". This describes voluntary behavior patterns such as voluntary support among colleagues, which are not explicitly mentioned in the job advertisement and which are beneficial for the company [17]. The N-S Fit (Needs-Supplies Fit) on the other hand, causes job- and career-related patterns such as job satisfaction or satisfaction within the given career opportunities, etc. [17]. These results are linked to the long-term performance of the company or the business unit [51]. As a consequence of this, it is obvious that all forms of recruiting will have to ensure a P-O Fit and an N-S Fit.

Besides the attractiveness of the company website, the reputation of the enterprise is also crucial for the application decision. On one hand, the company website influences the attitude towards a firm. On the other hand, the image of the company has a direct effect on the application decision. Here, the results are in accordance with the Brand-Equity-Theory. Job seekers relate the image of the company to unknown characteristics of the company and the job. On top of this, the image of the enterprise is also able to influence the quality of the pool of applicants. If a company is known to be rather selective in terms of their applicants, they usually have more applications from qualified applicants since these applicants can expect a positive feedback [64]. In summary, one can say that the content of a company website and the image of the company are two

major components which influence size and quality of the pool of applicants. Aesthetics, navigation and interactivity mainly contribute to the attractiveness of the website. These factors can either help the applicants to find the information required and/or assist the applicants in processing the information.

7 Implications for Research and Practice

It is of interest for future research to show the reasons/criteria which make a job seeker visit the website of a certain company. The weight of the individual criteria could also be an interesting starting point for future studies. Can a website that is easy to navigate also be perceived as interactive? Would job seekers refrain from applying if they perceived a high P-O Fit but also a low data security? In addition to that, there is still a lack of knowledge about which group of persons sets most value on which factors.

Another point to investigate would be the question of the extent to which one can assign the design criteria of company websites to online job boards. In this context, it would also be interesting to investigate the impact of the company image on the application decision.

For practical work, our paper makes several implications. Professional and well-arranged company websites for example, can help the applicants to find the information they are really looking for and interested in [55]. Therefore, the arrangement of a company website should be uniform and easy to navigate. The problem of many company websites is that they were initially created to present the products and/or services of the company. This can create confusion among applicants looking for job openings on the company website. In order to avoid this confusion, the career section of a website should be easy to find and should fit the overall picture of the website. On top of this, the user should know at all times where he is located at on the website and how he can navigate to other sections [26].

When creating an online application process, a company should be aware of its target-groups [55]. In case a company is looking for applicants with knowledge in the computer and internet sector, it is not necessary to offer extensive online instructions or support throughout the online application process. In such a case, the company should rather provide a basic support in terms of the application [9].

Moreover, target-group oriented information, e.g. in the form of RJPs, should be provided on the company website. It is also possible to offer a self-test that will additionally facilitate the self-selection of the job seeker. Thus, the job seeker is able to discover a probable P-O Fit by answering questions in the first place [34]. This, in turn, can have an impact on the quality of the pool of applicants.

With job seekers having different preferences concerning information [36], a company website should contain both information concerning the P-O Fit (for example corporate culture, work atmosphere, etc.) and information concerning the N-S Fit (such as rewards and benefits of the company). This is important because some job seekers make their application decision based on the P-O Fit, others based on the N-S Fit [36].

The (virtual) environment is a decisive factor for the way information is received and evaluated [6]. According Coyle and Thorson [31], attitudes towards websites are far more positive when the design of those websites is vivid. For that reason, it is important for a company website to contain vivid elements. Pictures and articles describing the daily routine of the employees or a video showing parts of the future job are just two examples of how to implement such elements. It is also advisable to give the job seekers

the opportunity to communicate among each other, for example via newsletters informing about current job openings, a contact email address or a chat.

In order for the job seeker to feel safe and treated fairly on the company website, the privacy policy of the company should be published on its website. The privacy policy tells the job seekers what will be done with their data in detail [9].

Besides an attractive website, the image of the company is also decisive for the application decision. For that reason, companies should not exclusively rely on their recruitment techniques. Allen et al. [4] show that even if job seekers had unlimited opportunities to find information, the image of the company would still play a major role during the application decision.

References

[1] Aaker, D. A. (1991). Managing Brand Equity: Capitalizing on the Value of a Brand Name. The Free Press.

[2] Aaker, D. A. (1996). Measuring Brand Equity across Products and Markets. California Management Review. 38 (3), 102–120.

[3] Alge, B. J. (2001). Effects of computer surveillance on perception on privacy and procedural justice. Journal of Applied Psychology, 86 (4), 797–804.

[4] Allen, D. G.; Otondo, R. F. & Matho, R. V. (2007). Web-Based Recruitment: Effects of Information, Organizational Brand, and Attitudes toward a Web Site on Applicant Attraction. Journal of Applied Psychology, 92 (6), 1696–1708.

[5] Allen, D. G.; Van Scotter, J. R. & Otondo, R. F. (2004). Recruitment Communication Media: Impact on Prehire Outcomes. Personnel Psychology. 57, 143-171.

[6] Ariely, D. (2000). Controlling the Information Flow: Effects on Consumers' Decision Making and Preferences. Journal of Consumer Research. 27 (2), 233–248.

[7] Barber, A. & Roehling, M. V. (1993). Job Postings and the Decision to Interview. Journal of Applied Psychology, 78 (5), 845–856.

[8] Batinic, B. & Appel, M. (2009). Nutzung von Online-Bewerbungen aus Sicht von Bewerbern und Unternehmen. Zeitschrift für Personalpsychologie, 8 (1), 14–23.

[9] Bauer, T. N.; Truxillo, D. M.; Tucker, J. S.; Weathers, V.; Bertolino, M.; Erdogan, B. & Campion, M. A. (2006). Selection in the Information Age: The Impact of Privacy Concerns and Computer Experience on Applicant Reactions. Journal of Management, 32 (5), 601–621.

[10] Belt, J. A. & Paolillo, J. G. P. (1982). The Influence of Corporate Image and Specificity of Candidate Qualifications on Response to Recruitment Advertisement. Journal of Management, 8 (1), 105–112.

[11] Blattberg, R. C. & Deighton, J. (1991). Interactive Marketing: Exploiting the Age of Addressability. Sloan Management Review, 33 (1), 5–14.

[12] Braddy, P. W.; Foster Thomson, L.; Wuensch, K. L. & Grossnickle W. F.(2003). Internet Recruiting: The Effects of Web Page Design Features. Social Science Computer Review, 21 (3), 374–384.

[13] Braddy, P. W.; Meade, A. W. & Kroustalis, C. M. (2006). Organizational Recruitment Website Effects on Viewers' Perceptions of Organizational Culture. Journal of Business and Psychology, 20 (4). 525–543.

[14] Bransford, J. D. & Johnson, M. K. (1972). Contextual Prerequisites for Understanding: Some Investigations of Comprehension and Recall. Journal of Verbal Learning and Verbal Behaviour, 11, 717–726.

[15] Breaugh, J. A. & Starke, M. (2000). Research on Employee Recruitment: So Many Studies, So Many Remaining Questions. Journal of Management, 26 (3), 405–434.

[16] Broniarczyk, S. M. & Alba, J. W. (1994). The Importance of the Brand in Brand Extension. Journal of Marketing Research, 31 (2), 214–228.

[17] Cable, D. M. & DeRue, D. S. (2002). The Convergent and Discriminant Validity of Subjective Fit Perceptions. Journal of Applied Psychology, 87 (5), 875–884.

[18] Cable, D. M. & Judge, T. (1994). Pay Preferences and Job Search Decisions: A Person-Organization Fit Perspective. Personnel Psychology, 47 (2), 317–348.

[19] Cable, D. M. & Turban, D. B. (2003). The Value of Organizational Reputation in the Recruitment Context: A Brand-Equity Perspective. Journal of Applied Social Psychology, 33 (11), 2244–2266.

[20] Caldwell, D. F. & O'Reilly III, C. A. (1990). Measuring Person-Job Fit With a Profile-Comparison Process. Journal of Applied Psychology, 75 (6), 648–657.

[21] Cappeli, P. (2001). Making the Most of On-Line Recruiting. Harvard Business Review, 139–146.

[22] Chandy, R. K.; Tellis, G. J.; MacInnis, D. J. & Thaivanich, P. (2001). What to Say When: Advertising Appeals in Evolving Markets. Journal of Marketing Research, 38, 399–414.

[23] Chapman, D. S.; Uggerslev, K. L.; Carroll, S. A.; Piasentin, K. A. & Jones, D. A. (2005). Applicant Attraction to Organizations and Job Choice: A Meta-Analytic Review of the Correlates of Recruiting Outcomes. Journal of Applied Psychology, 90 (5), 928–944.

[24] Chapman, D. S. & Webster, J. (2003). The Use of Technologies in the Recruiting, Screening, and Selection Processes for Job Candidates. International Journal of Selection and Assessment, 11 (2/3), 113–120.

[25] Childers, T. L. & Houston, M. J. (1984). Conditions for a Picture-Superiority Effect on Consumer Memory. Journal of Consumer Research, 11 (2), 643–654.

[26] Cober, R. T.; Brown, D. J.; Keeping, L. M. & Levy, P. E. (2004). Recruitment on the Net: How Do Organizational Web Site Characteristics Influence Applicant Attraction? Journal of Management, 30 (5), 623–646.

[27] Cober, R. T.; Levy, P. E. & Brown, D. J. (2004). Form, Content and Function: An evaluative Methodology for Corporate Employment Web Sites. Human Resource Management, 43 (2/3), 201–218.

[28] Cober, R. T.; Levy, P. E.; Brown, D. J.; Keeping, L. M. & Cober, A. B. (2003). Organizational Web Sites: Web Site Content and Style as Determinant of organizational attraction. International Journal of Selection and Assessment, 11 (2/3), 158–169.

[29] Cober, R. T.; Brown D. J.; Blumental, A. J.; Doverspike, D.& Levy, P. E. (2000). The Quest for the Qualified Job Surfer: It's Time the Public Sector Catches the Wave. Public Personnel Management, 29 (4), 479-495.

[30] Collins, C. J. (2007). The Interactive Effects of Recruitment Practices and Product Awareness on Job Seekers´ Employer Knowledge and Application Behaviours. Journal of Applied Psychology, 92 (1), 180–190.

[31] Coyle, J. R. & Thorson E. (2001). The Effects of Progressive Levels of Interactivity and Vividness in Web Marketing Sites. Journal of Advertising, 30 (3), 65–77.

[32] Crispin, G. & Mehler, M. (1997). Recruiting Rockets through Cyberspace. HR Magazine, 42 (12), 72–77.

[33] Daft, R. L. & Lengel, R. H. (1986). Organizational Information Requirements, Media Richness and Structural Design. Management Science, 32 (5), 554–571.

[34] Dineen, B. R.; Ash, S. R. & Noe, R. A. (2002). A Web of Applicant Attraction: Person–Organization Fit in the Context of Web-Based Recruitment. Journal of Applied Psychology, 87 (4), 723–734.

[35] Dineen, B. R.; Ling, J.; DelVecchio, D. & Ash, S. R. (2007). Aesthetic Properties and Message Customization: Navigating the Dark Site of Web Recruitment. Journal of Applied Psychology, 92 (2), 356–372.

[36] Dineen, B. R. & Noe, R. A. (2009). Effects of Customization on Application Decisions and Applicant Pool Characteristics in a Web-Based Recruitment Context. Journal of Applied Psychology, 94 (1), 224–234.

[37] Eckhardt, A.; Weitzel, T.; Koenig, W.& Buschbacher, J. (2007). How to Convince People who don't Like IT to Use IT: A Case Study on E-Recruiting, Proceedings of the 13th Americas Conference on Information Systems (AMCIS 2007), Keystone, Colorado, USA.

[38] Eddy, E. R.; Stone, D. L. & Stone-Romero, E. F. (1999). The Effects of Information Management Policies on Reactions to Human Resource Information Systems: An Integration of Privacy and Procedural Justice Perspectives. Personnel Psychology, 52 (2), 335–358.

[39] Erb, H.-P. & Büscher, M. (2005). Jetzt, gleich oder später? Zum Einfluss des Zeitverlaufs persuasiver Kommunikation auf Informationsverarbeitung und Urteilsbildung. Wirtschaftspsychologie, 7, 81–91.

[40] Feldman, D. C. & Klaas, B. S. (2002). Internet Job Hunting: A Field Study Of Applicant Experiences With On-Line Recruiting. Human Resource Management, 42 (2), 175–192.

[41] Gardener, W. L.; Reithel, B. J.; Foley R. T.; Cogliser, C. C. & Walumbwa, F. O. (2009). Attraction to Organizational Culture Profiles Effects of Realistic Recruitment and Vertical and Horizontal Individualism Collectivism, Management Communication Quarterly, 22 (3), 437–472.

[42] Gatewood, R. D.; Gowan M. A. & Lautenschlager G. J. (1993). Corporate Image, Recruitment Image, and Initial Job Choice Decisions. Academy of Management Journal, 36 (2), 414–427.

[43] Grund, C. (2001). Zum Signalcharakter unterschiedlicher Wege der Stellenfindung. Die Betriebswirtschaft, 61, 519–529.

[44] Grund, C. (2006). Mitarbeiterrekrutierung über das Internet – Marktanalyse und empirische Untersuchung von Determinanten und Konsequenzen für die Arbeitnehmer. Zeitschrift für Betriebswirtschaft, 76 (5), 451–427.

[45] Harris, M. M.; van Hoye, G. & Lievens, F. (2003). Privacy and Attitudes towards Internet-Based Selection Systems: A Cross-Cultural Comparison. International Journal of Selection and Assessment. 11 (2/3). 230–236.

[46] Hausknecht, J. P.; Day, D. V. & Thomas, S. C. (2004). Applicant Reactions to Selection Procedures: An Updated Model and Meta-Analysis. Personnel Psychology, 57 (3), 639–683.

[47] Keller, K. L. (1993). Conceptualizing, Measuring, Managing Customer-Based Brand Equity. Journal of Marketing, 57 (1), 1–22.

[48] Kin, S. & O`Connor, J. (2009). Assessing Electronic Recruitment Implementation in State Governments: Issues and Challenges. Public Personnel Management, 38 (1), 47–66.

[49] Kosfeld, C. (2003). Eintauchen in mediale Welten. Immersionsstrategien im World Wide Web. Deutscher Universitätsverlag GmbH.

[50] Kristof-Brown, A. L. (1996). Person-Organization Fit: An Integrative Review of ITS Conceptualizations, Measurement and Implications. Personnel Psychology, 49 (1), 1–49.

[51] Kristof-Brown, A. L.; Zimmerman, R. D. & Johnson, E. C. (2005). Consequences of Individuals Fit at Work: A Meta-Analysis of Person-Job, Person-Organization, Person-Group, and Person-Supervisor Fit. Personnel Psychology, 58 (2), 281–342.

[52] Kuhn, P. & Skuterud, M. (2000). Job Search Methods: Internet versus Traditional. Monthly Labour Review, 123 (10), 3–11.

[53] Lievens, F. & Harris, M. M. (2003). Research on Internet Recruiting and Testing: Current Status and Future Directions. International Review of Industrial and Organizational Psychology, 16, 131–165.

[54] Liu, Y.& Shrum, L. J. (2002). What Is Interactivity and Is It Always Such a Good Thing? Implications of Definition, Person, and Situation for the Influence of Interactivity on Advertising Effectiveness. Journal of Advertising, 31 (4), 53–64.

[55] Maurer, S. D. & Liu, Y. (2007). Developing effective e-recruiting websites: Insights for managers from marketers. Business Horizons, 50, 305–314.

[56] McMillan, S. J. & Hwang, J.-S. (2002). Measures of Perceived Interactivity: An Exploration of the Role of Direction of Communication, User Control, and Time in Shaping Perceptions of Interactivity. Journal of Advertising, 31 (3), 29–42.

[57] McMillan, S. J.; Hwang, J.-S. & Lee, G. (2003). Effects of Structural and Perceptual Factors on Attitudes toward the Website. Journal of Advertising Research, 43 (4), 400–409.

[58] Milgrom, P. & Roberts, J. (1986). Price and Advertising Signals of Product Quality. Journal of Political Economy, 94 (4), 796–821.

[59] O'Reilly III, C. A.; Chatman, J. & Caldwell, D. F. (1991). People and Organizational Culture: A Profile Comparison Approach to assessing Person-Organization Fit. Academy of Management Journal, 34 (3), 487–516.

[60] Palmer, J. W. (2002). Web Site Usability, Design, and Performance Metrics. Information Systems Research, 13 (2), 151–167.

[61] Pfeffer, J. (1994). Competitive Advantage through People. California Management Review, 36 (2), 9–28.

[62] Roberson, Q. M.; Collins, C. J. & Oreg, S. (2005). The Effects of Recruitment Message Specificity on Applicant Attraction to Organizations. Journal of Business and Psychology, 19 (3), 319–340.

[63] Rynes, S. L.; Bretz, R. D. & Gerhart B.. (1991). The Importance of Recruitment and Job Choice: A Different Way of Looking. Personnel Psychology, 44(3), 487–521.

[64] Rynes, S. L. & Lawler, J. (1983). A Policy-Capturing Investigation of the Role of Expectancies in Decisions to Pursue Job Alternatives. Journal of Applied Psychology, 68 (4), 620–631.

[65] Rynes, S. L. & Miller, H. E. (1983). Recruiter and Job Influences on Candidates for Employment. Journal of Applied Psychology, 68 (1), 147–154.

[66] Sinar, E. F.; Reynolds, D. H. & Paquet, S. L. (2003). Nothing but 'Net? Corporate Image and Web-based Testing. International Journal of Selection and Assessment, 11 (2/3), 150–157.

[67] Simon, S. J. & Peppas, S. C. (2005). Attitudes towards Product Website Design: A Study of the Effects of Gender. Journal of Marketing Communications, 11 (2), 129–144.

[68] Song, J. H. & Zinkhan, G. M. (2008). Determinants of Perceives Web Site Interactivity. Journal of Marketing, 72, 99–113.

[69] Spence, M. (1973). Job Market Signaling. Quarterly Journal of Economics, 87 (3), 355–374.

[70] Steuer, J. (1992). Defining Virtual Reality: Dimensions Determining Telepresence. Journal of Communication, 42 (4), 73–93.

[71] Thorsteinson, T. J.; Palmer, E. M.; Wulff, C. & Anderson, A. (2004). Too Good to be True? Using Realism to Enhance Applicant Attraction. Journal of Business and Psychology, 19 (1), 125–136.

[72] Tremayne, M. (2005). Lessons Learned from Experiments with Interactivity on the Web. Journal of Interactive Advertising, 5 (2), 40–46.

[73] Turban, D. B. & Cable D. M. (2003). Firm Reputation and Applicant Pool Characteristics. Journal of Organizational Behaviour, 24 (6), 733–751.

[74] Van Hoye, G. & Lievens, F. (2007). Investigating Web-Based Recruitment Sources: Employee Testimonials vs. Word-of-mouse. International Journal of Selection and Assessment, 15 (4), 372–371.

[75] Veryzer Jr., R. W. & Hutchinson J. W. (1998). The Influence of Unity and Prototypicality on Aesthetic Responses to New Product Designs. Journal of Consumer Research, 24 (4), 374–394.

[76] Wiechmann, D. & Ryan, A. M. (2003). Reactions to Computerized Testing in Selection Contexts, International Journal of Selection and Assessment, 11 (2/3), 215–229.

[77] Wolter, R. P. (2007). Personalbeschaffung im Zeichen des War for Talent. E-Recruiting, Arbeit und Arbeitsrecht, 9, 538–540.

[78] Zusman, R. R. & Landis, R. S. (2002). Applicant Preferences for Web-based versus Traditional Job Postings. Computer in Human Behaviour, 18 (3), 285–296.

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SESSION D

Topic: **e-Learning and e-Competencies**

Chair: **Huub Ruël**

E-learning in India - The Role of National Culture and Practical Implications

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Abstract. *The primary purpose of this research paper is to understand the role of national cultural dimensions on e-learning practices in India. India is considered a major player in the world economy today. US multinationals are significantly increasing their presence in India and understanding local HRM practices will help global companies transition better. This conceptual paper uses the national cultural dimensions of the GLOBE project, which is identified as the most topical theoretical framework on culture. The national cultural scores are used to develop hypotheses for specific cultural dimensions. Examples from the literature are also used to strengthen the proposed hypotheses. This research proposes that national cultural dimensions of power distance, uncertainty-avoidance, in-group collectivism, and future-orientation influence e-learning practices. Future research can definitely empirically test the hypotheses proposed. This study provides e-learning strategies for multinationals while integrating two theoretical models. The suggested strategies can be implemented by multinationals in other countries with similar national cultural dimensions also. This research also proposes a theoretical e-learning model identifying the impact of national cultural dimensions on e-learning practices. This research also provides practitioners a strategic implications model that could be implemented for e-learning initiatives in multinationals.*

Keywords: E-learning and National Culture, Cross-cultural management, GLOBE Study and India, E-learning and India, National cultural dimensions and e-HRM.

1 Introduction

1.1 E-learning: Definition and pros and cons

E-learning can be defined as providing training and development to employees via any electronic medium such as the internet, intranet, satellite TV, video or compact discs (CD). Jay Cross, founder of Internet Time Group and global consultant, introduced the term e-learning in 1998 suggesting a comprehensive training method via any technology-based medium. Several terms are used to refer to e-learning such as computer-based-training (CBT), online learning (OL), virtual learning (VL), internet-based training (IBT) among several others [19, 6].

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E-learning can further be divided into synchronous and asynchronous methods. Asynchronous e-learning methods provide immense flexibility to the learners allowing them learn the online material at their own convenience and pace. Further, the learner and the trainer may not be communicating online at the same time. On the other hand, synchronous e-learning allows for concurrent discussion among learners and trainers through enhanced technological capabilities such as video-conferences and live chats providing a very social learning environment [29].

Organizations have identified several advantages with this learning method. As learning styles among individuals vary greatly, online learning allows employees progress at their own pace. An online training program tends to be more standardized than instructor-based learning. E-learning schedules do not usually follow a strict format of specific place and time providing employees undeniable flexibility in learning. Employees can enhance their own professional development on any subject matter from a variety of experts. Further, e-learning is very conducive to businesses that want to provide learning and development to a multitude of employees in geographically dispersed locations. As the world is becoming a global marketplace, e- learning allows for an international learning platform [1, 6].

E- learning has proven to be very cost-effective and has shown to provide a positive return on investment. [1, 6]. IBM, the giant technocrat, confirms savings through e-learning initiatives-$50,000 for every 1000 classroom training days being replaced by e-learning programs. Classroom training is expensive as it involves the instructor's fees, employees' travel expenditures to training sites, and the cost of training rooms [1].

On the other hand, practitioners [42, 20] and scholars [47, 44] have identified several disadvantages to e-learning. This learning method requires employees to demonstrate a lot of discipline and self-direction. Further, the collaborative and interactive spirit of classroom training cannot be replicated by an online medium. For instance, IBM managers preferred learning soft management skills only through classroom training [44].

Employees may not seek to clarify their learning concerns immediately as they may do in classroom environments. Therefore employees may not actually master the subject content. Many e-learning programs try to include too much content into their learning modules causing an information overload. In contrast, classroom training provides for clarification of immediate doubts and also opportunities for discussions that enhance learning. E-learning does not facilitate easy learning for content material that is new and subject matter that needs a lot of knowledge sharing. Also, from a business perspective, the start-up costs for establishing e-learning programs may be very prohibitive for small and medium-sized companies. Further, e-learning may be conducive to employees who are tech-savvy and are independent learners [47].

The global e-learning market is predicted to surpass $52.6 billion by 2010 with North America having the lion share of this market. As of today, about 60% of US organizations actively promote e-learning to train their employees [33]. US organizations, such as Booz Allen and IBM, frequently contend for the top awards of ASTD (American Society for Training and Development) for the training support they provide their employees. Booz Allen, a global consulting company in Northern Virginia, uses e-learning method predominantly for career development and provides about 600 learning modules to enhance employee learning [34]. In 2007, IBM spent $700 million enhancing employee online learning with each employee spending at least 55.5 hours annually augmenting their online learning skills. Their latest online creation

known as IBM@Play involves business simulations and the use of avatars (three dimensional images) to enhance organizational learning [44].

1.2 Challenges in adopting e-learning

E-learning provides employees a self-paced, autonomous, repetitive, cost-effective and flexible method of training. On the other hand, an instructor-based training encourages group interaction, identifies the training expert, and provides a sense of formality. In a study on global e-learning initiatives, only 24% of the global companies identified their e-learning initiatives overseas were successful [44, 20].

Scholars [41, 30, 36] and practitioners [20, 42] identify several challenges with the adoption of e-learning; 1) National cultures, 2) learning and thinking styles, 3) age of trainee audience 4) polychronic and monochronic concept of time, and 5) technical infrastructure 6) translation issues. The literature on e-learning suggests very mixed results as to what impacts knowledge and learning outcomes.

National cultural dimensions of power-distance, uncertainty-avoidance, institutional collectivism, and future orientation have shown to influence methods of training learning and training. Some researchers suggest that high power-distance cultures prefer to have subject matter experts disseminate training information as such a method of instruction identifies training experts and provides them with the status and power that such cultures value. Further in such cultures an authority delivering the training content has better results on trainees who feel a sense of obligation to learn from such experts [41, 48]. The literature also implies also that high uncertainty-avoidance cultures prefer to have any approach to training that reduces the uncertainty in mastering the training content. Employees from such cultures prefer to have learning methods that are clearly structured with definite learning outcomes. E-learning is considered risky due to problems that trainees may encounter in the learning process, such as technological or navigational problems [15, 47].

Scholars suggest that collectivist cultures prefer a group approach to learning as it satisfies their communal interest in learning and also demonstrates concern for the entire group's learning outcomes. Collective cultures exhibit a strong group focus on group harmony. On the other hand, individualistic cultures reflect a strong emphasis on self-growth and individual potential which e-learning methods provide. Employees from cultures with high future orientation have a strong focus on their future career prospects and hence any form of education or training is cherished [50, 41, 21].

Learning approaches of deductive and inductive influence training methods such that deductive learners prefer to have an emphasis on the training process while inductive learners focus on the results of training. Collectivist cultures prefer a deductive reasoning style, while individualistic cultures prefer an inductive learning style. Deductive learners are usually trained on concepts from the general to the specific principles and thus prefer collective learning, while inductive learners are trained from the specific to the general principles and hence prefer independent inquiry [41].

[50] suggests that three kinds of thinking styles help employees approach their attitude to learning and development; inventive, evaluative and implementing. Inventive style of thinking encourages employees to suggest new ideas and thoughts. Evaluative styles persuade employees to challenge old paradigms and construct new ones. Finally, implementing styles encourage employees to be passive recipients of training information while subject matter experts provide content information. Self-directed or

e-learning learning styles may be more conducive to inventive and evaluative learning than implementing learning cultures.

Learning preferences could also be dictated by the age of trainees. Younger trainee audiences were able to assimilate e-learning content quicker than older trainee audiences. Older audiences find it more difficult to change their traditional paradigms of learning [20]. However, [38] in a study of 194 employees of both private and public banking sectors of India found that age of the trainees did not result in any different consequences for e-learning.

The concept of managing time as defined by monochronic or polychronic cultures further impacts how employees manage their time for learning. Monochronic cultures tend to be single-tasked and people from such cultures usually finish one task before moving to another. Hence employees from such cultures manage their time quite well and therefore can handle he demands of a self-paced e-learning environment. However, polychronic cultures tend to multi-task and people from such cultures try to do more than one task at a time. Thus employees from these cultures find the process of time management and self-paced e-learning quite challenging [41, 20].

[39] and [16] also suggest that e-learning initiatives could also be hampered by the lack of appropriate technological infrastructures. Emerging economies frequently experience the phenomenon of "digital-divide" where the population in these nations are strongly divided between who has access to technology and who does not. While most of the western nations are used to the concept of laptops both in their homes and offices such technological luxuries may not be available in emerging economies. For instance, a comparison of internet penetration (IP) suggests that US and Japan lead with IP of 69.3% (US), 67.2% (Japan), and economies like China and India lag with IP of 9.3 % (China) and 5.4% (India). The concept of continuous or online learning may be a contradiction in such economies which seems to be dictated by who has the money to access technology [16].

[20] suggests improper translations and use of ethnocentric expressions could hinder the process of e-learning in other cultures. In an e-learning project in India and United Arab Emirates trainees took longer to complete e-learning programs that were similar to the ones delivered in the US. Trainees in India and United Arab Emirates took 25% more time to complete the webinars because of style of language and expressions were US-centered. It is important to understand the vocabulary of the target audience so that e-learning transitions can be smooth.

1.3 E-learning initiatives: India

Indian organizations emphasize training and development to enhance knowledge capital and also stay on par with the global competition [11, 54]. Further, as Indian educational institutions do not sufficiently prepare students for corporate work; Indian organizations invest substantially in training and development to provide the "finishing school" touch to job applicants [2, 50]. For instance, Infosys Technologies Ltd, a leader in information technology, provides on an average four months of training for their entry-level trainees with a typical day being from 9:00 am to 5:30 pm. [53]. Suzlon Energy Ltd, a global energy leader, operating in 22 countries, conducts "Campus to Corporate Conversion" training programs for almost 6 months for their new applicants [52]. Therefore the concept of training and e-learning is welcomed by most large and IT organizations [10, 55, 52].

In India, Sanjay Sharma, CEO of Tata Interactive systems championed the e-learning efforts in the 1990s. E-learning initiatives at the academe and corporate levels have tremendous support from the federal government. The National Knowledge Commission was established to make India a potential leader in the field of knowledge and learning [6, 50].

The government is promoting e-learning initiatives in education by providing training to faculty to ensure smooth transitions for students from class-room environments to self-directed learning styles. E-learning initiatives in the academe have provided several advantages for students in the Indian culture. Students feel they can question their teachers via an internet-based training more freely than in a traditional classroom. Educators in high-power distance cultures, such as India, display a lot of authority and power and students usually are passive recipients of knowledge in such learning atmospheres. Students seem to be more regular in attending e-learning classes as chronic traffic in heavily crowded metropolitan cities creates tremendous commuter problems. Finally, educators are able to create deadlines and send reminders for academic projects more efficiently for students via a web-based learning method creating learning efficiency [6, 5].

Indian organizations are also promoting e-learning to enhance the knowledge capital of their employees and therefore contribute to firm performance. In a study of 640 managers from public, private and multinationals organizational learning was positively related to firm performance. In this study it was observed that line managers had a more significant role in developing organizational learning programs than HR managers. E-learning initiatives seem more predominant in large Indian companies and multinationals that tries to provide the best practices for their employees [9, 8].

[7] also observed some impediments for e-HRM services in Indian corporate are resistance from HR leaders that they may have reduced control over HRM functions and also lose their primary jobs. In another incident, teachers in an academe institution did not allow students to use their computers and log on to their online programs fearing for their job security. Also, many university students have indicated preferences to the importance of social interaction in learning [6].

Other critical barriers for implementing e-learning initiatives include lack of proper technological infrastructures. While on one hand, India is applauded for its leadership position in the IT (information technology), the paradox of "digital-divide" exists. This phenomenon has created a virtual divide between the affluent enjoying the benefits of latest technology, while the middle-class and lower economic levels are left behind. India's population of one billion has only 5.4 % internet penetration with approximately about sixty million internet users. In contrast, the US has about 69.3% internet penetration with about 207 million internet users [16]. The Indian public school system, of 1 million schools, has only 0.2 percent of computer-based education [6]. Poor infrastructure and undependable power shortages make any computer-based learning programs quite challenging for the majority of the population. While the big metropolitan cities of Mumbai, Bangalore, Chennai, Delhi and Hyderabad are very well-connected, technological infrastructure is not to global standards in most cities [5].

US global organizations are choosing India for several reasons to establish their overseas operations [53, 45]. Primarily, labor costs for entry-level knowledge professionals in India is around $25-$50/hour, in comparison to those of $75/hour in the US [29], proving to be very cost-effective for multinationals. Further, the country has a very well-educated English-speaking work force that can communicate easily with other

English-speaking cultures [6]. The country's work force is commended for its high work ethic- demonstrating a willingness to work twelve- hour work days for six days a week [30, 56].

Today 125 Fortune 500 US companies have their R &D centers in India [56]. Dell is planning to double it work staff in India over the next three years to almost hire 20,000 technical workers. Microsoft is going to add another 3000 jobs in India over the next three to four years [22]. Pearson Educational Technologies, educational leader, has moved its entire e-learning development to India to take advantage of the sophistication of the local information technology departments and lower labor costs [32].

This conceptual article is organized as follows: First, it details the theoretical framework which is divided into three sections- learning theories, social customs and history, and national cultural dimensions with specific relevance to India. The methodology section identifies the rationale for using the GLOBE (Global Leadership and Organizational Behavior Effectiveness) cultural study to predict hypotheses for e-learning practices. The results section provides hypotheses for specific national cultural dimensions that influence e-learning practices. The discussion section integrates the theory and results to provide specific strategies for multinationals. Finally, the paper identifies contributions for both scholars and practitioners. The paper also includes a theoretical and practitioner model for researchers and practitioners.

2 Theory: Learning theories and National Cultural Dimensions

2.1 Learning Theories

Learning theories help understand how individuals process, store, and recall information that is being learnt. Scholars have proposed several theories to provide an understanding on individual learning such as the behaviorist, cognitive learning, constructivist, social learning, and social constructivist [10, 54].

The behaviorist theory suggests that individuals learn by observations followed by positive or corrective reinforcement. Examples of such learning can be observed when individuals are trying to learn any psychomotor skills (cycling, driving) or when trying to learn job-related skills that can be mastered by observation (job shadowing in retail, manufacturing). Further in the e-learning environment, the behaviorist approach can be included to allow learners to observe content or task to be mastered followed by targeted feedback [10, 54].

Cognitive learning theory suggests that individuals learn based on the importance of the learning material to the learner, the learner's self-efficacy skills (the learner's confidence that we can learn this), and the integration of past and current knowledge. Examples of cognitive learning approach can be observed at the work-place when employees are sent on new job assignments-thus employees perceive the new assignment important to their professional growth which requires an assimilation of past and currents job skills [10, 54].

Constructivist learning theory suggests that individuals learn based on how they can construct the learning material to make it meaningful. The knowledge that the learners master and construct are transferred to the work-place. Examples of constructivist learning occur when employees undergo training programs where they have to create and develop build their own subject knowledge [10, 54].

Social learning theory is considered a bridge between behaviorist and cognitive learning theory as it includes observation, retention and recall happening dynamically at the same time. Finally, the social constructivist theory suggests that learning is a strong domain of the socio-cultural environment and individuals develop and construct their learning styles based on their social and cultural interactions. Individuals' cultural and social perspectives provide the basic learning foundation as to how individuals build, retain, and recall information. Individuals learn based on how they have been exposed to learning through their social and cultural environment [10, 48, 54]. This paper will integrate the social constructivist learning theory and national cultural dimensions to identify their influence on e-learning methods in India.

2.2 Social and historical context

Portuguese invaders introduced the term *castas* in the 16th century which meant tribes, groups, or families. They observed Indians working harmoniously but in separate groups [17]. The Indian caste system was divided into four principal categories based on a social and economic hierarchy- the highest, the *Brahmins*, (intellectual leaders), *Kshatriyas*, (soldiers of war), *Vaishyas*, (business traders), and *Shudras*, (unskilled laborers) [27, 25]. The early presence of such a rigid caste system had powerful organizational implications. The caste system created distinct labor categories and status differences among the groups. Consequently, the concepts of inequality, loyalty, and power distance were established early in the Indian social system [38, 26, 27].

Governments and political parties also exert a considerable influence on management practices. A contemporary example is that of the Communist party's biased selection practices of hiring only their political candidates as upper-level executives in Eastern European organizations [38]. India's was colonized by the British for almost a century and they introduced a work culture along the same lines of inequality established by the Indian caste system. Differential treatment between the superiors and their subordinates was the norm in British organizations in India. [27, 25, 26]. The British reinforced the caste distinction at the work place by promoting and recommending only the upper caste to prominent jobs [25, 26].

2.3 National Culture of India: The Globe Study

This study uses the GLOBE cultural dimensions as it one of the most recent studies [18] on organizational values and cultures. It has synthesized cultural findings from 61 countries on nine core cultural dimensions. The predominant cultural dimensions are assertiveness, future-orientation, gender egalitarianism, humane orientation, institutional collectivism, in-group collectivism, performance orientation, power distance and uncertainty-avoidance. Table 1 provides definitions of these cultural dimensions.

#	Cultural Dimension	Definition
1	Assertiveness	The degree to which individuals in organizations or societies are assertive in social relationships
2	Future-Orientation	The degree to which individuals in organizations or societies plan for the future
3	Gender Egalitarianism	The degree to which organizations or society promotes gender equality
4	Humane Orientation	The degree to which individuals in organizations or societies reward individuals for positive behavior
5	Institutional Collectivism	The degree to which organizational and institutional practices encourage collective action
6	In-group Collectivism	The degree to which individuals in societies reflect collectivist behavior
7	Performance Orientation	The degree to which upper management in organizations and leaders in societies reward group members for performance excellence
8	Power Distance	The degree to which organizations and societies accept power
9	Uncertainty-Avoidance	The degree to which organizations and societies avoid uncertainty by relying on practices and procedures

Table 1: Definitions of Cultural Dimensions

Source: Chhokar, J., Brodbeck, F., & House, R (Eds) (2007). Culture and Leadership Across the World. The GLOBE book of In-depth studies of 25 societies. Lawrence Erlbaum Associates. Mahwah, New Jersey

Six of these dimensions have their origins from Hofstede's cultural studies. The collectivism construct has been divided into two specific dimensions, institutional and in-group collectivism, to reflect differences between societal and organizational cultures. The masculinity dimension has been developed into assertiveness and gender egalitarianism to reflect individual differences and gender equity. Future and humane orientation have their origins from studies of Kluckholm and Strodbeck and the performance orientation was derived from McClelland's work on achievement [18].

3 Methodology

This conceptual research paper uses the latest cultural scores from the GLOBE study to predict the influence of culture on e-learning practices in India. Most cultural studies on

human resource management and training use national cultural dimensions of Hofstede [23, 36] which have been applauded and criticized for several methodological issues.

Hofstede, the principal research investigator, analyzed data from a single multinational company (IBM) and its 53 regional subsidiaries from 1967-1970 to provide his pioneer work on national cultures to the research world. The respondents for his research were predominantly non-managerial employees and the survey was primarily used as a management diagnostic tool to understand the nuances in IBM's overseas branches. In contrast the GLOBE research, conducted from 1994-1997, is a collaborative effort of about 170 researchers from 61 countries researching about 951 non-multinational organizations. The GLOBE respondents were managerial employees and this massive research was theory-driven, based on extensive academic literature [18, 27].

Apart from these methodological issues, the GLOBE research introduced cultural dimensions both at the organizational and societal level- therefore collecting two units of analysis (cultural practices or "as is" and cultural values "should be"). This is a distinguishing feature of this cross-cultural study [25, 12]. This study also introduced a new cultural dimension, performance orientation, not addressed in that of Hofstede's. Scholars suggest that Hofstede's studies did not measure feminine scores directly- a lack of masculinity was considered feminine, but in contrast, the GLOBE project measured feminine scores per se [43]. The results section provides the scores and hypotheses for power distance, uncertainty-avoidance, in-group collectivism, & future-orientation.

4 Results

This paper will identify four national cultural dimensions that have demonstrated sufficient impact on learning and knowledge construction. Specifically, the dimensions of power-distance, uncertainty-avoidance, in-group collectivism and future-orientation will be discussed. Scholars suggest the division of power (power-distance), the concept of structure (uncertainty-avoidance), the collectivist atmosphere (in-group collectivism) and planning ahead (future-orientation) have considerable impact on learning practices [3, 48]. Table 2 provides scores and ranks for India and the US on these cultural dimensions. The next section will discuss specific hypotheses for these dimensions and their relevance to e-learning practices.

#	Cultural Dimension	India (Rank)	US (Rank)
1.	Power Distance	5.47 (16)	4.88 (49)
2.	Uncertainty-Avoidance	4.15 (29)	4.15 (28)
3.	In-Group Collectivism	5.92 (4)	4.25 (51)
4.	Future Orientation	4.19 (15)	4.15 (16)

Table 2: National Cultural Dimension Scores for India and the US

Source: Chhokar, J., Brodbeck, F., & House, R (Eds) (2007). Culture and Leadership Across the World. The GLOBE book of In-depth studies of 25 societies. Lawrence Erlbaum Associates. Mahwah, New Jersey.

*(For the GLOBE study, a score of 4 indicates gender egalitarianism, a score higher than 4 indicates feminine orientation, while a score lower than 4 indicate masculine orientation).

4.1 Power- Distance

The high Indian scores on power-distance (5.47) reflect a society that is distinguished by social hierarchy and power [17]. Formal titles such as Mr., Mrs., Dr, Sir, or Madam are widely used both in the corporate and in education [17]. Subordinates do not sit down till they are asked to do so by their superiors. Generally Vice-Presidents and upper-level managers in Indian organizations use private rooms for their office, while other employees have general cubicles- indicating a clear class distinction. Indian subordinates rarely circumvent their bosses as such behavior is considered defiance to authority. In corporate environments, subordinates usually carry out their superiors' decisions implicitly without questioning [25, 27].

In training and development, such national cultural values dictate the type of learning and training methods employees would prefer. High power distance cultures favor a learning environment that differentiates and identifies the source of expertise. An instructor-based training is compatible with such deeply entrenched cultural values. The trainers offer training based on their knowledge and expertise which provides them with status and power. The trainees receive and learn information from the experts in the appropriate training protocol- as passive recipients and questioning only wherever

relevant. Therefore such cultures may not view replacing human experts with computer-based methods very positively [41, 48].

In an empirical study on 310 students, [48] demonstrated that students from high-power distance cultures prefer passive methods to active methods of teaching. Passive methods identified sources to provide the information predominantly in the form of lectures, guest speakers, or classroom presentations. Active methods required students to be responsible for their own learning and involved independent learning in case studies, research projects or group projects. Students from high power distance cultures preferred to receive learning from an expert and also demonstrated less preference for self-directed learning styles [48].

E-learning requires considerable autonomy and responsibility for one's own learning which high power distance cultures do not prefer. Classroom or passive methods of presentations seem to satisfy the concept of identifying levels, which is very important in high power distance cultures; 1) trainers are identified as the upper level with the required knowledge and 2) trainees are identified as the lower level with less expertise [41, 48].

Learning theorists suggest that individual learning is a consequence of the socio-cultural environment and early developmental interactions [10, 54]. In India, individuals have been accustomed to constructing and developing their knowledge in a passive way as status differences as a consequence of social distinctions and colonial rule encouraged submissive learning. Employees were encouraged to rely on authority for any learning or training outcomes. Therefore it would be implied that in an e-learning environment, employees will prefer synchronous e-learning methods where a training authority or expert can be visibly identified through videoconferencing or online chats. Therefore it would be right to argue that high power distance cultures would more likely adopt synchronous e-learning methods to those of asynchronous as it allows them to make power and status distinctions.

Based on the following discussion, and the national cultural scores and ranks (India: 5.47; US; 4.88; Rank; India; 16; US; 49), this leads to the first hypothesis:

H1a: Employers from high power distance cultures are more likely to use synchronous e-learning methods than employers in low-power distance cultures.

H1b: Employers from Indian organizations are more likely to use synchronous e-learning methods than employers in US multinationals.

4.2 Uncertainty-Avoidance

The high Indian scores on uncertainty-avoidance (4.15) reflect a culture that is very ritualistic and ceremonial- therefore the society adopts elaborate procedures to reduce anxiety. Many Indian social customs suggest a culture that strongly tries to circumvent the unknown. For instance, in business, employers consult astrologers to predict the future and take business decisions in parallel with astrological predictions. For marriages, social customs dictate that the astrological stars of the prospective groom and bride are matched before the wedding plans are even established [17].

In training and development, such national cultural dimensions demonstrate a strong need to reduce uncertainty in the learning process. High uncertainty-avoidance cultures prefer a learning environment that clearly provides structure and rules. A classroom-based environment allows for such a structured learning method. The training expert

clearly sets the rules and expectations and the employees feel secure in such a learning process [48, 50].

In an empirical study of 310 university students, it was observed that students from high uncertainty-avoidance cultures preferred learning styles that were less risky from the learners' perspective. The top three learning methods of students were lectures by instructor, classroom discussion and reading textbooks. These learning methods require minimal efforts from the learners and hence reduce the anxiety in the training process [48].

E-learning requires a lot of self-mastery and independent thinking which can be quite risky for anxious learners as navigational and technological problems occur. Learners should be comfortable with the isolative self-exploratory learning process of e-learning that can be intimidating even to the experienced [50, 39]. Learning theorists suggest that individual learning is a product of the environment that individuals have been cultured and exposed to [10, 54]. In India, there is a strong tendency to circumvent the unknown and therefore individuals prefer a very predictable work or learning environment. Therefore in an e-learning environment employees will prefer synchronous e-learning methods as it would provide a more structured learning atmosphere which will mitigate any concerns associated with new learning. Asynchronous methods allow individuals a lot more autonomy and self-direction which might create more anxiety for the new learner.

Based on the following discussion, and the national cultural scores and ranks (India: 4; 15; US; 4.15; Rank: India; 29: US; 28), this leads to the second hypothesis:

H2a: Employers from high uncertainty-avoidance cultures are more likely to use synchronous e-learning methods than employers from low- uncertainty-avoidance cultures.

H2b: Employers in Indian organizations are more likely to use synchronous e-learning than employers in US multinationals

4.3 In-group Collectivism

The high Indian scores on in-group collectivism (5.92) indicate a culture that is very tightly knit to both immediate and extended family. Collectivist cultures are characterized by a very close social framework where members distinguish themselves from in-groups and out-groups. In-group members could be members from the same social caste, religion, immediate or extended family. In India, it is very easy to distinguish a person's caste and religion by her or his last name. Indian employers frequently recruit, hire, promote and train employees from their own social castes and families [14, 13].

In training and development, high collectivist scores depict a strong need for an interactive group learning process. Collectivist cultures focus on the process of learning rather than learning outcomes. The context of working and learning together are traditional values deeply held. A case in point- Japanese postal employees display a collaborative work spirit as employees are trained to unload packages from the delivery trucks as a group. In contrast, similar postal work in the US emphasized individual responsibility for unloading postal packages [37, 42].

The learning and training emphasis in collectivist corporate cultures is gaining knowledge together and not trying to be different. E-learning has a strong emphasis on self-development and individual career advancement that high collective cultures do not

prefer [37]. [42] observes from global e-learning professional projects that only7% of the Japanese companies introduced e-learning initiatives as the cultures' strong preference for group interaction and support dictates any other training method less engaging.

Further, scholars [41, 29] also suggest that learning styles in individualistic and collectivist cultures differ greatly. Individualistic cultures prefer an asynchronous method of e-learning, where individuals construct and build their knowledge independently at their own pace. However collective cultures prefer a synchronous method of learning that allows trainees and trainers to engage in a collaborative spirit of learning. Learning theories also suggest that individuals learning styles are socially and culturally constructed. In India, learning has always been a collaborative effort as trainers and learners as the collectivist orientation seeks a mutual learning process. In a qualitative study on graduate students, [29] observed that asynchronous learning allows time for self-reflection - an aspect that individualistic cultures appreciate. Synchronous learning provides for social support- a trait that collectivist cultures strongly value.

Based on the following discussion, and the national cultural scores and ranks (India: 5.92; US; 4.25; Rank: India; 4: US; 51), this leads to the third hypothesis:

H3a: Employers from high in-group collectivist cultures are more likely to use synchronous e-learning methods than employers from low in-group collectivist cultures.

H3b: Employers in Indian organizations are more likely to use synchronous e-learning than employers in US multinationals

4.4 Future-Orientation

The high Indian scores on future-orientation (4.19) reflect a society that always plan for the future. The Indian culture nurtures children very early with axioms such as "save for a rainy day". This trait to plan for the future is reflected in adults also with most Indians having personal savings bank accounts [17].

In training and development, high scores in this national cultural dimension reflect a work culture that is always planning for their future. Employees from such cultures therefore value any learning and development as it will enhance their future professional status [17, 18]. US joint ventures management observed in China that attractive hiring strategies for Chinese applicants required placing a great emphasis on learning and development opportunities that multinationals could provide. China has high scores in future-orientation and hence employees from such cultures place a strong value on their future employability and any learning opportunities thereof [21].

As individuals in high future-orientation cultures are conditioned to planning and thinking ahead always, learning theorists suggest that this could possibly have consequences in the preferred learning methods. In a qualitative study, it was demonstrated that synchronous e-learning methods allows individuals to plan and organize their learning outcomes. This study demonstrated that 33% of the communication time among learners was spent on planning for future tasks and assignments. Therefore it would be right to argue that high future orientation cultures would prefer e-learning methods that allow them to plan and think ahead such as in synchronous e-learning [29].

Based on the following discussion, and the national cultural scores and ranks (India: 4.19; US; 4.15; Rank: India; 15: US; 16), this leads to the fourth hypothesis:

H4a: Employers from high future-orientation cultures are more likely to use synchronous e-learning than employers in low future-orientation cultures.

H4b: Employers in Indian organizations are more likely to use synchronous e-learning methods of training than employers in US multinationals

Figure 1 provides a theoretical model of national cultural dimensions and e-learning. This framework can be tested by researchers to augment their understanding of national cultural dimensions and e-learning practices.

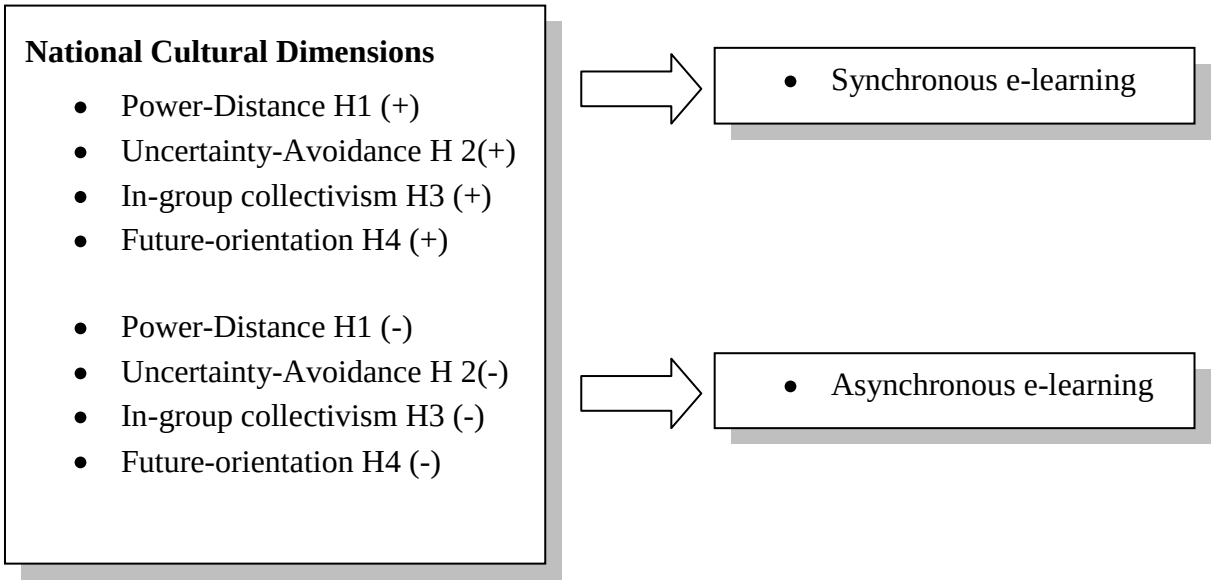

Figure 1: Theoretical Model of National Cultures and E-learning

5 Discussion

National cultural dimensions have shown to have powerful organizational implications. [28] provides evidence of the influence of power-distance on pilot behavior as evidenced from recorded conversations between co-pilots and pilots of Korean Airlines. Korean airlines had a high statistic of airline clashes and the authorities were keen to remedy this problem. An external investigation observed how co-pilots of these airlines obeyed implicitly the orders of their superiors (pilots) regardless of the safety or outcome of their flights. The co-pilots would ignore the orders from the air control towers regarding landing or taking off and follow their pilots' commands without any questions. Korea has a high power-distance culture and these recorded conversations suggest the powerful effect superiors have on subordinates- subordinates refuse to assert their viewpoint even when the safety of hundreds of human lives are in question.

[36] in their meta-analysis of 82 articles on culture and IT suggest that national cultural dimensions (power-distance, uncertainty-avoidance, masculinity-femininity, and collectivism) do impact the adoption of IT services. High power-distance learning cultures demonstrate a strong need to have power vested in an expert which e-learning services may not accommodate. High uncertainty-avoidance cultures find IT services quite risky (technological problems) and hence do not consider any e-HRM services reliable (such as e-recruitment, e-learning). Collectivist cultures have a strong need for face-to face interactions which e-learning may not be very conducive to.

[36] further identify three main conflicts (system, contribution and vision) related to national culture and the adoption of information technology. A system conflict occurs when an IT application (e-learning) brings to surface the cultural differences in implementation of these services. In implementing e-learning, the cultural importance of subject matter experts presenting information in a formal structured classroom environment becomes the main conflict in implementation. A contribution conflict occurs when a society's core values contradict with the application of the IT services (e-learning). A society's core values of being group-oriented or anxious about the unknown can be in direct conflict with the process of e-learning as it is deemed isolative and inherently risky. A vision conflict occurs when the society's values about the technology conflicts with the actual values of the IT application (e-learning). While e-learning is generally considered self-paced, continuous, and a flexible method of learning (actual IT values of e-learning), the society's values (India) may consider e-learning unreliable (lack of subject matter experts), undependable (chronic power outages and low internet penetration) and not engaging (no group interactions) [36].

High power distance cultures prefer a teacher-oriented method of learning as it identifies the expert and provides them with appropriate privileges, status, and power. High uncertainty-avoidance cultures favor structured learning environments and passive methods of learning as it seems to reduce the learning risk. Collectivist cultures find group learning interaction methods more engaging and also considerate of the entire groups' career outcomes. Future-oriented cultures always like to plan ahead and e-learning seems to offer ample opportunities to do so through continuous learning [41, 20].

Learning theories imply learning and knowledge creation is largely a result of how individuals are socially and culturally trained. The method of learning among individuals develops in a chronological way which usually begins in the early formative years which is subsequently reinforced over the academic years culminating in established learning patterns by adult ages. Practitioners from multinationals observe a lot of learning discrepancies while trying to implement any global training programs [10, 48, 54, 41, 42].

Learning discrepancies due to cultural preferences have been observed in different countries. In China, for an e-learning leadership module, both the US and Chinese leaders were asked to learn and assimilate similar content. The Chinese leaders mentioned to their US counterparts that the leadership concepts taught in the online course were not likely to be implemented in China as leadership can be only be understood through personal interactions and relationships. In Korea, for an e-learning problem-solving module, it was observed though Korean employees indicated that they had completed the learning modules they were not able to discuss the content thoroughly. The learning module suggested discussions of newly acquired content matter with their Korean supervisors. In Korea, subordinates do not like to imply having acquired superior knowledge to their supervisors- the hierarchy never changes- the bosses always have more subject knowledge. In Brazil, for an e-learning finance course, Brazilian managers indicated online course completion but their work applications did not reflect thorough mastery of content. It was realized that the gregarious Brazilians prefer face-to face interactions while learning and a solitary learning style was not conducive to absorb subject matter [20].

[23] suggests multinationals should take advantage of national cultures in implementing HRM practices in diverse countries. For instance, introducing team incentives in

collectivist cultures (such as Japan) would be very congruent with the local culture and more likely to produce positive business results. The Indian collectivist orientation has a strong family emphasis which most Indian companies accommodate with family-friendly practices (family retreats, family memberships to clubs). Multinationals should be cognizant that providing HRM practices that are congruent with the local culture is very likely to have affirmative organizational outcomes [40, 46].

For e-learning initiatives to be successful overseas, practitioners should conduct a cultural analysis and understand the role of national cultural dimensions on HRM practices. Based on this deduction, e-learning programs can be modified to provide and get the best from employees in different cultures. In high-power distance and uncertainty-avoidance cultures, it is important to initiate synchronous e-learning initiatives so that it would allow trainees to defer their learning questions to the authority on the subject. Such cultures prefer an authority to confirm and corroborate subject matter. In high uncertainty-avoidance cultures, the anxiety of assimilating and learning information on an independent schedule can be mitigated by having a synchronous format as it allows trainees to discuss any learning concerns with an expert. Such cultures prefer any training options that are less risky and more reliable [48, 20, 41].

In high collectivist cultures, it would be very beneficial to provide synchronous e-learning initiatives as it allows for social learning where trainees can collaborate with other trainees to satisfy their communal interest for learning. While establishing their business in China, IBM, the technocrat giant, realized the importance of *guanxi* or relationship-building. Therefore when they introduced, Sales Quest, an e-learning training program, they created a virtual world that allowed sales trainees from different parts of the country to socialize and interact extensively with each other [44].

In cultures with high future-orientation as employees have long-term perspectives, synchronous e-learning programs allow individuals to think and plan ahead. As this learning method provides opportunities to discuss with peers and experts, it provides sufficient time for individuals to strategize and think ahead [39, 9]. Table 3 provides multinationals strategic e-learning implications relevant to the specific national cultural dimensions.

#	**Cultural Dimensions**	**Impact on E-learning**	**Strategies for multinationals**
1.	High Power Distance Low Power Distance	Employees prefer to learn from training experts. Employees prefer independent and self-directed learning	Establish synchronous e-learning that can allow learners to identify a learning expert to showcase subject knowledge. Establish asynchronous e-learning that allows for self-mastery.
2.	High Uncertainty-Avoidance Low Uncertainty-Avoidance	Employees are anxious about new methods or the unknown Employees are risk-averse and welcome novel approaches	Establish synchronous e-learning to provide the capability to clarify learning questions with visible authority. Establish asynchronous learning that allows for self-exploration in learning
3.	High In-group collectivism Low-group collectivism	Employees prefer group interactions for learning Employees prefer individual learning	Creating synchronous learning communities to nurture the collectivist orientation. Creating asynchronous learning to allow individual learning
4.	High Future-orientation Low Future-orientation	Employees like to plan ahead for any management outcomes Employees do not strategically plan for management outcomes	Providing synchronous e-learning methods that allow learners to plan ahead. Providing asynchronous e-learning methods that does not provide opportunities for specific planning

Table 3: Strategic Implications for E-learning

6 Conclusion

This section identifies both the theoretical contributions and practical implications. First, while studies have examined the role of national cultures on training and learning, academic papers (both empirical and conceptual papers) have not examined the role of national cultures on e-learning per se [50, 41]. This paper suggests that power-distance, uncertainty-avoidance, in-group collectivism, and future-orientation have a strong influence on the type of e-learning methods. This paper addresses this paucity in theoretical research by providing an e-learning model that can be tested by academic researchers.

Second, most studies on HRM practices adopt the national cultural dimensions of Hofstede [36, 51] but this paper examines e-learning from the perspective of the most topical national cultural study and its results. The GLOBE cultural study is considered unique as it collected data to identify both the current (what is) and futuristic (what should be) societal values [18]. This study also examines the role of future-orientation on e-learning while most studies on national cultures and HRM practices predominantly use power-distance, uncertainty-avoidance and collectivism. Therefore this paper extends the knowledge of national cultural dimensions and HRM practices.

Third, this paper provides a strategic implication model for practitioners as multinationals increasingly choose to establish in emerging economies. Multinationals experience tremendous challenges in implementing standardized global practices due to deep-rooted cultural differences in learning. A case in point-Japan has only 7% of their organizations using e-learning initiatives while the US has 60% of their organizations adopting some form of online learning programs [42, 47]. This paper provides preliminary guidance as how to integrate national cultures (theory) to identify strategic e-learning implications (practice) to bridge the gap between scholars and practitioners.

Finally, this study focuses on an economy that is moving forward in leaps and bounds [38, 24]. Multinationals are establishing to India at an increasing pace with about 15,000 joint-ventures in India today [14]. [38] emphasizes that India and China are going to be the most successful emerging economies with India becoming the world's "back-office" and China becoming the "factory of the world." Multinationals should increase their awareness of cultural practices in these upcoming economies so that their international transitions are easier.

References

[1] Allison, S.(2007). The role of social learning. *E.learning Age*,14-15.

[2] Agrawal, N & Thite, M. (2003): Human resources issues, challenges and strategies in the Indian software industry: International Journal Human Resources *Development and Management*, 3, (3), 249-263.

[3]Aycan, Z. (2005). The interplay between cultural and institutional structural contingencies in human resource management practices. *International Journal of Human Resource Management*,16 (7), 1083-1119**.**

[4] Awasty. R. & Gupta, R. (2004). An Indo-Japanese MNC operating in India. *South Asian Journal of Management*, 11(3), 94-113.

[5] Banduni, M. (2005). The future of e-learning in India. *Express Computer*. http://www.expresscomputeronline.com/20051114/market03.shtml.

[6] Bhattacharya, I. & Sharma, K. (2007). India in the knowledge economy- an electronic paradigm. The *International Journal of Educational Management*, 21(6), 543-560.

[7] Bhatnagar, J. (2009). Human resource information systems (HRIS) and HR outsourcing in India. *In The changing face of people management in India* (Eds). Routledge. London and NewYork.

[8]. Bhatnagar, J. (2007). Looking from the organizational Learning lens at technology enabled HR in Indian organizations. *International Journal of Human Resources Development and Management*, 7, (1), 53

[9] Bhatnagar, J. & Sharma, A. (2005). The Indian perspective of strategic HR roles and organizational learning capability. *International Journal of Human Resource Management*, 16(9), 1711-1739.

[10] Biech, E. (2008). ASTD Handbook for learning professionals. Instructional Design Models and Learning Theories, pp 202-210. United Book Press Inc, Maryland, USA. CHANGED NUMBERING FROM HERE

[11] Bingham, T., & Galagan, P. (2007). Satyam creates value through learning, *T & D*, 1 (30), 6-12.

[12] Brewster, C., Sparrow, P., Vernon, G. (2007). *International Human Resource Management*. Chartered Institute of Personnel and Development. London.

[13] Budhwar, P. & Baruch, Y. (2003). Career Management practices in India: An empirical study. *International Journal of Manpower*, *24* (6), 699-721.

[14] Budhwar, P., & Boyne, G. (2004). Human resource management in the Indian public and private sectors: An empirical comparison, *International Journal of Human Resource Management*, 15 (2), 346-370.

[15] Burke, M., Chan-Serafin, S., Salvador, R., Smith, A., Sarpy, S. (2008). The role of national culture and organizational climate in safety training effectiveness. *European Journal of Work and Organizational Psychology*, 17 (1), 133-152.

[16] Chandrasekhar, C. (2006). India is online, but most Indians are not. The Hindu, 10.

[17] Chokkar, J, (2007). India. Diversity and Complexity in Action. *In Culture and Leadership across the World. The GLOBE book of In-depth studies of 25 societies* (Eds). Lawrence Erlbaum Associates. Mahwah, New Jersey.

[18] Chhokar, J., Brodbeck, F., & House, R (Eds) (2007). *Culture and Leadership across the World. The GLOBE book of In-depth studies of 25 societies*. Lawrence Erlbaum Associates. Mahwah, New Jersey.

[19] Cross, J. (2006). Not Without Purpose. *Training and Development*, 60(6), 42-46.

[20] Edmundson, A.. (2009). Culturally Accessible E-Learning: An Overdue Global Business Imperative. *Training and Development*, 63(4), 40-45,6.

[21] Fox, A (2007). China: Land of opportunity and challenge. *HR Magazine*, 52 (9), 38-44.

[22] Frauenheim, E. (2006). Indian Leaders in demand amid rapid expansion. *Workforce Management*, 85, (7), 6-9.

[23] Friedman, B. (2008). Globalization implications for human source management roles. *Employee Response Rights Journal*, 19:157–171.

[24] Friedman, T. (2006). *The World is Flat. Updated and Expanded*. Farrar, Straus and Giroux. New York.

[25] Gannon, M. (2008). *Paradoxes of Culture and Globalization*. Sage Publications. Los Angeles and London.

[26] Gannon, M. (2001). *Understanding Global Cultures: Metaphorical Journeys through 23 Nations*, 2nd ed., Sage Publications, Thousand Oaks, CA.

[27] Gannon, M., & Pillai,R.(2010).*Understanding Global Cultures. Metaphorical journeys through 29 nations, clusters of nations, continents and diversity*. Fourth Edition. Sage Publications. Los Angeles

[28] Gladwell, M. (2008). *Outliers: The story of success*. Little, Brown and Company. New York, NY.

[29] Hrastinski, S. (2008). Asynchronous and Synchronous E-Learning**.** *Educause Quarterly*, 31, 4, 17-23.

[30] Harris,P. (2006). India Inc.. *Training and Development*. 60, 14-19

[31] Hooi, L. (2006). Implementing e-HRM: The Readiness of Small and Medium Sized Manufacturing Companies in Malaysia. *Asia Pacific Business Review*,12 (4), 465-485.

[32] Khozem, M. (2002). Pearson eyes India for "e-learning. *Financial Times*, 32.

[33] Kopf, D (2007). e-Learning Market to hit $52.6B by 2010. The Journal transforming education through technology. http://thejournal.com/articles/2007/07/30/elearning-market-to-hit-526b-by-2010.aspx.

[34] Kornik, J (2006). Booz Allen Hamilton puts people first: One firm, one goal. *Training*, 43 (3), 10- 16.

[35] Kruse, K. (2004). What are "Synchronous" and "Asynchronous" Training? http://www.e-learningguru.com/articles/art1_7.htm.

[36]Leidner, D., & Kayworth, T. (2006). A Review of Culture in Information Systems Research: Toward a Theory of Information Technology Culture Conflict. *MIS Quarterly*, 30, (2), 357-370.

[37] McCool, M. (2006). Adapting e-learning for Japanese audiences tutorial. *IEEE Transactions on Professional Communications*, 49 (4), 335-345.

[38] Meredith, R. (2008). *The Elephant and the Dragon: The Rise of India and China and what it means for all of us*. W.W. Norton Company. New York and London

[39] Mittal, M. (2008). Evaluating perceptions on effectiveness of e-learning programs in Indian banks: Identifying areas of improvement. *Development and Learning in Organizations,* 22 (2), 12-16.

[40] Mukherjee, A. (2006). Sapient: Empowering Transparently. Business Today, 72-76.

[41] Nathan, E (2008). Global Organizations and E-Learning: Leveraging about learning in different cultures. *Performance Improvement*, 47 (6), 18-24.

[42] Oakes, K. (2004). Beyond E-Learning. Global Perspectives. *Training and Development.*, 58,(10),18-21.

[43] Parboteah, P., Bronson,J., & Cullen,J. (2005). Does national culture affect willingness to justify ethically suspect behaviors? *International Journal of Cross-Cultural Management*, 5(2), 125-138.

[44] Pollitt, D. (2008). Learn-while-you-play program gets IBM recruits up to speed *Training & Management Development Methods*, 22,(1), 401-404.

[45] Ramamurthi, R (2001). Wipro's Chairman Azim Premji on building a world class Indian company. *Academy of Management Executive*, 18, (12), 13-19.

[46] Ramaswamy, N. (2002). India: Understanding Compensation & Benefits. *Compensation & Benefits International*. 32, (5), 24-29.

[47] Reynolds, P. (2008. Yearning for E-Learning? The Pros and Cons of the Virtual Classroom for Your Call Center. *Customer Inter@ction Solutions*, 27(1), 36-37.

[48] Rodrigues, C. (2005). Culture as a determinant of the importance level business students place on ten teaching/learning techniques: A survey of university students. *Journal of Management Development*, 24(7/8), 608-622.

[49] Rothermel, F., Kotha, S., & Steensma, K.(2006). International market entry by U.S Internet firms: An empirical analysis of country risk, national culture and market size. *Journal of Management*, 22 (1), 56-82.

[50] Russell, R. (2008) Training for Innovation in India: Cultural Considerations and Strategic Implications. *Performance Improvement Quarterly*, 21,(2), 37-49.

[51] Ryan, A. Marie, L McFarland, Baron, H. and Page, R (1999). An International Look at Selection Practices: Nation and Culture as Explanations for Variability in Practice. *Personnel Psychology* 52, (2), 359-391.

[52] Salopek, J., Harris, P., Ketter, P., Laff, M. (2009). Lessons in renewable learning. *T & D*, 63 (10), 68-71.

[53]Shepard, L. (2010). The role of assessment in a learning culture, *Educational Researcher*, 29 (7), 4-14.

[54]Solomon, J. (2005). India poaches U.S executives for tech jobs. *Wall Street Journal*. (Eastern Edition), B1.

[55] Tyler, K. (2006). Infosys Technologies Ltd. *HR Magazine*, 51 (11), 56-60.

[56] Zakaria, F. (2006). India Rising, *Newsweek,* 34-43

Design Characteristics of Virtual Learning Environments: An Expert Study

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Abstract. *Virtual Learning Environments (VLE) constitute the current Information Systems (IS) category for electronically supported corporate training and development. Frequently supposed advantages of using VLE refer, for instance, to the efficiency, individuality, ubiquity, timeliness, and task orientation of learning. However, a crucial precondition of realizing such advantages is an appropriate systems design. Hence, the question which specific design characteristics actually characterize successful VLE is of specific interest for training and development practice. The current paper therefore addresses design characteristics by conducting an expert study which is based on a general theory of IS success and previous insights of the literature. As a result, a set of relevant, well-defined design characteristics is presented and discussed while implications for research and practice are derived.*

Keywords: Virtual Learning Environments, Design Characteristics, Expert Study.

1 Introduction

For decades, electronic learning systems constitute the basic enablers of corporate e-learning. Though designations as categorizations of such learning systems are rather heterogeneous and also change over time, current systems can be pooled under the rubric of Virtual Learning Environments (VLE), which can be understood as electronic Information Systems (IS) for the administrative and didactical support of learning processes in vocational settings by systematically providing corporate learners adequate learning materials as well as corresponding collaboration facilities so as to develop intended qualifications [e.g. 8, 42, 49]. The usage of such systems in corporate training and development is commonly justified based on diverse advantages such as efficiency, individuality, ubiquity, convenience, timeliness, cost efficiency and task orientation of VLE-based learning [e.g. 15, 20, 41]. Such advantages may also explain the ever increasing adoption of VLE in corporate training and development [e.g. 15, 19, 48]. However, the actual realization of such advantages crucially depends on several preconditions, while the specific characteristics of the used VLE constitute a prominent

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aspect. It is evident that only adequately designed VLE will offer the promising potential for success, while ill designed systems may even cause harmful disadvantages. This directly focuses on design characteristics of VLE as a crucial aspect of learning success. Technically [e.g. 18] as managerially oriented literature [e.g.6, 7, 45] congruently understands design characteristics as the set of those inherent information system properties, which determine IS success (while IS success is differently conceptualized as net benefits, user acceptance, or actual usage, among others). Though termed "design" characteristics, such properties critical to the success of VLE gain practical importance for the entire process of developing or else procuring, implementing and applying VLE in organizations. It is not surprising that design characteristics firstly are relevant for developing new VLE. Here design characteristics offer a framework of requirements which mandatorily must be met by the future system to assure its quality. Given that corporate VLE are getting purchased more and more from external vendors, design characteristic also are relevant for the systems procurement, since they offer a valuable set of selection criteria. Beyond development and procurement, design characteristics may also instruct the technical implementation process by defining technical implementation goals. Finally, design criteria offer suitable evaluation criteria for already applied VLE, and hence support the inspection and improvement of existing systems. Given the wide-spread and still increasing usage of VLE, design characteristics of VLE hence are of relevance for a broader group of technical and managerial decision makers in corporate training and development.

The current paper therefore aims at elaborating general VLE design characteristics. An expert study is conducted for this purpose. As a general foundation for the study theoretical bases are discussed first. In order to contribute to cumulative research and to integrate the expert study with previous findings subsequently a review of previous research is conducted. Based on this, the method of the expert study is exposed and the results are presented and discussed. Finally, implications for practice and research are derived.

2 Expert Study

2.1 Foundation

As a clear explorative empirical method, expert studies usually are employed to gain insights in topical domains which are theoretically not or at least not well developed and hence, are not open to confirmative research. In certain respects, this applies also to research into design characteristics of VLE. At least, there is no completely developed theory of VLE design which would allow for a direct elicitation of the desired design characteristics. However, alternative foundations may be found in more general theories of – given the subject of the study – in the area of general IS design or general IS success. In the recently flourishing area of IS design the necessity of a general theory of IS design is well recognized [e.g. 14]. However, so far rather procedural models of design research have been offered [e.g. 14, 35], while an explicit theory of IS design, which directly unfolds design characteristics or at least allows to derivate design characteristics, is missing at present. Conversely, in the area of general IS success there are some recognized theories [e.g. 7, 45]. Since explaining success of IS such theories mandatorily present a set of success predictors. As long as such success predictors constitute or at least refer to IS characteristics, these theories can also be used to found design characteristic research. In view of this possibility, in particular the IS success model (ISSM) [6, 7, 40] presents general success relevant IS characteristics and,

additionally, is repeatedly validated. Basically, ISSM offers three groups of success predictors, namely, systems quality, information quality and service quality [6, 7]. Visibly, systems quality understood as a set of features which refers to the system as such, and information quality, understood as a set of features which refers to the content of the system, constitute system-related characteristics and hence, are appropriate for design characteristics research. Service quality, however, understood as a set of features which refers to the user support, does visibly not constitute a characteristic of the system itself, and hence is not appropriable. Transferred to VLE design characteristic, the ISSM hence clarifies that system-related (features of the VLE as such) and information-related (learning content of the VLE) constitute essential groups of design characteristics. Being a general theory, ISSM however is not able to provide more detailed information about VLE design characteristics. It is hence the task of the expert study to ascertain systems as information-related design characteristics of VLE empirically.

2.2 Review

In order to add to cumulative research and integrate the expert study with previous findings a comprehensive review of previous research in design characteristics of VLE was conducted. The review considered studies which directly deal with design characteristic of VLE in an empirical or conceptual way. Extensive searches of electronic databases (EBSCO, ScienceDirect, and Scopus) as well as of selected journals and conference websites were carried out to identify appropriate studies. However, in order to assure the quality of results only outlets with double blind peer-review were taken into account. To map existing studies comprehensively, a time frame of 20 years (1989-2009) was analyzed. Based on this procedure 25 relevant studies could be identified (these studies are marked with an asterisk in the references section and are summarized in Appendix 1). The analysis of VLE design characteristics identified within these studies yielded several interesting results.

Firstly and unexpectedly, a plethora of over thirty different design characteristics could be identified (for details see Appendix 1). Though this may be judged as ample results of previous research, this abundance also represents a certain problem like an increasing number of design characteristics detracted from there applicability and usefulness. Hence, future research should strive for a limited set of major design characteristics rather than amassing a maximum of design characteristics. Secondly, as predicted by the ISSM, all identified design characteristics could by classified as either system-related or information-related, while quite frequently systems quality and information quality were presented as design characteristics. Whereas this constitutes a consent concerning the general design characteristics, there is dissent concerning more concrete design characteristics within these groups. This heterogeneity adds to the problem of the mere number, since it is still unclear which concrete design characteristics actually are relevant for success. Hence, it is necessary to validate design characteristics to attain a set of resilient characteristics. Thirdly, the design characteristics found are of rather different granularities, understood as the grade of operativeness and detailedness of design characteristics. Basically, very general, coarse-granular characteristics such as the mentioned "systems quality" or "information quality" and rather medium-granular characteristics such as "personalization" or "clear terminology" can be differentiated, while fine-granular, detailed, i.e. very specific design characteristics could not be detected. Granularity of design characteristics evidently is of major importance since expressiveness and usability increase with granularity (for instance, “develop/select/use

personalized VLE" constitutes a more expressive and usable statement than "develop/select/use VLE with good systems quality"). In view of this, at first glance one may claim maximal granularity from the expert study, however increased specificity commonly is aligned with a decreasing range of validity. Hence, to warrant general validity the expert study may have to get by with a medium granularity. Fourthly, there is a prevalent lack of explicit definitions of design characteristics (while there are some exceptions). Since the design characteristic presented, such as "perceived flexibility", represent rather complex constructs which can be understood in quite different ways, the lack of definition aggravates the understanding of design characteristics as well as their further usage. It also complicates the detection of possible redundancies of characteristics found in different studies such as "personalization" and "user adaptation". Hence, the expert study mandatorily has to elaborate thorough and explicit definitions of design characteristics.

In summary, previous research suggests a set of design characteristics which is copious, of limited congruence, of different granularity, and frequently unclear in meaning. This clearly justifies the necessity of the expert study. However, instead of just adding a further unconnected study, the current state of knowledge is to be used as a base to contrast but also enrich the expert study and thereby integrate it with previous work.

2.3 Method

To ascertain success relevant system- as well as information-related characteristics of VLE with an expert study systematically, the Delphi method was considered as promising approach [e.g. 11, 12, 13, 22]. Besides supporting practical forecasting and practical decisions, the Delphi method is also appropriate for systematically analyzing complex and multifaceted scientific topics that are not directly and easily accessible via quantitative research approaches [e.g. 11]. To ascertain relevant design characteristics systematically, a two-phased approach was performed.

Phase I was aimed at a general inquiry and categorization of generally imaginable design characteristics. As a starting point of phase I, a group of appropriate experts was to be appointed. Participants were selected based on different criteria, while it was intended to arrange an international group of experts with extensive knowledge in the design of VLE which is of diverse disciplinary provenience (computer science, management, pedagogy, and psychology), and diverse institutional affiliation (universities and private companies). The resulting group consisted of 13 international experts with different affiliation and backgrounds (see Appendix). Subsequently, an online-questionnaire was developed. Beside the provision of a general introduction into the questionnaire, relevant terms such as VLE or design characteristic were thoroughly defined in order to assure a consistent understanding of constructs and questions. In so doing, the questions referred to the creation of a comprehensive list of design characteristics in general, and to subsequently match this list to a categorization of system- and information-related design characteristics of VLE. Balancing the trade-off between specificity and validity it was asked for characteristics which were specific, but generally valid. To avoid mere adjective lists with undefined and hence unclear constructs, experts were explicitly encouraged to explain the stated design characteristics in detail. The questionnaire was pre-tested and slightly modified based on in-depth interviews with two experts. The online survey was carried out in autumn 2009, while all 13 experts participated.

A monitoring team of five independent researchers individually evaluated the results obtained in phase I. In particular, based on the construct explanations synonymous

design characteristics were identified and adjusted, the adjusted set of design characteristics was summarized respectively aggregated according to the principles of "summarizing content analysis" [31], and finally, general definitions for the summarized design characteristics were derived from the expert explanations. In a subsequent group discussion, individual results of the monitoring team members were mutually adjusted, while there was an initial high degree of inter-coder reliability [31] within the monitoring team anyway.

During the preparation of phase II the result list of design characteristics of phase I was compared with the results of the review of previous work. As there was substantial agreement concerning several design characteristics, the result list from phase I missed some of the design characteristics that proved to be significant for success. To be more concrete, experts did not mention "multimodal" [30, 36, 38], "accessible" [30], "appealing" [3, 4, 16, 27, 38], "reliable" [27, 30, 47], "secure" [30] and "structured" [3, 36]. To test also the relevance of these characteristics, they were added to the results of phase I. The resulting list of adjusted, aggregated, enriched, categorized and defined design characteristics constituted the base of the second online-questionnaire. The 13 experts this time were asked to rank the presented system- and information-related design characteristics of VLE from highest (rank 1) to lowest (rank n) priority for success. The resulting priority lists were summarized by calculating means and standard deviations of the respective rank positions.

2.4 Results

Interim results of phase I firstly revealed an unadjusted list of 55 design characteristics (31 system-related, 24 information-related). This list was successively reduced by adjustment of synonyms to 31 design characteristic (13 system-related, 16 information-related) and the summarizing of design characteristics to 16 design characteristics (10 system-related, 6 information-related).

VLE Design Characteristic	
A. System-Related	
Reliable	**A1. 3.08 (1.44)**
Secure	**A2. 4.38 (3.52)**
Learning-Process-Supportive	**A3. 4.46 (3.13)**
Interactive	**A4. 4.77 (3.11)**
Appealing	**A5. 5.08 (2.25)**
Transparent	**A6. 5.15 (2.79)**
Structured	**A7. 5.92 (2.22)**

Standard-Supportive	**A8. 6.46 (2.79)**
Accessible	**A9. 6.85 (2.15)**
Platform-Independent	**A10. 7.62 (2.90)**
B. Information-Related	
Understandable	**B1. 2.23 (1.48)**
Consistent	**B2. 2.92 (1.66)**
Credible	**B3. 3.23 (1.30)**
Challenging	**B4. 3.54 (1.51)**
Multimodal	**B5. 4.00 (1.78)**
Enjoyable	**B6. 4.58 (1.44)**

Table 1: Means and Standard Deviations of VLE Design Characteristics Ranks.

As depicted this list was enriched with 7 literature-based characteristics (6 system-related, 1 information-related).

Final results are rendered in Table 1 and 2. Table 1 firstly depicts the results of the prioritization process in phase II by presenting the mean values and the standard deviations (in brackets).

The derived definitions of these characteristics are presented in Table 2, while each definition is illustrated with selected statements of the literature review and/or experts to make their origin more transparent.

Design Characteristic	Definition	Source	Exemplary Statement
A. System-Related			
Reliable	VLE are *reliable*, if their end-users/learners can apply it without technology owed disturbances.	literature review	"Whenever I use the e-learning tool, it always works correctly." [30]

Secure	VLE are *secure*, if the system itself as well as unauthorized users cannot modify or delete the learners' personal profile data, respectively their learning history, progress (i.e. learning outcomes), and corresponding resources.	literature review	"I trust the system security." [30]
Learning-Process-Supportive	VLE are *learning-process-supportive* if they support the provision of (further) learning activities and/or materials with their inherent information (e.g. activity description and/or instruction, etc.) according to the learners' current status in the unit of learning, and help the learners to coordinate audit dates, group meetings, etc.	expert study	"Workflow-management component"
Interactive	VLE are *interactive* if they allow for learner-system- (e.g. taking self-tests, uploading assignments, etc.), learner-learner-, and/or learner-teacher-communication and/or collaboration (e.g. via	literature review	"[…] key to the learning process are the interactions among students themselves, the interactions between faculty and students, and the collaboration in learning that results from these interactions." [34, 36]

	audio/video conference, blackboard, chat, forum, etc.).	expert study	"The core of learning remains a relationship between a learner and a tutor. VLE must keep this crucial factor in the loop."
Appealing	VLE are *appealing*, if their graphical user interface has a pleasant appearance.	literature review	"Screen design is the way information is presented on the screen." [16, 23, 28]
Transparent	VLE are *transparent*, if they allow the learners to keep an eye on their own and/or other learners' learning history (i.e. completed and/or passed learning activities of a unit of learning) and current status in the learning process.	literature review	"The e-learning system allows the user to control his/her improvement." [30]
		expert study	"The system enables users to trace why and how certain recommendations are made, how much personal data one allows the system to data mine implicitly/explicitly to produce a user profile."
Structured	VLE are *structured*, if learners can quickly detect the allocated information (e.g. learning resources such as learning materials, collaboration services, assessment items, system-generated information such as user guidance, feedback, etc.) in, respectively can easily navigate the graphical user interface.	literature review	"[…] the ease with which users can move around the system." [23]

Standard-Supportive	VLE are *standard-supportive*, if they facilitate learning materials which are compiled based on approved eLearning standards such as IMS Learning Design [17], or SCORM [1] as these eLearning standards enable learning materials to be widely shared across VLE which also support these standards.	expert study	"Interoperability and standards compliance"
Accessible	VLE are *accessible*, if learners can access it according to their own possibilities.	literature review	"The e-learning tool is accessible according to my own possibilities." [30]
Platform-Independent	VLE are *platform-independent*, if they run on a wide range of operating systems.	expert study	"VLE should be Web-based, not standalone."
B. Information-Related			
Understandable	The information provided by VLE is *understandable*, if the words, sentences, and abbreviations applied within the learning materials are clear in meaning (e.g. by use of definitions), easy to comprehend and easy to read.	literature review	"Terminology refers to the words, sentences, and abbreviations used by a system." [23, 28]
		expert study	"Understandability vs. complexity."

Consistent	The information provided by VLE is *consistent*, if the learning materials themselves are without contradictions, coherent and presented in a logical order.	literature review	"The use of terms throughout the (E-library) is consistent." [16]
		expert study	"Sequencing of learning objects, tasks, and assessments."
Credible	The information provided by VLE is *credible*, if they originate from a trustworthy source (e.g. teacher, certified and/or reputable organizations, etc.).	expert study	"[…] how much one trust the credibility of the material (i.e. it does not convey wrong concepts)"
Challenging	The information provided by VLE is *challenging*, if the learning materials contain difficult but interesting tasks which stimulate learners' curiosity to solve them.	expert study	"For ambitious learners, focusing on learning objectives."
Multimodal	The information provided by VLE is *multimodal*, if the learning materials are presented in different media formats such as text, audio, and video.	literature review	"The Web-based learning system offers multimedia (audio, video, and text) types of (course) content." [36]
Enjoyable	The information provided by VLE is *enjoyable*, if the learning materials provided do so in their own right aside from their	expert study	"Positive user experience, associated with pleasure, fun, playability, and enjoyment."

	textual value, and consequently make the learning experience more pleasant.		

Table 2: Definitions, Sources and Exemplary Statements of VLE Design Characteristics.

2.5 Discussion

The present expert study provides a systematic set of well-defined, specific but generally valid system- and information-related design characteristics based on the ISSM and compatible to previous research results. Hence, the general objective of the expert study could be satisfactorily achieved.

Findings concerning the system-related design characteristics show that "reliable" was unambiguously rated as the most important system-related design characteristic, followed by "secure", "learning-process-supportive", "interactive", "appealing", "transparent", "structured", "standard-supportive", "accessible", and "platform-independent". It should be noted, "interactive", "appealing", and "transparent" show almost the same mean values, that may be a consequence of the prioritization procedure within phase II as study participants were "forced" to rank the given design characteristics even though they may have preferred similar priorities of different design characteristics. However, the salient disagreement amongst study participants concerning the relative importance of "secure" (SD: 3.52) as the second important system-related design characteristic of VLE in particular might be engendered by its diverse understanding ("[…] the system itself as well as unauthorized users cannot modify or delete the learners' personal profile data […]", etc.). The same may count for "learning-process-supportive" (SD: 3.13), "interactive" (SD: 3.11) as well as "transparent" (SD: 2.79) and "standard-supportive" (SD: 2.79). Once again, this result may originate in the way the prioritization procedure was conducted. It is noticeable, amongst the five system-related design characteristics considered to be the most important ones, rank number one ("reliable"), two ("secure"), and five ("appealing") are design characteristics from the literature review which were added subsequently. This shows that even though study participants did not even mention these system-related design characteristics within the first survey wave, they considered them as highly-relevant system-related design characteristics of VLE. Thus, the prioritization of preceding expert statements and theoretical-founded design characteristics proved to be a feasible and promising approach. Hence, the set of system-related design characteristics presented should always be under consideration when designing, and evaluating VLE.

Regarding information-related design characteristics, findings show that "understandable", is considered to be the most important design characteristic, followed by "consistent", "credible", "challenging", multimodal as well as "enjoyable". It should be pointed out that not similar to their system-related counterparts, all information-related design characteristics show high levels of agreement amongst study participants regarding their relevance for VLE (SD spectrum: 1.30 - 1.78). Hence, when designing and evaluating VLE one should consider the set of information-related design characteristics presented.

To conclude, the results of the expert study presents a comprehensive set of VLE specific information- and system-related design characteristics, which should be considered when developing, purchasing, implementing or evaluating VLE.

3 Implications

The above-mentioned results should generally provide a basic starting point for future research as design endeavors, while there are some implications for research as well as practice.

Concerning research implications, firstly, some further theoretical deliberations may improve future research. The used ISSM is able to roughly categorize relevant design characteristics, but however does not allow to deduce directly specific design characteristics. This likely applies to further imaginable theoretical foundations, in particular to the prominent TAM-approach, what could be proved within the frame of the literature review (see e.g. the TAM-based studies of [3, 38]). Again, the basic TAM does rarely directly propose concrete design characteristics. In order to overcome this theoretical gap, more recent theoretical developments that are orientated towards design and intervention (e.g. the TAM 3 offered by [45]) may offer deeper foundations. In addition, also amalgamations of such approaches with the ISSM may be worth of a trial (see the example in [32]). Furthermore, given that expressiveness and usability of design characteristics increase with growing specificity, future research should aim at increasing specificity of design characteristics, however without losing general validity. One imaginable way is to work out different facets of the design characteristics by constituting sub-characteristics. For instance, based on the definitions elaborated certain sub-characteristics of "flexible", "learning-process-supportive" or "transparent" could be established. As an important aspect considered by one previous study [30] and confirmed in the expert study, possible interdependencies of design characteristics should be taken into account. Basically, design characteristics may not be arbitrarily combinable for logical and/or technical reasons [10], hence, future research should also strive for (in-)compabilities of design characteristics found. This also entails a question that has not been tackled till now, whether different system- and information-related design characteristics contribute rather individually and independently to VLE success, or whether whole bundles or entire configurations of design characteristic are triggering success. Moreover, given the benefits of an experimental design, such as controlling relevant while excluding confounding variables, ensuring direct relevant experiences of respondents, and, particularly enabling the manipulation of specific design characteristics [21], experimental designs seem to be a promising approach to ascertain and evaluate relevant design characteristics empirically (cf. the pioneering work of [36] who conducted an offline experiment to determine relevant design characteristics). Finally, given the costs and duration of developing prototypes, and, all the more, full versions of a VLE, it would be highly beneficial if relevant design characteristics could be ascertained as early as possible, in order to avoid misconceptions and failure [5]. Hence, the usage of simple prototypical models (paper prototypes, video mockups, etc.) of the system planned may allow ascertaining relevant characteristics in very early phases of the corresponding software development process [32].

Additionally, the results of the study yield some implications for practice. Managerial and technical decision-makers in the process of developing new, selecting pre-packaged VLE-software, or evaluating and improving already adopted VLE are offered a valuable general (check-)list of criteria relevant for success. Beyond, with a particular view to information-related design characteristics, learning designers and teaching staff may

profit from their application while preparing their learning materials. Hereby, information-related design characteristics could also be understood as a checklist in how far their learning materials fulfill the proposed requirements (e.g. understandable, consistent, and credible learning materials).

Refining and customizing this (check-)list towards individual corporate settings and subsequently considering the list may lead to practical VLE design- and selection-processes which minimize learner resistance, increase learner satisfaction, and support overall learning success.

4 Conclusions

Within this paper a comprehensive literature review and an initial expert study were carried out yielding a systematic list of well-defined system- and information-related design characteristics of VLE. This hopefully will stimulate future research, especially quantitative studies which evaluate and deepen the insights offered, but may also instruct future practical development, selection and evaluation projects, while both streams may finally contribute to improved VLE which support better corporate training and development endeavors.

References

[1] ADL (2004), SCORM 4th Edition - Version 1.1 (Documentation), available at: http://www.adlnet.gov/Technologies/scorm/SCORMSDocuments/2004%204th%20Edition/Documentation.aspx, accessed on the 11th of April 2010.

[2] *Arbaugh, J. B. (2000). Virtual Classroom Characteristics and Student Satisfaction with Internet-based MBA Courses, Journal of Management Education, 24 (1), 32-54.

[3] *Chang, S.-C. & Tung, F.-C. (2008). An Empirical Investigation of Students' Behavioural Intentions to Use the Online Learning Course Websites, British Journal of Educational Technology, 39 (1), 71–83.

[4] *Chiu, C.-M., Hsu, M.-H., Sun, S.-Y., Lin, T.-C. & Sun, P.-C. (2005). Usability, Quality, Value and E-Learning Continuance Decisions, Computers & Education, 45, 399-416.

[5] Davis, F. D. & Venkatesh, V. (2004). Toward Preprototype User Acceptance Testing of New Information Systems: Implications for Software Project Management, IEEE Transactions on Engineering Management, 51 (1), 31-46.

[6] DeLone, W. H. & McLean, E. R. (1992). Information Systems Success: The Quest for the Dependent Variable, Information Systems Research, 3 (1), 60-95.

[7] DeLone, W. H. & McLean, E. R. (2003). The DeLone and McLean Model of Information Systems Success: A Ten-Year Update, Journal of Management Information Systems, 19 (4), 9–30.

[8] Fry, H., Ketteridge, S. & Marshall, S. (2009): A Handbook for Teaching and Learning in Higher Education: Enhancing Academic Practice, 3rd edition. Routledge.

[9] *Fu, F.-L., Chou, H.-G. & Yu, S.-C. (2007). Activate Interaction Relationships between Students Acceptance Behavior and E-Learning, in G. Dong, X. Lin, W. Wang, Y. Yang, & J. Xu Yu (eds.): Joint 9th Asia-Pacific Web Conference (APWeb 2007) and 8th International Conference on Web-Age Information Management (WAIM 2007), LNCS 4505, 670–677.

[10] Galletta, D. F. & Lederer, A. L. (1989). Some Cautions on the Measurement of User Information Satisfaction, Decision Sciences, 20 (3), 419–439.

[11] Grisham, T. (2009). The Delphi Technique: A Method for Testing Complex and Multifaceted Topics, International Journal of Managing Projects in Business, 2 (1), 112-130.

[12] Haeder, M. (2002): Delphi-Befragungen: Ein Arbeitsbuch. VS Verlag für Sozialwissenschaften.

[13] Haeder, M. & Haeder, S. (2000): Die Delphitechnik in den Sozialwissenschaften: Mehtodische Forschungen und innovative Anregungen. Westdeutscher Verlag.

[14] Hevner, A. R., March, S. T., Park, J. & Ram, S. (2004). Design Science in Information Systems Research, MIS Quarterly, 28 (1), 75–105.

[15] *Holsapple, C. W. & Lee-Post, A. (2006). Defining, Assessing, and Promoting E-Learning Success: An Information Systems Perspective, Decision Sciences Journal of Innovative Education, 4 (1), 67-85.

[16] *Hong, W., Thong, J. Y. L., Wong, W.-M. & TAM, K.-Y. (2001-2002). Determinants of User Acceptance of Digital Libraries: An Empirical Examination of Individual Differences and System Characteristics, Journal of Management Information Systems, 18 (3), 97-124.

[17] IMS (2003), 'IMS Learning Design Information Model - Version 1.0 (Final Specification)', available at: http://www.imsglobal.org/learningdesign/ldv1p0/imsld_infov1p0.html, accessed on the 11th of April 2010.

[18] ISO/IEC (2005), 'ISO/IEC 25000: Software Product Quality Requirements and Evaluation (SQuaRE)', available at: http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=35683, accessed on the 11th of April 2010.

[19] Johnson, R. D., Gueutal, H. & Falbe, C. M. (2009). Technolgy, Trainees, Metacognitive Activity and E-Learning Effectiveness, Journal of Managerial Psychology, 24 (6), 545—566.

[20] Kiser, K. (1999). 10 Things We Know so far about Online Training, Training, 36 (11), 66-74.

[21] Koenigstorfer, J. (2008): Akzeptanz von technologischen Innovationen: Nutzungsentscheidungen von Konsumenten dargestellt am Beispiel von mobilen Internetdiensten. Gabler.

[22] Landeta, J. (2006). Current Validity of the Delphi Method in Social Sciences, Technological Forecasting and Social Change, 73 (5), 467-482.

[23] *Lee, G. T., Dahlan, N., Ramayah, T., Karia, N. & Hasmi Abu Hassan Asaari, M. (2005). Impact of Interface Characteristics on Digital Libraries Usage, Malaysian Online Journal of Instructional Technology, 2 (1), 1-9.

[24] *Lee, Y.-C. (2006). An Empirical Investigation into Factors Influencing the Adoption of an E-Learning System, Online Information Review, 30 (5), 517-541.

[25] *Liaw, S.-S., Chang, W.-C., Hung, W.-H. & Huang, H.-M. (2006). Attitudes toward Search Engines as a Learning Assisted Tool: Approach of Liaw and Huang's Research Model, Computers in Human Behavior, 22, 177–190.

[26] *Liaw, S.-S. & Huang, H.-M. (2003). An Investigation of User Attitudes toward Search Engines as an Information Retrieval Tool, Computers in Human Behavior, 19, 751–765.

[27] *Lin, H.-F. (2007). Measuring Online Learning Systems Success: Applying the Updated DeLone and McLean Model, Cyber Psychology & Behavior, 10 (6), 817-820.

[28] Lindgaard, G. (1994): Usability Testing and System Evaluation: A Guide for Designing Useful Computer Systems. Chapman & Hall.

[29] *Liu, S.-H., Liao, H.-L. & Peng, C.-J. (2005). Applying the Technology Acceptance Model and Flow Theory to Online E-Learning Users' Acceptance Behavior, Issues in Information Systems, 6 (2), 175-181.

[30] *Martínez-Torres, M. R., Toral Marín, S. L., Barrero Garciá, F., Gallardo Váquez, S., Arias Oliva, M. & Torres, T. (2008). A Technological Acceptance of E-Learning Tools Used in Practical and Laboratory Teaching, according to the European Higher Education Area, Behaviour & Information Technology, 27 (6), 495-505.

[31] Mayring, P. (2003): Qualitative Inhaltsanalyse: Grundlagen und Techniken, Vol. 8. Beltz.

[32] *Mueller, D. & Zimmermann, V. (2009). A Learner-Centered Design, Implementation, and Evaluation Approach of Learning Environments to Foster Acceptance, International Journal of Advanced Corporate Learning, 2 (3), 50-57.

[33] *Nov, O. & Ye, C. (2008). Users' Personality and Perceived Ease of Use of Digital Libraries: The Case for Resistance to Change, Journal of the America Society for Information Science and Technology, 59 (5), 845-851.

[34] Palloff, R. M. & Pratt, K. (1999): Building Learning Communities in Cyberspace: Effective Strategies for the Online Classroom. Jossey-Bass.

[35] Peffers, K., Tuunanen, T., Rothenberger, M.A. & Chatterjee, S. (2007). A Design Science Research Methodology for Information Systems Research, Journal of Management Information Systems, 24 (3), 45–77.

[36] *Pituch, K. A. & Lee, Y.-K. (2006). The Influence of System Characteristics on E-Learning Use, Computers & Education, 47, 222-244.

[37] *Poelmans, S., Wessa, P., Mills, K., Bloemen, E. & Doom, C. (2008). Usability and Acceptance of E-Learning in Statistics Education, based on the Compendium Platform, International Conference of Education, Research and Innovation (ICERI 2008), 1-10.

[38] *Roca, J. C., Chiu, C.-M. & Martínez, F. J. (2006). Understanding E-Learning Continuance Intention: An Extension of the Technology Acceptance Model, International Journal of Human-Computer Studies, 64, 683-696.

[39] *Sahin, I. & Shelley, M. (2008). Considering Students' Perceptions: The Distance Education Student Satisfaction Model, Educational Technology & Society, 11 (3), 216–223.

[40] Seddon, P. B. (1997). A Respecification and Extension of the DeLone and McLean Model of IS Success', Information Systems Research, 8 (3), 240–253.

[41] Sitzmann, T., Kraiger, K., Stewart, D. & Wisher, R. (2006). The Comparative Effectiveness of Web-based and Classroom Instruction: A Meta-Analysis, Personnel Psychology, 59, 623-64.

[42] Strohmeier, S. (2008): Informationssysteme im Personalmanagement: Architektur – Funktionalität – Anwendung. Vieweg+Teubner.

[43] *Sun, P.-C., Tsai, R. J., Finger, G., Chen, Y.-Y. & Yeh, D. (2008). What Drives a Successful E-Learning? An Empirical Investigation of the Critical Factors Influencing Learner Satisfaction', Computers & Education, 50, 1183-1202.

[44] *Tobing, V., Hamzah, M., Sura, S. & Amin, H. (2008). Assessing the Acceptability of Adaptive E-Learning System, 5th International Conference on eLearning for Knowledge-Based Society, 1-10.

[45] Venkatesh, V. & Bala, H. (2008). Technology Acceptance Model 3 and a Research Agenda on Interventions, Decision Sciences, 39 (2), 273-315.

[46] *Wang, W.-T. & Wang, C.-C. (2009). An Empirical Study of Instructor Adoption of Web-based Learning Systems, Computers & Education, 53, 761-774.

[47] *Wang, Y.-S. (2003). Assessment of Learner Satisfaction with Asynchronous Electronic Learning Systems, Information & Management, 41, 75–86.

[48] *Wang, Y.-S., Wang, H.-Y. & Shee, D. Y. (2007). Measuring E-Learning Systems Success in an Organizational Context: Scale Development and Validation, Computers in Human Behavior, 23, 1792–1808.

[49] Weller, M. (2007): Virtual Learning Environments: Using, Choosing and Developing Your VLE. Routledge.

[50] *Yeung, P. & Jordan, E. (2007). The Continued Usage of Business E-Learning Courses in Hong Kong Corporations, Education and Information Technologies, 12 (3), 175–188.

Appendices:

1) Literature Review – Results Overview

Study	Theory			Design Characteristic	Construct Definition	Method
	TAM	ISSM	…	System-Related / Information-Related		
1. [26]	X	X		System Quality / -		Offline Survey
2. [4]			X	Perceived Usability, Perceived System Quality) / Information Quality	X	Survey with Application
3. [25]	X	X		System Quality / -		Offline Survey
4. [38]	X	X	X	System Quality / Information Quality	X	Online Survey with Application
5. [24]	X			- / Perceived Content Quality, Course Attributes		Online Survey with Application
6. [15]		X		System Quality / Information Quality		Survey with Prototype and Application
7. [27]		X		System Quality / Information Quality	X	Offline Survey with Application
8. [50]	X	X	X	System Quality / Information Quality		Offline Survey with Application
9. [48]				System Quality / Information Quality		Evaluation of an Applicatoin
10. [37]	X	X		System Quality / Information Quality	X	Offline Survey with Application
11. [3]	X		X	Perceived System Quality / -		Survey with Application
12. [32]	X	X		System Quality / Information Quality		Conceptual

13. [46]	X	X		System Quality Information Quality	X	Online Survey
14. [44]	X			System Adaptability -	X	Offline Experiment with Application
15. [2]	X			Perceived Course Interaction, Perceived Flexibility (time, location, methods)		Offline and Online Survey with Application
16. [16]	X			Screen Design Relevance, Terminology	X	Online Interview with Application
17. [47]		X		Learner Interface Learning Community Personalization Content		Interview and Survey with Application
18. [29]	X		X	- eLearning Materials Presentation Types: 1. Text-Audio, 2. Audio-Video, 3. Text-Audio-Video		Survey with Application
19. [23]	X			Screen Design, Navigation Terminology	X	Evaluation of an Application
20. [36]	X			System Functionality, System Interactivity, System Response -	x	Offline Experiment with Application
21. [9]	X			Functionality, Interface Design -		Online Survey with Application
22. [43]	X		X	e-Learning Course Flexibility (time, location, methods) Course Quality	X	Online Survey with Application

23. [30]	X			Accessibility, Communicativeness, Feedback, Interactivity and Control, Reliability, User adaptation, User tools		Survey with Application
				Format		
24. [39]	X			Flexibility		Online Survey with Application
				-		
25. [33]	X			Screen Design		Offline Survey with Application
				Relevance		

2) Expert List

Name	Affiliation	Background
Anh Vu, N.-N.	University of Leicester, UK	Computer Scientist
Christina, H.	IMC, Germany	Pedagogue
Dominique, V.	OUNL, the Netherlands	Pedagogue
Effie L.	University of Leicester, UK	Psychologist
Elisabetta, P.	Giunti Labs, Italy	Computer Scientist
Jad, N.	WUW, Austria	Computer Scientist
Kai, H.	TU Darmstadt, Germany	Computer Scientist
Luis, de la F.	UC3M, Spain	Computer Scientist
Marvin, S.	DFKI, Germany	Computer Scientist
Milos, K.	OUNL, the Netherlands	Computer Scientist
Patrick, P.	IMC, Germany	Computer Scientist
Susanne, N.	University of Vienna, Austria	Pedagogue
Volker, Z.	IMC, Germany	Management, and Business Informatics Specialist

Social Tagging Systems – Shall we use the collaborative and collective approach to gather competency related information?

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Abstract. *Social Tagging as a decentralized collaborative and collective approach to describe, structure, and share digital objects with user created keywords has become increasingly popular since 2004. Once evolved from a social bookmarking application service, meanwhile it is used for several private and corporate purposes. It is also applicable for e-HRM tasks, e.g. augmenting employees' profiles and competency models with tags. In this paper we pursue to detect its applicability to support competency acquisition. In detail we firstly answer the question, which characteristics social tagging systems offer to gather competency related information in order to describe competency profiles. To answer this question we present a conceptual framework that focuses on social tagging systems from an external and internal view. Secondly, we analyze if social tagging systems are able to ensure the provisioning of reliable and valid competency related information from the classical testing theories point of view. It has been detected, that both the ambiguity of language and the absence of rules aggravate the estimation of reliability and validity. Nevertheless, other strengths social tagging systems offer have been found. They equalize the lack of information quality and make social tagging systems valuable for competency acquisition.*

Keywords: competency acquisition, conceptual framework, reliability, validity, classical testing theory

Introduction

The popularity of Social Tagging has rapidly increased since 2004 [52, 62]. Social Tagging is mostly known from private application context. Once evolved from Social Bookmarking Service (delicious)[4], social tagging systems have become one of the best-known web-based [42] social software applications. One reason for its ongoing

[4] http:// delicious.com

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popularity is their simplicity and ease of use: Everybody can be a tagger, who interacts collaboratively, or collectively with other taggers in a web-based community for the purpose to administer, describe, share, structure and maintain several kinds of digital objects, e.g. pictures (Flickr[5]), videos (YouTube[6]) or WebPages (delicious) using self-created keywords called tags [42]. Taggers do not have to obey any rules or a bound to a controlled vocabulary; so, social tagging systems are anarchic decentralized social indexing systems as well.

Apart from private usage social tagging has also been applied for corporate purposes, e.g. to support and facilitate customers' navigation, e.g. product search (Amazon[7]) by means of product-related tags created by the customers themselves. Meanwhile, it is also possible to use social tagging systems to describe and augment personal profiles using tags. This special form of social tagging is also meant as people-tagging [13, 15, 16]. So far, it has been used for both private and corporate communities e.g. organizations to gather, acquire and retrieve characterizing tags [16, 46].

Moreover, social tagging systems have also become relevant for e-HRM tasks. So far there already exist few approaches which mainly focus on augmenting employees' profiles with characterizing tags [13] contributed by the employees themselves. First promising results have already shown that social tagging systems are useful to facilitate the corporate search for knowledge management, to discover employees' connections and support the expert finding, e.g. IBM Lotus connections[8] [12, 13]. Another approach combines people-tagging and ontology maturing to support competence management mainly focused on augmenting competency models with tags [6].

However, the applicability of social tagging for competence management still seems not to be exhausted. Social Tagging systems might also be a promising method to support competency acquisition, which belongs to the main functions of competency management as well. It pursues the purpose to provide reliable and valid personal related information, gathered by means of measuring, observing and describing methods. Having both kind of information it gets possible to align required job-related target-competencies with actual competences. Alignment results are for instance needed in human resource management to schedule and control e-HRM tasks, such as strategy, planning, acquisition, requirement, deployment and development.

Although previous researches confirmed social tagging systems enable the provision of characterizing tags; there is need of further research to detect systematically appropriate variants of social tagging systems to support competency acquisition. Further it still lacks evidence if they are also able to ensure the provisioning of reliable and valid information [5]. Hence, we focus on design characteristics and quality of those systems from the classical testing theories' point of view. In short, the following questions are answered:

- ***Q1: Which possibilities do social tagging systems offer to gather competency related information?***

[5] http://www.flickr.com/

[6] http://www.youtube.com/

[7] http://www.amazon.com/gp/tagging/cloud?redirect=true

[8] http://www-01.ibm.com/software/de/lotus/wdocs/connection/

- ***Q2: Do they ensure the provision of reliable and valid information?***

To answer the first question Chapter 2 regards several variants of social tagging systems from an external view and to filter appropriate ones. In a second step the internal view focuses on the dimensions social tagging systems consists of, and presents a conceptual framework to detect possible design characteristics to gather competency-related information.

To answer the second question Chapter 3 introduces the quality criteria of the classical testing theory, on which in Chapter 4 the social tagging systems are analyzed if they are able to ensure reliable and valid data information. Difficulties and benefits social tagging systems offer are discussed. Chapter 5 summarizes the results and gives an outlook on future research.

Conceptual Framework

Social tagging systems (social classification systems [57], collaborative tagging systems [62]) is a collective term that comprises different system variants. It is at present still unclear if every social tagging system version is appropriate to support competency acquisition. Hence, we give a short overview on existing system versions detecting appropriate social tagging system variants.

1.1 Social tagging systems – System variants (External view)

Social Tagging Systems allow a categorization from different perspectives. Firstly, the stability distinct between closed and open systems. In open systems the taggers fluctuation is very high, because the taggers are not bound to the system (delicious); whereas in closed systems the same taggers stay for a longer time and the tagger group remains stable (IBM lotus connections) [10, 13]. Secondly, the taggers' transparency within the system separates transparent systems from anonymously ones. In the former taggers use their real names, whereas in the latter taggers act anonymously and hide their identity using "nicknames". Thirdly, social tagging systems, based on their entry barriers, can be split in systems with minor entry barriers [43] and systems with major entry barriers. Fourthly, their purpose separates privately used from corporate ones.

System variants		
Perspective	**Characteristics**	
Stability	Open	Closed
Transparency	Anonymous	Transparent
Entry Barrier	Low	High
Purpose	Private	Corporate

= Relevant for competency management

Figure 2: Social tagging systems – System variants (External View)

Open Systems are wide spread mainly in private usage. Everybody can become a member of such an open community, because taggers just have to sign in with their email address, first name and last name. It is the taggers decision to use real names or fictive ones, so transparency cannot be ensured. They are not bound to the system; hence, fluctuation level is high. Further, there also exist open social tagging systems which are used for corporate purpose, e.g. Amazon. The entry barrier is higher than the first variant, because only customers are allowed to tag, who are transparent for the company, because of their customer profile. Closed social tagging systems can be found in both private and corporate application [58]. In private application context Collabio [4] has to be mentioned a "Facebook"[9] application which allows persons to be characterized by other persons with the help of tags in a playful way. Entry barrier is the profile owner decides who is allowed to tag e.g. friends or colleagues. Taggers are consequently transparent to the profile owner and other taggers. Those taggers are bound to the system for reasons of social reputation, consequently their fluctuation is low.

For the context of competence acquisition which takes places in a corporate environment a closed social tagging system is required. The opportunity to tag is restricted to a special tagger group, the organizational members. Taggers interact transparently within the system, and can be identified by their personal ID and real names as well. The entrance to those systems is bound to the employment contract that limit and regulate the period tagger belongs to the systems and how long they obtain a special role and job. Normally, there is low fluctuation within a closed organization. Hence, a corporate purpose is given, so we narrow the variety of all social tagging systems for this paper to closed ones that provide a high transparency of the tagger, low fluctuation and the corporate purpose as well. In the next step we focus on the elements social tagging systems consist of from an internal view.

[9] http://apps.facebook.com/collabio/

1.2 Social Tagging Systems – Dimensions (Internal view)

Previous external view has narrowed the number of several social tagging systems to special closed ones with special attributes. Now, we have also to narrow the number of tagger, digital objects and tags, which are required for competency acquisition.

Social Tagging Systems consist of three related dimensions: tagger, digital objects and tags [9, 42]. Taggers are the persons who interact within the closed community. They obtain several roles at the same time, e.g. they are producer and consumer of their tags [55]. Digital objects are the resources to tag, and tags are used to describe, augment and structure several kinds of them; thereby the same tag can be added to one or many objects.

In context of competency acquisition the variety of those dimensions is restricted. Taggers get additional attributes; they are organizational members, employees, superiors, subordinates and work mates as well. Further, not every digital object is needed to be tagged. We just focus on competency profiles [6]. Finally, we regard only competency related information as special content [63] so the tags are also narrowed to those which contain and competency-related information. However, this seems not to be enough to acquire all facets competency acquisition is composed of. Further filtering views on the limited closed social tagging systems and its dimensions seems be sufficient to define them more detailed. So each single element is regarded in the following from several sub dimensions that originate from competency acquisition.

In detail, the profile dimension focuses on appropriate profile types and several characteristics of transparency [16]. The tagger dimension focuses on taggers rights with the closed system, hierarchical level, and taggers' perspectives. Further the number of taggers, their incentive to contribute, their independence and visibility is regarded. Finally, the tag dimension has a focus on suggested tags, permitted tag-types, number of equal and different tags for single taggers, the acquisition of a temporal dimension, weighted tags, scope of tags, granularity of tags, tag structuring and font size. All dimensions, sub dimensions and combinable characteristics are composed in the figure below and presented in detail in subsequent paragraphs.

Conceptual Framework - Internal View					
Dimensions	**Subdimensions**	**Characteristics**			
Profiles	Type	Individual		Job	
	Transparency	Transparent		Non Transparent	
Tagger	Rights	Create	Use	Change	Delete
	Hierarchcal level	Equal		Unequal	
	Perspective	Self		Others	
	Number	Single		Multiple	
	Incentive	Voluntary		Compulsory	
	Independence	Given		Not Given	
	Visibility	Transparent		Anonymous	
Tags	Sugesstions	Given		Not Given	

	Tag Types	Unrestricted	Restricted
	Use of the same Tag	Single	Multiple
	Number of different	Unlimited	Limited
	Temporal dimension	Given	Not Given
	Weight	Given	Not Given
	Scope	Professional	Personal
	Granularity	Predefined	Not Predefined
	Structure	Given	Not Given
	Fontsize	Equal	Unequal

Figure 2: Social tagging systems – Dimensions (Internal View)

1.2.1 Profiles

Types (Individual, Job)

Actual competency profiles reflect individuals' (e.g. employees') competency stock, whereas target competency profiles point out required job related competencies [11]. A comparison of both helps to detect competency gaps [11]. Based on this information, measures of personnel requirement planning, recruiting or training can be adopted. Consequently, the alignment of actual and target competencies represents a main function of competency acquisition. Hence, social tagging systems might support both competency profiles, individuals 'and job related ones.

Transparency (Transparent, Non-Transparent)

Individuals 'competence is sensitive personal-related information; therefore, a selected group of experts has to acquire and assess individuals' competence. A transparency of individuals' competency profiles, contributed tags and tag creators for all tagger seems to be debatable against the background of data protection. Some people-tagging systems [13, 15] just allow a transparent view on individuals profiles [42], provided that the profile owner and participating tagger agree with that. However, research results show taggers tend to a non-transparent, private solution [49] when it refers to the tags attached to their profile. Thereby it is for the tagger to decide on who and how many taggers are allowed to have a look on their profile.

1.2.2 Tagger

Rights (Create, Use, Change, Delete)

Taggers obtain several rights and roles in social tagging systems [62]. Taggers are consequently entitled to create and use tags for profile description. Due to the context of competency acquisition and in particular the augmentation of individuals' profiles taggers have to obtain additional rights, e.g. changing or deleting tags, if they are inappropriate or false [13, 49]. These rights might also be helpful to eliminate obsolete tags keeping the profiles up to date.

Hierarchical level (Equal, Unequal)

A specialty of social tagging systems is that all taggers are treated equally; everybody can tag and there are no hierarchical differences [53]. However, for the purpose of competency acquisition taggers action is embedded into a closed organizational system, where taggers from several hierarchical levels interact. Every hierarchical level also reflects a special power of decision and expertise [35], e.g. not every organizational member is currently allowed to assess and ascertain competencies. Mutually tagging already exists in social tagging systems; however mutual assessing within an organization is possible but not common [39]. Hence, social tagging allows mutual tagging over several hierarchy levels where all taggers are considered unequal or without the hierarchical restriction, where all taggers are considered equal.

Perspective (Self, Other)

Self-description and assessment by others represent two well-known aptitude testing methods [6], which are often used for competency acquisition and assessment. Social Tagging also offers taggers the opportunity to describe their own profiles (both job-related and personal-related) as well as foreign ones [15]. Social Tagging seems to be particularly suitable and accepted by taggers in purpose of self-assessment and self-reference as previous research results show [14, 21, 22, 42, 46, 64]. For the reason that taggers can have both points of view social tagging systems offer both perspectives: tagging themselves or others [3].

Number (Single, Multiple)

There are several methods to acquire competencies. One of them is the single-appraisal such as a self-description or the single appraisal by the supervisor [37, 39]. A comparison of both represents a common method to gather competency-related information. Apart from those methods there are further methods that include the appraisal of multiple raters, which differ from each other by their perspectives [39]. Social Tagging Systems also allows a single tagger to describe profiles and a description of the same profile by a group of tagger from several perspectives as well [61]. So the number of tagger can vary between one (single -assessment) and many (multiple appraisal).

Incentives (Voluntary, Compulsory)

Social Tagging Systems base on the principle of voluntary participation of taggers. This principle has led to a high acceptance [43]. But Social Tagging System can only then be effective when a minimum of tags and profiles is given. More important become the taggers' incentives. So, the question is if the competence acquisition should be carried out through social tagging systems on a volunteer or compulsory base. Research findings show that taggers can be split by their motivation [13, 42, 56]. So, for instance, some of them tag for their own sake or for the sake the others [13]. Some tag for reasons of self-presentation [42, 64] or just to store tags [15, 50, 51]. Further motivation has also been detected in the users need to be a part of a community. However, compulsory incentives have also been detected [6], e.g. Social pressure can also be a reason why taggers tag to get not excluded from the community [8]. So, voluntary and compulsory incentives can be distinguished. Both are relevant for competency assessment, because in closed social tagging systems with corporate purposes a contribution of tags serves predominantly corporate and non-private purposes, for which voluntary contribution or commitment cannot be ensured [33].

Independence (Given, Not Given)

Social tagging is based on the principle of collaborative object description and taggers interexchange. While the description of a profile just by one single tagger might be time consuming and incomplete, social tagging systems use taggers collaborative participation to get multiple perspectives and a broad description. However, taggers in most cases do not acts independent from each other. It is more like a transparence and mutual influence between them [50]. They swap tags as ideas through a transparent visualization in order to collect multiple descriptions, synonyms or alternative descriptions.

Those can be improved if taggers are influenced by tags from others, and an internal vocabulary evolves and gets more stable over time [36]. However, there are few approaches in which taggers act independent from each other in order to filter the best describing tags for a digital object [61]. So, one can decide for dependence or independence over the taggers, but due to the requirements of data protection independence over the taggers shall be recommended.

Visibility (Transparent, Anonym)

Once a tag has been added to an object, its source cannot be traced anymore. In most cases the tag creator remains invisible. Because of its collaborative sharing character tags become common property [50] and can be reused by other taggers, which means one tag can be related with many taggers. However, to avoid inappropriate tags or tag spam [38] it might become important to identify the tagger who causes the false tag [49]. Two cases remain disputable. The first is the transparency and visibility of the related tagger for all others, the second is an anonymous solution, where the tagger remains invisible for reason of data protection and to ensure taggers freedom of opinion.

1.2.3 Tags

Suggestions (Given, Not Given)

A vexed characteristic for social tagging systems is the taggers' free choice of vocabulary without being bound to controlled vocabularies. Ambiguity of language has often been discussed as a main disadvantage of social tagging systems [26, 53].Therefore, existing approaches tend to get social tagging more structured and recommend to support taggers vocabulary choice by suggested tags [18, 42,63]. There are already several approaches to suggest tags, e.g. previously used tags [13], tags with similar spell, frequently used ones or the latest ones. Each kind of suggestion aims to reduce the ambiguity of language [18, 53, 59]. It is the taggers' choice to accept the suggest tags or ignore them. Hence, suggestions can be given or not.

Types (Unrestricted, Restricted)

Apart from suggestions a variety of tag-types results from the ambiguity of language [21, 22]. However, it still lacks a complete categorization. We can roughly separate single-word-tags from compounded-tags [59] as well as objective tags from subjective ones [34]. But there are also tag-types only made for the tagger himself to retrieve its own information, which are meaningless for other taggers. For the purpose of competency acquisition just tag-types that contain competency related information are required, not all tag types can be used [5]. Hence, two cases remain to decide for, a reduction of allowed tag-types [63] or tagging without constraints.

Use of the same tags (Single, Multiple)

Normally, competency acquisition methods include a scale to measure the degree each competence has got or is required. However, in social tagging systems a rating scale is missing [31, 55]. Social rating systems represent another social software category. To express the importance a tag has got for one profile, taggers sometimes use the same tag multiple times. But in some social tagging systems the multiple use of the same tag for one tagger counts once even if it is added twice or multiple times to the same object. A reuse of tags by one tagger might also a method to express the importance the tag has got for the profile or the degree to which a competency is given or needed.

Number of different tags (Unlimited, Limited)

In social tagging systems taggers are not limited in the number of tags they add to an object [22]. It is the taggers' choice how many tags he or she wants to contribute, that's why the number of tags varies among the tagger. Using social tagging systems for competency acquisition regulations to determine the number of tags might be necessary to avoid an assessment bias within a profile and tag spam [38]. However, regulations towards a fixed number of tags might also cause spam [38] tags, when taggers just add tag because they have to. Hence one has to decide for a limited or unlimited number of different tags.

Temporal dimension (Given, Not Given)

Some social tagging systems consist of more than three elements; some also include a temporal dimension to acquire the date a tag occurs for the first time or every time it has been changed. With the additional temporal dimension changes over the time could be measured. The additional temporal dimension might also useful for competency acquisition to depict changes in the profiles over time [13].

Weight (Equal, Unequal)

Another specialty of social tagging systems is the equality in weight every tag has within the system. This is related with the equal treatment of each tagger. However, a weighted tag might be a method to underline the tags' importance [63], e.g. the superiors' tags might be more important for individuals profiles than the subordinates' one. Otherwise latest added tags might be more important than those which were added a year ago. So, one can decide for unequally or equally weighted tags.

Scope (Professional Competence, Personal Competence)

Current people tagging approaches allow taggers to describe profiles in an unstructured manner [13, 28]. Focusing on competency acquisition there are several dimensions respectively facets competence consists of [24, 37, 60]. According to the DQR competence can be subdivided in two sections: professional and personal competence [19]. Hence, social tagging might cover the whole scope or just one of both sections [60].

Granularity (Predefined, Not Predefined)

Apart from the dimensions competence consists of there are also differences considering the granularity a competence is ascertained. The more granular a competency is acquired the easier it is to align actual and target competencies. However, ambiguity of language and the absence of rules in social tagging systems allow every hierarchical level [63] within the tags [10]. To gather more accurate

information we suggest predefining granular levels. Alternatively to this suggestion a non predefined characteristic is also possible.

Structure (Given, Not Given)

Unlike taxonomies, where terms are clearly kept in strict mono- hierarchical parent-child relations in social tagging systems each tagger can create his or her own structure [43, 55]. In most cases those structures are individual and cannot be matched with others. Tags can also been aggregated, e.g. compounded as tag bundles [42, 53, 59].

Further there exist approaches, which recommend a predefined structure, e.g. by means of given metadata, to get tags more accurate [1]. Another research recommends predefined facets or dimensions, where tags can be sub ordered [48]. In order to get a more aggregated view on competencies a given structure through predefined facets or metadata might be helpful. However it depends on number and quality of facets or metadata whether this is effective [1]. So, one can decide for an integrated structure or a structure less characteristic.

Font size (Equal, Unequal))

Finally, tag visualization as one of the main social tagging characteristics remains to discuss. There are various ways to visualize tags. Tags can be ordered as tag-clouds or they can be listed both horizontally and vertically. It's further on possible to order them either alphabetically, or semantically, or visualize them as unordered [27]. Each visualization aims at supporting social navigation [38, 50, 52]. Apart from structure the font sized can vary. In most cases a big font size represents a high frequency [30], up-to-datedness or occurrence. But it is also possible to visualize all tags in an equal font size.

2 Theoretical Foundation - Quality Criteria

Competency acquisition deals with measuring, elicitation and collection of competency related information; thereby, it gets usually supported by electronically diagnostic instruments for aptitude testing. Creating a scientific fundament each instrument used for competency acquisition requires a theoretical foundation that in most cases is based on a measuring theory. Each theory or model has several assumptions and is founded to quality criteria which have to be observed. Competence is a construct of aptitude testing [60]. Normally, methods to measure competencies for competency acquisition are evaluated by quality criteria, particularly reliability and validity that result from classical testing theory [25]. So, classical testing theory seems to be an appropriate theory to evaluate social tagging systems. In the following assumptions of classical testing theory are presented in short.

2.1 Assumptions

Classical testing bases on three main assumptions (axioms) and additional assumptions as well. All of them concern the measuring process and in particular the measured values [44]. Firstly, the existence axiom declares that the real value exists as the expected value of a measurement. Secondly, the connectivity axiom implies that each measured value consists of both a true and an error value. It implies each measurement is defected with errors. Thirdly, the independence axiom precludes that there is dependence between error values and true values among several persons. It is additionally assumed that error values within a person are not related. Further independence over participating raters is assumed [25]. Classical testing theory mainly

considers the quality of a measurement or elicitation from the measurement errors point of view; therefore it is also called “measurement error theory”. Measurement errors or error values can be subdivided in coincidental errors and systematical errors [23]. The former results from internal and external influences a person is affected with. They appear infrequently and are non predictable. The latter appears in pattern and results from errors within the theoretical or empirical measuring model. According to the classical testing theory error values result from the lack of quality. Thereby the degree of quality can be estimated with quality criteria, in particular, reliability and validity which will be subsequently introduced.

2.1.1 Reliability

Reliability is „ (…) the degree of accuracy a procedure has with regard to the characteristic to be measured.“ [35, p. 250][29]. It is also a degree for the stability a measuring instrument has got. [44]. Reliability requires two temporal distanced measurements which have to congruent in their measured values. So, reliability is a measure how prone a measuring method is for coincidental error values. Getting reliable results or measured values rules, regulations, norms and structures are necessary required.

The estimation of reliability embraces stability over time (re-test reliability), internal stability and at last the agreement over several raters in their interpretation of measured values. In detail re-test reliability can be estimated if there are two measurements at different times in which the same group uses the same method to measure or ascertain the same thing. A special kind of re-test reliability is the intra-rater reliability, a measure for the stability of measured values within one rater over time [2]. Estimating internal consistency it requires a measuring method to be divisible into many equal small measurements, which count as a measurement for their own [29]. If all measurements deliver the same measured values, internal consistency is given. Thirdly, inter-rater-reliability can be estimated if a fixed group of rater is ensured, who interpret the same measured value independent from each other in the same way. It implies a measuring method to be clear and accurate so that coincident interpretation errors can be minimized.

2.2 Validity

Validity is a measure how trustworthy, complete and valid a measuring method is. It is given if a measuring method exactly measures what it is supposed to do and nothing else. Validity can be assumed as given if theoretical argument and empirical results underline this. Validity represents further a measure, how prone a measuring method is from both systematical and coincidental error values [2].

There are several ways to estimate validity. Firstly, content validity is a measure if the applied measuring method actually measures the whole content respectively every facet of the regarded construct. It implies that a construct is measurable and a fixed definition exists which contains every facets the construct exits of it [60]. To estimate or test the content validity normally experts are interviewed, respectively, consulted. This is what we call face validity, which is given if the majority of experts agree with the definition. Secondly, criterion validity is a measure to what extent measured values match with present or future external criterion. Simultaneously or present comparison is regarded by concurrent validity, whereas predictive validity focuses on delayed comparisons. Thirdly, construct validity is given if actually the contrast is measured and nothing else. To put that in our perspective construct validity is given if all measured values refer to

competence and not to intelligence. Convergence validity is given if several measuring methods get the same measured values. Discriminate validity is given if measuring different constructs provide different measured values.

3 Discussion

Based on conceptual and theoretical assumptions we answer the question if social tagging systems, as limited before, are able to ensure the provision of reliable and valid competency related information. In the following at the first step we examine to what extent social tagging systems ensure the measuring of both quality criteria. At the second step we show up the sources of coincidental and systematical errors and give recommendations to minimize them referring to our conceptual framework.

3.1 Reliability

Estimating intra- rater reliability or re-test reliability a temporal dimension is required to compare tags within one tagger over time. Further, it has to be ensured that a tagger remains for a fixed period within a social tagging system. It is necessary that at least two measurements at different times can be done to compare changes within the tags. This is only to ensure in closed systems, because in open ones there is nothing that bounds a tagger to a system, whereas in closed systems the employment contract regulates the length of a period a tagger is bound to the organization. It still lacks research if competency related tags within one tagger are stable over time. Tags represent the taggers vocabulary, which develops over time as well as the tagger's personality and competence. Although previous findings show that some patterns of stability in the taggers vocabulary choice and spelling exist [50], it remains unclear if their understanding of the tag content remains also the same.

However, just the fact that the taggers belong to the organization does not guarantee their contribution yet. Previous findings show taggers can be distinguished in power user respectively normal taggers who tag frequently and lurkers who tag infrequently or just profit of existing information [50, 51]. This aggravates the validation of re-rest reliability and intra-rater-reliability for all taggers.

Currently, there is just a voluntary incentive; taggers are free to contribute tags driven by their own motivation. A compulsory incentive for now does not exist. However, if taggers are not expected to contribute, re-test reliability respectively intra-rater-reliability might be hardly to estimate. But a compulsory incentive might also increase the spam tag [63] because taggers just tag because they have to.

Estimating internal consistency implies that the measurement method, e.g. social tagging systems can be divided into many smaller measurements which measure the construct competence in an equal manner. Social tagging systems consist of multiple taggers, profiles and tags and it is possible to form smaller social tagging systems within one system. However, there are differences between each single tagger, profile and tags, so equality of each dimension is hardly to attest. For instance, there are several tag types which vary in their accurateness, objectivity and content. Not all of them are appropriate to ascertain competencies [5]. Further, spam tags exist [38, 54] that does not contain any relevant content. So consistency within the measurement method is hardly to attest.

Estimating inter-rater-reliability implies that at least two taggers tag the same profile. In social tagging systems multiple taggers describe the same digital object in a collaborative manner. However, the number of tagger varies depending on the digital object, respectively, profile. It is possible that just one or all taggers describe a profile,

because there are no rules that restrict a minimum of taggers. Referring to the conceptual approach there are several possibilities to estimate inter-rater-reliability exist, e.g. estimating inter-rater-reliability over several perspectives (self-assessment and foreign appraisal) [15], several hierarchical level or within one hierarchical level can be done.

Secondly, inter-rater-reliability requires congruence over taggers' interpretation of the same measured value. In social tagging systems there are neither rules nor regulations concerning the vocabulary choice. This causes the ambiguity of language social tagging systems are known for, in particular tags are imprecise [26]. Synonyms, homonyms, abbreviations and so on are not excluded because taggers are free in their vocabulary choice. However, taggers differ from each other in their linguistic power of expression, cognitive talents and domain knowledge [17]. Hence, ambiguity can be avoided neither in the spelling, nor in the understanding or sense a tag has [31, 53, 54]. For example, although an individual's profile is tagged multiple times by different taggers with „leadership ability", inter-rater-reliability cannot be attested at all because each tagger might have its own understanding, what "leadership ability" is [16, 45]. Tags are consequently not accurate to interpret, in particular single-word tags offer polysemy [3,57]. But can be used as a start tag which can be augmented with more specific tags.

Further there tags with multiple or additional hidden meanings that are just understandable for a special group, called socio-semantic tags [34, 57]. Apart from objective tags there subject related ones [32], which can just be understood or interpreted by the tagger himself [6, 13, 32, 51, 53]. So, we recommend limiting the tag-types to those tag types which are clear for all taggers. Problems to interpret tags in an accurate manner might further result from different granularities within the tags. Fine-granular tags might be more accurate than large-grained ones, e.g. the tag „C++" is more defining than "computerlanguage". We recommend a predefined granularity level; however, it needs further research to detect which granularity-level is the best.

Independence from the participating taggers for each tagger has to be observed for competency acquisition and assessment procedures [35] according to the German requirements for proficiency assessment procedures and classical testing theory as well. In detail, it concerns the processes of acquisition, interpretation and evaluation of competency related information respectively tags. It is especially relevant for personal related information and individual's competency profile description due to the fact that competencies are sensitive personal-related data. However, social tagging systems follow the principle of collaborative tag sharing and a mutual transparency of all contributed tags [13, 15, 16]. So it requires a special characteristic as we presented in the conceptual framework.

Assuming each tagger tags independent from others the same profile, multiple single descriptions of one profile are given to estimate their inter-rater reliability. In this combination multiple tagger are involved in a collective way. To ensure independence the transparency we recommend to keep profiles and the foreign related tags non-transparent for the tagger that he or she just see own contributed tags [61].Thus coincidental errors that result from external influences might be minimized.

Nevertheless, coincidental errors result from both influence sources externals and internals as well. This has been scarcely confirmed in [30, 50], which show taggers are influenced by their own subjective point of view and other taggers' influence as well. Internal coincidental errors result from the taggers' current temper and personality. So, every tagger is influenced by its own idiosyncratic subjective point of view [20].

Socially desired tags cannot be avoided at all [6]. Otherwise, tags can consciously been avoided [16], e.g. to strip other taggers a special competence which tagger do not have themselves or just to save another tagger to be not connected with an expertise they want not to related with [14]. Underestimation or overestimation of their own or foreign competencies might occur as well [23].

However, classical testing theory assumes the true values are the expected values, so the mean of multiple measure values might compensate error values. Social tagging systems already use the wisdom of multiple taggers to describe the same object. The congruence over several taggers in his or her profile description helps to detect relevant tags. Research results from social indexing show, taggers agree on core terms [60], which are mostly defining for a digital object. Nevertheless, even if tags just appear once ,they can be valuable [4].Therefore, social tagging seems to be an appropriate method to minimize internal coincidental error values. The more taggers are involved, the more objective a profile description might become [36], it might also be helpful to improve inter indexer inconsistency [21, 22, 30]. Further subjective coincidental errors in competency acquisition could be reduced [23].

However non-transparent solutions act against the collaborative character social tagging systems has. Hence, we recommend a transparent solution, in which a tagger is influenced by external criteria (foreign tags) but all taggers interact invisibly with each just other over their tags. Thereby, all tags are in an equal font size to avoid halo effects [23, 27]. So, every tagger gets more objective information, foreign tags work as suggestions and it is the taggers decision to use the same tags or create new ones. So, taggers might be inspired by other tags to find additional rich deep information. It requires further research whether this approach observes the requirements for proficiency assessment and data protection.

Finally, due to the accuracy and trustworthiness [35] to estimate inter-rater-reliability it requires equal expertise or domain knowledge for all taggers. In social tagging systems an expertise is not required [17, 43, 52], each tagger is allowed to participate [51] However, it requires empirical research to test if non-experts tags are less defining than experts [31, 51].Taggers differ in their expertise and knowledge, especially if we assume that they are from several hierarchical levels. But every single tagger has got special domain knowledge and might contribute hidden but important competency related information [5, 31]. For example, a tagger who has no special expertise in competency acquisition might know in detail which competencies his job requires. On the other hand, work mates might also know each other from another perspective than superiors or subordinates do, similarly to the multiple-rater-assessments. So, we recommend reaching equality in the taggers expertise as required to weight tags corresponding with the hierarchical level or by the distance a tagger has to the profile owner or job.

In sum, it remains debatable if social tagging systems provide hard, reliable and accurate competency-related information. But using the recommended characteristics coincidental error sources might be minimized, which required further research. However, rich, deep competency-related information from many different perspectives can be gained [4, 7]. Social tagging systems seem to be appropriate to detect hidden information [5], which is hardly to collect over all facets with current methods in such a simple manner. Especially for self-description they seem to be an appropriate method [16, 46,50] because taggers can describe their own competencies in their own words as detailed as required.

3.2 Validity

Estimating content validity it requires a fix measuring model that defines all facets dimensions competence consists of, in a special granularity [2]. However, social tagging systems do not provide any guidelines or definitions. They rather aim at the collection of all possible descriptions a digital object or construct might have. Social Tagging systems are foreign from controlled vocabularies, in which a single group of experts defines what competence is, the facets it consist of and how granular it is to ascertain. Instead of consulting experts to evaluate the face validity, social tagging systems use the collective knowledge of taggers to get a broad, rich and extensive definition. So content validity in social tagging systems is not based on a fixed definition but it is rather a continuous evolutionary defining process. This procedure is already used in combination with ontologies to augment competency models supported by employee's commitment [6, 33]. So, content validity is difficult to estimate. Estimating criterion validity needs external criteria, e.g. empirically measured values to which tags can be compared with. This could be difficult to prove because competence is hardly to measure directly [6]. Hence, the estimation of concurrent and predictive validity requires further research. Estimating construct validity implies that, firstly, the construct is measurable and it, secondly, can be clearly distinguished from other constructs [2]. This seems to be difficult for multifaceted constructs such as competence [24], because there are several definitions and in part overlapping understandings what competence is [37,41]. Competence is a latent construct that consist depending on the situation of more or less facets [2, 41]. The harder it is to ascertain all facets with one measurement method [2]. But competencies are everywhere to detect, so each tag might be able to ascertain a small facet of competence [6]. To estimate convergent validity we recommend comparing tags with existing definitions and measured values gained by other conventional methods. If they are congruent concurrent validity is given. Estimating discriminate validity requires additional social tagging systems that ascertain other construct profiles with the same tagger. Both require further research.

4 Conclusion

Firstly, we answered the question which possibilities social tagging systems offer to gather competency related information. In order to do this we systematically examined social tagging systems from external and internal points of view and presented a conceptual framework that consists of several design characteristics ordered by social tagging dimensions and selected sub dimensions.

Secondly, we aimed at finding out if social tagging systems are able to ensure the allocation of reliable and valid competency related information. To examine this we regarded social tagging systems from the point of view of classical testing theory. In particular, we focused on their reliability and validity. It has been detected that the absence of rules, independence from the taggers and missing expertise as well as the ambiguity of language aggravate the estimation of reliability and validity. The main disadvantages result from the shortness of tags that allows different understandings and interpretability. So, from classical testing theory's point of view social tagging systems do not fulfill the requirements to gather hard-reliable and consequently valid competency-related information. This was previously assumed in [17], who consider the flexibility and ambiguity of social tagging systems as a negatively influence on the quality of tags [51]. Social tagging procedure is similar to qualitative research methods that use the language of the society and acquire or gather data from the participant's point of view, who describe constructs through their own eyes [7].

Nevertheless, using social tagging for competency acquisition is valuable for e-HRM. Because of their decentralized collaborative character, it is a free choice of vocabulary and missing structure social tagging systems are accepted by many people. Their commitment could be helpful to ascertain more hidden, deep and rich information by several multiple perspective which otherwise would not have been ascertained [4]. Using the collective or collaborative gathering approach social tagging systems consist of multiple perspectives from several points of views can also make competency-related information more accurate [30]. Further benefits, social tagging systems additionally provide, are hardly to detect with chosen quality criteria. So we propose another evaluation by substitute quality criteria e.g. efficiency, effectiveness [30], relevance and usefulness.

References

[1] Bar-Ilan, J., Shoham, S., Idan, A., Miller, Y. & Shachak, A. (2008): Structured versus unstructured tagging:a case study, Online Information Review 32 (5). 635-647

[2] Bailey, K. D. (2007) Methods of social Research, 4th Vol. Free Press NY

[3] Berendt, B. & Hanser, C. (2007) Tags are not Metadata, but „Just more Content"- to Some People, *ICWSM '07. Colorado.* http://warhol.wiwi.hu-berlin.de/~berendt/Papers/ICWSM07/berendt_hanser_ICWSM07.pdf, last access 10.05.2010

[4] Bernstein, M., Tan, D., Smith, G., Czerwinski, M. & Horvitz, E. (2008) Collabio: A Game for Annotating People within Social Networks, In *Proceedings of UIST 2009: ACM Press NY Symposium on User Interface Software and Technology.* http://research.microsoft.com/en-us/um/people/horvitz/collabio.pdf, last access 10.05.2010

[5] Bischoff, K., Firan, C. S., Nejdl, W. & Paiu, R. (2008) Can All Tags be Used for Search? In CIKM '08: Proceeding of the 17th ACM conference on Information and knowledge management (2008) 203-212

[6] Braun, S., Kunzmann, C. & Schmidt, A. (2008) People tagging and ontology maturing: towards collaborative competence management, David Randall and Pascal Salembier (eds.): From CSCW to Web 2.0: European Developments in Collaborative Design Selected Papers from COOP08, Computer Supported Cooperative Work, Springer, 2010

[7] Bryman, A. (2008) Social research Methods, 3rd Edt., OVP Oxford Press, NY

[8] Brzozowski, M. J., Sandholm, T. & Hogg, T. (2009) Effects on Feedback and Peer Pressure on Contributions to Enterprise Social Media. Proceedings of the ACM 2009 International Conference on Supporting Groupwork; ACM Press NY 61-70 http://www.hpl.hp.com/research/idl/papers/feedback/group2009feedback.pdf

[9] Cattuto, C., Loreto, V. & Pietronero, L. (2007) Semiotic dynamics and collaborative tagging, PNAS.1461-1464

[10] Damianos, L., Griffith, J. & Cuomo, D. (2006) Onomi: Social Bookmarking on a Corporate Intranet, Proceedings of the WWW 2006 Collaborative Web Tagging Workshop,2006
http://www.mitre.org/work/tech_papers/tech_papers_06/06_0352/06_0352.pdf

[11] De Coi, J. , Herder, E., Koesling, A., Lofi, C , Olmedilla, D., Papapetrou, O. & Siberski, W. (2007) A Model For Competence Gap Analysis, ECTEL06 conference.

[12] Ehrlich, K., Lin, C.& Giffiths-Fisher, V.(2007) Searching for Experts in the Enterprise: Combining Text and Social Network Analysis, GROUP'07 November 4-7 Sanibel Island, Flirida USA ACM

[13] Farrell, S., Lau, T. (2006) Fringe Contacts: People-Tagging for the Enterprise. In: Proceedings of the WWW 2006 Collaborative Web Tagging Workshop (Edinburgh, 2006). ACM Press, NY

[14] Farell, S., Lau, T. & Nusser, S.(2007) Building Communities with People-Tags. In: INTERACT (2), LNCS, Springer (2007), 357-360

[15] Farrell, S., Lau, T., Wilcox, E., & Muller, M., (2007) Socially augmenting employee profiles with people-tagging. ProcUIST 2007.

[16] Farrell, S., Lau, T., Wilcox, E., Muller, M. & Ehrlich, K. (2006) Augmenting employees profiles with people-tagging, http://domino.research.ibm.com/library/cyberdig.nsf/papers/4DBEF46CBCE81493 85257222005806E0/$File/rj10395.pdf

[17] Gao, Q., Dai, Y. & Fu, K. (2009) Improving Personal tagging Consistency through Visualization of Tag Relevancy, In: Ozok, A.A.; Zaphiris, P. (Eds.) Online Communities, LNCS 5621. Springer. Heidelberg 326-335

[18] Gemmel, J., Ramezani, M., Schimoler, T., Christiansen, L. & Mobasher, B. (2009) A Fast Effective Multi-Channeled Tag Recommender, Proceedings of ECML PKDD http://www.kde.cs.uni-kassel.de/ws/dc09/papers/paper_25.pdf

[19] German Qualifications Framework Working Group (2009) Discussion proposal for a German Qualifications Framework for Lifelong Learning, http://www.deutscherqualifikationsrahmen.de/SITEFORUM?&t=/Default/gateway &i=1215181395066&application=menu&l=1&active=no&ParentID=12157726270 52&xref=http%3A//www.google.de/url%3Fsa%3Dt%26source%3Dweb%26ct%3D res%26cd%3D2%26ved%3D0CAwQFjAB%26url%3Dhttp%253A%252F%252Fw ww.deutscherqualifikationsrahmen.de%252Fportals%252Fdqrbbj%252Fexport%25 2Fder_dqr%252Findex.html%26rct%3Dj%26q%3Ddqr%26ei%3Dj55RS7_HAo3z _AbClIiaCg%26usg%3DAFQjCNGI9RgArrGCgvvonoybzdb5CiOVsw

[20] Glushko, R., Maglio, P., Matlock, T. & Barsalou, L. (2008) Categorization in the wild, Trends in Cognitive Sciences 12(4), 129-35.

[21] Golder, S. Hubermann, B. (2005) The Structure of Collaborative Tagging Systems Technical report, Information Dynamics Lab, HP Labs. http://www.hpl.hp.com/research/idl/papers/tags/tags.pdf

[22] Golder, S. & Hubermann, B. (2006) Usage patterns of collaborative tagging systems, Journal of Information Science. 32(2). 198-208

[23] Greving, B. (2007) Messen und Skalieren von Sachverhalten, in: Albers, S., Klapper, D., Konradt, U, Walter, A. & Wol, J. (Hrsg.) Methoden der empirischen Forschung, 2. Überarbeitete und erweiterte Auflage, Gabler Wiesbaden, 65-78

[24] Grzeda, M. (2005) In competence we trust? Addressing conceptual ambiguity, Journal of management development. 24(6) 530-545

[25] Gulliksen H.(1950) Theory of mental tests, 1th Ed. Wiley & Sons, London.

[26] Guy, M. & Tonkin, E. (2006) Folksonomies: Tidying up Tags? D-Lib Magazine 12(1). http://webdoc.sub.gwdg.de/edoc/aw/d-lib/dlib/january06/guy/01guy.html, last access 10.05.2010

[27] Halvey, M. & Keane, M.T .(2007) An assessment of tag presentation Techniques, Poster zum www 2007 may 8-12 Bannf Alberta Canada

[28] Hammond, T., Hanny, T., Lund, B. & Scott, J. (2005). Social bookmarking tools – A general overview. D-Lib Magazine 11(4).April (2005) http://www.dlib.org/dlib/april05/hammond/04hammond.html, last access 10.05.2010

[29] Hartig, J. & Jude, N. (2007) Empirische Erfassung von Kompetenzen und psychometrische Kompetenzmodelle. In: Hartig & J. Klieme, E. (Eds.) Möglichkeiten und Voraussetzungen technologiebasierter Kompetenzdiagnostik. BMBF. Bonn. 17-36.

[30] Hassan-Montero, Y. & Herrero-Solana, V. (2006) Improving tag Clouds as Visual Information Retrieval Interfaces., *In: Scit2006: International Conference on Multidisciplinary Information Sciences and Technologies* Mérida, Spain, 10/2006.

[31] Heckner, M. (2009) Tagging, Rating, Posting Studying Forms of User Contribution for Web-based Information Management and Information Retrieval. Hülsbusch. Konstanz

[32] Heckner, M., Neubauer, T. & Wolff, C. (2008) Tree, funny, to_read, google: What are Tags Supposed to Achieve? In SSM '08: Proceeding of the 2008 ACM workshop on Search in social media. 3-10

[33] Heinsman, H., de Hoogh, A., Koopmann P. & van Muijen, J. (2008) Commitment, control, and the use of competency management, in: Personnel Review Vol. 37(6) 2008, 609-628

[34] Höltschi, P., Aschoff, F. & Schwabe, G. (2008) wehmütig, witzig, wunderbar - Subjective tags als Wegweiser im Web 2.0. Multikonferenz Wirtschaftsinformatik MKWI 200., 1319-1330.

[35] Hornke, L. & Pitts, R. (2004) DIN 33430 Requirements for proficiency assessment procedures and their implementation. In: Westhoff K, Hellfritsch, L., Hornke, L., Kubinger K., Lang, F., Moosbrugger, H., Püschel, A. & Reimann G. (Eds.) Grundwissen für die berufsbezogene Eignungsbeurteilung nach DIN 33430. Pabst, Lengerich

[36] Hotho, A., Jäschke, R. Schmitz, C., Stumme, G. (2006) Trend Detection in Folksonomies. In: Goos, G.; Hartmanis, J.,van Leeuwen, J. (Eds.) Semantic Multimedia LNCS Springer. 56-70

[37] Kaufhold, M. (2006) Kompetenz und Kompetenzerfassung: Analyse und Beurteilung von Verfahren der Kompetenzerfassung. Vs Verlag

[38] Koutrika, G., Effendi, F., Gyöngyi, Z., Heymann, P. & Garcia-Molina, H. (2008) Combating Spam in Tagging Systems: An Evaluation. Transactions on the Web 4(2). ACM Press 1-34

[39] Lepsinger, R. & Lucia, A.D. (2009) The Art and Science of 360-Degree Feedback: 2nd Edition, Wiley & Sons, San Francisco CA.

[40] Madden, M., Fox, S. (2006). Pew Internet: Riding the Waves of "Web 2.0".Pew Internet. http://www.pewinternet.org/Reports/2006/Riding-the-Waves-of-Web-20.aspx

[41] Markus, L., Cooper-Thomas H. & Allpress K. (2005) Confounded by competencies? An evaluation of the Evolution and Use of Competency Models. In: New Zealand Journal of Psychology July 2005(2). 117-126

[42] Marlow, C., Naaman, M., boyd, d. & Davis, M. (2006). HT06, Tagging Paper, Taxonomy, Flickr, academic article, to read. In Proceedings of the HYPERTEXT'06: Proceedings of the seventeenth conference on Hypertext and hypermedia (odensee, 2006) ACM Press New York, NY. 31–40

[43] Mathes, A. (2004) Folksononmies Cooperative Classification and Communication Through Shared Metadata, http://www.adammathes.com/academic/computer-mediated-communication/folksonomies.html

[44] Moosbrugger, H. (2008) Klassische Testheorie (KTT) in: Moosbrugger, H.& Kelava, A. (Eds.) Testtheorie und Fragebogenkonstruktion, Springer, Berlin Heidelberg,. 99 - 113

[45] Muller, M. (2004) When Similiar Tags do not Describe Similiar Things: Evidence of Communities among Users, http://domino.watson.ibm.com/cambridge/research.nsf/58bac2a2a6b05a1285256b30005b3953/5a6ac2e7302fe5c9852574b20070d985/$file/muller%20-%20when%20similar%20tags.pdf

[46] Muller, M, Ehrlich, K. & Farrell, Stephen (2006) Social Tagging and Self-Tagging for Impression Management, Submitted as an interactive poster to CSCW 2006, Banff, November 2006

[47] Olson, H., Wolfram, D. (2006) Indexing Consistency and its implications for Information Architecture: A Pilot Study, http://www.asis.org/~iasummit/2006/files/175_Presentation_Desc.pdf

[48] Quintarelli, E., Resmini, A. & Rosati, L. (2007) FaceTag: Integration Bottom-up and Top-Down Classification in a Social Tagging System, Bulletin of American Society for Information Science and Technology Juni/July 2007. 10-15

[49] Razavi, M. & Iverson, L. (2009) Improving Personal Privacy in Social Systems with People-Tagging, Conference on Supporting Group Work Proceedings of the ACM 2009 international conference on supporting group work Sanibel Island, Florida, USA.11-20

[50] Sen, S., Lam, S., Rashid, A. Cosley, D. Frankowski, D., Osterhouse, J., Harper, F.& Riedl, J. (2006) tagging, communities, vocabulary, evolution, Proceedings of the 2006 20th anniversary conference on Computer supported cooperative work , Alberta, 181 – 190

[51] Sen, S., Harper, F., LaPitz, A.& Riedl, J.(2007) The Quest for Quality Tags, Proceedings of the 2007 International ACM Conference on Supporting group work, Sanibel Island, Florida, USA. 361-370

[52]Sinclair, J. & Cardew-Hall, M. (2008)The folksonomy tag Cloud: When is it useful, in: Journal of Information Science 31(1) S. 15-29

[53] Smith Gene (2008) tagging. People-powered Metadata for the social web. Addison-Wesley Longman. Amsterdam.

[54] Šnuderl, Katja (2008) Tagging: Can user-generated content improve our services? Statistical Journal of the IAOS 25(3-4). 125-132

[55] Stock, W. & Stock. M. (2008) Wissensrepräsentation- Informationen auswerten und bereitstellen, Oldenburg, München. 153-176

[56] Thom-Santelli, J., Muller, M. & Millen, D.. (2008) Social tagging roles: Publishers, Evangelists, Leaders. In: CHI 2008 Proceedings online social network. 1041-1044

[57] Tonkin, E. (2006) Searching for the long tail: Hidden structure in social tagging. In: Furner, J. & Tennis, J.T. (Eds.) Proceedings of the 17th Workshop of the American society for information science and technology special interest group in classification research. Austin, Texas. http://sal.cs.bris.ac.uk/Publications/Papers/2000579.pdf, last access 10.05.2010

[58] Trant, J. (2009) Studying Social Tagging and Folksonomy: A Review and Framework, in: Journal of Digital Information Special Issue on Digital Libraries and User-Generated Content – 2008, 10 (1) 2009.

[59]Vander Wal, T. (2009) Optimizing Tagging UI for People & Search, http://www.personalinfocloud.com/2009/01/optimizing-tagging-ui-for-people-search.html, last access 10.05.2010

[60] van Loo, J., Semeijn, J. (2004) Definition and measuring Competences: an application to Graduate survey, Quality & Quantity Kluver Academic Publishers. 331-349

[61] von Ahn, L., Dabbish, L. (2004) Labeling images with a computergame. ACM Conference on Human Factors in Computing Systems, CHI. 319-326.

[62] Voß, J. (2007) Tagging, Folksonomy & Co- Renaissance of Manual Indexing? In: Proceedings of the Open Innovation. Proc. 10th International Symposium for information science UVK. Constance.

[63] Xu, Z., Fu, Y., Mao, J. & Su, D. (2006) Towards the Semantic Web: Collaborative Tag Suggestions, in: WWW2006: Proceedings of the Collaborative Web Tagging Workshop (2006)

[64] Zollers, A (2007) Emerging motivations for tagging: expression, performance, and activism,. in: WWW Workshop on tagging and Metadata for Social information organization., http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.118.7409&rep=rep1&type=pdf., last access 10.05.2010

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Human Resource Management-relevant Virtual Community Research: Review and Outlook

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Abstract. *Virtual Community (VC) is a comprehensive phenomenon with relevance to social as well as economic transactions. Also Human Resource Management (HRM) includes both relationship- and value added-oriented processes. HRM-actors, in particular HR-managers and employees, increasingly try to balance their personal and job-related needs. Thus, given increasingly spatially dispersed workplaces, the usage of VC may generate benefits or risks for HRM-relevant processes. Further, applicants utilize VC to enhance their chances in the recruitment process. Yet, although there is practical evidence of HRM-relevant VC (VC_{HR}), respective research literature seems to be scarce. To explore this, the paper aims at assembling and evaluating relevant academic literature to give an impulse for systematic VC_{HR}-research which might abet to the development of a respective research area in the context of e-HRM.*

Keywords: virtual applicant community, virtual employee community, virtual HR-community, rigor vs. relevance, e-HRM.

1 Introduction

Virtual Communities (VC) are defined as community-oriented, web-based discussions of groups of people with a certain kind of common interest and a certain degree of social belonging [53, 105]. The context in which VC are set is rather broad. Given comprehensive accessibility and habitual usage of information and communication technologies (ICT), VC represent a common and widespread phenomenon and are used in personal as well as organizational scenarios. Virtual discussions develop in regard to gaming (e.g. fun and fantasy), personal interests (e.g. demographic groups, health, hobbies), and economic transactions (e.g. discussions on brands, products, purchases) [for a common categorization see e.g. 6]. Social aspects, which go along with the idea of community, are to be considered in business communication because employees and managers though they act within business scenarios cannot fully prescind from their personal needs. Also, increasing network-oriented organizational forms and virtual workplaces demand to reflect social aspects of the work relationships denominated as ´communities of work´ [109]. Due to their potential socio-economic value VC enhance formal as well as informal communication and thus are able to meet personal and organizational requirements simultaneously. Thus, multifarious motives and benefits are to consider in regard to participation as well as usage and management of VC.

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VC exist in the scope of extra-organizational communication enabling communication with customers, administration/government, businesses, or applicants (B2C, B2G, B2B, B2A), and also in intra-organizational communication enabling communication between internal actors on hierarchical- or peer-levels (B2E, E2E). As already studied in other business scenarios (e-commerce), VC may also affect external and internal HRM-relevant relationships in regard to personnel marketing, training and development, and leadership [35], and are means to foster virtual information exchange and social support in the increasingly dispersed and thus also virtual workplace [128]. Formal, usually task-oriented virtual communication yields the potential to enhance HRM-processes whereas informal, socially-oriented virtual communication (virtual water cooler talk) impact motivation and commitment. Also negative implications need to be considered as personal networks and information exchange increase beyond the sphere of influence of HR-executives.

HRM-relevant VC-research should be a subset within the research on e-HRM research [85, 114], which is defined as "[...] the (planning, implementation and) application of information technology for both networking and supporting at least two individual or collective actors in their shared performing of HR activities." [114: 20]. With reference to this concept, the web-based nature is obvious and actors are easily identified. Yet, although a basic HRM-relevance is assumed further exploration of application and effects is necessary. The aim of this paper is then to enhance research in this area. First, an initial literature review is presented and discussed. Subsequently, an outlook is given to propose relevant research perspectives, a definition to delineate the term VC_{HR}, a typology, as well as theories and methods for further exploration of the VC_{HR}-phenomenon. The paper concludes with a call for future research.

2 Literature Review

VC contributions are extensively heterogeneous. To review the amplitude of contributions which strongly differ in quality, perspective, and context is an unfeasible undertaking. Only few papers give rough sketches [53, 83]. VC-research dates back to 1968 when Licklider & Taylor [84] expressed their vision of ´on-line interactive communities´. Following the initiation of a computer network basically for research purposes, further options for virtual (later also web-based) social communications [e.g. 105], conceptual and technological design [e.g. 76, 101], and new business models [e.g. 55] are opened up.

The aim of the literature review is to provide an overview of VC-contribution with relevance to (e-)HRM. Due to the chosen review method which has a narrow VC-focus based on the assumed importance of reciprocal communication applications and looking for HRM-relevance in VC-literature rather than on evaluating topical web-based HRM-concepts, the results cannot be exhaustive; yet should definitely lead to confirm and explore or challenge the VC-relevance for HRM.

2.1 Method

An iterative research approach is chosen which comprises a period of fifteen years (1995-2010) since the mid 1990s mark essential developments with respect to technology and VC, i.e. the facilitation of the World Wide Web (WWW) and the design of VC for economic purposes.

Step 1: A primary review is based on an EBSCOhost Business Source Premier (BSP) database search. A combination of the general search terms ´virtual community´ +

´human resource´ (boolean research mode) applied on titles or abstracts of peer-reviewed academic journals found only one article [37]. As a crosscheck, the screening of A-ranked journals (Human Resource Management/HRM, Human Resource Management Journal/HRMJ, International Journal of Human Resource Management/IJHRM, Journal of Human Resources/JHR according to WU-Journal Rating 2009) only revealed a second contribution [118].

Step 2: Hence, the BSP database review must lean on an extended sample. Keyword combinations (boolean research mode) applied on title or abstract of peer-reviewed academic journals now include specified communication applications (forum/discussion board, weblog, chat/instant messaging/virtual world) instead of the general VC-term, HR-actors (employee, HR-executive, applicant), as well as functional areas (recruitment, development+HR, leadership+HR) and other keywords which imply HR-relevance (knowledge+HR, collaboration+HR, leadership+HR, participation+HR, trust+HR, career). Additionally, the term Virtual Workplace is searched due to the impact of changes in work organization on communication structures. Still, a selection is difficult because a) systematic research in the research field of each HRM-function is beyond the scope of an initial review, b) found HRM key terms (e.g. development) often refer to VC-design instead of HR processes, and c) a selection from other VC-research areas also would reveal differentiation problems due to the large number of contributions. Although this research step could generate ninetynine hits, only seven thereof are considered to be relevant [1, 3, 25, 37, 42, 110, 121].

Step 3: Step 2 shows that either the amount of academic literature on the topic is inherently rather small or the chosen approach significantly constricts the results. Thus, the preceding approach is complemented by free Internet research (Google Scholar, snowball technique), including academic journals and conference proceedings and with reference to the above mentioned keywords. While hereby further thirteen articles are revealed [5, 15, 19, 23, 40, 74, 80, 95, 98, 102, 113, 115, 124] it is detrimental that the results are not reproducible.

Step 4: In order to better understand the identified contributions, they should be contextually discussed. For that, the fourth step includes free research on contextual contributions.

2.2 General Results

In contrary to the amplitude of general VC literature, literature on HR-specific VC is scarce and no discrete e-HRM sub-discipline can be stated. The selection of twentyone articles listed in **figure 1** comprises a basis for future research, yet is subject to discussion in regard to the degree of differentiation from related areas (e.g. work organizational, knowledge management (KM)) as well as it cannot be exhaustive in regard to applied research method and an unidentified number of practical or semi-academic contributions.

Within the proposed selection eighteen contributions are published in academic journals [1, 3, 5, 15, 19, 23, 25, 37, 42, 74, 95, 98, 102, 110, 115, 118, 121, 124] and three stem from conference proceedings [40, 80, 113]. The inclusion of proceedings should have increased the results as meanwhile large international conferences (e.g. International Conference on Communities and Technologies/C&T, Hawaii International Conference on System Sciences/HICSS, Americas Conference on Information Systems/AMCIS) offer particular (mini-)tracks on VC. The comparably small number however is explicable as those tracks mostly focus on social aspects, marketing/e-commerce

perspective, success, and design. Explicit HRM-relevant aspects however are neglected. The regional dispersion based on authors´ affiliations shows a majority of articles with American origin (N=12), followed by Europe (N=7) and Asia-Pacific (N=3)[10]. In regard to chronology, the number of contributions increased over time. Fifty percent are found in the most current period (2007-2010).

Author	**Explanation aim**	**Theory**	**Method**	**Implications**
Akkirman/ Harris 2004 (j) USA	Employee satisfaction in the Virtual Workplace	N/A	Case study (N=86) Correlation and variance analysis (ANOVA)	P: satisfaction and success of Virtual Workplace depend on strategies and activities R: cultural aspects, effects of implementation, development of company´s performance
Anderson 1999 (j) USA	Model of HRD-relevant Internet applications	N/A	Conceptual	P: improvement of HRD by learnercentric and interactive Internet-based activities R: learner and instructor types, effects on HRD organization
Ardichvili 2008 (j) USA	Success factors of vCoPs as collective learning measures in the workplace	N/A	Conceptual	P: consider framework to encourage participation and remove barriers R: explore vCoP in context of activitiy theory and situated cognition theory
Birchall/ Giambona 2007 (j) UK	Company-external Virtual Learning Communities for SME managers	N/A	Conceptual	P: VC are a feasible learning tool in regard to temporal, financial, and spatial restrictions R: trust level and development
Bock et al. 2008 (j) Singapore	Impact of VC leadership on motivation and organizational commitment	OSU leadership theory	Study (N=92) PLS	P: VC management should consider leadership styles R: explore leadership in blended communities, other influencing factors, and outcomes
Cho et al. 2005 (j) Korea	Impact of IM on occupational relationships	N/A	Study (N=137) Interviews (N=13) Social network analysis	P: general usefullness of IM to support occupational relationships R: explore hierarchical and cultural aspects
Cortini 2009 (j) Italy	Challenges, options and risks of weblogs in the context of	related to CSP-Framework	Conceptual	P: reflection of blogging policies R: perception of blogging

[10] Note: Parker et al (2004) is counted twice as it is of American and Asia-Pacific origin.

	Corporate Social Performance (CSP)			policies and company´s attitudes towards blogging by employees, impact on commitment
Ebner et al. 2009 (j) Germany	VC-concept of company-external suggestion management system	N/A	Case study Action Research	P: relevance for R&D and HR-processes, incentives for participation and stakeholder´s participation in development R: conditions, structures, consequences, further application scenarios
Ettinger et al. 2008 (p) Netherlands/ Germany/ Austria	Participation factors in career communities	N/A	Case study (N=1) Interviews (N=6) Ethnography	P: relationship-oriented design suggestions for recruitment platforms R: N/A
Fairbank et al. 2003 (j) USA	Interactive forum as part of Employee Suggestion Management Systems (ESMS)	expectancy theory	Conceptual	P: replacement of traditional suggestion managemgement systems R: pilot implementation and evaluation
Kahai et al. 2007 (j) USA	Team Collaboration in VW	N/A	Conceptual	P: impetus for design suggestions R: impetus for research
Laumer et al. 2008 (p) Germany	Recruiting in VW	N/A	Study (N=9.679) Descriptive statistics Case study (N=1)	P: recommendation to consider VC/VW in recruiting strategies R: explore country-specific VW-usage patterns
Parker et al. 2004 (j) New Zealand/ USA	Concept of career communities	N/A	Case study (N=3) Q-methodology (ICCS)	P: N/A R: explore further aspects (identity, career success, career support) and concepts (extra-organizational relationships)
Pliskin/ Romm 1997 (j) Israel	VC evolution during a strike	N/A	Case study (N=1) Content analysis	P: N/A R: explore intra-/interorganizational ICT usage, cultural factors, ethical dilemmas
Quan-Haase et al. 2005 (j) Canada	IM for Collaboration	N/A	Study (N=27) Interviews (N=10) Text analysis (Nvivo)	P: consider visibility tools in VC design R: extend social translucence of technology (STT) framework
Shaw et al. 2007 (j) USA	Impact of IM on organizational communication	N/A	Explorative study (N=78) Logfile	P: additional to traditional communication channels, increased presence

			analysis, Deskriptive statistics	awareness, thus more effective communication and increased productivity R: restraints on productivity by IM usage
Stocker/ Tochtermann 2008 (p) Austria	Weblog usage in SMEs	N/A	Case study (N=1) Descriptive statistics Experiment Study (N=40)	P: promotion and content are key factors for weblog success R: impetus for research
Taras/ Gesser 2003 (j) Canada/ USA	”Greedy Associates“ (GA) phenomenon	N/A	Conceptual	P: VC are worth watching R: N/A
Valentine et al. 2010 (j) USA	Ethical aspects of firing employees due to their blogging activites	Related to Integrative Social Contract Theory	Explorative study (N=401), Regressions and variance analysis (ANOVA)	P: definition of fair blogging policies R: ethical aspects in further blogging scenarios
Warisse Turner et al. 2006 (j) USA	Relation between media usage (virtual presence) and performance appraisal	Related to social influence theory and media richness	Study and interview (N=88), Hierarchical regession	P: careful definition of media-usage policies F: further organizational, media-related, and appraisal-related aspects
Wiesenfeld et al. 2001 (j) USA	Social aspects in the virtual workplace	N/A	Study (N=250) Regression analysis	P: social support strengthens organizational identification, investment in sophisticated ICT R: explore organizational identification in context of virtual workplaces

Figure 1: Overview of VC_{HR}-research. (j) = published in journal, (p) = published in conference proceedings, P = implications for practice, R = implications for research.

2.3 Content Analysis

In this subchapter, a short overview of the content along the criteria explanation aim, theory, method, and implication is presented. The *explanation aims* are heterogeneous and thus can confirm the VC-relevance in the assumed and further HRM areas: recruitment [37, 40, 80], development [3, 5, 15, 42, 95], leadership [1, 19, 25, 118, 121, 124], work organization and organizational communication [23, 74, 102, 110, 113], and industrial relations [98, 115]. Further, the contributions show deficiencies in their *theoretical foundation*. Only two contributions [19, 42] apply an explicit theory while other three [25, 118, 121] relate to selected models and frameworks. Yet, all contributions base upon a thorough literature review and discussion of previous concepts to formulate research questions and hypotheses. Also in regard to the applied *method*, quite explorative research character becomes obvious. Two third of the contributions apply a qualitative or quantitative study. Hereof, three contributions [37, 110, 118] explicitly declare themselves as explorative or action research while the

remaining on third of the whole selection is conceptual and likewise gives reason for future research. Finally, the majority of contributions derive *implications* for practice and research in order to benefit from the results.

2.4 Contextual Discussion

The identified VC_{HR}-research contributions are discussed below in the context of HRM considering further literature to strengthen the evidence of the selected contributions. Basically, the review selection concerns recruitment, career support, leadership, organizational communication, and KM, as well as aspects of industrial relations. This rather broad set of HR-relevant areas is definitely not arbitrary but rather reflects a comprehensive initial review of the area.

VC offer potential in *recruitment*. Benefits may be realized by applicants which attend applicant communities for information exchange and support, or by organizations which gather information from applicant communities or initiate or take part in applicant-HR communities for recruiting purposes. Laumer et al. 2008 [80] explored on the one hand the (frequent) usage of virtual worlds, a special kind of VC, by job seekers and on the other hand the (positive) experience of a popular company from the IT-sector which established a recruiting center in Second Life (SL). Ebner et al. 2009 [37] suggest to exploit company-initiated external R&D communities also for recruitment purposes as those communities make significant applicant information available.

VC can also *support career investments*. This may be in form of intra- or extra-organizational career communities [40, 95] or as special forms of general e-mentoring [38]. Ettinger et al. 2008 [40] focus on aspects of participating in recruitment platforms and conclude that job seekers are inclined to use this recruitment and career support if community- and network-supporting applications are offered. Parker et al. 2004 [95] explore the concept of career communities in order to identify possible characteristics and typology. They find that practical career communities comprehend a set of ideal types and serve different functions such as career support, sense-making, and learning. They emphasize that future career support requirements probably cannot be met only by company-internal concepts so that extra-organizational relationships gain in importance. Further, the concept of e-mentoring as presented by Ensher et al. 2003 [38] should be considered in this context, as recent mentoring definitions go beyond dyadic relationships and mentoring roles also include personal relationships which enhance social, affective support. E-mentoring can be attached either to informal networks to support personal career endeavours or to formal organizational development and leadership strategies.

VC offer *options for e-leadership*. E-leadership, defined as execution of measures (power, rewards, expertise, role-modeling) to motivate individuals or groups to fulfil certain task in a virtual environment [e.g. 7, 104], can be perceived as a subset of e-HRM and becomes increasingly important in the virtual workplace. Bock et al. 2008 [19] explore the impact of leadership characteristics perceptions on motivation and organizational commitment. Being focused on non-work related communities (within the organizational setting), they affirm the supposition that the existence of virtual relationship-oriented communities (in contrary to task-oriented virtual teams) positively influence employees´ work habits. Awareness on adequate leadership styles even increases the probability of a positive outcome. Respective measures to create a sense of belonging and trust which can be enhanced by colleague- or leadership have impacts on employee satisfaction and commitment [1, 124]. Executives also need to carefully consider (media usage) policies in order to prevent discrimination as well as ethical and

legal issues which might influence commitment and performance negatively [25, 118, 121].

VC influence *organizational communication and KM*. In general, HR-relevant issues are associated with organizational issues such as organizational structures (positions and hierarchies) and communication structure (ICT usage). It is the function of HRM to recruit, develop, and compensate employees and, therewith, motivate them to fulfill their task-specific roles. Then it is to examine which impact modified organizational and communication structures might have on motivational measures and strategies and if social, relationship-oriented aspects need to be particularly considered in regard to network-oriented organizational forms and ICT-usage [109, 124]. The assumption is that VC usage facilitates knowledge acquisition and exchange.

In more detail, diverse reciprocal ICT applications (discussion boards, weblogs, chat) serve as a technological prerequisite for VC. Thus, to explore the impact of such tools for organizational and occupational relationship building is worthwhile. While Cho et al. 2005 and Quan-Haase et al. 2005 [23,102] surveyed the potential impact of IM, which offer benefits for effective communication in form of their presence awareness functions [110], Stocker & Tochtermann 2008 [113] surveyed weblogs, whose value stems from the interlinked conversationality in the blogosphere [e.g. 56]. Also virtual worlds, defined as visually supported webchats, offer a trend for relationship-oriented organizational communication and e-leadership [74].

Then, VC can serve as a measure for organizational KM. While KM is a part of product development to spur innovations [e.g. 37], knowledge communities can also be relevant in HRM as they can be a measure for training and development and support deployment planning and promotion on career paths [5, 113, 119]. KM is increasingly important in knowledge intensive organizations and modified organizational forms such as dispersed and less hierarchical workplaces. The concept of virtual communities of practice (vCoP) also delineates virtual communities in this context [e.g. 5, 29, 36].

Finally, and in addition to HRM-functions and work organization, VC trends in *industrial relations* should be considered. Due to their networking and information exchange possibilities, VC offer opportunities for job seekers and employees to exert power in regard to the negotiation of compensation and other working conditions [98, 115]. Although such forms of employee communities do not substitute formal unions and their impact is dependent on the design (e.g. traffic, individuality, trustworthiness, topicality) as well as the economic cycle, its existence is ´worth watching carefully´ [115]. Further, there is a general discussion on the impact of ICT on unions to offer new option for information and services, recruitment, networking, and campaigning [e.g. 47, 96]. Thus, terms such as *e-voice* and *e-unions* indicate two trends: a) the existence of informal virtual employee communities which render beneficial (individual) negotiation positions in regard to employers, b) formal virtual employee communities (interactive communication of union members) which enhance attractiveness and efficiency of unions.

3 Research Outlook

With reference to the rigor vs. relevance debate one could argue, that in regard to the scarcity and scattered kind of contributions, VC_{HR}-research is neither relevant nor rigorous because it is almost not existent. In this regard, the rigor vs. relevance debate is groundless. But, practice shows a great variety of HR-relevant arenas, e.g. company external job boards and employee-oriented industry specific web-based platforms as

well as company-internal ICT (e.g. intranets) which nowadays offer a variety of interactive applications for discussion and thus also for VC. Based on this practical evidence, the suspected conclusion that the scarcity of VC_{HR}-research contributions goes along with its irrelevance might be premature and the proposed initial selection might be rather seen as the potential advent of an emerging research area, potentially set in the larger context of e-HRM. This assumption is supported by the fact that analogies from existing VC-research areas are to question, e.g.:

- How are VC_{HR} characterized?
- Subsequently, must the design of VC_{HR} differ from the design of VC in other areas (e.g. commerce and marketing, relationship and leisure)?
- Do organizational settings provoke different considerations of social cues? E.g. does trust have a different impact in the costumer-vendor and the employee-employer relationship?
- Does HRM need strategies to cope with a potential loss in their governance potential (hierarchy and information) due to the potential of company-external peer-to-peer information exchange and support?
- Do VC_{HR} generate positive/negative economic consequences for HRM?

Because of the gap between research and practice is (intended to be) bridgeable [45], VC_{HR}-research is of relevance in order to support HR-executives to manage and to benefit from the existence of the widespread VC phenomenon. Academic research is important because the existence and usage of VC is no self-evident panacea for communication, information, and relationship disorders. In contrast, being untrained and unaware in the handling, VC application or participation may result in undesired, costly outcomes. Thus, beside a rigorous research approach and implications for future research, VC_{HR}-research should offer explicit practical implications. Often, practical implications are too general and of minor use (´Managers must foster trust and interactivity to support participation and commitment as prerequisites for VC-success.´). It is useful to transfer available VC-knowledge into the HRM-context in order to create new context-specific, quite explicit knowledge in form of specific design and management scenarios instead of producing scenarios adequate for other contexts or rather general design and management principles [4]. Although being discussed controversially, it seems purposeful that useful implications are co-developed by practice and research [45]. Thus, research is ideally problem-initiated and based on valid academic approaches [4]. So, applied research approaches should meet academic standards and fit the (practice-oriented) explanation aim. Yet, co-developed management knowledge – termed either as problem-initiated research or evidence-based management – cannot release entirely the tension between rigor (general knowledge) and relevance (contextual knowledge) so that an increase in one of the paired aspects is only obtained at the expense of the other.

In sum, the existing modicum of VC_{HR}-research is based only on few scattered studies and conceptualizations. This portrays a developing research area as currently neither a common definition or research framework nor a critical review of hitherto research results is available. The following subchapter intends to lead to problem-initiated research by which implications for practice and future research can be derived likewise.

VC-research does not differ from other research fields in regard to basic approach options whose essential selection criteria is the explanation aim. Thus, encircled by explanation aim and implications, options in regard to perspective, definition, typology, theory, and method are considered in detail.

3.1 Perspectives

The multidisciplinary nature of VC_{HR} implicitly effectuates multiple perspective taking and is in favor of a multidisciplinary research approach [99]. Nevertheless, it seems advisable to explicate the respective focus to distinguish different research endeavors.

The social perspective focuses on the interpersonal relationships of the participants. The technical or design perspective reflects either the information and communication technology (ICT)-structure or the strategic management. Systems and applications are frequently regarded as a prerequisite and thus neglected in the discussion of the social and economic perspective. This results in a heterogeneous comprehension of the VC-term and rather general implications for VC-design and -management. Finally, the economic perspective focuses contingent economic benefits and costs of participation and usage.

Although it is possible to depict different perspectives conceptually, they are obviously intertwined. Basically, VC are social entities (communities) which are realized on a technical basis (virtuality) and as such are socio-technical phenomena. This results in discussions on the societal impact of VC and a great number of research contributions on the attitude, intentions, and behavior of participants. Along with the increasing usage, also the economic impact became apparent and VC were considered within a socio-(technical-)economic perspective, which pairs social and economic variables [41]. With respect to the economic perspective, existing or missing affective, social aspects are found to influence VC-success [e.g. 8, 16, 21, 27, 100, 106, 126], system characteristics [e.g. 81, 82, 86], and rather cognitive benefit-cost evaluations [e.g. 10, 53, 107]. VC-research in the context of marketing and e-commerce particularly explores the impact of VC on the consumer decision process (brand communities) [e.g. 9, 12, 30, 78, 91, 92, 97, 108].

3.2 Definition

There is no single VC-definition due to respective perspectives and application scenarios as well as different concepts on the understanding of community and reality [e.g. 44]. This also aggravates VC_{HR}-research, as common VC-definitions are too context-specific and restrictive whereas potential synonyms (e.g. social media, web 2.0) are imprecise. Further conceptualization is definitely needed to shape a definition attended by an adequate set of characteristics to develop a likewise adequate typology. For that, some basic considerations are suggested to enhance consistent future research.

VC_{HR} are defined as groups of HR-actors who predominantly utilize web-based ICT to discuss HR-relevant topics. Thus, actors, ICT, and discussion (as a specific of transaction) are the main dimensions of VC_{HR}. Actors are applicants, employees, and HR-executives who are engaged in HR-relevant transactions. Applicants are company-external actors whose actions are pre-contractual. Employees are company-internal actors whose actions are post-contractual. The term ´HR-executives´ is a subsumption of company-internal actors, i.e. either line managers or managers of the HR-department, and company-external actors, e.g. HR-consultants. Actors are in particular characterized by the degree of their interpersonal belonging. Access to web-based ICT is possible via

Internet, Intranet, or Extranet. The technical core is based on community-oriented applications. Whereas information applications (e.g. search engine, profile engine, rating scales, and file sharing applications) deliver important community-supporting functions, reciprocal communication applications (discussion boards, weblogs with comment functions, webchats) are prerequisites for dialogue-oriented communication and discussion. Depending on the definition, also a combination of both application categories may form a VC in a broader sense, which then can be depicted by related terms such as web 2.0, computer-mediated communication, or social media. VC-specific transactions are basically discussions and topics could either be HR-function-specific (e.g. recruitment including marketing and pre-selection, development, or relationship-oriented leadership) or HR-function-comprehensive (e.g. HR-administration and -strategy). Further, two different transaction objects can be distinguished. Discussions can be specified as exchange of information or exchange of social goods (e.g. recognition, sense of belonging) in the HR-context.

Figure 2 displays the fundamental characteristics of VC_{HR}.

Dimension	**Attribute**	**Value**			
Actors	Participants	Applicants	Employees	HR-executives	HR-consultants
	Interpersonal Belonging	Closely-coupled		Loosely-coupled	
System	Access	Internet	Extranet		Intranet
	Communication Application	Discussion Board	Weblog		Webchat
Transaction	HR-topic	Function-specific		Function-comprehensive	
	Transaction Object	Information		Socials	

Figure 2: Fundamental Characteristics of VC_{HR}.

3.3 Typology

Based on the proposed fundamental characteristics, five ideal VC_{HR}-types are determined. The proposed typological terms ground on actors´ relationships. This is only one, yet practicable and common possibility of denomination in analogy to terminology in other disciplines. A distinction is made between company-external (indicated by ´$_{ex}$´) and company-internal (indicated by ´$_{in}$´) types.

Company external virtual applicant communities ($A2A_{ex}$) are loosely-coupled groups of applicants who exchange information on future employers, positions, and working conditions which can provide decision support and a basis for negotiation. Participation is voluntary and publicly accessible via the Internet. Common applications are discussion boards or weblogs. Virtual applicant communities affect recruitment. Applicants benefit from peer-information on application proceedings and from being better prepared for interviews. Companies risk a loss in their informational preeminence and might want to observe applicants´ discussions in order to detect comments which negatively impact the employer reputation. But they also might benefit from advantages in the pre-selection process if they have, dependent on the respective business model offered by the community operator, access to applicant profiles and contact data. Examples are [62, 67, 71].

Company-external virtual HR-to-applicant communities ($HR2A_{ex}$) are loosely-coupled groups of HR-representatives and applicants who exchange information in the context of personnel marketing and pre-selection. Participation is based on the company´s

strategy and thus most likely obligatory for HR-representatives and voluntary for applicants. $HR2A_{ex}$ are publicly (Internet) or partly-publicly (Extranet) accessible. Common ICT-applications are weblogs and webchats. $HR2A_{ex}$ support recruitment. Company and applicants benefit from an exchange which can be decoupled from time and place in case of asynchronous communication applications and from supporting visual cues e.g. in case of synchronous communication in virtual world environments. Restrictions are apparent in regard to the verification of identity. Examples are [61, 66, 69].

Virtual HR communities ($HR2HR_{ex}$/$HR2HR_{in}$) are comparatively persistent and closely-coupled groups of HR-representatives. Discussions can be either function-specific or function-comprehensive and have the purpose to exchange expert information and social support to enhance operational and strategic HR-tasks. Participation in and access to HR2HR depends on the operator. In case that a HR-association or specific company operates the community, the access usually is restricted to members. Discussion boards on the Internet are common applications. As an assumption, HR2HR are beneficial to HR-representatives as they offer membership in an expert community which can positively influence task-specific and relationship-oriented leadership performance. Company-external examples are [59, 60, 63, 68, 70].

Virtual employee communities ($E2E_{ex}$/$E2E_{in}$) are groups of employees who exchange information and social support in a broad range of issues relevant for employees. Discussions are rather function-comprehensive and include working conditions (e.g. workplace organization, compensation), personal and occupational development as well as other occupational challenges (e.g. work-life balance, workplace bullying). The range of issues depends on the operator and declared purpose of the community. External operators may allow a more diversified discussion while internal communities may be task-specific or generally restricted to issues which do not conflict formal and informal company-specific policies. As E2E appear as a highly diversified type, participation and access as well applications also depend on operator and purpose. E2E in particular affect development and leadership. In regard to development, E2E could be formal relationships in e-learning concepts or rather informal relationships in knowledge management, denominated as knowledge communities or communities of practice. In regard to leadership, also company-external E2E are of particular interest, as they can resemble an outspoken rumor mill and thus serve as employee complaint sites (also: gripe boards) where employees share their experiences with working conditions and leadership styles with respective negative consequences (irritation or legal action) for the involved parties [9, 115]. Also, new communication options for formal or informal unionization appear [e.g. 47, 96]. The assumption is that employees benefit from the extended option of informational exchange and social support while companies need to understand VC-dynamics and make media-usage and monitoring policies carefully. Company-external examples are [58, 64, 65].

Company-internal virtual HR-to-employee communities ($HR2E_{in}$) are rather closely-coupled groups of HR representatives and employees who exchange information and social support in the context of development and (relationship-oriented) leadership. Participation is basically voluntary yet dependent on company-specific structures and strategies. Access is granted to company-internal members only. While diverse applications are optional in the Intranet, webchats become a trend in those virtual workplaces using virtual world technologies. Given that HR-actors include trainers, $HR2E_{in}$ enhance training and development options in knowledge intensive companies as well as in the virtual workplace. In regard to leadership, occupational support and

recognition can positively influence employee satisfaction and commitment. Due to its company-internal status, equally to $E2E_{in}$ and $HR2HR_{in}$, examples can be given only in case study approaches.

Other conceptual types are out of the scope of a general analysis. $E2A_{ex}$ is a rather uncommon relationship, as there is no specific need for exchange. In the case that employees are exploited for personnel marketing and recruitment purposes, this relationship can be subsumed under $HR2A_{ex}$. Similarly, the delineation of $HR2E_{ex}$ is of minor relevance. Virtual discussions on industrial relations are held within each group (HR2HR or E2E), company-internally ($HR2E_{in}$), or between HR-actors and counselors (lawyers or mediators) who however do not fit the HR-notion.

3.4 Theories

Although the review displayed a marginal theory-based foundation and this might be an indicator for explorative research instead of a lack in rigor, benefits could be derived from an intensified consideration of theory application found in general VC-research. In short, sociological as well as media- and ICT-related theories are already applied in VC-research, while economic theories are underrepresented although their examination might shed more light on costs and benefits of VC_{HR} participation and usage.

Basically, VC are kinds of relationships. The intention of respective research endeavour then is to a) to describe aspects of the relationships, b) to explain aspects of the relationships, and/or c) to compare VC relationships to other (non-)mediated relationships. To this, researchers can rely on a heterogeneous pool of theories which may be strictly applied, tested, or extended. Theories may stem from media and IT sciences, sociology, as well as business administration and economics. Yet, the classification of single theories to a certain perspective is rather difficult due to the multidisciplinary nature of VC and respective research.

With regard to a social perspective, social network theories [e.g. 51], small world theory [90], social capital theory [e.g. 24, 87], and Social Cognitive Theory [e.g. 11] can be transferred to VC-research e.g. in order to emphasize the need to embed ICT into the social structure [72], to understand forms of social capital in VC in comparison to physical communities [28], to explain implications of VC on social engagement [e.g. 16, 75] and factors of information sharing in VC [22, 89, 127]. Further, theories of social presence [111] and social translucence of technology [39] reflect VC-design in order to its ability to generate virtual social cues – visibility, awareness, accountability, social context – in the absence of physical social cues [103]. While on the one hand, former lacks of social cues in text-based VC [123] are mitigated by the availability of VC-supporting visualization options (e.g. buddy lists, virtual worlds), on the other hand, the fit of the specified traditional theories must be discussed in regard to new strategies in relationship building and delivery of social and emotional cues in VC [23]. VC are exposed to a process of evolution and can be examined by respective models [e.g. 98]. This is to explore life cycles in regard to different dimensions, such as VC-phases (e.g. early, mature, dissolving), structures (e.g. degree of trust, commitment), and memberships (e.g. lurker, regular, senior).

With regard to the socio-technical-economic perspective, such theories are to be considered that potentially relate media characteristics and ICT usage to organizational behavior and outcomes. Gupta & Kim 2007 [54] apply the theory of reasoned action [46] and technology acceptance model TAM [120] combined with attitude-behavior theory [43] to explore cognitive as well as affective determinants on attitude and

behavior. Lin 2008 [86] applies the IS success model [31] to identify system characteristics and social factors which influence member loyalty as an indicator for VC-success. Also of interest are the uses and gratifications approach [18], theories of media choice [26, 32], and adaptive structuration theory [33, 93] to explain media usage [107] as well as to explore task-specific and contextual effects of VC-usage [7, 20, 23, 74].

Although at least transaction cost effects are mentioned [52, 127], economic theories are not applied. Yet, also economic theories might be beneficial for VC-research as e.g. transaction cost theory [125] offers an explanation for VC_{HR}-existence and principal agent theory [2, 57] supports the analysis of hierarchical structures in general and trust and incentives in this hierarchical relationships in particular.

3.5 Methods

Although the review already displayed a variety of methods, insights into general VC-research can help to consider specified options. Thus, a selection of methods is presented which also could be considered in VC_{HR}-research endeavors. Adaptations of traditional methods might be necessary in particular due to the fact of a web-based research object [e.g. 13, 48, 73, 79, 88] but also due to organizational settings [e.g. 113].

With regard to the socio-technical perspective, common data analysis methods which are basically based on observation and transcripts are social network analysis [e.g. 116, 122] in order to link concepts of social and technical networks [e.g. 50, 123] and netnography (as a standardized approach in contrast to online or virtual ethnography) with special regard to interpretive analysis of consumer behavior in cyberspace [77, 79]. Further and partly intertwined with these methods, logfile analysis [112, 117], data mining [94], and other automated methods, e.g. chatbots and polls [49] are applied to gain insight into VC-structures.

Further, modeling serves to illustrate causality in particular between VC-usage and VC participants´ behavior. With regard to the economic perspective, this is attached to economic relevant measures (e.g. commitment, success). Here structural equation modeling (SEM) analyzed with LISREL [22, 34, 53, 86, 100, 127], AMOS [119], Partial Least Square Analysis (PLS) [19], and Bayesian Belief Networks (BBN) [28] have already been applied.

4 Conclusion

The paper intended to depict the hitherto neglected e-HRM subset of VC_{HR} – which are web-based and community-oriented discussions with relevance to HRM. VC_{HR}-research is considered to be of relevance as there is practical evidence of the phenomenon in form of virtual applicant communities, virtual HR-to-applicant communities, virtual HR communities, virtual employee communities, and virtual HR-to-employee communities. Although VC-research is abundant, the review found that HR-specific contributions are scarce, context-specific and not integrated into a broader framework. Faced the practical evidence, further research is desirable in order to structure the complexity of the phenomenon. A framework might spur VC_{HR}-research and puts emphasis on the fit between explanation aim, perspective taking, definition, typology, theory, method, and implications.

Future research endeavors might include: further definition and typology in particular in contrast to concepts such as social media, social networking, web 2.0 with HRM-relevance, VC_{HR} (functional) scenarios, business models, and prototypes, impacts of

not-controllable types, this is external virtual applicant or employee communities which are out of the reach of explicit organizational control yet with potential impact on HRM strategies and processes, future technical developments in regard to the virtual workplace and virtual life, e.g. the impact of increasing virtual world applications.

In sum, one crucial aspect of the rigor vs. relevance debate is the general choice of a leading principle, this is if the existing gap between rigor and relevance is (intended to) be bridgeable or if it is not [45]. In case of VC_{HR}, one might favor the position that the rigor vs. relevance gap needs to be bridged as the undeniable existence of VC_{HR} faces an underrepresented research body. To extend the latter might serve to efficiently handle the management of and participation in VC in the context of HRM.

References

[1] Akkirman, A.D. & Harris, D.L. (2005). Organizational Communication Satisfaction in the Virtual Workplace. Journal of Management Development, 24(5), 397-409.

[2] Alchian, A. & Demsetz, H. (1972). Production, Information Costs, and Economic Organization. American Economic Review, 62(5), 777-95.

[3] Anderson, K. (1999). Internet-based Model of Distance Education. Human Resource Development International, 2(3), 259-262.

[4] Aram, J.D. & Salipante, P.F. (2003). Bridging Scholarship in Management: Epistemological Reflections. British Journal of Management, 14, 189-205.

[5] Ardichvili, A. (2008). Learning and Knowledge Sharing in Virtual Communities of Practice: Motivators, Barriers and Enablers. Advances in Developing Human Resources, 10, 541-554.

[6] Armstrong, A. & Hagel III, J. (1995). Real Profits from Virtual Communties. The McKinsey Quarterly, 3, 126-141.

[7] Avolio, B.J., Kahai, S.S. & Dodge, George E. (2000). E-Leadership: Implications For Theory, Research, and Practice. Leadership Quarterly, 11(4), 615-668.

[8] Bagozzi, R.P. & Dholakia, U.M. (2002). Intentional Social Action in Virtual Communities. Journal of Interactive Marketing, 16(2), 2-21.

[9] Bailey, A.A. (2004). thiscompanysucks.com: The Use of the Internet in Negative Consumer-to-Comsumer Articulations. Journal of Marketing Communications, 10, 169-182.

[10] Balasubramanian, S. & Mahajan, V. (2001). The Economic Leverage of the Virtual Community. International Journal of Electronic Commerce, 5(3), 103-110.

[11] Bandura, A. (1986). Social Foundations of Thought and Action - A Social Cognitive Theory. Prentice Hall.

[12] Barnes, S. & Mattsson, J. (2008). Brand Value in Virtual Worlds: An Axiological Approach. Journal of Electronic Commerce Research, 9(3), 195-206.

[13] Batinic, B., Reips, U.-D. & Bosnjak, M. (2002). Online Social Sciences. Hogrefe & Huber.

[14] Benbasat, I. & Zmud, R.W. (1999). Empirical Research in Information Systems: The Practice of Relevance. MIS Quarterly, 23 (1), 3-16.

[15] Birchall, D. & Giambona, G. (2007). SME Manager Development in Virtual Learning Communities and the Role of Trust: A Conceptual Study. Human Resource Development International, 10(2), 187-202.

[16] Blanchard, A.L. & Markus, L.M. (2004). The Experienced "Sense" of a Virtual Community: Characteristics and Processes. The DATA BASE for Advances in Information Systems, 35(1), 65-79.

[17] Blanchard, A. & Horan, T. (1998). Virtual Community and Social Capital. Social Science Computer Review, 16, 239-307.

[18] Blumler, J.G. & Katz, E. (1974). The Uses of Mass Communications: Current Perspectives on Gratifications Research. Sage Publications.

[19] Bock, G.-W., Ng, W.-L. & Shin, Y. (2008). The Effect of a Perceived Leader´s Influence on the Motivation of the Members of Nonwork-Related Virtual Communities. IEEE Transaction on Engineering Management, 55(2), 292-303.

[20] Boland, R.J.Jr. & Tenkasi, R.V. (1995). Perspective Making and Perspective Tanking in Communities of Knowing. Organization Science, 6(4), 350- 372.

[21] Casaló, L.V., Flavián, C. & Guinalíu, M. (2008). Fundaments of Trust Management in the Development of Virtual Communities. Management Review News, 31(5), 324-338.

[22] Chiu, C.-M., Hsu, M.-H. & Wang, E.T.G. (2006). Understanding Knowledge Sharing in Virtual Communities: An integration of Social Capital and Social Cognitive Theories. Decision Support Systems, 42, 1872-1888.

[23] Cho, H.-K., Trier, M. & Kim, E. (2005). The Use of Instant Messaging in Working Relationship Development: A Case Study. Journal of Computer-Mediated Communication, 10(4), Article 17.

[24] Coleman, J.S. (1988). Social Capital in the Creation of Human Capital. American Journal of Sociology, 94, 95-120.

[25] Cortini, M. (2009). New Horizons in CS and Employee/Employer Relationship: Challenges and Risks of Corporate Weblogs. Employee Responsibiliites & Rights Journal, 21(4), 291-303.

[26] Daft, R.L. & Lengel, R.H. (1984). Information Richness: A New Approach to Managerial Behavior and Organizational Design. Cummings, L.L. & Staw, B.M. (Eds.), Research in Organizational Behavior, 6, JAI Press, 191-223.

[27] Daneshgar, F. & Ho, S. (2008). Sociological Factors Affecting Trust Development in Virtual Communities. International Journal of Networking and Virtual Organisations, 5(1), 51-63.

[28] Daniel, B.K. (2009). Social Capital Modeling in Virtual Communities: Bayesian Belief Network Approaches. IGI.

[29] Davenport, E. & Hall, H. (2002). Organizational Knowledge and Communities of Practice. Annual Review of Information Science and Technology, 36, 171-227.

[30] De Valck, K., van Bruggen, G.H. & Wierenga, B. (2009). Virtual Communties: A Marketing Perspective. Decision Support Systems, 47, 185-203.

[31] DeLone, W.H. & McLean, E.R. (2003). The DeLone and McLean Model of Information Systems Success: A Ten-Year Update. Journal of Management Information Systems, 19(4), 9-30.

[32] Dennis, AR./ Valacich, J.S. (1999). Rethinking Media Richness: Towards a Theory of Media Synchronicity. Proceedings of the 32nd Hawaii International Conference on System Sciences (HICSS).

[33] Desanctis, G. & Poole, M.S. (1994). Capturing the Complexity in Advanced Technology Use: Adaptive Structuration Theory. Organization Science, 5(2), 121-147.

[34] Dholakia, U.M., Bagozzi, R.P. & Klein Pearo, L. (2004). A Social Influence Model of Consumer Participation in Network- and Small-group-based Virtual Communities. International Journal of Research in Marketing, 21, 241-263.

[35] Diederichsen, A. (2009). Conception, Categorization, and Impact of HR-Relevant Virtual Communities. Torres-Coronas, T. & Arias-Oliva, M. (Eds.). Encyclopedia of Human Resources Information Systems: Challenges in e-HRM, Information Science Reference, 154-160.

[36] Dubé, L., Bourhis, A. & Jacob, Réal (2006). Towards a Typology of Virtual Communities of Practice. Interdisciplinary Journal of Information, Knowledge, and Management, 1, 69-93.

[37] Ebner, W., Leimeister, J.M. & Krcmar, H. (2009). Community Engineering for Innovations: The Ideas Competition as a Method to Nurture a Virtual Community for Innovations. R&D Management, 39(4), 342-356.

[38] Ensher, E.A., Heun, C. & Blanchard, A. (2003). Online Mentoring and Computer-mediated Communication: New Directions in Research. Journal of Vocational Behavior, 63, 264-288.

[39] Erickson, T. & Kellogg, W.A. (2000). Social Translucence: An Approach to Designing Systems that Support Social Processes. ACM Transactions on Computer-Human Interaction, 7(1), 59–83.

[40] Ettinger, E., Widerom, C. & Van Dick, R. (2008). Transforming Exchange-based Job Boards into Lasting Career Communities. Proceedings of the 11th Conference on Business Information, Austria, 109-116.

[41] Etzioni, A. (2003). Toward a new socio-economic paradigm. Socio-Economic Review, 1, 105-134.

[42] Fairbank, J.F., Spangler, W.E. & Williams, S.D. (2003). Motivating Creatitivity Through a Computer-mediated Employee Suggestion Management System. Behaviour & Information Technology, 22(5), 305-314.

[43] Fazio, R.H, Powell, M. & Williams C. (1989). The Role of Attitude Accessibility in the Attitude-to-Behavior Process. Journal of Consumer Research, 16(3), 280-289.

[44] Fernback, J. (1999). There Is a There There: Notes Toward a Defintion in Cybercommunity. Jones, S. (Ed.), Doing Internet Research: Critical Issues and Methods for Examining the Net, Sage, 203-220.

[45] Fincham, R. & Clark, T. (2009). Introduction: Can We Bridge the Rigour-Relevance Gap?. Journal of Management Studies, 46(3), 510-515.

[46] Fishbein, M. & Ajzen, I. (1975). Thinking, Attitude, Intention and Behavior: An Introduction to Theory and Research, Addison-Wesley.

[47] Freeman, RB. (2004). The Road to Union Renaissance in the United States. Wunnava, P.V. (Ed.), The Changing Role of Unions: New Forms of Representation, M.E. Sharpe, 3-21.

[48] Garton, L., Haythornthwaite, C. & Wellman, B. (1999). Studying On-Line Social Networks. Jones, S. (Ed.), Doing Internet Research: Critical Issues and Methods for Examining the Net, Sage, 75-105.

[49] Ginsburg, M. (2001). Realizing a Framework to Create, Support, and Understand Virtual Communities. Infonomics/Merit Workshop on Digitisation of Commerce: e-Intermediation, Holland.

[50] Granitz, N.A. & Ward, J.C. (1996). Virtual Community: A Sociocognitive Analysis. Advances in Consumer Research, 23(1), 161-166.

[51] Granovetter, M.S. (1973). The Strength of Weak Ties. American Journal of Sociology, 78(6), 1360-1380.

[52] Gulati, R., Nohria, N. & Zaheer, A. (2000). Strategic Networks. Strategic Management Journal, 21, 203-215.

[53] Gupta, S. & Kim, H.-W. (2004). Virtual Community: Concepts, Implications, and Future Research Directions. Proceedings of the Tenth Americas Conference on Information Systems, 2679-2687.

[54] Gupta, S. & Kim, H.-W. (2007). Developing the Commitment to Virtual Community: the Balanced Effects of Cognition and Affect. Information Resources Management Journal, 20(1), 28-45.

[55] Hagel III, J. & Armstrong, A.G. (1997). Net Gain: Expanding Markets through Virtual Communities. The McKinsey Quarterly, 1, 141-153.

[56] Herring, S.C., Kouper, I., Paolillo, J.C. & Scheidt, L.A. (2005). Conversations in the Blogosphere: An Analysis "From the Bottom Up". Proceedings of the 38th Hawaii International Conference on System Sciences.

[57] Holmstrom, B. & Milgrom, P. (1994). The Firm as an Incentive System. The American Economic Review, 84(4), 972-991.

[58] http://biofind.com/rumor, 01-17-2010.

[59] http://community.astd.org/eve/forums, 01-17-2010.

[60] http://community.ere.net/, 01-17-2010.

[61] http://networkinworld.jobs/, 01-17-2010.

[62] http://targetjobs.co.uk, 01-17-2010.

[63] http://www.citehr.com/, 01-17-2010.

[64] http://www.endicottalliance.org/discussion.html, 01-17-2010.

[65] http://www.infirmation.com/bboard/clubs.tcl?topic=RealGAs, 01-17-2010.

[66] http://www.jobsite.co.uk/insider/, 01-17-2010.

[67] http://www.monster.com, 01-17-2010.

[68] http://www.onrec.com/forum/, 01-17-2010.

[69] http://www.semperllc.com/metaverse/, 01-17-2010.

[70] http://www.shrm.org/Communities/MemberDiscussionArea/Pages/default.aspx, 01-17-2010.

[71] http://www.vault.com/, 01-17-2010.

[72] Huysman, M. (2004). Design Requirements for Knowledge-Sharing Tools: A Need for Social Capital Analysis. Huysman, M. & Wulf, V. (Eds.), Social Capital and Information Technology, MIT Press, 187-207.

[73] Jones, S. (1999) (Ed.). Doing Internet Research: Critical Issues and Methods for Examining the Net, Sage Publications.

[74] Kahai, S.S., Carroll, E. & Jestice, R. (2007). Team Collaboration in Virtual Worlds. The DATA BASE for Advances in Information Systems, 38(4), 61-68.

[75] Kavanaugh, A., Reese, D.D., Carroll, J.M. & Rosson, M.Beth (2003). Weak Ties in Networked Communities. Huysman, M., Wenger, E. & Wulf, V. (Eds.), Communities and Technologies - Proceedings of the First International Conference on Communities and Technologies, Kluwer, 265-286.

[76] Kim, A.J. (2000). Community Building on the Web: Secret Strategies for Successful Online Communities, Peachpit Press.

[77] Kozinet, R.V. (1998). On Netnography: Initial Reflections on Consumer Research Inverstigations of Cyberculture. Advances in Consumer Research, 25, 366-371.

[78] Kozinet, R.V. (1999). E-Tribalized Marketing?: The Strategic Implications of Virtual Communities of Consumption. European Management Journal, 17(3), 252-264.

[79] Kozinet, R.V. (2002). The Field Behind the Screen: Using Netnography for Marketing Research in Online Communities. Journal of Marketing Research, 39, 61-72.

[80] Laumer, S., Eckhardt, A. & Weitzel, T. (2008). Recruiting IT Professionals in a Virtual World, Conference Proceedings PACIS, China.

[81] Lechner, U. & Hummel, J. (2002). Business Models and System Architectures of Virtual Communities: From a Sociological Phenomenon to Peer-to-Peer Architectures. International Journal of Electronic Commerce, 6(3), 41-53.

[82] Leimeister, J.M., Sidiras, P. & Krcmar, H. (2006). Exploring Success Factors of Virtual Communities: The Perspectives of Members and Operators. Journal of Organizational Computing and Electronic Commerce, 16(3+4), 279-300.

[83] Li, H. (2004). Virtual Community Studies: A Literature Review, Synthesis and Research Agenda. Proceedings of the Americas Conference on Information Systems, New York, August, 2708-2715.

[84] Licklider, J.C.R. & Taylor, R. (1968). The Computer as a Communication Device. Science and Technology, April. Reprinted: Digital Research Center (1990): In memoriam: J.C.R. Licklider (1915-1990), 21-41.

[85] Lievens, F. & Harris, M.M. (2003). Research on Internet Recruiting and Testing: Current Status and Future Directions. International Review of Industrial and Organizational Psychology, 18, 131-165.

[86] Lin, H.-F. (2008). Determinants of Successful Virtual Communities: Contributions from System Characteristics and Social Factors. Information & Management, 45, 522-527.

[87] Lin, N., Cook, K. & Burt, R.S. (2001). Social Capital: A Theory of Social Structure and Action, Cambridge University Press.

[88] Maclaran, P. & Catterall, M. (2002). Researching the Social Web: Marketing Information from Virtual Communities. Marketing Intelligence & Planning, 319-326.

[89] McLure Wasko, M. & Faraj, S. (2005). Why should I share? Examining Social Capital and Knowledge Contribution in Electronic Networks of Practice. MIS Quarterly, 29(3), 35-57.

[90] Milgram, S. (1967). The Small World Problem. Psychology Today, Mai, 60–67.

[91] Muniz, A.M.Jr. & O´Guinn, T.C. (2001). Brand Community. Journal of Consumer Research, 27(March), 412-432.

[92] Okleshen, C. & Grossbart, S. (1998). Usenet Groups, Virtual Community and Consumer Behavior. Advances in Consumer Research, 25(1), 276-282.

[93] Orlikowski, W.J. (2000). Using technology and constituting structures: a practice lens for studying technology in organizations. Organization Science, 11(4), 404-428.

[94] Oudshoff, A.M., Bosloper, I.E., Klos, T.B. & Spaanenburg, Lambert (2003). Knowledge Discovery in Virtual Community Texts: Clustering Virtual Communities.Journal of Intelligent & Fuzzy Systems, 14, 13-24.

[95] Parker, P., Arthur, M.B. & Inkson, K. (2004). Career Communities: A Preliminary Exploration of Membber-Defined Career Support Structures. Journal of Organizational Behavior, 25(4), 489-514.

[96] Pinnock, S.R. (2005). Organizing Virtual Environments: National Union Deployment of the Blog and New Cyberstrategies. WorkingUSA: The Journal for Labor and Society, 8, 457-468.

[97] Pitta, D.A. & Fowler, D. (2005). Internet Community Forums: An Untapped Resource for Consumer Marketers. Journal of Consumer Marketing, 22(5), 265-274.

[98] Pliskin, N. & Romm, C.T. (1997). The Impact of E-Mail on the Evolution of a Virtual Community during a Strike. Information & Management, 32, 245-254.

[99] Porter, C.E. (2004). A Typology of Virtual Communities: A Multi-Disciplinary Foundation for Future Research. Journal of Computer-Mediated Communication, 10(1), Article 3.

[100] Porter, C.E. & Donthu, N. (2008). Cultivating Trust and Harvesting Value in Virtual Communities. Management Science, 54(1), 113-128.

[101] Preece, J. & Maloney-Krichmar, D. (2005). Online Communities: Design, Theory, and Practice. Journal of Computer-Mediated Communication, 10(4), Artikel 1.

[102] Quan-Haase, A., Cothrel, J. & Wellman, B. (2005). Instant Messaging for Collaboration: A Case Study of a High-Tech Firm. Journal of Computer-Mediated Communication, 10(4), Article 13.

[103] Raybourn, E.M., Kings, N. & Davies, John (2003). Adding Cultural Signposts in Adaptive Community-based Virtual Environments. Interacting with Computers, 15, 91-107.

[104] Reeves, B., Malone, T., Yee, N., Cheng, H., Abecassis, D., Cadwell, T., Abbey, M., Scarborough, J., Read, L. & Roy, S. (2007). Leadership in Games and at Work: Implications for the Enterprise of Massively Multiplayer Online Role-Playing Games, Report, Palo Alto: Seriosity Inc.

[105] Rheingold, H. (2000). The Virtual Community: Homesteading on the Electronic Frontier, MIT Press.

[106] Ridings, C., Gefen, D. & Arinze, B. (2002). Some Antecedents and Effects of Trust in Virtual Communities. Journal of Strategic Information Systems, 11(3-4), 271-295.

[107] Sangwan, S. (2005). Virtual Community Success: A Uses and Gratifications Perspective. Proceedings of the 38th Hawaii International Conference on System Sciences.

[108] Schlosser, A.E. (2003). Special Session Summary. Come Together, Right Now, Virtually: An Examination into Online Communities. Advances in Consumer Research, 30, 192-195.

[109] Schoemaker, M. (2006). Shaping Communties of Work, An Organisational Development Approach. International Journal of Action Research, 2(2), 243-263.

[110] Shaw, B., Scheufele, D. & Catalano, S. (2007). The Role of Presence Awareness in Organizational Communication: An Exploratory Field Experiment. Behavior & Information Technology, 26(5), 377-384.

[111] Short, J., Williams, E. & Christie, B. (1976). The Social Psychology of Telecommunications. Wiley & Sons.

[112] Soroka, V., Jacovi, M. & Ur, S. (2003). We Can See You: A Study of Communities´ Invisible People through ReachOut. Huysman, M., Wenger, E. & Wulf, V. (Eds.), Communities and Technologies - Proceedings of the First International Conference on Communities and Technologies Kluwer, 65-79.

[113] Stocker, A. & Tochtermann, K. (2008). Investigating Weblogs in Small and Medium Enterprises: An Exploratory Case Study. Proceedings of the 11th Conference on Business Information, Austria, 95-107.

[114] Strohmeier, S. (2007). Research in e-HRM: Review and Implication. Human Resource Management Review, 17(1), 19-37.

[115] Taras, D.G. & Gesser, A. (2003). How New Lawyers Use E-Voice to Drive Firm Compensation: The "Greedy Associates" Phenomenon. Journal of Labor Research, 14(1), 9-29.

[116] Tichy, N., Tushman, M. & Fombrun, C. (1979). Social Network Analysis For Organizations. Academy of Management Review, 4. 507-519.

[117] Tyler, J.R., Wilkinson, D.M. & Huberman, B.A. (2003). Email as Spectroscopy: Automated Discovery of Community Structure within Organizations. Huysman,

M., Wenger, E. & Wulf, V. (Eds.), Communities and Technologies - Proceedings of the First International Conference on Communities and Technologies Kluwer, 81-96.

[118] Valentine, S., Fleischman, G.M., Sprague, R. & Godkin, A.L. (2010). Exploring the Ethicality of Firing Employees who Blog. Human Resource Management, 49(1), 87-108.

[119] Van den Hooff, B., Elving, W., Meeuwsen, J.M. & Dumoulin, C. (2003). Knowledge Sharing in Knowledge Communities. Huysman, M., Wenger, E. & Wulf, V. (Eds.), Communities and Technologies - Proceedings of the First International Conference on Communities and Technologies Kluwer, 119-141.

[120] Venkatesh, V., Morris, M.G., Davis, G.B. & Davis, F.D. (2003). User Acceptance of Information Technology: Toward a Unified View. MIS Quarterly, 27(3), 425-478.

[121] Warisse Turner, J., Grube, J.A., Tinsley, C.H., Lee, C. & O´Pell, C. (2006). Exploring the Dominant Media: How Does Media Use Relfelct Organizational Norms and Affect Performance?. Journal of Business Communication, 43(3), 220-250.

[122] Watts, D.J. (2004). The "New" Science of Networks. Annual Review of Sociology, 30, 243-270.

[123] Wellman, B., Salaff, J., Dimitrova, D., Garton, L., Gulia, M. & Haythornthwaite, C. (1996). Computer Networks as Social Networks: Collaborative Work, Telework, and Virtual Community. Annual Review of Sociology, 22, 213-238.

[124] Wiesenfeld, B.M., Raghuram, S. & Garud, R. (2001). Organizational Identification Among Virtual Workers: The Role of Need for Affiliation and Perceived Work-based Social Support. Journal of Management, 27, 213-229.

[125] Williamson, O.E. (1985). The Economic Institutions of Capitalism, The Free Press.

[126] Wu, J.-J. & Tsang, A.S.L. (2008). Factors affecting Members´ Trust Belief and Behavior Intention in Virtual Communities. Behavior & Information Technology, 27(2), 115-125.

[127] Wu, W.-P. (2008). Dimensions of Social Capital and Firm Competitiveness Improvement: the Mediating Role of Information Sharing. Journal of Management Studies 45(1), 122-146.

[128] Zemliansky, P. & St.Amant, K. (2008) (Eds.). Handbook of Research on Virtual Workplaces and the New Nature of Business Practices, Information Science Reference.

A Delphi Study on E-HRM: Future Directions

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Abstract. *This paper explores empirically future developments in information and communication technology (ICT) and its implications for human resource management (HRM). The paper applies the Delphi method and draws on a panel of anonymous experts comprising e-HRM academics from Europe and e-HRM practitioners from Finland. Findings indicate that developments in social media are believed to have several major implications for HRM in the future.*

Keywords: E-HRM, ICT, future studies, Delphi method

1 Introduction

No one can predict the organization of the future. No one can predict the course of the HR profession. No one can predict how HR practices will change in the future. Thinking about the future, however, helps us to prepare it. Thinking about the future may lead to innovative insights. Thinking about the future may help to change today´s HR practices in positive ways. [65] Much of the change today and even more of it in the future will be driven by information and communication technology (ICT). This is becoming more and more the case for human resource management (HRM) processes as well. According to [17], HRM adopted ICT somewhere between the late 1970s and early 80s and was used for administrative tasks like payroll solutions. From the early 1980s the focus has shifted from single applications to more complicated HR portals. A survey conducted in 2009 -2010 reported companies broadening the scope of their electronic HRM applications [11]**,** it seems that companies are ready to invest more in e-HRM technology in order add value.

Considering the fact that practitioner reports provide evidence that e-HRM is a common feature in organizations [12], e-HRM research still remains silent about changes in HRM practices due to the introduction of e-HRM. Studies generally examine single e-HRM applications, focusing on the changes in HRM processes and functions following automation [7]; [59] and reliable empirical data on the consequences of e-HRM are lacking. According to [60] *research is asked to provide a general understanding of e-HRM consequences that support practice in its decisions and shed light to (on) the potential negative consequences of e-HRM adoption for various stakeholders*. In addition, [54] calls for e-HRM research to look at *the consequences of technical developments and process streamlining for the design and conduct of international HRM activity in companies.* This study tries to answer these and other similar calls for research [53], [54], [59] by applying the futures perspective and extracting expert opinion about future developments in ICT and their implications for HRM.

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Overall, future studies within the field of HRM have not received much scholarly inquiry compared to the ICT field [46]. Management studies using the Delphi method have focused on future tools used in corporate management [51] and the future of knowledge management systems [46]. The Delphi method has also been used as a more practical business approach [2]; [15]; [25]. Indeed, it seems that the Delphi method has been applied and critically discussed most in studies on healthcare (see e.g. [6]; [21]; [27]; [35]; [41]; [42]).

The scattered evidence concerning HRM future studies varies from the field of strategic HRM [30] towards developing new tools for HRM futures analysing [49] and survey predicting future HR trends [22]. Moreover, Delphi studies in HRM include human resource development (HRD) [40], country-specific studies [33] and a workplace stress study among HR professionals [34]. According to our search from scholarly databases, published books, various e-HRM conference proceedings, latest HRIS reviews [39]; [47], e-HRM review [59] and review on Delphi studies [46] future studies in the field of e-HRM are non-existent. This is somewhat alarming as future directions are extensively and successfully studied in other disciplines. We suggest this method could contribute to e-HRM as it has contributed to other streams of business research during last decades.

In light of the above, this paper aims to identify key future developments in ICT between 2010- 2015 and their implications for HRM. More specifically, the study investigates implications for three aspects of HRM – how HRM is organised and delivered, the roles played by HR, and the knowledge and skills needed by HR professionals**.** The implications for HRM in multinational corporations (MNCs) and the identification of additional unexpected ICT developments that might influence HRM were also studied. The contribution of this cross-disciplinary study can be argued on three fronts. Firstly, based on assumption that research lags behind the use of ICT in business, this research tries to be proactive in predicting ICT implications for HRM. Secondly, this study raises debatable issues for the integration of the futures´ conceptual frameworks and theorizing future research questions. Finally, this research offers a basis for the development of HRM strategies and policies by practitioners based on the trends identified.

The next section introduces the concept and history of e-HRM and summarises the current debate about the extent to which e-HRM is having or will have a 'transformational' impact on HRM. Future studies in general and the Delphi method are then discussed, which leads into the description of the present study's data collection. Following the presentation of the study's findings, the final section concludes with some managerial implications and areas for further research.

2 E-HRM

The term e-HRM has been referred to with different labels. For example, alternatives to e-HRM in the academic literature include, virtual HRM [29], web-based HRM [50] and human resource information systems HRIS [47]. The concept of e-HRM has also been defined in several ways. From the 1980s "specialized information system within the traditional functional areas of the organization, designed to support the planning, administration, decision-making, and control activities of human resource management' [17] to widely used definition from [59] "planning, implementation and application of information technology for both networking and supporting at least two individual or collective actors in their shared performing of HR activities". This research defines e-

HRM as *"an umbrella term covering all possible integration mechanisms and contents between HRM and Information Technologies aiming at creating value within and across organizations for targeted employees and management*." [7]. Whilst the term HRIS is sometimes used interchangeably with e-HRM, we distinguish between the use of ICT in HRIS and e-HRM in line with [38]. Whereas HRIS refers to the automation of systems for the sole benefit of the HR function, e-HRM is concerned with the application of internet and web-based systems, and more recently mobile communications technologies, to change the nature of interactions between HR professionals, line managers and employees from face-to-face relationships to ones that are becoming increasingly mediated by technology [38].

The actual business case for the adoption of e-HRM technology has been argued on number of fronts. For example, e-HRM can increase efficiencies by reducing HR transaction costs and headcount. E-HRM can also substitute physical capability by leveraging digital assets, i.e. HR information can be used flexibly on an infinite number of occasions at little or no marginal cost. In addition, the effective use of integrated e-HRM systems can transform the HR "business model" by freeing up the HR function to provide strategic value to the business that it previously could not do [31]. Furthermore, organization can benefit from improved cross-group learning and knowledge sharing practices through a common information base where HR staff can benefit from improved career development. Finally, there can be better customer satisfaction through better service specification and overall better management of information [8]; [60].

The benefits of e-HRM have been studied to some extent and [7] suggest halting studies about cost reduction and a 'magic' transformation of an HR department into a strategic unit because of the introduction of e-HRM assuming organizations are definitely silent whether their HR departments are more strategic because of the e-HRM. To support this, [37] reports that a administrative HR function is unlikely to become more strategic with the introduction of e-HRM. On the other hand, e-HRM can become more strategic as a consequence of an existing strategic HR function. In general, it seems e-HRM literature often draws on managerialist rhetoric or 'pro-innovation bias' [59], about the expected 'transformational' impact, a debate which has been going on since 1980s.

2.1 Introduction to e-HRM eras

In this section we discuss trends in the past in order to highlight the kinds of things that might be important in the future. One can analyse the historical trends of HR from different viewpoints: the evolution of HRM as a professional and scientific discipline, as an aid to management, as a political and economic conflict between management and employees. Since the scope of this article is in the field of e-HRM and early developments in this field began late 1970s and early 1980s, we will examine the developments of HR and ICT since 1980s.

The period *from 1980 to 1990* has been described as the *cost-effectiveness* [26], *polite and police* [18] and *communication* [65] era. During this period HR had four core activities which were staffing, development, appraisal and rewards [65] and there was growing realization that people costs were a significant part of company budgets, some companies estimating them being 80% of their total costs which led to the need for HR to justify its existence and the overall functional focus shifted from employee administration to employee development and involvement. To improve effectiveness and efficiency in terms of service delivery, cost reduction and value-added services, HR departments came under pressure to harness technology that was becoming cheaper and more powerful [26]; [18].

During the early 1980s payroll vendors began to emerge, offering technology and in some cases the possibility to outsource the personnel function and promoting ERP solutions which could combine personnel data and payroll applications [3]. In the late 1980s small- and medium-sized firms could start to afford computer-based HR systems that were run by increasingly user-friendly microcomputers that could be shown to be cost-effective**.** [26] [36] described the automation of HR tasks and processes during the mid1980s as being the first steps which attracted the attention among HR scholars. Research topics covered ergonomics and usability, job design, organizational design and the role of users. In terms of academic interest, during late 1980s attention turned to the phenomena of textualization information and concerns about spiralling IT costs [36].

The period from 1990 to 2000 has been described as the era of *technological advancement and the emergence of strategic HR* [26] or the *partner phase* [18]. The economic landscape underwent radical changes throughout the 1990s with increased globalization, technological breakthroughs (particularly internet-enabled web services) and hyper competition. HR process re-engineering exercises became more common and more frequent with several initiatives such as right-sizing of employee numbers, reducing layers of management, reducing bureaucracy, autonomous work teams and outsourcing [26]. The personnel department was transformed into the 'human resources department' and the role of HR was moving beyond automated payroll and benefits transactions to, for example, recruiting talent and talent management via HRIS solutions [18]. However, [3] recognizes HRIS falling short of their promised visions during the "pre-Windows" era. Still, these developments did lead to the HR or workforce scorecard [4]; [24] as well as to an increased emphasis on return on investment of the HR function and its programs [10]. Companies were able to offer employees a way of connecting their own HR information via the intranet and implement e-HRM strategies by streamlining HR processes. In short, HRIS applications enabled operational efficiency, cost reductions and control [3].

In the late 1990s vendors began to offer basic "HR portal" solutions which would bring together in one place tasks relating to career decisions, personal information, and personal development. [18] argues this phase putting HR in the position of not only helping to run the business better, but also of partnering with other business divisions. According to [36] the growth of internet, as the main technological development of this era, opened the way to connect computers across countries and ERP systems created the opportunity to integrate databases "into a seamless whole for real-time transaction processing and decision making". The 'final stage of total digitalization' in the 1990s arrived when HR professionals and ICT specialists joined forces and developed electronic information systems "that moved HR decision making from drawers to computer" [31]. In addition to previous developments, outsourcing became a hot topic during the late 1990s in search for strategic partnerships [36] – a theme that takes us to the next era.

Finally, from the year 2000 to the present, [66] argues the beginning of the 21st century the purpose of HR has been to "create value" for key stakeholders (e.g. employees have right set of competencies, employees are committed to organization and communities in which organizations participate have more confidence in the organization's ability to deliver on its social responsibilities) In terms of e-HRM, [18] describes this *player phase* as aiming for "creating strategic value". The 21st century HR function was required to measure its impact on productivity, data mining and making decisions about talent. Technical solutions were often outsourced and HR's technical solutions supposed

to be strategic which then enabled a more productive and focused workforce. During this era it has been common to adopt a portal strategy that potentially enables collaboration across and outside of the business. During this era HR has increasingly turned to talent management with integrated software which combines recruiting, maintaining talent pools, personal data and information on personal networks; and to greater and greater extents doing all this wirelessly.

Companies in the 21st century can be broadly said to have adopted at least one of the following e-HRM technologies: HR functional applications, integrated HR suite applications, interactive voice responses (IVR), HR intranet applications, Employee Self-Service (ESS) and Manager Self-Service (MSS) portals, HR extranet applications or HR portals [19]. [56] suggests technological changes influencing e-HRM during the end of this decade will include intelligent self-service systems, interchangeable devices, cognitive software, nanotechnology and the convergence of the internet, digital TV and the wireless technology communication into "vibrant network".

Indeed, social media, or "web 2.0" as a "vibrant network" has been suggested by some scholars [28]; [20]; [39] to be the potential technology that will have a major impact on HR. According to [20] the term social network has been widely used in the web context in recent years. It is often associated with the term Web 2.0. Whereas Web 1.0 fitted into a scheme of "author to readers", Web 2.0 tends to reduce hierarchies by allowing readers to become real actors and be the centre of information exchange. In terms of social media and HR then, the potential tools for HR are, for example, blogs, social networks (e.g. Linkedin), virtual worlds, video platforms (e.g. Youtube) and wikis [28]. Research concerning social media and HR seems to be non-existent [39] except for a few preliminary studies focusing on social media and recruitment [28]; [39]. The lack of research regarding social media is surprising as the report from [11] argues that social media is going mainstream in corporate world. Other recent consultancy surveys also support this view [43]; [44].

To sum up, this historical analysis of trends showed the role of e-HRM in the company has changed over time from being primarily concerned with routine transactional HR activities to dealing with complex transformational ones. Transactional activities are the routine bookkeeping tasks, for example, changing employees address whereas transformational activities are those action that are intended to "add value" (e.g. training programs) [26]. These transactional and transformational activities result in variety consequences, a debate to which we now turn.

2.2 Consequences of e-HRM: current debates

Consequences, especially positive consequences (such as reducing costs and speeding up processes) are the foundations of e-HRM adoption and therefore an important topic to study. At the time of writing there appears to be little consensus on the consequences of e-HRM. For analysing consequences we will review the work of [57]; [60] and [53] - [54].

[57] suggests e-HRM can result functional consequences such as increasing organizations ability to access, collect and disseminate information. In addition they may give individuals greater access to information about job opportunities, benefits and performance feedback. Nevertheless, [57] argues such systems may lead to a number of dysfunctional consequences. For example, e-HRM may decrease social interactions and negatively affect the quality and accuracy of information about organizational expectation, incumbent performance and compensation. In addition, they may decrease

the degree of perceived control of incumbent and increase the degree to which the systems are viewed as invasive of privacy. As a result system acceptance may suffer, leading to reduced effectiveness. Related to [57], [56] reviewed the functional and dysfunctional consequences of using e-HRM to attract, select and manage the performance of employees. The conclusion was that many e-HRM systems are developed Western cultures and consequently the HR processes inherent in these systems are rooted in Western cultural values (e.g. meritocracy, individualism). As a result, e-HRM system may be less effective when used in nations with different cultures.

Additionally, [60] views consequences as used information system (IS) potentials. In terms of origin of consequences, it is supposed that there is no single way of using a given HR system but a spectrum of usage possibilities that for instance differ in intention, intensity, and skilfulness among a large range of other aspects. Indeed, regarding whether e-HRM adoption result is an 'innovation or irritation' [50] depends on where one stands. For example, HR headcount reduction, which is often the case for e-HRM adoption, can have potentially damaging consequences for knowledge transfer, line managers expecting personal HR service, and for those HR staff displaced by the reduction [38] According to [60] consequences are divergent there exists possibility to choose from a usually broad spectrum of offered usage possibility that is generally made responsible for divergent consequences. Furthermore, consequences change dynamically. While the technological contribution to consequences remains constant over a period of time, i.e. as long as the corresponding information system is not modified, the organizational contribution of occurring consequences, i.e. the kind of usage, of course can change.

[60] suggests consequences being (un-)expected and (un-)desired. Often, actual occurring consequences are desired and expected. For instance, the desired consequences of cheapening and accelerating recruiting system can be anticipated in the run-up to using a certain recruiting system. As argued before, these expected and desired consequences form the central reason for using e-HRM systems. However, unexpected and undesired consequences may also occur. For example, intended misuse of individual users may constitute a serious variety of unexpected usage. Intended misuse can range from smaller fraudulences such as fudging one's own attendance data within a self-service system to malicious sabotages such as launching viruses that attack the information system. This kind of usage will also yield unexpected and undesired results. In terms of researching the consequences, [60] suggests consequences research based on the suggested concept implies several complications and adds complexity to consequences research; therefore we did not specify this concept further to respondents participating Delphi panel. In regards to this concept, we simplified our focus on future consequences to HR staff and HR function in MNCs and in methodological terms our purpose was to keep the questions as simple as possible.

According to [53] the main change has been that HR now considers whether organization has good HR systems in place and whether this gives them capability to deliver people-related services without them having to pass through the hands of the HR function. However, implementation has been fraught with problems because the process of implementing e-HRM across countries is under-theorized and especially because the e-HRM consequences for HR managers and HR function are not well understood [54]. With this in mind [53] presents four ICT developments are impacting companies HRM success and potential unique competitive advantage; the advent of shared service thinking, the removal of various intermediaries in the delivery of HR services, the

continued adoption of ERP system and finally, the e-enablement of HR service delivery and more towards self service models. [53], [54] argue these developments will have significant impact on existing international HR functions and HR personnel's work and suggest that e-enablement of HR in MNCs can consequence in fragmentation HR function.

For global 'e-enabled' HR in MNCs then, [53] suggest the following developments will take place. Firstly, e-enablement of more transactional work HR work and more sophisticated HR practices such as parts of the selection process or the appraisal and performance process. Secondly, current online access rights and limited update rights used as a stepping stone to managers authorizing pay changes and performance management data and to employees providing not only actual data about their preferences but also more dynamic and interactive information around skills and personal aspirations. Thirdly, computing power being directed at developing what are called "proactive pull technologies" (systems that allow individuals to see the consequences of their decisions, of decision-support mechanisms to assist managers in areas of discipline, training and selection) and finally, mass customization of terms and conditions as variations and combinations can be recorded and monitored. It is debatable whether these developments become real or not, but we argue that at least some of the developments can be scientifically predicted with the use of Delphi tool, which is presented next.

3 Method

3.1 Delphi Study

Overall, the purpose of the forecasting Delphi study is to obtain consensus from a panel of experts using repeated answers from questionnaires and controlled feedback. The core of the Delphi technique is that a pool of experts deals with a certain problem that lies in the future. For example, forecasting Delphi could be used to forecast future economic, social, labour and organizational conditions to help organization design HRM programs for the next five year or more [34]. There are also variations like policy Delphi where only opposing views are debated and consensus is not necessarily the desired goal [63]; [64].

In other words, the method used allows the grouping and subsequent analysis of the ideas of experts in order to gain a closer understanding of issues that would not be offered by other qualitative or quantitative studies. The reasons for conducting Delphi study has been summarized by [16]. Firstly, there is no other group communication process than can elicit the same data; secondly, the researcher can identify and access the "experts" to discuss this problem; and finally, the researcher can forecast the type of results that may be obtained from these experts through the Delphi method [32], [68]. In addition, [63] identifies four possible research objectives that call for the use of Delphi studies. Firstly, Delphi studies can be used to explore or expose underlying assumptions or information leading to differing judgments. These can also be used to seek out information which may generate consensus on the part of the respondent group. The third use of Delphi studies relates to the correlation of informed judgments on a topic spanning a wide range of disciplines. Finally, Delphi studies are valuable in educating a respondent group as to the diverse and interrelated aspects of a topic.

There are no set rules for Delphi studies [18]; [27] although they are characterised by a structured process of questionnaires or rounds of discussion until a group consensus is reached [6]; [21]. As mentioned earlier, these questions are discussed by a panel of

"experts" or oracles, hence the Delphi name. The popularity of this method arises especially because it can be conducted semi-anonymously amongst respondents who are geographically dispersed. For example, from the field of public relations research, [61] study covered 13 nations in Asia-Pacific and study by [67] included between 22 and 25 European countries, therefore method it suitable for this study´s purposes as well. A Delphi study typically has two or three rounds of contact with the experts in which comments are first elicited, then summarised and returned for further discussion. The reality is that most Delphi studies are completed by a third and final round because of time constraints, participant fatigue, funding for the research and the design of the study [27]. Similarly to [46], Delphi studies can include follow-up telephone interviews with each panel member.

The experts, panel members, are selected for the perceived expertise they can contribute on the research question. According to [51] panel members must be selected from stakeholders who will be directly affected, experts with relevant experience and facilitators in the field under study. In addition, [55] suggests the composition of the panel relating to the validity of the research results. Panel size can range from few to fifty of even hundred [54]. Research on Delphi performance has suggested that groups with 10-20 have had more accurate predictions than larger 50 + member groups. [9]; [13] In addition, some studies have found errors decreasing with larger groups [35]. Panel members are always anonymous. The various reasons for this include: an expert making a commitment to a stand then being reluctant to change it, the different academic standings of the participants, not losing face, and elimination of the usual biases found in present society such as gender, racial, and age biases. Anonymity of responders allows consensus to take place without the undue influence of rank, power, personality or persuasive speaking which is common to group meetings [9]; [16].

3.2 Data Collection

The process used in this study involved 24 experts: 11 HR managers from 11 organizations, and 13 academics from 11 universities around Europe. In selecting the respondents, the main criterion used was to find respondents who have expertise on e-HRM systems. More specifically, most of the academic members held position of assistant professor or above and have published e-HRM related research in international journals. Practitioners were mostly e-HRM consultants with business expertise of more than five years.

We followed the approach of [40]; [52] and [69] who distinguished three separate stages with answer ranking described in Figure 1. The first stage is labelled as the brainstorming phase, where respondents generate lists of relevant items by replying to research questions. In the present study, after collecting contact information in academic seminar and professional e-HRM future workshop, respondents were sent an e-mail invitation to participate in the study which also contained an explanation of the process. The e-mail also contained the Delphi instrument where respondents were asked to respond to the following six open-ended questions.

> Q1: What development(s) in ICT will influence HRM between now and the year 2015?
>
> Q2: What implication(s) will these developments in ICT have for how HRM is organised/ delivered in firms between now and the year 2015?
>
> Q3: What implication(s) will these developments in ICT have for the role played by HR between now and the year 2015?

Q4: What implication(s) will these developments in ICT have for the kinds of knowledge and skills needed by HR professionals between now and the year 2015?/

Q5: What implication(s) will these developments in ICT have for HRM in the context of multinational corporations between now and the year 2015?

Q6: Finally, please describe 1-3 unexpected ICT developments that might influence HRM between now and the year 2015?

A three-week time frame was assigned to round one and a reminder letter was sent after the two weeks. Final responses arrived five weeks after invitation during December 2009 and 78% of invited respondents responded to the first round. At this stage, data was analysed by grouping similar items together. Duplicates were removed and data was reviewed by three independent researchers not participating as panel members.

The second round was conducted during January 2010. [52] and [69] describe round two as the narrowing down phase, where respondents were asked to identify items which they considered to be most important from responses to stage one. The panel members were contacted individually by e-mail with a direct URL link to the round two survey site, an explanation of the procedure for responding, and the time line for this round. In round two, the issues raised in round one were presented and the participants were asked to rank the importance of these issues and introduce additional ones after reviewing their peers' suggestions and rationales. For rankings, the participants were asked to rank five responses which they considered to be most important from responses to stage one. Response rate for round two was 100 % (n=24).

In the present study, the relative importance of each of the items in the instrument was calculated according to the indications of the respondents and all the items formed the basis for round three. [52] and [69] suggests the third stage as the ranking stage where respondents are asked to rank items in order of importance from responses to stage two. Third round was conducted during March 2010 and 23 respondents participated (response rate 96 %) and ranked the five most important items based on round two rankings. The analysis of this round forms the basis of the results and findings section that follows, 5 being highest value and 0 lowest. Kendall's Tau (τ) (-1 = total disagreement, 1= total agreement) was used to measure the degree of consensus among respondents between round two and three [40].

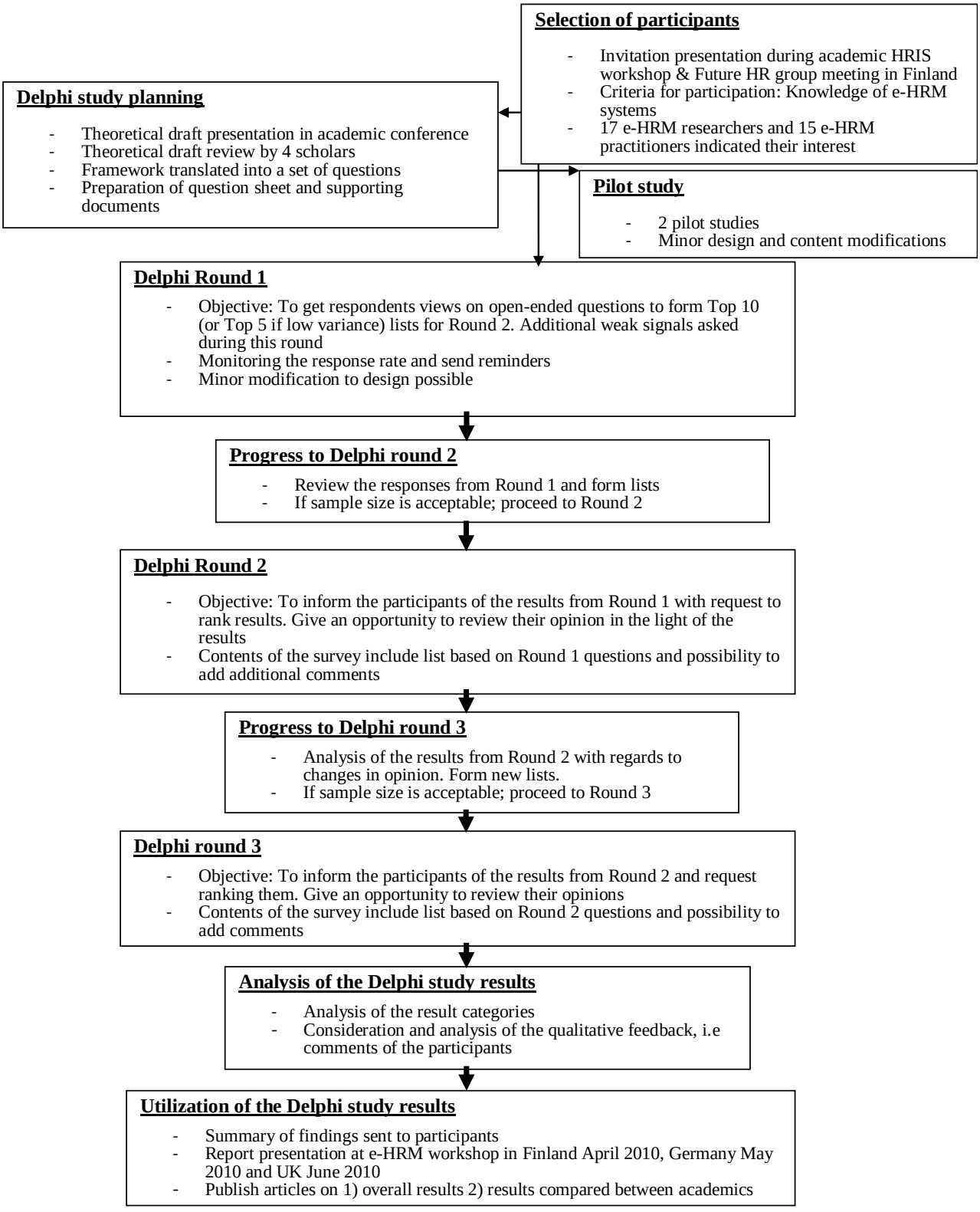

Figure 1: Delphi process

4 Results and findings

RQ1.*What development(s) in ICT will influence HRM between now and the year 2015?*

Of the 23 respondents who completed the final round, the increased use of Web 2.0 / social media (τ =0.148) was the highest ranked response. Increased use of mobile communication technology (τ = 0.219) was ranked second and increased interaction between audio and visual technologies (τ =0.302) was ranked as being the third most important development in ICT influencing HRM between now and 2015 (see Table 1). Respondents had broadly similar views during regarding the importance web 2.0 / social media (quotations presented are from round 2). For example:

> *"Social media are already influencing HR and I think that it is just the beginning. HR department must adapt to this phenomena." , researcher*
>
> *"Web 2.0 is becoming much more widely diffused and its advantages along with mobile will converge to produce a new HR business model" , practitioner*

Technological development	Mean rank (5=highest)	Overall rank	Standard deviation
Increased use of Web 2.0 (social media)	4,3	1	1,55
Increased use of mobile communication technology	3	2	1,53
Increased interaction between audio & visual technolgoies	1,82	3	1,3
Increased use of SaaS (software as a service)	1,56	4	1,72
Shift from document centric to communication centric	1,34	5	1,52
Increased data processing speed	1,08	6	1,44
Virtual worlds become common practice	1,04	7	1,22
The possibility to easily change the database and update information	0,69	8	1,52

Note: Top 3 Kendall´s τ = 0,223

Table 1. Development(s) in ICT that will influence HRM

RQ2. *What implication(s) will these developments in ICT have for how HRM is organised/ delivered in firms between now and the year 2015?*

The three most important implications (see Table 2) were that, firstly, social media and collaboration will fundamentally change the competence and knowledge management paradigm (τ = 0.3), secondly, HR departments will become more virtual (fragmented nets of changing external providers, HR professionals, line managers and employees) (τ =0.337). Thirdly, HR will become more decentralized by giving more responsibilities to local managers and employees with negative Kendall´s tau (τ = -0.118) which means respondents disagreed on this ranked topic. Respondents commented most ranked answers with following comments:

> *"Social media utilization will be broad and deep. This is revolution, not evolution! ", practitioner*
>
> *"There are parallel centralization/decentralization trends. Many tasks of administrative HR performance by in-house HR function will move to line and centralized/outsourced services. There has been talk about this for the last 15 years. It is slowly happening. Number 1 may describe the direction, but 2015 comes fast. Fundamental change in paradigm requires more time. If the statement had been 'social media and collaboration*

start changing competence and knowledge management paradigm' I would strongly agree", researcher

"Major changes in the HR and how it will be perceived is done by business. Majority of companies still try to solve the same issues with the same tools and behaviors as today. However, agile companies (10%) have drastically gained competitive edge in implementing technologies to automate HR business and bring business intelligence reporting tools close to business users (executives, managers, HR, controllers etc.)", researcher

Implications for how HRM is organised/delivered	Mean rank (5=highest)	Overall rank	Standard deviation
Social media will fundamentally change management paradigm	2,82	1	2,2
HR departments will become more virtual	2,78	2	1,95
HR will become more decentralized	2,65	3	1,77
A mostly automated HR function	2,13	4	1,42
Increased devolution of HRM to the line	1,52	5	1,44
Completely bought HRIS service, managed by provider	1,08	6	1,59
HR will be more centralized	0,65	7	1,52
ICT developments as such will not have an impact on HR	0,47	8	1,44
HRM will become more and more a managerial burden	0,43	9	0,94
Nothing much changes, HRM issues are not easy to measure	0,3	10	1,06
SaaS will enable but also necessitate a different HRM approach	0,26	11	0,86

Note: Top 3 Kendall´s $\tau = 0{,}173$

Table 2. Implication for how HRM is organised / delivered in firms

RQ3. *What implication(s) will these developments in ICT have for the role played by HR between now and the year 2015?*

Responses to implications for the role played by HR (Table 3) indicate, firstly, conventional HR departments seem to lose some of their influence, recognition and resources and for HR departments that open up to ICT developments power and recognition will increase ($\tau = 0{,}166$). Secondly, HR will drive things like organizational agility (through performance management, learning and collaboration) while traditional HR administration is already tackled and ready for optimization ($\tau = 0{,}029$) and finally HRM practices will be more useful for line managers; new cadre of middle and senior managers capable and prepared to handle people issues ($\tau = 0{,}004$).

"HR activities will differentiate in companies more and more. There will be advanced HRs but unfortunately will not do progress at all.", researcher

"There are several HR functions that do now believe that a new generation of line managers are people-centric enough to understand that they need to take responsibility for these issues. Much has been said about the capability of HR Business Partners. Everyone knows that it is the capability of line managers to handle these issues on which the overall success ultimately depends.", researcher

Implications for the role played by HR	Mean rank (5=highest)	Overall rank	Standard deviation
Conventional HR departments will lose their influence	2,61	1	1,92
HR will drive things like organizational agility	2,52	2	1,8
HRM practices will be more useful for line managers	2,26	3	1,88
Higher employee satisfaction with HR services	1,82	4	1,55
Not much will change, 2015 still talking strategic partner	1,43	5	2,04
HR will play active role in the design & development of ICT	1,39	6	1,75
Not many implications; HR will still want to work with people	0,95	7	1,52
HR will become a strategic partner	0,78	8	1,27
ICT platforms lead to a HR information market places	0,47	9	1,08

Note: Top 3 Kendall´s $\tau = 0{,}066$

Table 3. Implications for the role played by HR

RQ4. *What implication(s) will these developments in ICT have for the kinds of knowledge and skills needed by HR professionals between now and the year 2015?*

Interestingly, two most ranked options for this question were among the most agreed of all answers in this study. First ranking for knowledge and skills needed by HR professionals was knowledge of social networking, importance of social networking, and ability to work in a 'virtual' network ($\tau = 0{,}458$). Second highest ranking for skills and knowledge needed was statistics and business analytics faster, deeper, more insightful about sourcing, buying and managing service providers ($\tau = 0.645$). Thirdly ranked skill was statement "knowledge of what the technologies can do is important, but more important is their capacity to handle all of the new data that will become available, especially on engagement and knowledge sharing" ($\tau = -0{,}323$). Respondents commented ICT skills and knowledge being critical future skill for various reasons:

> *"Social networking is a mindset - important to have that mindset in a world where being connected is core, such a mindset is needed", researcher*

> *"ICT people don't take ownership and that is why HR have be on top of HR related ICT issues" practitioner*

Implications for knowledge & skills needed by HR professionals	Mean rank (5=highest)	Overall rank	Standard deviation
Knowledge of social networking, realizing importance of SN	3,21	1	1,78
Statistics & business analytics: insightful about sourcing	2,08	2	2,06
Capacity to handle all data that will become available	1,95	3	1,74
Combination of HR expertise with core IT literacy	1,82	4	1,89
HR professionals are consultants, need consultancy skills	1,52	5	1,87
Understanding how ICT changes work in organizations	1,47	6	1,72
More general education will be required,	10,8	7	1,9
HR professionals will need to have a good sense of time	0,82	8	1,64
Understanding present essential trends	0,65	9	1,52
HR service providers will be fewer in number,	0,65	10	1,43
Requires highly skilled, and consequently higher paid individuals	0,6	11	1,26
No administrative knowledge, creativity is the most important	0	12	0

Note: Top 3 Kendall´s $\tau = 0{,}26$

Table 4. Implications for the knowledge and skills needed by HR professionals

RQ5. *What implication(s) will these developments in ICT have for HRM in the context of multinational corporations between now and the year 2015?*

Respondents ranked social media being the most important implication in the multinational context. According to this most ranked statement, "social media will have far-reaching implications for staff: sharing of confidential information; its use in recruitment; training and educational issues; ethical issues" (τ = 0.326). Second most important trend identified by respondent was multinational corporations will particularly use ICT to better control and evaluate their subsidiary companies (τ = 0.111) Finally, respondents ranked "multinational organizations will outsource operational HRM on a global basis to a larger extent. This includes payroll. Global HRIS solutions implemented in the last 5-10 years are the enabler. This development has started and it will be accelerated" being third important (τ = 0.254). Comments regarding MNC context reflected the complex field where MNCs operate:

> *"MNEs will use ICT and Web 2.0 to help resolve the integration-responsivess problem. Technology will enable MNEs to integrate and decentralize simultaneously", researcher*

> *"Although there will be huge complexity in implementation, as local cultural factors and differences in subsidiary power impact the pursuit of a globally consistent HR delivery model, the inevitable pull for corporate HR is that this enables them to redraw 'the line in the sand' between standardisation (as opposed to optimisation) of HR systems" researcher*

Implications for HRM in the MNC context	Mean rank (5=highest)	Overall rank	Standard deviation
Social media will have far-reaching implications for staff	3,3	1	2,03
MNC will particularly use ICT to control and evaluating	3,17	2	1,33
MNCs will outsource operational HRM to a larger extent	2,17	3	1,99
Data privacy issues will become more severe	1,43	4	1,72
Subsidiary units will become more locally responsive	0,86	5	1,71
Companies that have SAP will enhance solutions with SaaS add-ons	0,86	6	1,51
Systems such as SAP and Oracle will be out of use	0,69	7	1,32
It will tend to strengthen the notion of standardization	0,69	8	1,55
Because of the investments made, ICT developments have only a minor influence	0,6	9	1,37
Its not ICT, its institutional context that surrounds the attractiveness of sourcing	0,52	10	1,03
SAP or Oracle will be a driver towards convergence of HRM	0,52	11	1,08
There will be no difference. Social networking will remove the borders	0,26	12	0,91

Note: Top 3 Kendall´s τ = 0,23

Table 5. Implications for HRM in the context of multinational corporations

RQ6. *Finally, please describe 1-3 unexpected ICT developments that might influence HRM between now and the year 2015*

According to respondents rankings on unexpected ICT developments, virtual job fairs will become common practice (τ = 0.173) Second ranking indicated that major ERP systems as in-house systems become history and next generation HRIS solutions will replace existing ERP solutions (τ = 0.202) and thirdly, companies like Google begin to dominate providing free ERP solutions (τ = 0.173). Comments on top three rankings:

> *"Number 1 is not even unexpected. It is expected", practitioner*

> *"I am waiting the moment, when Facebook, Google or LinkedIn actually will provide similar components for free as traditional ERP vendors like SAP or Oracle sell nowadays based on normal licence fees. However, SAP and Oracle most probably need to fight against these free-software companies and re-think their money-making strategy. I am quite*

convinced that convergence between ERP and social media will continue to develop and therefore will impact dramatically HR and ICT in the coming 5 years time. Whatever will happen, it is benefiting companies in obtaining user-friendly and cost-efficient solutions.", practitioner

"Technology will make physical interviews obsolete especially in advanced economies as applicants will prefer online methods to 'shop' for their best company." researcher

Unexpected ICT developments that might influence HRM	Mean rank (5=highest)	Overall rank	Standard deviation
Virtual job fairs will become common practice	2,87	1	2,26
Major ERP systems as in-house systems become history	1,96	2	2,01
Companies like Google begin to dominate	1,8	3	1,8
End of conventional job interviews. Recruiting via Skype	1,52	4	1,75
International standards for HR data	1,09	5	1,85
Geotagging leads to monitoring and tracking practices	0,87	6	1,42
Social media is used to 'control' staff	0,82	7	1,43
Reaction against online communication by new generation	0,82	8	1,43
Consultation technologies democratise business programmes	0,69	9	1,39
Standardized HR services leads to stronger isomorphismism	0,65	10	1,36
Internet collapse / internet becoming very unsafe	0,52	11	1,03
Effort and error free HRIS implementation	0,43	12	1,23
Internal HRIS organizations are ramped down	0,22	13	0,73

Note: Top 3 Kendall´s $\tau = 0{,}182$

Table 6. Unexpected ICT developments that might influence HRM

5 Discussion and Conclusion

A review of e-HRM developments since 1980s and e-HRM consequences debate reveals that e-HRM is an emerging, fast evolving, and important area of research. The developments on this area will have great impact on the future of the HR field. To shed light on the futures´ developments of e-HRM, this study applied the Delphi method to survey a mixed academic and practitioner panel of e-HRM experts through a three-round issue identification and consensus-building process.

Critical issues were suggested and ranked in six areas. We looked what ICT developments will influence HRM, what implications these developments have for how HR is organised/ delivered in firms**,** what the implications ICT has for the role played by HR and finally we looked what implications ICT has for the kinds of knowledge and skills are needed by HR professionals in the future**.** We also looked into two additional topics: firstly, what implications will developments in ICT have for HR in the context of multinational corporations and finally we looked for additional weak signals that might influence HRM in the future. Among the issues raised and later rated in both round two and round three, a acceptable consensus was reached in all areas ($\tau > 0$). Overall, 5 issues received a strong mean ranking of 3 or above and thus emerged as the most critical issues across researched topics.

Main finding in this study was the importance of social media. Increased use of web 2.0 technology was the highest ranked of all answers therefore we suggest this technology will have major impact on HRM in the future. In addition, respondents indicated social media and collaboration will fundamentally change the competence and knowledge management paradigm with highest ranking to

research question two. For the implications for the role played by HR then, our results suggest that with the use of social media conventional HR departments will lose their influence, HR will drive things like organisational agility and HR will be more useful for line managers. With these results in mind, [14] analyzed social media trends affecting business and argued the use of social media tools will continue to grow rapidly and this will provide business community with new and innovative ways to explore the rapidly changing business environment. According to consultant surveys, organizational support for social media is increasing. The use of wikis for knowledge sharing is supported in 13 %, the use of internal blogs in 14 % and the use of social media tools for recruiting is reported in 9 % of US organizations [11]. Knowledge of social networking, importance of social networking, and ability to work in a 'virtual' network was also ranked above mean three for question four thus supporting our argument regarding the importance of social media´s implications for HRM and HR personnel. Similarly with [5], we suggest this ICT transformation is reshaping the competencies that define HR professionals success.

Interestingly, the third ranked issue of Google dominating ERP market in final research question became close to reality when during time of publishing this paper traditional print-media reported Google holding a conference and selling its cloud computing services — like e-mail and business software — to executives of large corporations [58]. However, previously mentioned or any other future technological developments should not be taken granted, as [48] notes that "*speed of technological progress will probably not be determined by technological capability but by culture*" and keeping global operations in mind, HR is generally regarded to be most culture- and institution specific function [62]. To examine future trends in HRM and ICT one must look within countries, since labour laws differ from country to country and thus could have a significant impact on any new developments in HRM for that country. In IHRM literature we have learned that there are some similarities in terms of HRM trends across other countries (e.g. focus on the cost effectiveness) [26] We did not found institutional factors affecting futures´ development, instead our findings in MNC context suggest that social media will have strong influence on staffing and MNCs will particularly use this technology for better control and evaluation.

The main contribution of our work was the theoretical contribution to the field of e-HRM research. This study was a successful pilot study which tested Delphi method across countries with experts from many e-HRM fields. With this in mind, and similarly with [59], we suggest researchers to adapt these kinds of non-traditional methods when studying the cross-disciplinary field of e-HRM.

5.1 Limitations and future research

Our study was not without limitations; however these limitations offer fruitful venues for future research. Firstly, in order to make use of technology and reduce time delays we chose to use e-mail and web-portal to conduct this study. We found the return of the Delphi responses was much slower than excepted. Our conclusion from this experience is that that we should perhaps learn again writing with pen and with paper and conduct this kind of research in academic workshops or seminars or even via traditional mail.

Secondly, marketing function has been argued as the most advanced "user" of social media [14]. While marketing professionals are actively and regularly

participating in social networks on a weekly basis, their usage of a variety of existing social media tools seems to remain infrequent [1]. The current level of adoption of social media tools by marketing professionals seems to be still fairly low while the majority of acknowledges that participation in social networks is important to their business and career. With these findings from more people sensitive business field in mind, we might assume social media and HRM still being part of technological hype? Therefore we courage researchers to seek more knowledge on social media´s impact to HRM.

Thirdly, present study had a positivist orientation, and critical questions regarding negative aspects of e-HRM were not widely addressed. Therefore future research could seek knowledge on negative aspects of ICT and HRM. Finally, this research will mature in very short period of time. Therefore this research could be repeated over time with similar methods and samples so that there would be a rolling benchmark of the issues and topics that contribute to develop the e-HRM body of knowledge.

5.2 Managerial Implications

As suggested, the increasing use of ICT in HRM will influence they way people in organization look at the nature and role of HRM and develop their skills. With HRM data and reports now being readily available on desktop, will managers interact less with the HR department which is actually ICT department? See it being less important and only develop their ICT skills? If that is so, we encourage managers to think how this will affect the attitude of HR professionals toward their jobs and profession. Will HR professionals resist adoption of latest technology if they perceive that technology lessens status? Finally, managers should not be too optimistic on social media. We recommend managers to consider the "dark side" of this technology (i.e. where employees are too open, for example, with micro-blog posting) when implementing new e-HRM systems, policies and practices

References

[1] Ama (2009) American Marketing Association Social Media Survey Results and Analysis 2009. 1st edition.

[2] Addison, T. (2003). "E-commerce project development links: evidence from a Delphi survey", International Journal of Information Management, 23: 25-40.

[3] Ball, K.S (2001). The use of human resource information systems: a survey. Personnel review 30: 677-693

[4] Becker, B.E., Huselid, M.A. & Ulrich, D. (2001) The HR scorecard: linking people, strategy, and performance. Harvard Business School Press, Boston, MA.

[5] Bell, B.S., Lee, S-W. & Yeung, S.K. (2006). The impact of e-HR on professional competence in HRM: Implications for the development of HR professionals. Human Resource Management 45: 295-308.

[6] Beretta, R. (1996) A critical review of the Delphi technique. Nurse Researcher 3: 79-89.

[7] Bondarouk, T. V. & Ruël, H. J. (2009). Electronic Human Resource Management: challenges in the digital era. The International Journal of Human Resource Management 20: 505 — 514

[8] Bondarouk, T.V & Ruel, H.J. (2009B). Structuring the IT-enabled Transformation of HR: An HRM Frames Analysis in an International Company. In Sparrow (Eds.) Handbook of International Human Resource Management. John Wiley:

[9] Brockhoff, K. (1975). The performance of forcasting goups in computer dialogue and face-to-face discussion. In Linstone, H. A. & Turloff, M., (Ed.), The Delphi method: Techniques and applications (pp. 291 - 321). Reading, MA: Addison-Wesley.

[10] Cascio, W.F. (2000) Managing a virtual workplace. Academy of management executive, 14: 81-90

[11] CedarCrestone (2010). The CedarCrestone 2009–2010 HR Systems Survey: HR Technologies, Deployment Approaches, Value and Metrics, 12th Annual Edition.

[12] Clark, L. (2006). 'Henkel Rolls Out e-Recruitment across Europe,' Computer Weekly, 1, 24, 14.

[13] Colton, S. (2002). Developing an instrument to analyze the application of adult learning principles to world wide web distance education courses using the Delphi technique Doctoral dissertation, University of Louisville.

[14] Cooke, M. & Nick (2008) Web 2.0, social networks and the future of market research International Journal of Market Research. 50: 2

[15] Czinkota, M.R. & Ronkainen, I.A (2005) A forecast of globalization, international business and trade: report from a Delphi study. Journal of World Business 40: 111–123

[16] Dawson, M.D. & Brucker, P.S. (2001). "The utility of the Delphi method in MFT research", The American Journal of Family Therapy, 29: 125-40.

[17] DeSanctis, G. (1986). Human Resource Information Systems: A Current Assessment. MIS Quarterly 10: 15–27.

[18] Evans, C. (1997). The use of consensus methods and expert panels in pharmacoeconomic studies, Pharmacoeconomics, 12 : 121-9.

[19] Florkowski, G. & Olivas-Luján, M.R. (2006). Diffusion of Information Technology Innovations in Human Resource Service Delivery: A Cross-Country Comparison. Personnel Review, 35: 684–710.

[20] Girard, A., & Fallery, B. (2009) E-recruitment: new practices, new issues. An exploratory study. In: The third International Workshop on Human Resource Information Systems, 6-7 May 2009, Milan, Italy.

[21] Green, B., Jones, M., Hughes, D., & Williams, A. (1999), "Applying the Delphi technique in a study of GPs information requirements", Health & Social Care in the Community 7: 198-205.

[22] Hays, S.W & Kearney R.C (2001) Anticipated Changes in Public Sector Human Resource Management: Views From the Field,_ Public Administration Review 61 : 585-597.

[23] Hatcher , T. & Colton, S. (2007) Using the internet to improve HRD research - The case of the web-based Delphi research technique to achieve content validity of an HRD-oriented measurement Journal of European Industrial Training 31 : 570-587

[24] Huselid, M.A., Becker, B.E. & Beatty R.W. (2005) The workforce scorecard: Managing human capital to execute strategy. Harvard Business School Press, Boston, MA.

[25] Kaynak, E., Bloom, J., & Liebold, M. (1994), "Using the Delphi technique to predict future tourism potential", Marketing Intelligence & Planning, 12: 18-29.

[26] Kavanagh, M. & Thite, M (2008) Human Resource Information Systems: Basics, Applications, and Future Directions. Thousand Oaks: Sage publications

[27] Keeney, S., Hasson, F., & McKenna, H. (2006), "Consulting the oracle: ten lessons from using the Delphi technique in nursing research", Journal of Advanced Nursing, 53 : 205-12.

[28] Kluemper, D, & Rosen P. (2009) Future employment selection methods: evaluating social networking web sites. Journal of Managerial Psychology 24 .(6), 567-580

[29] Lepak, D. P. & Snell, S.A. (1998). Virtual HR: Strategic human resource management in the 21st century. Human Resource Management Review, 8: 215–234.

[30] Lepak, David P. & Shaw, Jason D.(2008)'Strategic HRM in North America: looking to the future',The International Journal of Human Resource Management,19: 1486 — 1499

[31] Lengnick-Hall, M.L., & Moritz, S. (2003), 'The Impact of e-HR on the Human Resource Management Function,' Journal of Labor Research 24: 365–379.

[32] Linstone, H., & Turnoff, M. (1975). The Delphi method: Techniques and applications. Reading, MA: Addison-Wesley.

[33] Lin, Carol Y. Y.(1997)'Human resource management in Taiwan: a future perspective',The International Journal of Human Resource Management,8: 29 — 43

[34] Loo, R. (1996) Managing workplace stress: a Canadian Delphi study among human resource managers, Work & Stress 10 : 183-189

[35] Loughlin, K.G. & Moore, L.F. (1979), "Using Delphi to achieve congruent objectives and activities in a paediatrics department", Journal of Medical Education, 54: 101-6.

[36] Magalhaes, R. & Ruel, H. (2007) Studying human resource information systems from an integrated perspective: a research agenda. Proceedings of the 1st international workshop on human resource resource information systems. Fucnhal (Portugal) 2007

[37] Marler, J. H.(2009) 'Making human resources strategic by going to the Net: reality or myth?',The International Journal of Human Resource Management,20: 515 — 527

[38] Martin, G., Reddington, M. & Alexander, H. (2008). Technology, Outsourcing and Transforming HR (Eds.), Oxford: Butterworth-Heinemann.

[39] Martin, G, Reddington, M. & Kneafsey M.B (2009) Web 2.0 and Human Resource Management 'Groundswell' or hype?CIPD Chartered Institute of Personnel and Development publications. British Library Cataloguing in Publication Data: Reading

[40] McGuire, D. & Cheh, M (2006) The development of the field of HRD: a Delphi study Journal of European Industrial Training 30: 653-667

[41] McKenna, H. (1994) "The Delphi technique: a worthwhile approach for nursing?", Journal of Advanced Nursing, 19:1221-5.

[42] McKenna, H.P., Bradley, M., & Keeney, S. (2000), "Primary care nursing: a study exploring key issues for future developments", University of Ulster, Newtownabbey,

[43] McKinsey (2008) Building theWeb 2.0 enterprise: McKinsey global survey results

[44] McKinsey (2007) How businesses are usingWeb 2.0: a McKinsey global survey

[45] Meyrick, J (2003) The Delphi method and health research. Health education 103: 7-13

[46] Nevo, D & Chan, E. (2007) A Delphi study of knowledge management systems: Scope and requirements. Information & Management 44: 583–597

[47] Ngai, E.W.T. & Wat F.K.T. (2006). Human resource information systems: a review and empirical analysis. Personnel Review, 35: 297–314.

[48] Reilly, R. (2000) The future of success. New York: Alfred Knopf

[49] Robinson M, Sparrow, P, Chris C. & Birdi, K. (2007) Forecasting future competency requirements: a three-phase methodology. Personnel Review 36: 66-89

[50] Ruël, H.J.M., Bondarouk, T., & Looise, J.C. (2004). E-HRM: Innovation or irritation. An explorative empirical study in five large companies on web-based HRM. Management Review, 15: 364−381.

[51] Schwarz, S. (2008) Assessing the future studies in management. Futures 40: 237-246

[52] Schmidt, R., Lyytinen, K., Kiel, M. & Cule, P. (2003), "Identifying software project risks: an international Delphi study", Management Information Systems, 17 (4) 5-37.

[53] Sparrow P., Brewster, C. & Harris, H. (2004) Globalizing human resource management. Routledge, London.

[54] Sparrow. P (2009) Handbook of international human resource management. Wiley, Chippenham

[55] Spencer-Cooke, B. (1989). Conditions of participation in rural, non-formal education programs: A Delphi study. Educational Media International 26 : 115-124.

[56] Stone, D.L (2005) The brave new world of eHR : Human resources management in the digital age. San Francisco: Jossey Bass

[57] Stone, D., Stone-Romero, E. & Lukaszewski K(2006) Factors affecting the acceptance and effectiviness of electronic human resource systems. Human Resource Management Review 16: 229-244

[58] Stone, B. & Vance, A. (2010) Companies Slowly Join Cloud-Computing. New York Times.18.4.2010. Available at: nytimes.com/2010/04/19/technology/19cloud.html

[59] Strohmeier, S. (2007) Research in e-HRM: Review and Implications,' Human Resource Management Review 17 : 19–37.

[60] Strohmeier, S. (2009) Concepts of e-HRM consequences: a categorisation, review and suggestion. The International Journal of Human Resource Management 20: 528 — 543

[61] Synnott, G., & McKie, D. (1997), "International issues in PR: researching research and prioritizing priorities", Journal of Public Relations Research, 9 :.259-82.

[62] Tayeb (1998) Transfer of HRM across cultures: An American company in Scotland. International journal of human resource management, 9: 332-370

[63] Turoff, M. (1970), "The design of a policy Delphi", Technological Forecasting and Social Change 2 : 149-71

[64] Turoff, M. (1975) The policy Delphi. The Delphi Method: Techniques and Applications, Addison-Wesley, Reading

[65] Ulrich, D. (1997) Human resource champions: the next agenda for adding value and delivering results. Harvard Business School Press. Boston Massachuttes.

[66] Ulrich, D., Younger, J. & Brockbank, W. (2008) The twenty-first-century HR organization. Human Resource Management 47: 829-850

[67] Van Ruler, B., Vercic, D., Bütschi, G., & Flodin, B. (2004), "A first look for parameters of public relations in Europe", Journal of Public Relations Research, 16: 35-63.

[68] Ziglio, E. (1996), The Delphi method and its contribution to decision making. In Adler, M., Ziglio, E. (Eds) Gazing into the Oracle: the Delphi Method and its Application to Social Policy and Public Health, Jessica Kingsley Publishers, London.

[69] Zhang Y., & Salaba, A. (2009) What is next for functional requirements for bibliographic records? A Delphi study. Library Quarterly 79: 233-255

HRIS Design Characteristics: Towards a General Research Framework

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Abstract. *Design characteristics constitute a promising approach for supporting researchers and practitioners in developing, implementing and improving Human Resource Information Systems (HRIS) to ensure the anticipated benefit for those firms which introduce and/or apply them. Constituting an intuitively appealing approach, the question how to understand and apply systematically such design characteristics is of specific interest. Hence, the paper proposes a general research framework of HRIS design characteristics which a) allows researchers to understand and apply crucial aspects relevant to HRIS design characteristics better so that b) practitioners may be supported in developing, implementing and permanently improving successful HRIS.*

Keywords: HRIS Design Characteristics, HRIS Development, HRIS Implementation, HRIS Improvement.

1 Introduction

Human Resource Information Systems (HRIS) can be understood as "configurations of different interacting systems that aim at generating and delivering [Human Resource] HR functionality in order to automate and informate [Human Resource Management] HRM [63]. With a view to HR core functions, these are, among others, recruiting and selection [7], compensation and benefits [15], training and development [66], performance management [44] as well as HR planning [23]. In so doing, HRIS show diverse benefits such as the improvement of HR operations and management processes by means of increased quality of decision making [4, 29, 36] or the improvement of "employee satisfaction by delivering HR services more quickly and accurately" [29].
However, the profit of applying HRIS strongly depends on their appropriate development, implementation and permanent improvement as only properly developed, implemented and permanently improved HRIS will ascertain the success [13, 29, 61].
On the other hand, this implies that HRIS success is manageable, at least, to a certain degree [64]. In so doing, design characteristics relevant to the success of HRIS may

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support HRIS-related decision makers, system developers as well as system implementers in ascertaining the success of HRIS. Being of special importance, HRIS design characteristics are understood as a set of properties inherent to HRIS [28] by which they can be developed, implemented and permanently improved [13, 29, 61] and which are conceptually assumed or empirically ascertained to have a positive impact on system success [9, 11, 12, 46, 70, 71, 76]. To be more concrete, HRIS design characteristics may help HRIS-related decision makers to better validate the capabilities of particular HRIS, and based on this, to better derive necessary improvement measures in order to warrant successful HRIS. Thus, by use of corresponding HRIS design characteristics, HRIS-related decision makers may be enabled to better detect in how far HRIS actually meet crucial aspects relevant to HRIS success [29, 61]. Besides, HRIS design characteristics may support system developers in the preparation of the final HRIS system specification, respectively help them to build or select successful HRIS based on this initial system specification [13, 29]. With a view to system implementers, design characteristics may help them to customize HRIS precisely according to the (internal/external) customers' requirements [13]. Given this, researchers may be predominantly interested in the derivation of as well as the engagement with HRIS design characteristics by means of rigorous foundations and methodologies so that they may better support the aforementioned stakeholders in the development, implementation and permanent improvement of successful HRIS [26].

However, only few research contributions explicitly deal with HRIS design characteristics by exploring [37, 45, 55, 68, 75], applying [1, 37, 38, 39, 52, 55, 68, 75, 76] or reviewing [45] diverse design characteristics at present. This may be mainly due to the fact that existing foundations such as the Technology Acceptance Model [8, 9, 10, 71, 72, 73] or the DeLone and McLean Model of IS Success [11, 12, 58] do not propose concrete guidelines how to understand and apply design characteristics relevant to the success of HRIS [11, 12, 46, 71, 73, 76].

Hence, our current understanding of HRIS design characteristics is quite limited at present and there is a necessity to suggest general insights. Given this, the main purpose of this paper is to introduce HRIS design characteristics as an emerging and mandatorily needed field of research in order to ensure the success of HRIS. However, due to its comprehensive and interdisciplinary character systematic engagement and debate around particular aspects relevant to HRIS design characteristics (e.g. definition of the application target, the method of elicitation, respectively evaluation of HRIS design characteristics) is needed in order to better guide and structure the upcoming discourse of this emerging field of research, and consequently, the successful selection and application of relevant HRIS design characteristics. Thus, the current paper does not intend to enumerate particular HRIS design characteristics but primarily aims at paving the way for HRIS design characteristics research in general by proposing a parsimonious, but general, research framework of particular aspects relevant to HRIS design characteristics. Using this framework, researchers should be enabled to better understand and apply crucial aspects relevant to HRIS design characteristics so that, subsequently, practitioners may be better supported in developing, implementing and improving successful HRIS.

In order to deal with these questions, the paper is structured as follows: based on a clarification of HRIS a general research framework of selected issues relevant to HRIS design characteristics in particular will be derived. Subsequently, the framework will be discussed and exemplarily illustrated by means of an ongoing HRIS research project. Thirdly, both practice and research-oriented implications will be derived.

2 A General Research Framework of HRIS Design Characteristics

At the current stage of research, a general research framework conflating particular aspects relevant to HRIS design characteristics is considered as the most appropriate to better guide and structure the upcoming discourse of this emerging field of research, and thus, the successful selection and application of relevant HRIS design characteristics. In short, the framework distinguishes between the following aspects relevant to HRIS design characteristics (see Table 1):

type of success measure relevant to	decision maker		system developer		system implementer		system user
type of design characteristic	system-related				information-related		
type of application target	development			implementation			improvement
validity	universal				contingent		
method of elicitation	theory	literature review	use case	case study	survey	[...]	combinatorial approaches
method of evaluation	non-empirical			empirical			combinatorial approaches
level of granularity	coarse-grained			medium-grained			fine-grained

Table 1. A General Research Framework of HRIS Design Characteristics.

At first, the type of HRIS success measure referring to particular stakeholders is considered to be obviously of relevance for HRIS design characteristics. For instance, whereas HRIS-related decision makers, system developers as well as system implementers may more focus on resource- (e.g. budget, time), feature-, or revenue-/profit-related issues, system users may tend to define HRIS success with a view to their level of individual productivity or satisfaction with the system [59, 60, 69]. Besides, system- and information-related design characteristics as a basic and rough categorization of HRIS design characteristics are introduced, defined and illustrated [11, 12, 46, 71, 76]. In addition to that, crucial application targets of system- and information-related HRIS design characteristics are presented, amongst them the development, the implementation as well as the permanent improvement of HRIS [13, 29, 61]. Furthermore, methods for the elicitation of HRIS design characteristics are illustrated as an important scientific milestone as researchers have to set the course which system- and information-related HRIS design characteristics will be evaluated subsequently at which quality. For example, HRIS design characteristics may differ according to their level of validity (e.g. universally applicable vs. contingent design characteristics) or granularity (e.g. coarse-grained vs. fine-grained design characteristics).

2.1 Type of Success Measure

HRIS success, also called HRIS effectiveness [11, 12, 19] among others, is understood as the degree to which the person developing, implementing or permanently improving HRIS believes that the stakeholder (in whose interest the development, implementation and permanent improvement is being made) is better off [58].
In so doing, IS success measures can be classified according to the following stakeholders, among others, HRIS-related decision makers, system developers, system implementers as well as system users [59, 69]. From a *decision maker*'s perspective, successful HRIS may maximize the following aspects, among others [60]: cost efficiency (e.g. IT operations), service-to-the-business-related issues (e.g. customer satisfaction with IT products/services), business improvements (e.g. IT support effectiveness) as well as revenue-/profit-related issues (e.g. IT profit generation, competitive advantage). On the other hand, from a *system developer*'s perspective, successful HRIS may be completed on time and under budget, may show a set of features consistent with the system specification, and may operate properly [13]. With a view to *system implementers*, successful HRIS may be easy and fast to adjust to the (internal/external) customers' requirements [13]. Finally, *system users* may find HRIS successful if they contribute to maximize, among others, their perceived level(s) of individual productivity, satisfaction or usefulness/ease of use while using these systems [8, 10, 11, 12].
However, in order to maximize HRIS success, researchers and practitioners have to know more about its underlying drivers. Thus, the subsequent chapter presents system- and information-related HRIS design characteristics as crucial drivers of HRIS success, among others.

2.2 Type of Design Characteristic

HRIS design characteristics are understood as a set of properties inherent to HRIS [28] by which they can be developed, implemented and permanently improved [13, 29, 61] and which are conceptually assumed or empirically verified to have a positive impact on system success [9, 11, 12, 46, 70, 71, 76]. There are different possibilities to categorize HRIS design characteristics, while a common categorization in the literature roughly distinguishes between *system-related* and *information-related* design characteristics [11, 12, 46, 71, 76]. Hence, system- and information-related design characteristics relevant to the success of HRIS are considered to constitute a basic and rough categorization of HRIS design characteristics. Whereas system-related design characteristics measure the desired properties of an HRIS itself (e.g. "reliability", "security" [45]), information-related ones (e.g. "understandability", "consistency" [45]) measure the desired properties which refer to the information provided by the HRIS [12]. Thus, system-related design characteristics may constitute a valuable means to the stakeholders involved (e.g. system developer, system implementer) to develop, implement and permanently improve successful HRIS. Besides, information-related design characteristics may support information providers in creating information relevant to system users' particular requirements (e.g. understandable, consistent and credible information).
Refining and adjusting these two major categories of HRIS design characteristics towards individual HR requirements, and subsequently considering these design characteristics, may lead to practical HRIS development, implementation and (permanent) improvement processes which may contribute to an overall HRIS success.

In so doing, the subsequent chapter illustrates the development, implementation and (permanent) improvement of HRIS by use of system- and information-related design characteristics as major fields of application where design characteristics may support the stakeholders involved in attaining successful HRIS.

2.3 Type of Application Target

Given their manageability, and thus their crucial impact on HRIS success [11, 12, 64], system- and information-related HRIS design characteristics may support the stakeholders involved in successfully accomplishing the development, the implementation as well as the (permanent) improvement of HRIS [13, 29, 61].

To begin with the *development* of HRIS, design characteristics may support the concretization of the system specification (i.e. how the HRIS will operate). In so doing, HRIS design characteristics may be concretized alternatively by use of technical concepts, i.e. pure textual descriptions or visual representations via UML diagrams and/or user interface mockups. Based on such a system specification, HRIS design characteristics may subsequently help the stakeholders involved to either build or select (in case of a packaged software design) HRIS accurately [13]. Thereby, the selection of pre-packaged HRIS by use of design characteristics may help to avoid costly misconceptions of HRIS as vendor software packages may not be selected based on an incomplete, inaccurate or irrelevant system specification [29]. Besides, organizations may decide to select an external HRIS developer, i.e. to outsource the HRIS development to an external company or to obtain access to existing software through an application service provider as external software developers may yield vast resources, experiences, and technical skills to design a much more effective solution than would be otherwise possible [29].

Beyond, during the *implementation* HRIS design characteristics might be considered as a valuable means which may guide the customization, i.e. the precise adjustment, of an HRIS to the (internal/external) customers' requirements.

Regarding the permanent *improvement* of HRIS, which is considered to be mainly ensured by their comprehensive evaluation, HRIS design characteristics are considered to constitute a valuable means to better monitor in how far the HRIS under consideration meets the (elicited/existing) design characteristics relevant to HRIS success.

Given this, it is of particular scientific interest to support practitioners in the specification (see Chapter 2.4 & 2.7), elicitation (see Chapter 2.5) and evaluation (see Chapter 2.6) of relevant HRIS design characteristics so that practitioners may develop, implement and permanently improve successful HRIS [26].

2.4 Range of Validity

In order to select and apply system- and information-related HRIS design characteristics within each of the application targets properly (see Chapter 2.3), it is relevant to the stakeholders involved to know about their validity, i.e. if particular HRIS design characteristics are thought to be universally valid or dependent on diverse contingency factors [32, 40].

In regard to possible *contingencies*, the success measure(s) to be achieved may constitute a prominent influence factor which may have a crucial impact on the validity of particular system- and information-related HRIS design characteristics to be selected and applied by the stakeholders involved. For instance, whereas HRIS-related decision makers, system developers and system implementers may more focus on resource- (e.g.

budget, time), feature-, or revenue-/profit-related issues, system users may tend to define HRIS success with a view to their perceived level of satisfaction with HRIS [59, 60, 69]. Hence, HRIS design characteristics may act as a function of their underlying contingencies, in this particular case the kind of success measure depending on the corresponding stakeholders involved (e.g. resource-, feature-, revenue-/profit-related issues or level of perceived satisfaction with HRIS). In so doing, design characteristics for stakeholders such as HRIS-related decision makers, system developers and system implementers may be shaped so that they might have a crucial impact on resource-, feature- or revenue-/profit-related issues (e.g. "pre-packaged", "easy and fast to customize", "economical", "reliable", "secure", etc.). As distinct from this, HRIS design characteristics for stakeholders such as system users might be streamlined in order to maximize their perceived individual productivity, respectively satisfaction while using HRIS (e.g. "understandability" and "consistency" of the information provided by the HRIS, etc.).

In addition to the success measure(s) to be achieved, the type of application target may be considered as a further contingency factor of HRIS design characteristics. For instance, during the development as well as the implementation phase, HRIS design characteristics contingent on the "organizational culture" [47], the "organizational context" (e.g. size, resource constraints, time frame, kind of HR core function [51, 56, 65]) or the "technological change" in general [56] may be considered in order to better adjust the HRIS to the (internal/external) customers' requirements. Beyond, HR core functions to be supported by HRIS [56], amongst them recruiting and selection [7] or training and development [66], may constitute another contingency factor which may have a crucial impact on HRIS design characteristics. Potential examples of such contingent HRIS design characteristics are, among others, the "accessibility of the user interface", the "user interface appeal", the "interactivity within the user interface", the "multimodality of information" [45] as well as the "multilingualism of information".

On the contrary, *universally valid* HRIS design characteristics may be best suited for the improvement of an HRIS and replaced by more contingent ones in order to better adjust to particular HRIS properties (e.g. portable competence profile, support of particular technical standards, etc.) or unexpected system errors/failures. Potential examples of such universally valid design characteristics are, among others, the "reliability" or "security" of an HRIS as the warranty of these design characteristics should always be ensured and not be driven by "cultural", "organizational" or "technological" contingencies.

Hence, HRIS design characteristics are thought to be located on a "continuum of validity", ranging from universally applicable HRIS design characteristics to highly contingent ones. Thereby, the knowledge about such a "continuum of validity" may help researchers in eliciting (see Chapter 2.5) and evaluating (see Chapter 2.6) appropriate HRIS design characteristics so that practitioners may develop, implement and permanently improve successful HRIS [26].

2.5 Method of Elicitation

The elicitation of HRIS design characteristics may predominantly be undertaken by researchers so that practitioners may draw on comprehensive sets of well-extracted design characteristics relevant to the development, implementation and (permanent) improvement of successful HRIS. In so doing, the elicitation of HRIS design characteristics constitutes an important scientific milestone as researchers determine

which HRIS design characteristics will be evaluated subsequently (see Chapter 2.6) at which quality (see Chapter 2.4 & 2.7).
Hence, methods of elicitation are understood as rigorous and thus systematic ways of ascertaining system- and information-related HRIS design characteristics which are made available to practitioners so that they may develop, implement and improve successful HRIS.
Thereby, the following ways of ascertaining HRIS design characteristics are suggested: theory-grounded as well as literature-, review-, use case-, case study- or survey-based approaches, and combinations of them.
Theories as a base for the elicitation of HRIS design characteristics can be generally described as a general set of statements which aim at explaining what is, predict what will happen and provide a basis for intervention and action [17]. In so doing, Doty and Glick [14] provide three primary criteria a theory should meet, namely: identification of constructs (here: independent variables such as design characteristics; dependent variables such as HRIS success measures), specification of relationships among these constructs which finally have to be falsifiable. In so doing, promising theories for the elicitation of HRIS design characteristics are, among others, the Technology Acceptance Model [8, 9, 10, 71, 72, 73] as well as the DeLone and McLean Model of IS Success [11, 12, 58]. This finding might predominantly be due to the fact that the Technology Acceptance Model as well as the DeLone and McLean Model of IS Success comprehensively illustrate (inter-)relationships between system- and information-related design characteristics and important measures relevant to HRIS success (e.g. individual productivity, satisfaction or usefulness/ease of use while using HRIS [8, 10, 11, 12]). However, due to its comprehensiveness and robustness, the application of the DeLone and McLean Model of IS Success is particularly recommended for a theoretically grounded elicitation of system- and information-related HRIS design characteristics. The outcome of such an elicitation procedure may consists of comprehensive sets of system- and information-related HRIS design characteristics which subsequently could be applied in the realm of (experimental/large-scaled) empirical studies.
Besides, *literature reviews* constitute another potential method for the elicitation of HRIS design characteristics. Thereby, a literature review may support researchers in better extracting, contextualizing or structuring information relevant to system- and information-related HRIS design characteristics, among others the kind of foundation (e.g. conceptual, theoretical), the object of analysis (e.g. HRIS in general, HRIS contingent on HR core functions such as training and development in particular), the data gathering or data analysis method as well as the results achieved. However, except one literature on design characteristics relevant to HRIS subtypes to training and development [45], there currently exists an urgent need to conduct such literature reviews as the selection and application of design characteristics uniformly appears to be highly arbitrary so far [45].
Concerning *use cases* as a potential means for the elicitation of HRIS design characteristics they may provide "a standard way of capturing, exploring, and documenting what a system should do" [5]. To be more concrete, use cases may support system developers in better contextualizing, and thus specifying HRIS requirements. In so doing, use cases may help system developers in selecting appropriate HRIS design characteristics which may subsequently support system implementers as well as HRIS-related decision makers during the customization and (permanent) improvement of HRIS [5].

In addition, *case studies* are equally considered to be a valuable instrument to help imitating and/or simulating a real situation where HRIS design characteristics may be an issue [16]. Thereby, the main purpose of case studies, which can be described as verbal representations of reality [16], is to illuminate a decision or set of decisions regarding the development, implementation and improvement by means of HRIS design characteristics as well as their impact on particular success measures [77]. In so doing, case studies might be a valuable means for training purposes (e.g. best practices in HRIS design characteristics) as they cover a huge plethora of contextual conditions which might be highly pertinent to the selection and application of design characteristics relevant to the success of the particular HRIS under consideration [77].

Regarding *survey techniques*, qualitative approaches can be distinguished from quantitative ones [30], whereas both of them can be either conducted experimentally or non-experimentally. Thereby, given the benefits of an experimental design, such as controlling relevant while excluding confounding variables, ensuring direct relevant experiences of respondents, and, particularly enabling the manipulation of specific HRIS design characteristics [31], experimental designs are considered to constitute a promising approach for researchers in order to empirically ascertain relevant system- and information-related HRIS design characteristics [50]. With a more particular view to qualitative approaches, focus groups may be particularly useful for exploratory research when rather little is known about the phenomenon of interest [6, 48, 62]. For example, a focus group may support researchers in the elicitation of unknown HRIS design characteristics as well as in their operationalization while preparing a questionnaire for a quantitative, (non-)experimental survey approach [30, 57]. In so doing, quantitative approaches such as (expert) Delphi studies may be an appropriate means for systematically analyzing complex and multifaceted HRIS-related issues that are not directly and easily accessible via quantitative research approaches [18, 20, 21, 33]. For example, there is pioneering work [45] which systematically ascertains system- and information-related design characteristics of HRIS subtypes relevant to training and development by use of an expert Delphi study amongst European e-learning experts. *Further approaches* for the elicitation of HRIS design characteristics are, among others, experimental standardized written offline interviews [50, 67] as well as non-experimental standardized written online [35, 52, 74] or offline [2] interviews.

Subsequent to the ascertainment of HRIS-related design characteristics, the content analysis may support researchers in coagulating, respectively extracting, relevant system- and information-related HRIS design characteristics out of the data acquired by "following content analytic rules and step by step models, without rash quantification" [43, 54].

Beyond mere manifestations, *combinatorial approaches* are considered to be most suitable as they may "pool the forces" of each single method of elicitation. For instance, the necessity of an expert Delphi study to elicit particular HRIS design characteristics may be the main outcome of a preceded literature review. The expert Delphi study in turn may be founded on a theoretical underpinning such as the DeLone and McLean Model of IS Success which offers a basic and rough categorization of system- and information-related design characteristics [11, 12]. Finally, the outcomes of the expert Delphi study may be then further discussed and refined in focus groups. In so doing, the application of a focus group may enable researchers to operationalize an end user-/expert-oriented questionnaire [30, 57]. This questionnaire may be then deployed in the realm of a large-scaled quantitative (non-)experimental survey which might aim at investigating the success of particular HRIS (subtypes).

2.6 Method of Evaluation

Supplement to the elicitation, the evaluation of HRIS design characteristics is an important step to find out in how far the HRIS under consideration actually meets the (elicited/existing) design characteristics relevant to HRIS success. Hence, the evaluation of HRIS employing corresponding system- and information-related design characteristics constitutes a central point to ensure the permanent improvement and thus the success of HRIS.

Thereby, empirical methods can be roughly distinguished from non-empirical ones. To begin with, *non-empirical* methods can be understood as a means by which researchers may conduct a plausibility check of the HRIS under consideration employing particular design characteristics. In so doing, HRIS design characteristics may enable researchers to eliminate elementary system errors/failures during each application target of an HRIS based on logical reasoning. Thereby, a plausibility check, respectively logical reasoning may be applied based on a theoretical underpinning such as the Technology Acceptance Model or the DeLone and McLean Model of IS Success. Such a theoretical underpinning may support researchers in better specifying research models which depict (inter-)relationships between particular HRIS design characteristics and important success measures. Beyond, further non-empirical methods of evaluation constitute so-called compatibility verifications. Such an approach may support researchers in carving out in how far the elicitation of particular HRIS design characteristics by means of the methods thoroughly described in Chapter 2.5 (e.g. literature review, use case, case study, etc.) may have led to the same results than the evaluation of HRIS by means of a theoretical underpinning such as the Technology Acceptance Model or the DeLone and McLean Model of IS Success.

As distinct from non-empirical methods, *empirical methods* are exemplarily represented by the case study approach, experiments and the survey approach which all together are considered to constitute a valuable means by which HRIS design characteristics may be evaluated. Thereby, the case study approach is considered to best support researchers in the course of an in-depth analysis of pioneering HRIS, respectively design characteristics. This is mainly due to the fact that this approach allows for an extensive and comprehensive evaluation of HRIS design characteristics using the example of a particular company, etc. Regarding experiments, researchers may profit from their particular benefits while evaluating pioneering HRIS, respectively design characteristics. In so doing, experiments may enable researchers to manipulate particular system- and information-related HRIS design characteristics as well as their influence on particular success measures by use of a theoretical underpinning such as Technology Acceptance Model or the DeLone and McLean Model of IS Success. Beyond that, further empirical methods of evaluation are, among others, the observation or the documentation of HRIS design characteristics [3].

Thereby, closely linked to the data gathering procedures presented, the analysis of these data constitutes a crucial aspect in order to carve out in how far the HRIS under consideration actually meet the (elicited/existing) design characteristics relevant to HRIS success.

Finally, *combinatorial approaches* of particular evaluation approaches are considered to "pool the forces" of each single method of evaluation. For instance, researchers may decide upon a combination of non-empirical and empirical evaluation approaches. In so doing, non-empirical evaluation approaches may constitute the first step in the evaluation of an HRIS by means of particular design characteristics, followed by more comprehensive and expressive empirical approaches such as large-scaled surveys in

order to evaluate HRIS by use of small sets of elicited/existing system- and information-related design characteristics.

2.7 Level of Granularity

Considering the preceding steps, researchers may be enabled to carve out particular (sets of) HRIS-related design characteristics. However, they do not know anything about their expressiveness or operational capability by then. Thus, the level of granularity of design characteristics indicates "the grade of operativeness and detailedness of design characteristics" [45]. This definition is based on the assumption that the level of granularity of HRIS design characteristics "can hardly be measured in terms of absolute numbers because of the subjectivity of the related concepts that may determine the granularity in question" [22]. Hence, we determine the level of granularity of particular HRIS design characteristics recursively [24], since a *coarse-grained* design characteristic (e.g. system quality) can be understood as the composition of more *medium-grained* and *fine-grained* design characteristics.
For example, coarse-grained design characteristics such as "system quality" may be further sub-divided into more medium-grained design characteristics such as "flexibility" and more fine-grained design characteristics such as "adaptivity" and "adaptability", whereas these fine-grained design characteristics in turn may hardly be further sub-divided into smaller, and at the same time, still expressive design characteristics.
With a view to the type of application target, more fine-grained design characteristics may be mostly appropriate while developing HRIS (e.g. preparation of a detailed system specification) whereas medium-grained ones might be most suitable while implementing and/or improving HRIS. In so doing, more coarse-grained design characteristics can be easily drilled down to more fine-grained, i.e. more expressive and detailed, measures in order to better adjust the HRIS in case of unexpected system errors/failures.
It is obvious, the expressiveness and usability of HRIS design characteristics increases with growing specificity (as for instance, "design/select/utilize personalized HRIS" constitute a more expressive and usable statement than "design/select/utilize HRIS with good systems quality"). However, growing specificity is commonly aligned with a decreasing range of validity (see Chapter 2.4). Hence, to warrant validity for all kinds of HRIS, future research into HRIS design characteristics should preferably deal with medium granularity.

To sum up, the present contribution provides a general research framework which illustrates the possibility space of selected issues relevant to HRIS design characteristics in particular. In so doing, the major benefits of the framework are as follows: firstly, the framework is considered to constitute a parsimonious framework which contains the most important aspect when dealing with HRIS-related design characteristics. However, similarly to design characteristics [45], all dimensions contained (with)in the framework are considered to be relevant in order to apply HRIS design characteristics, and thus HRIS successfully. Secondly, the framework comprehensively depicts specific success measures relevant to particular stakeholders, outlines system- and information-related design characteristics as mandatory categories which should be applied by the stakeholders involved developing, implementing and permanently improving HRIS. Beyond, the framework provides information about the kind of validity of design characteristics, supports researchers in the (initial) elicitation of HRIS-related design characteristics as well as the evaluation of HRIS by means of (these or already existing)

design characteristics. Finally, the framework proposes different kinds of granularity of HRIS design characteristics which may support researchers in choosing appropriate design characteristics for the right purpose. For example, during the development of an HRIS, more fine-grained design characteristics may be an appropriate means to determine an HRIS's properties at most precisely. As distinct from this, more coarse-grained design characteristics may be applied during the implementation or (permanent) improvement of an HRIS in order to have some rough success indicators which may be refined by means of more fine-grained design characteristics in case of unexpected system errors and/or failures. Thus, the framework is considered to be a valuable means which provides pointers to crucial aspects when selecting and/or applying HRIS design characteristics. Hence, the general objective of this research effort could be satisfactorily achieved.

3 Illustration

Supplement to the major benefits of the framework, the subsequent elaboration exemplarily illustrates each dimension of the framework by drawing back on an ongoing HRIS research project, the EU co-funded project iCOPER (Interoperable Content for Performance in a Competency-driven Society) [27], which aims at providing mechanisms to ensure European-wide user involvement, cooperation, and adoption of e-learning-related standards and specifications. In so doing, one of the main objectives is to provide a useful technological infrastructure which matches learners with learning opportunities, that is, trying to get learners into situations to which they are suited. This requires enabling learners to have access to a portable profile of their learning outcomes achieved after their successful completion of studies. In order to achieve this objective researchers of higher education and vocational training settings collaboratively develop, implement and improve pioneering HRIS subtypes relevant to training and development [66], also called Virtual Learning Environments (VLE). Thereby, VLE are understood "as electronic Information Systems (IS) for the administrative and didactical support of learning processes in vocational settings by systematically providing corporate learners adequate learning materials as well as corresponding collaboration facilities to develop intended qualifications" [45]. In so doing, VLE are considered as a prominent subtype of HRIS as they equally "aim at the generation and delivery of HR functionality in order to automate and informate Human Resource Management [63].

Thereby, the suggested framework supports the ongoing project work in the following way: at first, HRIS success measures relevant to system users, i.e. learners, were chosen, amongst them learners' satisfaction with the HRIS under consideration. Beyond, corresponding to the second dimension of the framework, system- and information-related design characteristics were chosen as a basic and rough categorization of those particular HRIS design characteristics to be elicited and evaluated subsequently. Thereby, system- and information-related design characteristics were mainly chosen to demonstrate the influence of particular system- and information-related design characteristics on learners' satisfaction with as well as the (behavioral intention to) use of the HRIS. Therewith, the development and (permanent) improvement of the HRIS under consideration could be systematically monitored and (minor/major) adjustments of system- and information-related HRIS design characteristics easily undertaken in order to maximize learners' satisfaction with the system. In line with the framework the utilization of fine-grained design characteristics was considered to be the most appropriate for preparing the final system specifications

of the different prototypes whereas medium-grained ones were chosen for improvement-related purposes. In so doing, more fine-grained design characteristics actually supported prototype task force members in determining the prototypes' properties most precisely. Subsequently, more coarse-grained design characteristics were applied during the build of the final applications, and similarly will be applied during the (permanent) improvement of the final HRIS as they turned out to constitute valuable and workable indicators of the HRIS' current development states. For instance, as prototype developers were faced with some unexpected system errors/failures these medium-grained design characteristics were easily drilled down to more fine-grained ones in order to better adjust the system errors/failures found by use of these more expressive and detailed measures. The same applies to the continuous evaluation of learners' satisfaction with the prototypical as well as final applications. Regarding their validity, prototype developers decided to draw on already existing HRIS system- and information-related design characteristics contingent on HR core functions such as training and development as well as innovative HRIS design characteristics contingent on the specific focus of the project (e.g. competency-driven provision of learning materials, support of technical standards relevant to training and development, etc.).
In so doing, the complete set of HRIS design characteristics was elicited by means of an expert Delphi study, considering the DeLone and McLean Model of IS Success as a theoretical underpinning for deriving system- and information-related design characteristics as recommended by the framework. Supplement to the elicitation, the evaluation of the prototypes as well as the final applications will be undertaken by use of the originally elicited set of system- and information-related design characteristics relevant to learners' satisfaction with these systems. In so doing, the corresponding research model will be based on amalgamations of the Technology Acceptance Model and the DeLone and McLean Model of IS Success will be analyzed deploying structural equation models.

4 Implications

The above-mentioned results should generally provide a basic starting point for future research relevant to HRIS design characteristics, while there are some implications for both research and practice. Generally speaking, the (dimensions of the) framework proposed should a) allow researchers to better understand and apply crucial aspects relevant to HRIS design characteristics so that b) practitioners may be better supported in developing, implementing and permanently improving successful HRIS.
In so doing, researchers should further elaborate each dimension of the framework proposed in order to supply practitioners such as HRIS-related decision makers, system developers as well as system implementers with a comprehensive set of well-elaborated guidelines in order to develop, implement and improve successful HRIS by means of particular system- and information-related HRIS design characteristics. Such efforts may be of crucial importance for the further advancement of this emerging field of research as already existing research attempts [25, 26, 34, 41, 42, 49, 53] as well as theoretical underpinnings such as the Technology Acceptance Model or the DeLone and McLean Model of IS Success do rarely propose concrete propositions what to consider when dealing with HRIS design characteristics in particular. At the same time, an extensive, research-driven elaboration of particular framework dimensions proposed such as the validity or the granularity of HRIS design characteristics may help to bridge the gap towards rigorous and relevant guidelines relevant to HR practitioners in particular [26].

On the basis of such rigorous and relevant outcomes practitioners such as HRIS-related decision makers, system developers as well as system implementers could then be equipped with comprehensive manuals for either managing the development, the implementation or the improvement of HRIS by means of particular system- and information-related design characteristics. Refining and customizing such manuals towards individual corporate settings and subsequently considering the manual may lead to practical HRIS development-, implementation- and improvement-processes which could contribute to minimize system users' resistance, increase system users' satisfaction, and support overall HRIS success.

5 Conclusions

Within this paper a general research framework of selected issues relevant to HRIS design characteristics was derived and exemplarily illustrated by means of an ongoing research project currently participated in on a European-wide level. This framework hopefully will stimulate future research regarding the development, implementation and improvement of HRIS by means of particular design characteristics. In so doing, the framework is thought to be continuously elaborated by, respectively supports researchers in their attempts to constantly improve HR-related IT artifacts by means of (particular/particular bundles of) HRIS-related design characteristics.

6 References

[1] Al-Ibraheem, N. & Ruel, H. (2009). In-House vs. Off-The-Shelf E-HRM Applications. In: Bondarouk, T., Ruel, H., Guiderdoni-Jourdain, K. & Oiry, E. (eds.): Handbook of Research on E-Transformation and Human Resources Management Technologies: Organizational Outcomes and Challenges, 92-115.

[2] Arbaugh, J. B. (2000). Virtual Classroom Characteristics and Student Satisfaction with Internet-Based MBA Courses, Journal of Management Education, 24 (1), 32-54.

[3] Bailey, K. D. (1987): Methods of Social Research, 3rd Edition. Free Press.

[4] Beckers, A. M. & Bsat, M. Z. (2002). A DSS Classification Model for Research in Human Resource Information Systems, Information Systems Management, 19 (3), 41-50.

[5] Bittner, K. & Spence, I. (2003): Use Case Modeling. Addison-Wesley.

[6] Catterall, M. & Maclaran, P. (2006). Focus Groups in Marketing Research. In: Russell, W.B. (ed.): Handbook of Qualitative Research Methods in Marketing, 255-267.

[7] Chapman, D. S. & Webster, J. (2003). The Use of Technologies in the Recruiting, Screening, and Selection Processes for Job Candidates, International Journal of Selection and Assessment, 11 (2/3), 113-120.

[8] Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology, MIS Quarterly, 13 (3), 319-340.

[9] Davis, F. D. (1993). User Acceptance of Information Technology: Systems Characteristics, User Perception and Behavioral Impact, International Journal of Man-Machine-Studies, 38, 475-487.

[10] Davis, F. D., Bagozzi, R. & Warshaw, P. (1989). User Acceptance of Computer Technology: A Comparison of Two Theoretical Models, Management Science, 35 (8), 982-1003.

[11] DeLone, W. H. & McLean, E. R. (1992). Information Systems Success: The Quest for the Dependent Variable, Information Systems Research, 3 (1), 60-95.

[12] DeLone, W. H. & McLean, E. R. (2003). The DeLone and McLean Model of Information Systems Success: A Ten-Year Update, Journal of Management Information Systems, 19 (4), 9-30.

[13] Dennis, A. R., Wixom, B. H. & Roth, R. M. (2006): Systems Analysis and Design, 3rd Edition. John Wiley & Sons.

[14] Doty, D. H. & Glick, W. H. (1994). Typologies as a Unique Form of Theory Building: Towards Improved Understanding and Modeling, Academy of Management Review, 19 (2), 230-251.

[15] Dulebohn, J. H. & Marler, J. H. (2005). E-Compensation: The Potential to Transform Practice? In: Gueutal, H. G. Stone, D. L. (eds.): Brave New World of e-HR. Human Resource Management in the Digital, 166-189.

[16] Ellet, W. (2007): The Case Study Handbook: How to Read, Discuss, and Write Persuasively About Cases, Harvard Business School Press.

[17] Gregor, S. (2006). The Nature of Theory in Information Systems, MIS Quarterly, 30 (3), 611-642.

[18] Grisham, T. (2009). The Delphi Technique: A Method for Testing Complex and Multifaceted Topics, International Journal of Managing Projects in Business, 2 (1), 112-130.

[19] Grover, V., Jeong, S. R. & Segars, A. H. (1996). Information Systems Effectiveness: The Construct Space and Patterns of Application, Information and Management, 31 (4), 177-191.

[20] Haeder, M. (2002): Delphi-Befragungen: Ein Arbeitsbuch. VS Verlag für Sozialwissenschaften.

[21] Haeder, M. & Haeder, S. (2000): Die Delphitechnik in den Sozialwissenschaften: Methodische Forschungen und innovative Anregungen. Westdeutscher Verlag.

[22] Haesen, R., Snoeck, M., Lemahieu, W. & Poelmans, S. (2008). On the Definition of Service Granularity and its Architectural Impact. In: Bellahsène, Z. & Léonard, M. (eds.): CAiSE 2008, LNCS 5074, 375-389.

[23] Hannon, J., Jelf, G. & Brandes, D. (1996). Human Resource Information Systems: Operational Issues and Strategic Considerations in a Global Environment, International Journal of Human Resource Management, 7 (1), 245-269.

[24] Herzum, P. & Sims, O. (2000): Business Components Factory: A Comprehensive Overview of Component-Based Development for the Enterprise. John Wiley & Sons.

[25] Hevner, A. R. (2007). A Three Cycle View of Design Science Research, Scandinavian Journal of Information Systems, 19 (2), 87-92.

[26] Hevner, A. R., March, S. T., Park, J. & Ram, S. (2004). Design Science in Information Systems Research, MIS Quarterly, 28 (1), 75-105.

[27] iCOPER: Project Description and Objectives, available at: http://www.icoper.org/project-objectives, accessed on the 11th of April 2010.

[28] ISO/IEC 25000:2005: Software Product Quality Requirements and Evaluation (SQuaRE)-Guide to SQuaRE, available at: http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=35683, accessed on the 11th of April 2010.

[29] Kavanagh, M. J. & Thite, M. (2009): Human Resource Information Systems: Basics, Applications, and Future Directions. Sage.

[30] Kaya, M. (2007). Verfahren der Datenerhebung. In: Albers, S., Klapper, D., Konradt, U., Walter, A. & Wolf, J. (eds.): Methodik der empirischen Forschung, 2nd Edition, 49-64.

[31] Koenigstorfer, J. (2008): Akzeptanz von technologischen Innovationen: Nutzungsentscheidungen von Konsumenten dargestellt am Beispiel von mobilen Internetdiensten. Gabler.

[32] Kuechler, W. & Vaishnavi, V. (2008). The Emergence of Design Research in Information Systems in North America, Journal of Design Research, 7 (1), 1-16.

[33] Landeta, J. (2006). Current Validity of the Delphi Method in Social Sciences, Technological Forecasting and Social Change, 73 (5), 467-482.

[34] Laumer, S. & Eckhardt, A. (2009). Help to Find the Needle in a Haystack: Integrating Recommender Systems in an IT supported Staff Recruitment System, Proceedings of the SIGMIS-CPR, 7-12.

[35] Lee, Y.-C. (2006). An Empirical Investigation into Factors Influencing the Adoption of an E-Learning System, Online Information Review, 30 (5), 517-541.

[36] Lengnick-Hall, C. A. & Lengnick-Hall, M. L. (2006). HR, ERP, and Knowledge for Competitive Advantage, Human Resource Management, 45 (2), 179-194.

[37] Lin, H.-F. & Lee, G.-G. (2006). Determinants of Success for Online Communities: An Empirical Study, Behaviour & Information Technology, 25 (6), 479-488.

[38] Lindgren, R., Henfridsson, O. & Schultze, U. (2004). Design Principles for Competence Management Systems: A Synthesis of an Action Research Study, MIS Quarterly, 28 (3), 435-472.

[39] Lippert, S. K., & Swiercz, P. M. (2005). Human Resource Information Systems (HRIS) and Technology Trust, Journal of Information Science, 31 (5), 340–353.

[40] Luthans, F. (1976): Introduction to Management: A Contingency Approach. McGraw-Hill.

[41] Maier, C., Laumer, S. & Eckhardt, A. (2009). An Integrated IT-Architecture for Talent Management and Recruitment. In: Bondarouk, T. & Ruel, H. (eds.): Proceedings of the 3rd International Workshop on Human Resource Information System – HRIS 2009, 28-38.

[42] March, S. T. & Smith, G. F. (1995). Design and Natural Science Research on Information Technology, Decision Support Systems, 15 (4), 251-266.

[43] Mayring, P. (2010). Qualitative Content Analysis, Forum: Qualitative Social Research, 1 (2), 1-10, available at: http://www.qualitative-research.net/fqs-texte/2-00/2-00mayring-e.pdf, accessed on the 11th of April 2010.

[44] McLeod, R. Jr. & DeSanctis, G. (1995). A Resource-Flow Model of the Human Resource Information System, Journal of Information Technology Management, 6 (3), 1-15.

[45] Mueller, D. & Strohmeier, S. (2010). Design Characteristics of Virtual Learning Environments: An Expert Study (accepted), International Journal of Training and Development (2010).

[46] Mueller, D. & Zimmermann, V. (2009). A Learner-Centred Design, Implementation, and Evaluation Approach of Learning Environments to Foster Acceptance, International Journal of Advanced Corporate Learning, 2 (3), 50–57.

[47] Orlikowski, W. & Iacono, C. (2001). Desperately Seeking the "IT" in IT Research – A Call to Theorizing the IT Artifact, Information Systems Research, 12 (2), 121-134.

[48] Patton, M. Q. (1990): Qualitative Evaluation and Research Methods, 2nd Edition. Sage.

[49] Peffers, K., Tuunanen, T., Rothenberger, M. A. & Chatterjee, S. (2007). A Design Science Research Methodology for Information Systems Research, Journal of Management Information Systems, 24 (3), 45-77.

[50] Pituch, K. A. & Lee, Y.-K. (2006). The Influence of System Characteristics on E-Learning Use, Computers & Education, 47, 222-244.

[51] Raymond, L. (1990). Organizational Context and Information Systems Success: A Contingency Approach, Journal of Management Information Systems, 6 (4), 5-20.

[52] Roca, J. C., Chiu, C.-M. & Martínez, F. J. (2006). Understanding E-Learning Continuance Intention: An Extension of the Technology Acceptance Model, International Journal of Human-Computer Studies, 64, 683-696.

[53] Rossi, M. & Sein, M. K. (2003). Design Research Workshop: A Proactive Research Approach, available at: http://tiesrv.hkkk.fi/iris26/presentation/workshop_ designRes.pdf, accessed on the 11th of April 2010.

[54] Rourke, L. & Anderson, T. (2004). Validity in Quantitative Content Analysis, Educational Technology Research and Development, 52, 5-18.

[55] Schaeffer-Külz, U. (2005): Mitarbeiterportal und Self-Service-Systeme: Praxisstudie. Datakontext.

[56] Schonberger, R. J. (1980). MIS Design: A Contingency Approach, MIS Quarterly, 4 (1), 13-20.

[57] Schwarz, N. & Oyserman, D. (2001). Asking Questions About Behavior: Cognition, Communication, and Questionnaire Construction, American Journal of Evaluation, 22 (2), 127-160.

[58] Seddon, P. B. (1997). A Respecification and Extension of the DeLone and McLean Model of IS Success, Information Systems Research, 8 (3), 240-253.

[59] Seddon, P. B., Staples, D. S., Patnayakuni, R. & Bowtell, M. J. (1999). Dimensions of Information Systems Success, Communications of the Association for Information Systems (CAIS), 2 (20), 1-39.

[60] Seddon P., Graeser V. & Wilcocks L. P. (2002). Measuring Organizational IS Effectiveness: An Overview and Update of Senior Management Perspectives, The DATA BASE for Advances in Information Systems, 33 (2), 11-28.

[61] Sommerville, I. (2007): Software Engineering, 8th Edition. Addison-Wesley.

[62] Stewart, D. W., Shamdasani, P. N. & Rook, D. W. (2007): Focus Groups: Theory and Practice", 2nd Edition. Sage.

[63] Strohmeier, S. & Kabst, R. (2007). Do Current HRIS Meet the Requirements of HRM? An Empirical Evaluation Using Logistic Regression and Neural Network Analysis. In.: Bondarouk, T. & Ruel, H. (eds.): Proceedings of the 1st International Workshop on Human Resource Information System – HRIS 2007, 1-14.

[64] Strohmeier, S. (2009). Concepts of e-HRM Consequences: A Categorisation, Review and Suggestion, The International Journal of Human Resource Management, 20 (3), 528-543

[65] Tait, P. & Vessey, I. (1988). The Effect of User Involvement on System Success: A Contingency Approach, MIS Quarterly, 12 (1), 91-108.

[66] Teo, T. S. H., Soon, L. G. & Fedric, S. A. (2001). Adoption and Impact of Human Resource Information Systems (HRIS). Research and Practice in Human Resource Management, Research and Practice in Human Resource Management, 9 (1), 101-117.

[67] Tobing, V., Hamzah, M., Sura, S. & Amin, H. (2008). Assessing the Acceptability of Adaptive E-Learning System, 5th International Conference on eLearning for Knowledge-Based Society, 1-10.

[68] Urbach, N., Smolnik, S. & Riempp, G. (2009). Development and Validation of a Model for Assessing the Success of Employee Portals. In: 17th European Conference on Information Systems, 1-13.

[69] Urbach, N., Smolnik, S. & Riempp, G. (2009). The State of Research on Information Systems Success: A Review of Existing Multidimensional Approaches, Business & Information Systems Engineering, 4, 315-325.

[70] Van Aken, J. E. (2005). Management Research as a Design Science: Articulating the Research Products of Mode 2 Knowledge Production in Management, British Journal of Management, 16, 19-36.

[71] Venkatesh, V. & Bala, H. (2008). Technology Acceptance Model 3 and a Research Agenda on Interventions, Decision Sciences, 39 (2), 273-315.

[72] Venkatesh, V. & Davis, F. D. (2000). A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies, Management Science, 46 (2), 186-204.

[73] Venkatesh, V., Morris, M., Davis, G. & Davis, F. (2003). User Acceptance of Information Technology: Toward a Unified View, MIS Quarterly, 24 (3), 425-478.

[74] Wang, W.-T. & Wang, C.-C. (2009). An Empirical Study of Instructor Adoption of Web-Based Learning Systems, Computers & Education, 53, 761-774.

[75] Wang, Y.-S., Wang, H.-Y. & Shee, D. Y. (2007). Measuring E-learning Systems Success in an Organizational Context: Scale Development and Validation, Computers in Human Behavior, 23, 1792-1808.

[76] Wixom, B. H. & Todd, P. A. (2005). A Theoretical Integration of User Satisfaction and Technology Acceptance, Information Systems Research, 16 (1), 85-102.

[77] Yin, R. K. (2003): Case Study Research: Design and Methods, 3rd Edition. Sage.

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SESSION F

Topic: **Organizational aspects**

Chair: **Barbara Imperatori**

Beyond people and tools, what is the place for the organization in the analysis of ICT uses?

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Abstract. *The IS literature allows to identify the role played by the characteristics of the people and the characteristics of the tools in the uses if an ICT tool. However, these papers have in common to develop a very narrow analysis of them. They have difficulties to take into account the organization as a whole. Numerous papers ask for a greater consideration of the organization into the analysis of the uses of an ICT tool. In this paper, we suggest to enrich this reflection by paying attention to researches produced in the field of the sociology of organizations. To show the potential of this literature, we present a case study of a Small and Medium Enterprise that uses a software supposed to improve collective decisions. The results produced by this case study allow to validate the relevance of the framework which develop a localized analysis of uses but they also show that it is interesting to interpret those uses from a more global view, especially with regard to the strategic challenges of this firm. This framework allows us to propose a discussion which draws perspectives of research to progress towards a better consideration of the organization in the analysis of the uses of ICT.*

Keywords: ICT uses, tools, organization, appropriation.

1 Introduction

In the ICT uses field of research, the concept of enactment of the technology [30] constitutes a particularly crucial contribution. This concept allows to report how people intervene in their uses of an ICT. In the same way, De Sanctis & Poole [10] allows a precise analysis of the role of the characteristics of technology in uses. The concepts of "structural features" of the technology and the "spirit of the technology" constitute solid support points on which it is possible to analyse "appropriation moves" of a technology [10: 133].

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Those researches produced stimulating frameworks for the analysis of ICT uses. However they have in common to background the question of the organization. Nowadays, different papers in the IS literature underline that the nature of the organization plays a major role in the nature of the ICT uses. Therefore, they point the need to reintroduce the organizational dimension in this reflection. After presenting them, we will suggest completing them by reusing the researches that, from 60s to 80s, especially in Europe, analyse the link between the organization and the technology. These will allow us to propose a real enrichment of the reflection on the ICT uses.

To report concretely the potential of this reflection, we will present the case of a firm that implements a software supposed to improve collective decisions. The analysis of the uses of this tool shows that they are linked to the characteristics of the users, to the characteristics of the tool but also to the characteristics of the organization in which all these phenomena take place.

We will end this paper with a discussion that draws perspectives of research articulating these three dimensions of the people, the tool and the organization in the analysis of ICT uses.

2 Literature review

Although they are very different, works of Orlikowski [30] and De Sanctis & Poole [10] can be considered as two majors outcomes in the reflection on the ICT uses. Each on their theme, they propose a powerful framework of analysis which succeeds in reporting exactly phenomena which they study. Having presented them, we will show however that they have in common not to grant a great place for the role that organization plays in the definition of the ICT uses. We will present recent papers in IS and oldest papers in sociology of organizations to show what the wider consideration of the organization can bring in this reflection.

2.1 Orlikowski [30] analyses in detail the role of people in the ICT uses

In the literature, the role that uses and socials structures play in uses of an Information Technology (IT) has been identified as a important theme of research.

The theory of practice is considered as the actual most efficient framework to analyse this reinvention that users do when they use IT solutions [30]. Orlikowski [30] propose the term of “enactment” (that she takes from Weick [53]) to designate the real use that actors make of a specific technology. Orlikowski argues that “while a technology can be seen to embody particular symbol and material properties, it does not embody structures because those are only instantiated in practice” [30: 406]. In other words, Orlikowski considers that technology has no concrete material structural characteristics. It does not pre-exist to the practice. Each user enacts rules and resources that composed technology each time he uses it in recurrent practice. Instead of analysing how the structures presumed to be embedded within technology “are used, misused, or not used by actors in various contexts”, the theory of practice proposes to frame what actors do with the technology, how they enact it [30: 407]. Technology structures are thus not “external” to humans, simply “waiting” to be appropriated, they emerge from the actors’ situated interaction with an IT. These enacted structures are labelled “technology-in-practice”.

In this way, the actors’ use of technology becomes structured by their experiences, knowledge, meanings, habits, power relationships, and norms. Such structuring enacts future use as actors continue to interact with the system.

In coherence with this perspective, Orlikowski [30] argues that technology can never really be considered as "stabilized" because technology-in-practice is always subject to change as humans modify their awareness, experiences, knowledge, power, etc. It is proposed that even though technology-in-practice may become institutionalised over time, this is only stabilisation "for now" [44]. In every use, there is always the possibility of enacting new structures. Therefore, the practice lens suggests an "open-ended set of emergent structures that may be enacted through recurrent use of technology" [30: 412].

Theory of practice [30] is a powerful framework because it really underlines and explains the role that users play in the uses of the technologies. But, if the users' role is taken into account, the role of the characteristics of the technology appears quite absent [12]. In fact, this theory of practice does not link enactment with any kind of characteristic of the technology that is used. The place of users is so important that appropriations become too close to uses [29]. Therefore, literature claims for a reintroduction of the characteristics of the technology in the analysis of uses.

2.2 De Sanctis & Poole [10]: technology and appropriation that tool characteristics play in the ICT uses

De Sanctis and Poole re-introduce technology in the study of technology uses and social structuration. They proposed the Adaptative Structuration Theory (AST) that is currently considered as the most powerful framework to explain how characteristics of the technology play a role in uses [24].

The central thesis of this conceptualisation is that social structures inscribed in the technologies are produced and reproduced by individual members of a group, by using and adapting rules and resources through the interactions.

Initially, AST was developed to study groups using electronic group decision support systems (GDSS): "it looks into the processes of human usage of computer systems and at the nature of group-computer interaction" [10: 150]. AST suggests that social structures serve as guides for planning and accomplishing tasks: designers incorporate such structures into the technology, with the result that the structures may be modified or reproduced [19]. De Sanctis & Poole [10] propose that the social structures provided by technology can be described in two ways:

- *The structural features of the technology* (examples of the structural features of GDSS were identified such as the voting algorithms and anonymous recording of ideas that brought meaning and control); they are classified by the type of rules, resources, or opportunities for use that the technology offers to the user;

- the *spirit of the technology*, which is understood as the general intention of the system with regard to values and goals underlying a given set of structural features that provide a normative framework, suggesting appropriate behaviour, possibly participating in the trial of domination. When technology is new, its "spirit" is defined. Designers determine how the technology should be used, but the adoption of this technology shapes its spirit further. Over time, the spirit of the technology is less open to interpretations and becomes rigid when the technology is stable and used routinly.

Those two concepts permit to analyse four elements that characterize the way users use a given technology :

- appropriation moves (the ways that users choose to appropriate the available structures of technology);

- faithfulness of appropriation (the extent to which a certain technology is appropriated in line with its spirit);

- attitudes towards appropriation (the users' assessments of the extent to which the structures within the system are useful and easy to use);

- instrumental uses (reasons why the system is used) [42: 57].

With this framework, we clearly see how the characteristics of technologies intervene in uses. Even if those authors consider that users play a great role in appropriation, they emphasize more the characteristics of the technology (their features and their spirit) and give a smaller place to users. This is especially clear with their concept of "faithfulness of appropriation". By evaluating the appropriation from the point of view of its "faithfulness" or "unfaithfulness" to the spirit that designers inscribed in it, they ultimately do not seriously incorporate the impact of users. In contrast, some authors argue that "best appropriation" can be considered as the most innovative one without taking into account whether it is faithful or unfaithful to the original spirit of the technology ([37]; [33]; [9]).

With the Theory of Practice [30], we have a framework able to explain how people intervene in uses of a technology. With the Adaptative Structuration Theory [10], we have a framework particularly efficient to explain how characteristics of technology play a role in uses. They are not easy to articulate (because they are partly constructed in opposition) but they both can be considered as a kind of outcome of the reflection in their particular field of research.

Nevertheless, they share the same weakness: they do not really take organization into account to explain uses of a technology. As we will see it below, literature currently claims for a wider reintroduction of this dimension in the reflection.

2.3 Two theoretical frameworks that under-estimate the role of the organization in the definition of uses

Orlikowski's reflection [30] is explicitly elaborated in reaction with the "social constructivism" approach that, until then, was largely dominating technology analysis (mostly, computer technology) ([23]; [4]; [54]; [5]). Through a detailed analysis on how technologies are invented and developed by designers, these authors highlighted that technologies are social constructions and helped to better understand the logic that guided their design [47]. The majority of the authors note that technology reflects the "dominant" interests (those who have the power to control the development process) through funding for example, to the detriment of the "dominated" interests (future users). From a very clearly Marxist perspective, the "social constructivism" often denounces technologies as being developed by the "dominators" to oppress workers.

Orlikowski [30] criticizes this approach by demonstrating that the attention to technology design methods led researchers to overestimate the role of designers. In particular, those works lay on an hypothesis which she felt unfounded: inventors could integrate a framework so structured into technology that users had only two choices, either adopt or reject it. The ERP "SAP" furnishes a good example of this type of technology. It seems so structured that users can have the feeling that the only choice is to use it the way the inventors conceived it to be used.

Orlikowski's [30] criticizes this hypothesis by demonstrating that, on a conceptual level as well as in her case studies, a technology can be used in extremely different ways. This furnishes the proof that technology does not embody structure. From Orlikowski's

point of view, the concept of appropriation is too limited because its position is related to the structure, which was embodied into the technology by designers. All these authors try to demonstrate how the initially embodied structure has been sidestepped, transgressed, etc. by users. So, for this author, in relation to a specific technology, users demonstrate a much greater creativity than "social constructivists" admit. She proposed the concept of "enactment" to take this creativity into account and to underline that uses are not related to structure embodied in the technology. Clearly, this critic of social constructivism conduces Orlikowski to give a greater role to actors in the definition of uses and, by contrast, a smaller role to the technology and to the organization.

But we have to be precise on this question. Orlikowski [30: 415] does not completely eliminate the question of organization from her reflection. On the contrary, she explicitly evokes the fact that uses depend on the leadership, the hierarchy structure and the remuneration/incentive systems. She is even much more precise than De Sanctis & Poole [10] on this question. At the first glance, it seems that she clearly explains that uses cannot be completely analysed if researchers do not take into account the hierarchical structure, repartition of power and HR politics and rules.

But, at this point of the reflection, we must take into account that Orlikowski [30] and De Sanctis and Poole [10] are inscribed in the same epistemological framework of interactionism. This epistemological framework permits them to be aware of the importance of work and organization in the explanation of uses but it gives them a singular definition of those phenomenon. In fact, those authors pay attention to the interactions at work, but they encounters difficulties to consider the global context of the organizational structure**.** Especially, they do not take into account the organizational structure as a whole in the interaction process. They consider that actors locally restructure social structures, work, organization, etc. through their interactions. All structures and the interactions between structures are instantiated in recurrent social practices that employees maintain with the other members of the organization. Therefore, they are intangible, they emerge from interactions between people in work situations.

This epistemological framework conduces them to describe with a lot of details how situations of work are organized, how technologies, actors and rules intervene in those micro-situations and how they are permanently built and rebuilt [15] but everything takes place in this micro area and the global organizational context is never really used as a major element of explanation [18].

Even if they are less explicit than Orlikowski [30] on the role of incentives HR rules, etc., De Sanctis & Poole [10] share the same point of view. For example, they clearly indicate that uses are influenced by skills of actors, their power, knowledge, and expectations about the technology. All those elements are themselves influenced by training, communication, and previous experiences and the knowledge and experience of the institutional context in which actors live and work [32]. The notion of "institutional context" is clearly taken into account but it is strictly limited to the context of the work/tasks that users do.

3 The contribution of the sociology of organizations in the analysis of the ICT uses

Since few years, the literature in the Information Systems field claims for a wider and more powerful definition of the role of organization in the analyse of uses of

technologies. We will present few important papers that argue in favour of this thesis and, after, we will propose to complete them with a wide re-use of results obtained by researchers in sociology of organizations during 60's, 70's and 80's especially in Europe.

3.1 Numerous researches in IS claims to better analyse the role of the organization as a whole

Even interactionism remains clearly dominant in IS (especially in Anglo-Saxon literature) [47], different reflections show a new interest for the role of structures in the analysis of uses of IT. To give examples of this new logic, we present and summarize five recent papers that appear particularly interesting from this point of view.

The first one is the paper of Donaldson on "Technological Frame Perspective" [13]. This paper remains clearly inscribed in an interactionist epistemology. It is even directly linked with Orlikowski's work because it proposes to re-use the concept of Technological Frame of Reference (TFR) developed by Orlikowski and Gash [32]. TFR indicates that uses of IT are oriented by "assumptions, expectations and knowledge [*that members of the organization*] use to understand technology in organizations. This includes not only the nature and the role of the technology itself, but the specific conditions, applications, and consequences of that technology in particular contexts" [32: 178].

If we analyse this concept, we clearly see that it is mainly oriented to the understanding of how people (and especially their mental representations) intervene in the construction of IT uses. As we evoke it for other Orlikowski's concepts above, it does not ignore the organizational context but it has a very situated definition of it. TFR can only be analysed in specific conditions in particular contexts.

In a first period, this attention to the specificity of situations do the strength of this concept. It permits different researchers to propose precise and insightful analysis of how TFR influences uses in concrete work situations (cf references in [13]). But, in a second period, Donaldson [13] evaluates that all those "context specific" analysis are an obstacle to generalisation and construction of cumulative theory. In fact, in each research, authors propose *ad hoc* explanations that cannot be generalized.

In consequences, Donaldson's paper continuously argues in favour of the analysis of the TFR structure (that can be the same in different organizations and work situations) and not only of the content of TFR (as it was done until now). This first paper clearly shows how the introduction of a relative distance to specific situations and a better analysis of structure appears as a way to increase power of concepts developed to analyse IT uses.

The second paper that we find interesting to present is published by Sinha and Van de Ven [46]. It does not belong directly to the IS literature and it clearly cannot be considered as inscribed in interactionist epistemology but it is particularly useful for our reflection because it demonstrates that attention to work situations implicates today a rehabilitation of "design of work" as an object of research. Work design can be defined as the system of arrangements and procedures for organizing work [46: 390]. This paper argues that analyse of work situation necessitates to analyse how work is organised, separated between different hierarchical levels, several people, teams and services and even between different firms (subcontracting, etc.).

This kind of researches were particularly developed in the 70's and in the 80's [46] but it had been largely ignored in the following years. It is really important to redevelop it because as those authors explain "IT is not simply a tool for automating existing processes (…) It is an enabler of work design changes that can lead to additional

productivity gains. In other words, a significant proportion of the increases we have enjoyed in economic productivity in the last two decades – increases typically attributed to IT – could very well be due to the new work arrangements that were enabled by IT" [46: 389].

This renewed interest for work design and organization is a major idea to improve Orlikowski's reflection. Interactionism approach develops a precise and very interesting vision of what is done and what happens in specific work situations but it currently needs to be better contextualized by indicating which kind of repartition of power (centralized or decentralized?), division of work, type of hierarchy, etc. we have in the organization where those work situations and those uses are observed.

The last two papers that we want to evoke are Leonardi and Barley [21] and Markus and Silver [24] ones. Leonardi and Barley's paper [21] is clearly inscribed in the IS literature (it has been published in *Information and Organization*). It presents the main trends of the debate on the relationships between technologies and organizations. It underlines that those relationships had always to deal with the complex frontier between the material and the social and that a consensus had been built on the idea that despite their materiality, technologies are products of negotiations ([6]; [16]) and, on the contrary, organizing revolves around interactions between people and machines ([48]; [27]; [49]; [1]; [45]; [43]). "Technologies resist, in the sense that they do not allow users to do whatever they want. However, the fact that technologies resist does not mean that users are at the mercy of the technology, only that they must adapt their practices accordingly" [21: 163-164]. For their part, Markus and Silver [24] refine definitions of De Sanctis and Poole by proposing to analyse the role of technical objects, functional affordances and symbolic dimensions in the uses of IT. We clearly see here that, as others, those authors claims for an articulated analysis of the role of people, of organization and of technologies in IT uses.

Even she continues to highlight the role of actors in the construction of uses, Orlikowski seems to share the same kind of idea in her last paper [31]. In her seminal paper [30], she does not really use "technology-as-artifact" to explain uses that are done of lotus notes. Technology-in-practice that means rules, norms and facilities were the only concepts she used to explain different uses. In her last one, we can see that she assigns a much more important role to the technical dimension of tools in the use that can be done of them. She clearly claims for a tight articulation between social and technological dimension of the life in organization. As we see in other papers presented above, it seems that organization and structures appear as a phenomenon that needs to be taken into account if we want to really analyse IT uses in details.

Finally, the critical realist approach can be seen as a new approach that tries to re-articulate those different dimensions [11]. In fact, these researches consider that objects (including people, material objects and social phenomena such as institutions) and relations among objects (for instance, friendship or master-slave relations) must be taken into account to analyse appropriation.

3.2 Some reflections that can be completed by articulating them with the sociology of organizations?

To enrich this reflection on what the consideration of the organization can bring in the analysis of the ICT uses, we suggest to use researches that, especially in Europe and in France, analyse the nature and the role of organization. From 60's to 80's, the sociology of organizations debates on the elements that characterize organizations. After

numerous debates [28], this field of the sociology constructs the idea that an organization can be defined by [22] :

1. *an horizontal division of work*. In an organization, we can find different degrees of repartition of work between people or services. This repartition is at the basis of the elaboration of an organization. This is because work is separated between people that coordination of those different tasks is necessary and that organization is created.
2. *a vertical division of work*. This division of tasks between different people regularly conduce to a vertical division of work which results in the definition of a hierarchy, in people that are in charge of the control of work of other people.
3. *A mechanism of coordination*. These mechanisms of coordination can be varied. For example, Mintzberg [26] distinguishes five different ones: the mutual adjustment, the direct supervision, the standardization of the methods of work, the standardization of the results, the standardization of the qualifications. But they characterize an organization.
4. *One or several goals*. The idea that organizations are finalized, that is they try to achieve goals has been identified since a long time [34]. Nevertheless, authors underline that this notion of goal must be used with caution. In fact, goals are always multiple and different among members of an organization. For example, Perrow [34] distinguishes the goals of production, the goals of firm , the systematic goals and the derived goals
5. *A certain perenniality.* An horizontal and vertical division of the work justify themselves only if these persons are involved in an activity which reproduces regularly. An organization thus joins in a certain duration. It can be variable but it is nevertheless an important characteristic of the organization.

These five characteristics constitute the basic elements that permit to define an organization. They take root very profoundly in reflection on organizations because they were already very widely present in the definition of the bureaucracy by Weber [52]. On the contrary, we can underline that very numerous works ([39]; [40]; [3]; [35]; [11]) attempted to detail these characteristics and to specify the mechanisms which allow to create them and to maintain them, etc.

Other papers will be necessary to make all the profit of the results produced by this literature. Nevertheless, in this one we suggest using these five characteristics to show how the re-use of this literature on organizations is able to enrich the reflection on the ICT uses.

4 Methodology, presentation of the case study and results

After presenting our methodology and our case study, we will present the main results of our study

4.1 Methodology and presentation of the case study

The investigation conducted here is strictly exploratory. The phenomena under investigation are not well known and their boundaries are ill defined. For these reasons, the case study seems to be the most appropriate research method [55]. Boundaries and logics of phenomenon we analyse (competences, work situations, uses of management tools) are uncertain. This pleads for a unique case study method [38].

The case study was carried out in a software and computer services company that we call DT[11]. This firm produces and markets several software packages (registry/public records office management, mail digitisation and management, document classification). In 2006, the company's turnover was 4.5 million euros and it employed a total of 48 people. The workforce is distributed among 6 departments: digitisation software (10 people), electronic data Interchange (EDI) software (7 people), customer support (10 people), implementers (8 people), sales (10 people), administration (3 people).

In the autumn of 2007, this SME began to use the 'think together®' software package, the purpose of which, according to its designers, is to *'facilitate and accelerate decision-making in organizations'*. In order to understand the 'spirit' of this technology, we conducted three interviews with the designers of the software. We also interviewed the SME's managing director. He told us that this software package was intended in the first instance for use in the Electronic Data Interchange software department. Accordingly, we interviewed more than half the members of this department (4 out of 7). In order to extend the scope of our analysis, we also interviewed the head of the customer support department.

The interviews were transcribed, coded, and validated across the research team and subsequently with the interviews. We also analysed secondary data in order to attempt methodological triangulation. A first level of encoding was used to reduce the diversity of the data and to sum up important elements in the interviews. A second level of encoding enabled us to identify the main themes arising during the interviews [25].

4.2 Results

As we present it above, the literature shows that the characteristics of the people and the characteristics of the tool influence ICT uses. But as the organization influences too very strongly these uses, before presenting the way this tool is used in this organization, it is at first necessary to present our case more in detail. In particular, it is necessary to describe how this firm divides the work vertically and horizontally and what are its goals. We can then present two particularly interesting results. The first one will underline how much goals of the firm influence uses which are made of this tool. The second will bring to light the fact that the vertical division of the work (through an attempt of (re)creation of a new hierarchical level) plays a great role in those uses.

4.2.1 *Division of work and goals of DT*

Although DT is relatively small (48 persons), we can find in this firm a relatively elaborated division of work. DT proposes three kind of products/services:

1. digitalisation,
2. production of software for citizens services (management of cemeteries, management of the family status, etc.),
3. production of Electronic Data Interchange systems articulated around a platform AIRS3 and around software applications ("file", "mail", "deliberations", "Customer relationship management" (GRC)).

These three kind of products/service have different types of organization:

[11] It is a pseudonyme.

1. The digitalization is especially an activity of engineering, integrating technical and software solutions often produced externally, implanted in an integrated and middle-term approach. This activity has not been concerned by the introduction of the software “think together®”.
2. Software for the management of cities are developed in-house and are connected with the applications of Electronic Data Interchange (EDI).
3. The platform EDI and its applications are also in a logic of publisher (produced in-house) but also of integration (the strategy being to offer henceforth a platform and inter-operable applications). It is on this last segment that the uses of “think together®” were most developed.

DT is thus composed by four kinds of professions (and four kind of services):

1. The marketing, that is the commercial, that are all time outside from the firm.
2. Project managers (implementation at the customers and training)
3. Customer service (on-line support for the customers)
4. The R&D service.

The governance of this company is centred on an executive committee (CODIR) where we find the Chief Executive Officer (CEO - strategic management), the operation manager (technical management) and the sales manager (commercial management). Although centralizing the power, the CODIR acts clearly in interaction with the services. As OC (CEO of DT) explains: “*here we are a small structure. We know each other. We are close. We can take time to collect the various opinions before deciding. Even if it is us then in the CODIR, that make the decisions and who assume them”*. The communication between the employees and the directors is also facilitated by the fact that the small size of this firm allows sales manager to be member of the CODIR and team leader of salesmen at the same time.

But there is no official team leader for the R&D service. The team leader is for the moment the Chief Executive Officer himself (OC). As he evokes it in the interviews that we had with him, this supervision asks him time that he estimates not to have and he thus wishes to create a new hierarchical level to supervise this service.

As we can see, before the arrival of the tool “think together ®”, in particular for the R&D service, this company faces difficulties from the point of view of the vertical division of the work (the CEO wants to create a new hierarchical level). This difficulty in the division of work is linked to its difficulty in the definition of the goals that this firm must pursue, in particular for this activity of R&D. In the field of the Electronic Data Interchange, this company faces an acceleration of the cycle of products. The requests of the customers are more and more precise and more and more varied. Changes in products involve time to conceive the new version of the applications (what asks time to the R&D service) but also time to the other services of the firm.

This activity is characterized by a very strong link between activity of publishing and integration of IS. When R&D service conceives new applications, it has to train the project managers which will install them at the customer's and it has to train the customer support too because questions of customers will solicit them if these applications do not work correctly and to train the salesmen who will have to sell these new applications to new customers.

The fact of answering the requests of the customers has thus an important cost for this firm. Now these requests are more and more numerous and furthermore urgent. This company is thus confronted with a real redefining of the goals for this service of R&D. In particular, it has to build a tool of selection to determine the requests which the company can accept (because in spite of their cost, it estimates that they will be finally profitable) and those it has to refuse (because it considers them as unprofitable for her).

This firm is thus confronted to the question of the good distance which it is necessary to establish between his customers and its R&D service. Too close, this service would reach too easily their requests and would not allow the company to be profitable. Too distant, it would risk to refuse too many of their requests and would eventually annoy them (and make them leave towards the other software editors).

It is a relatively classic question for a R&D service. It is not moreover the first time that this firm tries to answer this question. It has already tried to answer it by introducing three years ago the mechanism of a "users club". This club gathers all the customers/users of the software sold by this firm. As OG (one of the employees of the R&D service) explains it: *"During the meetings of the "users club", we inform our customers: "this year we have X days of development to be dedicated to your requests of modifications. Say to us what you wish". Later, we try to organize a hierarchy between the requests, distinguishing those which seem the most shared between our customers and we assign them certain day number of development. For our customers, it is a way of answering their expectations. For us, it permit to control the number of days that we invest in the development because at first we fix them a maximum envelope. It is an important meeting: we can see the requests which appear, if they are shared by some of them, etc. By speaking to them about cost, we can also explain to them why we can make such development and not such the other one, etc. The "users club", it is thus a good means to manage the requests of our customers. Well, it is true that often these meetings are delicate for us because we often have to say to them that we cannot make what they ask us because it is too expensive...."*.

This organizational solution meets partially the expectations of DT but the acceleration of the requests and the difficulty which it meets to channel really the requests during the meetings of the "users club" do that this firm search for a new solution "*to leak out and organize into a hierarchy*" the requests of development which are formulated by its customers.

The CEO considered that the software "think together ®" can be one solution to move on this objective. Indeed, this software allows to accelerate and to improve collective decisions. Used in the R&D service, it could allow all the employees of this service (and not only one or two of them as it is the case with the "users club") to decide more quickly and more effectively which developments should be done.

The analysis of the uses of this software in this firm shows that the characteristics of the people and the characteristics of the tool gives important elements to understand the nature of these uses. But the organizational structure and goals of this firm are also crucial to analyse them.

First, we will see that people enact this software in very different ways. These results confirm Orlikowski framework [30]. These "appropriation moves" can be considered as differently faithful to the spirit of the technology introduced by its designers. These results confirm the theoretical frame of De Sanctis & Poole [10]. But, second, we will see that the question of the place of the R&D service with regard to the requests of the

customers / users constitutes another powerful factor of explanation of these uses. We will thus introduce this organizational dimension into the analysis.

4.2.2 RK, MPP and OG, three contrasted enactments - and differently faithful to the spirit of the technology - of "think together®"

In this organization, we found enactment of this software extremely different. For example, RK (an employee of the R&D service) declares: "*it had been four months since we multiplied the meetings to try to answer a problem: how to articulate our product "mail"* [which digitalizes received mails] *and our product "document"* [which classifies automatically documents]. *It had been months since our customers had asked us for this merger and we did not know how to do it. I take all the e-mails that we had been exchanged, I put them all in* ["think together®"]. *That was on Friday (...) That crackled, everybody expressed his opinion ... On Wednesday, we had a meeting and we went out of it with a concrete decision. We really freed the situation thanks to* ["think together®"].".

This enactment shows that, on this precise case, the software allowed to make quickly a collective decision that the classic software (here the e-mail) had not allowed to do. To use Orlikowski's terms [10: 416], this enactment can be considered as one "collective Problem-Solving Technology-in-Practice". We can also notice that this "appropriation move" is faithful to the spirit of the technology. On the basis of a classic democratic view, designers of these software consider that a decision is better if you "seek the opinion of most large number of persons in the process of the decision-making" (AM, designer of "think together®"). The example which we have just presented well reports it: the decision seems to have been effective because everybody was consulted at the same time and either in a sequential way and two-two as it is mostly the case with e-mail.

MPP, responsible of the customer support, reports us a completely different enactment of "think together®". If we use Orlikowski's term [30: 417], we can consider it as a "limited use technology-in-practice". MPP explains us that the use she was waiting for "think together®" was impossible and thus that she almost does not use it any more. She explains to us: *"When a customer subjects us a little bit complex problem to the phone, we use generally our "cook book". It is a word document where we listed all the problems which we have already met and the solutions which were brought to it. It works not bad. Sometimes also, when we have a specially difficult problem, we can send a small MSN message to a colleague to ask his opinion. Generally, he answers quickly... That works better than an e-mail for which, most of the the time, we do not have answer ... Nevertheless, it is true that our "cook book" begins to be too big. That would be good to be able to make requests by words, etc. At the beginning I thought that* ["think together®"] *would help us to make that"*.

This enactment is particularly interesting. It corresponds to what Orlikowski calls users creativity. Our interlocutor has a problem: her "cook book" became too big to be easily useful, the e-mail does not allow to have fast answers to the questions, MSN is almost of the order of the "do-it-yourself". She thus tests the capacity of the new software to resolve her problem. The use she expects has nothing to do with the spirit of this technology. The structural features proposed by this software are in complete gap with regard to what she wishes. In a completely logical way, she regrets that there is not in this software of "*search engine"*. Conversely, she does not know well the structural features of this software. For example, she does not know that the "map" exists. When we show it to her, she declares: "*I, what I need it is: what is the solution which we can*

propose in such problem? How this solution had been found, by whom, etc. it is not really important … From my point of view, this presentation of all those ideas muddles me up more that it helps me...".

To use De Sanctis & Poole's terms [10], we see here clearly that this "appropriation move" is not at all faithful to the spirit of this technology. While being in favour of this new software, this user analyses it with regard to problems she encounters in her activity. The fact, that the software was not conceived to resolve this kind of problem, do not enter into account in this logic: it is with regard to use that she wishes to produce that she estimates the utility or the uselessness of this software.

We could multiply the examples of varied enactment and differently faithful to the spirit of this technology. For example, we can evoke the case of OG, one other employee of the R&D service who - although wishing to develop uses relatively faithful to the spirit of the technology - has for the moment a very limited use of "think together®". Indeed, he finds that "*"think together® is not easy to read and to use. There is really big efforts of ergonomics to do. For me, in the current version, this software does not really allows us to make quickly good collective decisions* ".

The frameworks of both Orlikowski [30] and De Sanctis & Poole [10] allow to analyse in details the nature of the uses produced in this firm. However, it seems that this analysis is enriched when we take into account, besides, the structural characteristics of this organization.

4.2.3 Those uses are also defined by goals and division of work in this firm

The literature in sociology of organizations enriches the analysis of these uses. For example, even if we cannot enter into details, Crozier & Friedberg's concepts [7] bring interesting elements to analyse the enactments that we described above. From this point of view, the low use of MPP appears as relatively logical. "Think together®" is intended to improve the decision-making in the R&D service. As responsible for the customer support, MPP is outside of the R&D service. She has links with this one (when the new developments realized by the R&D do not work at the customer's, they ask explanations to her service) but, situated at the border of the R&D service, it is finally logical that she is also "at the border" of uses of "think together®" and do not really use it.

In the same way, interview with OG, employee of the R&D service, shows that he does not feel himself correctly recognized and valued in this firm. He even declares to be about to leave it. His limited use of "think together ®" may also be interpreted to his position of dominated in the relations of power in this firm. In the same way, the intensive use of "think together®" by RK appears as correlated to the dominant position which he occupies in this R&D service. Even if we are not able to go deeper in this kind of analysis in this paper, we indeed notice thus that an analysis more directly "organizational" of ICT uses allows to enrich strikingly this research perspective.

In this same logic, we clearly see that beyond their varieties, enactments presented above are all linked to the question of their goal and, in the case of this firm, towards the difficulty to position its R&D service and its efforts of development with regard to the needs of her customers. RK evokes that "*it had been several month when customers had asked us for this merger"* whereas MPP does not use "think together®" because it does not allow to answer the requests of the customer as effectively as her cook book, even if this one became "*too big"*, difficult to use, etc. Beyond their differences, enactments thus seem linked with the organizational context in which they appear.

A third element allows to bring light that the enactments do not appear simply in the interaction between people and technology but are really shaped by organizational phenomena. During our first interview with OC, the CEO of DT, when we asked him: "*could you say to us why you decided to implement* [“think together®”] *in your firm?*", he answered: "*it is a little complicated story … The R&D service where I would like to use it had no real manager for a long time … We had a first person who was supposed to be manager but in fact, he took on charge only the technical aspect. It not was him who really made the management of the team … When he left for reasons of health, we replaced him but that it was a very bad recruitment choice … At the level of the relationship with colleagues, that was not good at all. We fired him and, since, I assume the management of this service … But I have too many things to do, I can not enough take time with them. I have in the team, somebody, DC, whom you go to meet, whom I would like making him rise as manager. I think that he has shoulders and competencies for that but it has to mature little by little … In my idea, the use of [*“think together ®”*] can help him to go up to this role”.*

This answer is particularly interesting because it justifies the use “think together®” not by the idea that the employees's need it, nor by the technical characteristics of the software but because this CEO is confronted to an organizational problem (the absence of a responsible for R&D service) and he hopes that “think together®” would allow him to resolve this problem.

This example shows that the implementation and the uses of “think together®” are in narrow interaction with the difficulties that this firm encounters at present on the goals of its R&D service and on its vertical division of the work. The uses of “think together®” are shaped by the characteristics of the users and by the characteristics of the software but they are also defined by the search for a new solution to filter the requests of the customers which arrive to the R&D service. DC has already this role in the organizational structure. But OC, the CEO of DT, implements “think together®” in his firm to strength this role and to add it a function of animation of the collective decisions which would move DC closer to the role of responsible of R&D service.

This organizational dimension of the uses is so strong that it is from this point of view that OC judges the global efficiency of “think together®”. An interview realized three months later with OC shows that its relative disappointment about uses of “think together®” does not lie on the technical limits of the tool. He agrees to say, for example, that “think together®” allows the firm to decide how to merge mail and document products. But, he underlines that he regrets that “*the uses too much limited of* [“think together®”] *do not really allow the R&D service to reposition collectively with regard to the requests of the customers and to help DC to play his role of responsible of the service*”. It is thus from the organizational point of view and not only from the technical one that he judges the efficiency of “think together®”.

Other actors of the firm are aware of organization stakes that exist in the uses of “think together®”. So, RK, who “*thought at a moment that* [he] *could be an efficient responsible of the R&D service”* considers today that: “*this team does not really need a chief”* and that every project manager “*perfectly knows how to lead his projects by himself”*. Compared to these comments, the very active way that he had to use “think together®” for the problem of the merger of products mail and document can be also analysed as an attempt of demonstration - when he understood that he will not be the responsible of the R&D service - that this team does not need a chief and that the project managers know perfectly how to work completely autonomous.

From this point of view, we see that the uses of ICT must be also analysed with very classic concepts in the sociology of organizations. This firm seems to be in a very well known situation: the future chief choose by the CEO has difficulties to build his legitimacy in face of his ex-colleagues that consider that they were so justifiable at least as him to have this responsibility. The point of view of DC on this possible promotion are moreover particularly ambiguous. During the interview, he never evokes this question directly, he asserts that the decision to create a new hierarchical level is not still effective (while the CEO asserted us the opposite), never mentions that he is the anticipated holder, etc.

These various points of view confirm that all the actors of this R&D service are aware of organizational stakes incorporated in uses of "think together®". The future chief who knows that his legitimacy is weak does not display as a conqueror and, conversely, the actors who claimed to occupy this post, try to demonstrate its uselessness. We are thus here in very important but classic organizational phenomena towards the sociology of organizations. It thus seems to us that this kind of reflection must be reintroduced in the reflection on the uses of ICT.

5 Discussion

The results of this case study allow to introduce a discussion on three complementary dimensions. First of all, they demonstrate the validity of the theoretical frameworks of Orlikowski [30] and De Sanctis &Poole [10]. But they also underline how much the results produced by these theoretical frameworks are focused on the micro-located dimension of these uses. In the second point of our discussion, we will claim for the necessity to add to this micro-located analysis, a more global analysis which integrates an organizational dimension. Finally, we will underline that by reintroducing this organizational dimension in the analysis of uses of ICT, we have the possibility to reuse all concept built by the sociology of organizations.

5.1 Orlikowski [30] and De Sanctis & Poole [10], two frameworks relevant but focused on a micro-located definition of uses

The results of our case study confirms the relevance of the theoretical frameworks of Orlikowski [30] and De Sanctis & Poole [10]. First, they show that the enactments of the actors are highly varied and that they are rich of a real inventiveness. The case of MPP, which waits from "think together®" a use which neither the designers nor the CEO has ever evoked, constitutes a particularly interesting example. The users are completely free to reinvent the uses of a software, including if it conduces them not to use it because they judge it on the basis of a use which this one has never claimed to be able to return. Second, this case study confirms that the characteristics of the software play a role in the uses. In particular, the spirit of the technology appears as a powerful concept to analyse uses.

But this case study also puts in evidence that these two theoretical frameworks, although appreciably different, share the same difficulty: they limit their analysis to the only situation of interaction between the people and the technology. Their reflection is confined in the immediate context of uses. In the data presented above, these theoretical frameworks analyse in detail how the uses of "think Together®" allowed to merge "mail" and "document" products and on the contrary, how it did not allow to meet the expectations of MPP, the responsible of customer support. Nevertheless, they do not analyse how these uses are positioned with regard to the major strategic reorientation of this firm.

5.2 Towards the consideration of a more organizational and more global dimension of the uses?

While being particularly interesting, these analysis of the uses do not allow to see that the question of the merger between "mail" and "document" products participates of a much wider and more very strongly strategic question on the choices that this organization has to do to reposition its R&D service with regard to the requests of the customers and better choose its investments in development.

The detailed presentation of the organizational context of these uses underlines that this firm is not any more satisfied of its tools of coordination as the user's club. Especially, it wants to reorganise itself to better identify and select the requests of development done by the customers. The use of “think together®” to merge “mail” and “document” products is not thus simply a “problem solving technology-in-use” as we had characterized it thanks to the theoretical framework of Orlikowski [30], it is as well the validation of the fact that “think together®” can be a solution to bring to a successful conclusion the strategic repositioning of the R&D service with regard to the requests of the customers.

On the contrary, the low use of MPP must not be simply seen as the fact that this person has personal characteristics and\or that the software has technical characteristics which conduce her to a limited use. This low use shows as well that, in this reflection on the strategic repositioning of this firm, the role of the customer support service is not perfectly established. Indeed, if, as announces it the CEO OC, “think together®” becomes one of the major channels of the strategic reorientation of this firm, the low use of MPP is worrisome because it means that the customer support service is weakly involved in this strategic repositioning. On the contrary, this low use can also mean that, in spite of what asserts OC, “think together®” is not really the main channel of this strategic reorientation of the R&D service. But in that case, it means that it is the idea of OC (the CEO) to use “think together®” to help DC (the anticipated responsible for R&D service) to play his new role is not followed by effect. In a case as in the other one, DT has real organizational challenges to face and resolve.

As a supplement to the frameworks of Orlikowski [30] and De Sanctis & Poole [10] who describe in detail the uses that appear in interactions between the people and the technologies, it thus seems particularly important to develop a real organizational analysis of these uses, that means an analysis which positions these uses with regard to the questionings which are then current in this organization about its horizontal and vertical division of the work, its goals, its coordination and its perenniality.

5.3 Towards the reintroduction of the classic research questions in the sociology of organizations?

Finally, these more organizational and more strategic dimensions in the analysis of the uses of ICT lead us to reintroduce in the analysis very classic dimensions of the sociology of organizations as the question of the distribution of the power and the uncertainties [7], professional identities and of change management [22].

The analysis of the uses of “think together®” shows that if the characteristics of the users and of the software explain some of these uses, we enrich very strongly this perspective when we analyse these uses by re-using the classic works of the sociology of organizations [3]. In fact, it seems that the uses of “think together®” are linked with the fact that the actors, as MPP, are held outside of the relations of power which structure the R&D service in which this software is used or that employees, as RK, do

not recognize the legitimacy of the anticipated holder of the role of responsible for R&D service.

Beyond the localized analysis of uses, we perceive that the implementation of this software and the varied way it is used in this firm can be analysed as a relatively classic process of change in an organization: some actors are out of this process of change. There are relatively neutral. Other think that they will win with these new logic and other think that they will lose. The uses made of "think together®" are also connected to their location with regard to these transformations. These dimensions thus seem to have to be taken into account in the analysis of the uses of this software.

6 Conclusion

This research asked the question of the interest to introduce a clearly organizational dimension into the reflection on the uses of ICT.

The literature review shows that the frameworks of Orlikowski [30] and De Sanctis and Poole [10] establish two different but complementary perspectives to analyse the uses of the ICT. Orlikowski [30] develop more particularly the fact than the characteristics of the people are crucial to understand the uses of ICT. De Sanctis & Poole [10] insist rather on the role that the characteristics of a technology play in these uses.

But these relevant frameworks have in common to analyse the uses in a very localized way. We see that numerous works in IS claim currently for a reintroduction of a more global and organizational dimension in the analysis of the uses of ICT. We enrich this reflection by showing that the researches developed in the sociology of organizations could be re-used to deepen the reflection on ICT uses.

As this idea is still exploratory, we chose the methodology of the unique case study to begin to support it. The analysis of the uses of "think together®" in the firm DT shows that, according to what assert Orlikowski [30] and De Sanctis & Poole [10], these enactments are highly varied and differently faithful to the spirit of the technology. Our results also put light that to be complete the analysis of these uses need to take into account as well the fact that they are linked with the strategic reorientation of this firm and, more particularly, its questionings on the position that the R&D service has to adopt with regard to the requests of development formulated by the customers. The results of our case study confirm that it is necessary to take into account better the organizational dimension in the analysis of the uses of ICT. We noticed that all the classic research questions of the sociology of organizations (distributions of power, the position with regard to the change in the organization, etc.) emerge during the analysis of the uses developed in that case. Our discussion attempted to transform these results into tracks of research for the future.

Our results must be naturally analysed with regard to the limits of this study. They seem completely valid for our case study but their generalisation remains to establish. We formulate the hypothesis that this case is exemplary for the Small and Medium Enterprises that use ICT to modify their practices of management. To increase the generalisation of these results, it would be necessary to replicate this kind of study in similar situations but also to study other types of ICT in other economic sectors.

In a general way, this research shows that the analysis of the uses of ICT necessities a double attention on the very local and sometimes technical dimensions of the uses and on a much more global and more organizational vision of the strategic context in which they are produced. The difficulty to articulate these various dimensions constitutes our main perspective of research.

References

[1] Barley, S.R. (1990). The alignment of technology and structure through roles and networks. *Administrataive Science Quaterly*, *35*(1), 61-103.

[2] Beaudry, A., & Pinsonneault, A. (2005). Understanding user responses to information technology: A coping model of user adaptation. *MIS Quaterly, 29(3),* 493-524.

[3] Bernoux, Ph. (1995). *La sociologie des organisations.* Paris: Seuil.

[4] Bijker, W. E. (1987). The social construction of Bakelite: Toward a theory of invention. In W. E. Bijker, T. P. Hughes, T. Pinch, (eds). *The Social Construction of Technological Systems.* Cambridge MA: MIT Press, 159-187.

[5] Bijker, W. E., & Law, J. (eds) (1992). *Shaping Technology/Building Socieg: Studies in Sociotechnical Change.* Cambridge MA: MIT Press.

[6] Constantinides, P. & Barrett, M. (2006). Negotiating ICT development and use: The case of telemedecine system in healthcare region of Crete, *Information and Organization*, 16(1), 27-55.

[7] Crozier, M., & Friedberg, E. (1977). *L'acteur et le système*, Paris: Seuil.

[8] De Certeau, M. (2002). *L'invention du quotidien. Arts de faire*, réédition, Paris: Gallimard.

[9] De Sanctis, G., & Poole, M. S. (1994). Capturing the Complexity in Advanced Technology Use: Adaptative Structuration Theory. *Organization Science*, *5*(*2*), 121-147.

[10] de Vaujany, F.-X. (2008) (2). Strategic Alignment: What Else? A Practice Based View of IS Value, ICIS Proceedings, *Twenty Ninth International Conference on Information Systems,* Paris.

[11] de Vaujany, F.-X. (2008). Capturing reflexivity modes in IS: A critical realist approach. *Information and Organization*, *18*, 51–72.

[12] Donaldson, E. (2006). A technological frame perspective on information technology and organizational change, *Journal of applied Behavioral science*, *42*(1), 23-39.

[13] Giddens, A. (1984). The constitution of society: Outline of the theory of structuration, Cambridge: Polity Press.

[14] Groleau, C. (2002). Structuration, Situated Action and Distributed Cognition: Rethinking the Computerization of Organizations. Systèmes d'Information et Management. 7(2), 13-35.

[15] Howcroft, D., & Wilson, L. (2003). Paradoxes of participatory practices: the Janus role of the systems developer. *Information and Organization, 13*(1), 1-24.

[16] Ives, B., & Olson, M.H. (1984). User Involvement and MIS Success : A review of Research. *Management Science, 30(5),* 583-603.

[17] Jarzabkowski, P., Balogun, J. & Seidl, D. (2007). Strategizing: The challenges of a practice perspective, Human Relations, 60(5), 5-27.

[18] Jones, M. (1999). Structuration theory. In: W.L. Currie and B. Galliers (Eds.), Rethinking management information systems (pp. 103 – 135). Oxford University Press.

[19] Leonard-Barton, D. (1988). Implementation as Mutual Adaptation of Technology and Organization. Research Policy, (17), 251-267.

[20] Leonardi, P. M., & Barley, S. R., (2008). Materiality and Change: Challenges to Building Better Theory About Technology and Organizing. Information and Organization, 18, 159-176.

[21] Livian, Y.F. (1998). Organisation. Théories et pratiques. Paris: Dunod.

[22] Mac Kenzie, D., & Wajcman, J., (eds). (1985). The Social Shaping of Technology. Milton Keynes, UK: Open University Press.

[23] Markus, M.L., & Silver M.S. (2008). A Foundation for the Study of IT Effects: A New Look at De Sanctis and Poole's Concepts of Structural Features and Spirit. Journal of the Association of Information Systems, 9(3/4).

[24] Miles, M.B. & Huberman, A.M. (1994). Qualitative Data Analysis, Beverley Hills, CA: Sage Publications.

[25] Mintzberg, H. (1979). The structuring of organizations: a synthesis of the research, Englewood Cliffs, N.J.: Prentice Hall.

[26] Mohr, L. (1971). Organizational technology and organizational structure. *Administrative Science Quaterly*, *16*, 444-459.

[27] Monjardet, D. (1977). La variable technologique dans les études d'organisation. Bilan critique. *In* collectif, *L'organisation du travail et ses formes nouvelles*, Bibliothèque du CEREQ, vol.10, Paris: La Documentation française, 93-122.

[28] Ologeanu-Taddei, R. & Staii, A. (2008). Comment analyser l'appropriation ? Le défi de l'opérationnalisation empirique. *13ème conférence de l'AIM (Association Information et Management) – pré-ICIS*, Paris : Université Dauphine.

[29] Orlikowski, W. (2000). Using technology and constituting structures: a practice lens for studying technology in organizations. *Organization Science, 11(4)*, 404-428.

[30] Orlikowski, W. (2010). The Sociomateriality of Organizational Life: Considering Technology in Management Research. *Cambridge Journal of Economics, 34*(1), 1-17.

[31] Orlikowski, W.J., & Gash, C. (1994). Technological frames: making sense of information technology in organisations. ACM Transactions on Information Systems, 12(2), 174 – 207.

[32] Perriault, J. (1989). La logique de l'usage, Paris: Flammarion.

[33] Perrow, C. (1970). Organizational Analysis: a sociological view, Londres: Tavistock.

[34] Pichault, F., (2009). Gestion du changement. Perspectives théoriques et pratiques, Bruxelles: De Boeck Université.

[35] Poole, M.C. & De Sanctis, G. (1989). Microlevel structuration in computer-supported group decision making. Human Communication Research, 19(1), 5 – 49.

[36] Proulx, S. (Ed.) (1988). Vivre avec l'ordinateur : les usagers de la micro-informatique, Québec: Boucherville.

[37] Ragin, C.C., & Becker, H.S. (1992). What is a case ? Exploring the foundations of social inquiry, New-York: Cambridge University Press.

[38] Reynaud, J.-D. (1991). Les règles du jeu – L'action collective et la régulation sociale. Paris: Armand Colin.

[39] Reynaud, J.-D. (2003). Ordre social et normativité ordinaire. In G. de Terssac (Ed.), La théorie de la régulation sociale de Jean-Daniel Reynaud. Paris: La Découverte, 241-249.

[40] Rice, R., & Rogers, E. M. (1980). Reinventing in the Innovation Process. Knowledge: Creation, Diffusion, Utilization, 1(4), 499-514.

[41] Ruël, H.J.M., (2001). The non-technical side of office technology; managing the clarity of the spirit and the appropriation of office technology. Ph.D. thesis, Enschede, The Netherlands: Twente University Press.

[42] Schatzki, T.R. (2005). The sites of organizations. Organization studies, 26(3), 465-484.

[43] Schryer, C.F. (1993). Records as Genre. Written Communication, 10, 200-234.

[44] Scott, W.R. (1998). Organizations: Rational natural and open systems (4th ed.). Upper Saaddle River, NJ: Prentice Hall.

[45] Sinha K. K. & Van de Ven A. H. (2005). Designing Work Within and Between Organizations Organization Science, 16(4), 389 – 408.

[46] Strohmeier, S. (2007). Research in e-HRM: review and implications, *Human Resource* Management Review, 17(2), 19–37.

[47] Thompson, J.D., & Bates, F.L. (1957). Technology, organization and administration. Administrative science quaterly, 2(3), 325-343.

[48] Trist, E. L. (1981). The sociotechnical perspective: the evolution of sociotechnical systems as a conceptual framework and as an action research program In A. H. Van De Ven & W. F. Joyce (Eds.). Perspectives on organization design and behavior. New York : John Wiley & Sons , 19-75.

[49] Tyre M. J., & Orlikowski, W. J. (1994). Windows of Opportunity: Temporal Patterns of Technological Adaptation in Organizations. Organization Science, 5(1), 98-118.

[50] Venkatesh, V., Morris, M. G., Davis, G.B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. MIS Quarterly, 27(3), 425-478.

[51] Weber, M. 1995 (1921). Economie et société, Paris: Pocket, .

[52] Weick, K. E. (1969). *The social Psychology of Organizing.* Reading, MA: Addison Wesley.

[53] Woolgar, S., (1991). Configuring the user. The case of usability Trials. In J.Law (ed.). *A sociology of monsters. Essays on power technology and domination.* London: Routledge, 58-99.

[54] Yin, R.K. (1994), *Case Study Research: Design and Methods*, London: Sage.

Global Integration versus Local Adaption of an e-HRM System in a US MNC

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Abstract. *Research in e-HRM appears to purport that e-HRM practices are diffused and adopted uniformly in the subsidiaries of multinational corporations (MNC). This paper argues that the transmission e-HRM practices, like the diffusion of other HRM practices, is subject to a multitude of institutional factors. This paper also proposes institutional theory as a macro theoretical research paradigm for e-HRM research. Based upon an analysis of interview data garnered in the German and Irish subsidiaries of a single US MNC, a palpable divergence in e-HRM practices could be discerned. Moreover, this research identifies a number of forces for standardisation and isomorphic pressures in the institutional environment of the MNC.*

Keywords: e-HRM, Institutionalist Theory, Institutional Factors, Germany, Ireland, International HRM

1 Introduction

Despite a growing body of research underpinning the field of electronic Human Resource Management (e-HRM), a distinct paucity of studies founded on macro theories emerges when this body of research is examined [89]. This paper argues that e-HRM diffusion in the subsidiaries of a Multinational Corporation (MNC) is, similar to other HRM practices, subject to a broad range of institutional factors, even though the nature of an e-HRM would necessitate a high level of integration and standardisation across the MNC to attain expected effectiveness and efficiency gains. It has frequently been argued that particularly US MNCs' are characterised by standardised, centralised and formalised HR policy-making processes and the introduction of US style HRM practices in their host countries [e.g. 1, 25, 50]. The level of diffusion of HRM practices in general across MNCs appears to diverge considerably and various attempts have been made to understand these differences. For a number of years, the international HRM (IHRM) literature has provided a forum for an ongoing debate, which has given rise to a host of institutional factors that may arbitrate the transfer of employment practices among multinational corporations' subsidiaries. These factors comprise home and host country effects [1, 34, 70], sector effects [13, 78, 79], the institutional context and national business system [e.g. 10, 13, 13, 14, 24, 25, 26], dominance effects [35, 62,

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74], organisational culture [2, 7, 48, 86], or the impact of micro-political relationships between the subsidiaries and the head quarter [32, 47]. A detailed discussion of these factors extends beyond the scope of this paper. Much of the debate surrounding these factors is founded on institutional theory. This paper will draw on both the business systems approach (or European institutionalism) and new or neo institutionalism. Indeed, Tempel and Walgenbach [90] opine that both theoretical stances can learn from each other. European institutionalism places greater emphasis on the regulative context [51, 93, 95] than does the US-based new institutionalism, which focuses more on the socio-political background [17, 83].

A review of the extent e-HRM literature underscores a dearth of research and discussion on the factors mediating the diffusion of e-HRM and e-HRM practices across the subsidiaries of MNCs. Consequently, the aim of this paper will be to explore whether the institutional factors that mediate the transfusion of standard HRM practices may also effectuate the transmission of e-HRM practices within the subsidiaries of an MNC or whether indeed other forces can be discerned. Data for this paper emanate from a review of the international HRM (IHRM) literature as well as an analysis of primary data derived from a series of in-depth interviews with key decision-makers and stakeholders in the areas of IHRM and e-HRM in the German and Irish subsidiaries of a US MNC. Findings from this research intimate a number of pertinent issues regarding the transmission of e-HRM practices throughout this MNC. Subsidiary variations in e-HRM utilisation may be explained by a multiplicity of factors including the strength of national business systems, the strategic salience of subsidiaries and micro-political power relationships between the subsidiaries and the head quarter. While the findings affirm both home and host country effects in the diffusion of e-HRM practices, the dominance effect of the MNC shapes employment practices in general [79, 80] and not just e-HRM practices in the subsidiaries in distinctive ways. Due to the information intensive and dependent nature of an e-HRM system, e-HRM practices are subject to stronger forces for standardisation than standard HRM practices. This paper evinces that variability in e-HRM practices in the subsidiaries of an MNC arises, to a large degree, from the same type of factors governing the transfer of HRM practices across subsidiaries, albeit e-HRM practices are impacted in different ways. These findings also support evidence from the e-HRM literature, which illuminates other factors such as user acceptance as auxiliary key determinants of e-HRM success [40, 82]. This paper is structured as follows: the succeeding section will illuminate the pressures of institutional duality on the transmission of organisational practices in general and e-HRM practices in particular across the subsidiaries. Then, the lack of research into the diffusion of e-HRM is highlighted. This is followed by an outline of the methodological approach for this research. Next, the research evidence will be discussed before the main conclusions are offered.

2 Institutional Duality and the Diffusion of e-HRM Practices

Internal integration and centralised decision making is of paramount importance in the operation of global e-HRM system [81]. Any deviation from the standard system would arguably compromise the quality of the data collected and ultimately impair the informative value of any subsequent analyses of this data. However, organisations are continuously faced with what has been described as ‘institutional duality’, that is, different layers of institutional contexts that simultaneously impact the configuration of HRM (and thus also e-HRM) practices [60, 76]. In other words, MNCs strive to attain internal consistency of policies and procedures to develop and sustain their corporate identity, while, on the other hand, MNCs are forced to tailor their policies and practices

to suit the cultural, societal, and legislative environment of their host nation in order to achieve local efficiency [29, 50, 53]. Morgan and Kristensen [67] contend that the countervailing nature of these institutional contexts will ultimately lead to micro-political conflict between the head quarter (HQ) and the subsidiaries and the subsidiaries themselves. A number of authors have argued this point [8, 18, 19, 31]. Institutional isomorphic pressures may be categorised as normative or cognitive [83], high or low context-specific [11], or coercive, mimetic, and normative [29]. DiMaggio and Powell define isomorphism as "a constraining process that forces one unit in a population to resemble other units that face the same set of environmental conditions" [16]. Coercive isomorphism is the product of both formal and informal pressures of the host society in which the subsidiary resides, including government, employment legislation, trade unions, works councils, etc. [16]. Mimetic isomorphism focuses on organisational modelling (in benchmarking and imitating strategies and practices of key competitors) in response to uncertainty in the firm's environment [16]. Normative isomorphism relates to the adoption of accepted work practices, standards and modus operandi of a specific institutional (sectoral) environment. Institutional isomorphism may ultimately result in organisations that are "virtually indistinguishable" and "interchangeable" [16, 29]. These pressures can arise in the global or national (even regional), internal (the relational context) or external (the institutional context) environment of the firm [60]. Child [11, 12] distinguishes between high context and low context dimensions to assess the level of influence different institutional contexts have on MNC practices. A high context dimension refers to factors that lead to a high level of embeddedness in the national and social institutional context, whereas a low context perspective is associated with factors such as the economy, market and technology, which are less dominant in moulding a company's HR policies and practices. To a large degree, the level of differentiation and adaptation of HRM (and e-HRM) practices required by the MNC seem to hinge on the strength of the national business system (NBS) of the host country [13] and the magnitude of differences between the NBS of the home and host country [89]. MNCs pursuing a transnational or geocentric globalisation strategy appear to favour what has been described as a 'cherrypicking approach', whereby the MNC selectively adopts HRM (and perhaps also e-HRM) practices from the respective home and host country context of their subsidiaries [43, 49]. Furthermore, some employment practices that originated in host countries may be adopted by subsidiaries in other countries and even in the country of origin of the MNC – this process is termed 'reverse diffusion' [1, 24]. The level of transfer of HR practices has been theorised by a number of authors. Morgan and Kristensen [67], for instance, argue that the larger the institutional distance was the greater the difficulty in transferring practices successfully would be. Kostova [59] differentiates between implementation and internalisation. She suggests that successful implementation and internalisation hinge on three sets of factors under the headings social context (regulatory, cognitive and normative), organisational context (culture) and relational context (commitment, identity and trust relationship with parent organisation). Building on this theme, Björkman and Lervik [6] put forward three dimensions of ascending levels of transfer success – implementation, internalisation and integration of diffused HR practices. Oliver [73] identifies a range of strategic responses to institutional pressures, which will ultimately affect the success of any transmission. These responses extend from manipulation, defiance, avoidance, and compromise to acquiescence. In comparison, the ERP and IS bodies of literature generally appear to consider large corporations in which these systems are rolled out as a homogenous mass rather than a heterogeneous system of political subsystems, that is, the subsidiaries. Few articles of

the ERP implementation literature allude to culture and the organisational environment [75, 85]. However, established IS success models strike one as focusing predominantly on user acceptance issues [15, 71]. While this section has illuminated a range of institutional factors that may compel a MNC to adapt its (e-)HRM practices locally, the next section reveals the dearth of literature and debate on the transmission and local adaptation of e-HRM in subsidiaries of an MNC, which this paper is ultimately aiming to address.

3 Scarcity of Research into Diffusion of e-HRM

Based upon the arguments presented above it seems reasonable to assume that e-HRM practices in different subsidiaries of the same MNC ought to diverge in some way. To date however, the e-HRM literature has accepted and has somehow assumed that unilaterally imposed e-HRM practices will be adopted by subsidiaries in the same manner in which they were intended by an MNCs HQ, even thought the above discussion has highlighted that this is in fact not the case. The few quantitative studies that examine the diffusion of e-HRM and / or Human Resource Information Systems (HRIS) centre on the adoption of HR technology by a wider population of organisations rather than the adoption and subsequent diffusion of e-HRM in a single company [42, 58, 63, 72, 92]. It seems that only Smale and Heikkilä's [84] study acknowledges that the introduction of an e-HRM system may give rise to conflict and micro-political behaviour, which necessitate negotiation and local adaptation of e-HRM practices to resolve these issues. Evidently, additional research is required to address this imbalance.

4 Methodological Approach

This research employs a single case study but multiple units of analysis approach to assess whether or not the diffusion of e-HRM practices in the subsidiaries of a US MNC is mediated by the same institutional factors that govern the transmission of standard HRM practices. This paper also aims to explore any differences and similarities that may exist between the transfusion of traditional HRM and e-HRM practices. Accordingly, this investigation is both instrumental [87] and exploratory [97] in nature. Due to the multifaceted nature of institutional factors a single case was selected to focus on the phenomenon under investigation and to avoid the moderation of results by additional extraneous variables, which would have been introduced by a multiple case analysis [4, 14]. German and Irish subsidiaries of this MNC were chosen for this analysis due to the distinct cultural, economical, business and employment systems backgrounds in these countries [57]. Primary data for this ongoing study derive from fourteen in-depth face-to-face interviews with key decision-makers and stakeholders in the areas of IHRM and e-HRM utilisation in this multinational. Interviews were recorded and transcribed. Interviewees were chosen based on their level of involvement and decision-making power regarding the use of e-HRM in the subsidiaries. The semi-structured interviews lasted between one and four hours and were carried out in the Irish manufacturing facility (with the HR director, HRIS specialist, and two line managers), the European HRIS headquarter (Head of Shared Services Centre Project Team, European HRIS Manager, Information Systems Analyst, Payroll Processing Manager) in The Netherlands, the International (European) Headquarter (Senior Director for HR Systems) in Switzerland, the Central European Sales Headquarter in Germany (HR Director Central Region and HRIS specialist), and the German manufacturing plant (Plant Director, Finance /HR Manager, Plant Manager / Head of the Works Council). The US MNC under investigation (Meddevco in the following) employs approximately 38,000 people in 120 countries. This medical devices company operates in the region of

270 manufacturing facilities, sales offices, research centres, education centres and administration facilities across the globe. This sector is highly regulated [27] and may thus be subject to strong institutional isomorphic pressures. Coercive pressures arise from the highly unionised nature of this sector in Ireland and Germany and the highly regulated nature of the employment regulation system in Germany [68, 36]. Normative pressures emerge from the regulated nature of the sector itself, for instance quality and regulatory standards. According to the Irish HR Director in this study, key competitors in this industry frequently benchmark one another in terms of HR practices. This is not surprising, as many of the 140 medical device companies located in Ireland are clustered in the West of Ireland, which delivers additional mimetic pressures for institutional isomorphism among these companies. The majority of medical devices companies appear to be headquartered in the US [28].The e-HRM system in Meddevco is part of an enterprise resource planning system (ERP) named PeopleSoft (owned by Oracle). An ERP is a management information system that integrates information from all functional areas such as finance, production, marketing and HRM into a central data bank. The US HQ utilises practically every PeopleSoft module available to support the HR function. Online HR activities supported by the system include talent management, performance appraisals and e-recruitment, online training, and HR administration. The US-part of the corporation also maintains a HR shared services centre (HRSSC), which does not serve centres outside of the USA. The ERP and e-HRM systems were adopted at different stages in the life cycle of the different subsidiaries. In the Irish manufacturing site, PeopleSoft was adopted when the site was taken over by Meddevco. The Sales HQ for the Central Region in Germany (set up in 1970) commenced the introduction of PeopleSoft in 1999 (the same year the Irish site was acquired). It took almost two years to implement, according to the German HRIS Super-User. The German manufacturing site was acquired in 2000 and PeopleSoft introduced in 2004 and is, with reference to the German Plant Director and Finance Manager still not fully implemented, even though the European HRIS Centre considers the rollout actualised. This dichotomy accentuates the differences between three ascending levels of transfer of HR practices identified by Bjorkman and Lervik [6] - implementation, internalisation and integration. The evidence suggests that e-HRM transfer may only be at the initial level. In other words, managers and staff in the German manufacturing plant have not accepted the system nor do they see value in using the system. The next section will focus more closely on the key factors of e-HRM diffusion in Meddevco.

5 Key Factors in e-HRM Diffusion

The introduction to this paper has already drawn attention to the premise that internal consistency ought to be the key to maintaining a global e-HRM system. Thus, the data and types of information collected throughout the MNC's subsidiaries ought to be uniform. It therefore follows that MNCs ought to control and keep isomorphic pressures to a minimum. However, this is not the case in this MNC. A number of examples exist where the corporation had to make concessions to individual subsidiaries and countries with regard to data entry. In the German manufacturing site for example, modules such as e-recruitment or talent management are not utilised due to the lack of manpower. In addition, this subsidiary is allowed to leave some employee information on the system unpopulated, as the pay scales of the employees covered by collective bargaining arrangement do not fit into the system. In some respects, the German Plant Director stated, the corporation simply turns a blind eye when qualifications of (German) employees are entered incorrectly, as the system of vocational training does not exist in the US. Moreover, the system recognises all but few German universities. German

payment systems and the entry of German qualifications into the system also present barriers to utilisation in the German Sales HQ, according to the German Super-User. Managers in the German manufacturing plant feel a great deal of disenchantment and even disengagement with the system, especially since the corporation has now shifted its main focus of attention on the introduction of a new ERP system (by SAP), even though PeopleSoft will run in parallel for the foreseeable future, a decision which raised palpable concern with the HR Director for the Central Region. Similar issues arose in the international head office in Switzerland and limited adjustments had to be made to the system for compliance reasons. Since the international HQ in Switzerland was considered a show-piece for the organisation and an extension of the HQ in the US, additional customisations or divergence from e-HRM policies were not an option according to the Senior HR Systems Director located in the International HQ. At a European level, the MNC has to date been unable to introduce a HRSSC, which centralises all HR administration in a central location. According to some of the key stakeholders interviewed (German Plant Manager, Irish HR Director), European managers are fundamentally opposed to this idea and their combined resistance has already led to the failure of the first attempt to introduce such a HRSSC. In response, the MNC has set up a project team, which includes some European key stakeholders in order to pre-empt possible resistance in the next introduction attempt. Other issues arising from the implementation of HR self-service are of a logistic nature. Since HR self-service is provided via an intranet, employees will need access to a PC. However, not every employee can be guaranteed permanent access, particularly in the manufacturing sites in Galway (Ireland) and Heerlen (The Netherlands), according to the Irish HR Director and European HRIS Centre Manager, even if the organisation provides a number of computer kiosks on the shop floor. In addition to access to a PC, employees require the basic computer skills necessary to take advantage of the self-service features of such a system. These skills cannot be taken for granted as the composition of staff differs in the subsidiaries. For instance, the majority of staff in the German manufacturing plant possesses a tertiary qualification, while most of the workers in the Irish Plant do not. In addition, people may have privacy and security concerns regarding online access to personal information [21, 55]. Mimetic pressure to implement a HRSSC arises from the MNC's key competitor, which has already introduced such a HRSSC.

Auxiliary key drivers for the global standardisation of HRM practices include organisation structure and culture [20]. However, the standardisation of e-HRM practices is just as subject to the 'drivers for localisation' [20] as other HR practices such as recruitment or training are. At any given time, these localisation drivers provide a counter force to the drivers for standardisation and include, inter alia, national culture, national institutions and national business systems as well as the subunits themselves [39]. Meddevco consists of six distinct product divisions, each with its own support functions. Complex reporting and organisational structures, centralised control and decision-making in this MNC all act as strong drivers for standardisation. A so-called Human Resources Council (HRC), consisting of Senior Vice Presidents (SVP) of particular functions, for instance the SVP for Compensation and Benefits Systems, drive the multinationals' HR strategy. Nine of the ten members of this council are permanent constituents; only the European representative rotates on a yearly basis, which has some marked repercussions for the (lack of) representation of European interests in the HR decision-making process. While the HR Council develops corporate HR strategy, it does not have Board of Director status. The actual Board of Directors of the MNC ratifies

any proposals before these are disseminated to the divisions. Asked about her influence on e- decision making processes the Senior Director HR Systems replied:

None. All decisions are made by the HRC. If for instance a decision would be made to introduce SAP by the CIO [Chief Information Officer] and the HRC, I would not be involved in the decision making.

Other key stakeholders in this research (Irish HR Director, German Plant Manager, HR Director Central Region, Head of HRSSC Project Team), independently from one another, emphasised that one of their key roles was to interpret company policies and transpose these into the local business system. The data suggests that local managers apply some discretion in adapting some of these policies locally, for instance the Irish manufacturing plant refused to implement a salary modelling tool, which confirms evidence from other research in MNC subsidiaries [18, 19, 26, 32].

National institutions and business systems in Germany and Ireland diverge considerably. It has frequently been argued that the employment relations (ER) system in Germany is highly regulated, whereas Irish ER appear to be a lot more deregulated by comparison [1, 56]. The German system of co-determination is characterised by indirect worker participation through elected worker representatives and a myriad of formalised institutions [77]. It has also been argued that the key labour market institutions, multi-employer bargaining, co-determination, and initial vocational training, curtail managerial prerogative [69]. As one might suspect, legal compliance issues represent the key reasons for adapting e-HRM practices. However, the evidence also shows that these may be circumvented by using supplementary systems, as was the case with payroll systems, which are unique in each subsidiary. The localisation drivers, or high context specific drivers, in the unionised German manufacturing plant outweigh the drivers for standardisation to some extent. For instance, the introduction and subsequent changes or amendments of an e-HRM system would have had to go through a formal consultation process with the works council. Any veto by a works council effectively would have put a halt on the usage of the system [68]. However, the works council in the German manufacturing plant did not seem to object to the introduction of e-HRM, partially perhaps because the works council chairman and his deputy belonged to the management team of the German manufacturing plant. In the also unionised Irish manufacturing plant, the force of localisation drivers is low compared to the drivers for standardisation. In other words, trade unions were neither consulted about nor do they have any influence on the use of the system, as stated by the Irish stakeholders interviewed. It comes therefore as no surprise that the Irish subsidiary is rather more willing to adopt US e-HRM practices than the German plant, although the former has blocked a number of e-HRM practices and was able to do so but for reasons other than the drivers in question. The picture in the sales HQ for the central region mirrors that of the Irish manufacturing plant. Evidence from this research suggests that this is largely due to the absence of a union in the sales HQ. In the opinion of the HR Director for the Central Region, customisation of the e-HRM system could have been a more contentious issue had the central office in Germany been unionised or had there been a works council. The absence of a works council affords some advantages in the daily HR operations of the Sales Head Office.

Because we don’t have a works council, the recruitment process is simplified immensely for us. Because if you have a works council, then you have to first announce all positions internally for two weeks before you can go external. This for instance

would be an issue that we would have to incorporate [in the system] if we had a works council, but since we have none … (German HRIS specialist)

The picture of e-HRM practices that manifests itself in the evidence provided is rather fragmented. Is it possible, therefore, to consider the e-HRM practices employed across these subsidiaries to be convergent (toward US model of e-HRM practices), divergent or in a form of stasis [66]?

The MNC operates a strict 'no customisation unless legally required' policy regarding the rollout of e-HRM practices in its subsidiaries. The Finance Manager of the German manufacturing plant explained the customisation strategy.

The global aspect is always checked and if [a customisation] can be implemented globally and if it is advantageous not only for [us] then it is highly likely that it will be implemented quickly. If it is specific to our location and if you don't have a sufficient rationale as to how important it is, then nothing will happen.

This policy is an indicator of the high levels of control in the corporation, which is a view that is echoed by the German and Irish HRIS Super-Users. For the most part, the strategic subunits (SBUs) in this research lean towards the full adoption of e-HRM practices. As far as the MNC is concerned, this makes business sense. For instance, the above section on the role of e-HRM has stressed the significance of internal consistency regarding the collection, management and analysis of employment related information. Overall, the European HRIS centre and European subsidiaries appear to have little leverage concerning decisions made by the US parent's HRC. The SBUs were neither informed nor consulted during the implementation phase. This seems to endorse Burbach and Dundon's [9] findings on HRIS and e-HRM utilisation in Ireland, which stressed that nine out of ten organisations did neither consult with nor inform employees of the e-HRM implementation. This is rather surprising, since it is well established that employee involvement can be correlated with system acceptance and ultimately system success [40, 87, 94]. The HQ drove system implementation in Europe and individual subsidiaries had no choice but to implement the system under the aegis of the European HRIS Centre. Despite HRIS Centre Manager's suggestion that the introduction process went smoothly, interview data indicates that resistance to the initial implementation was extensive, as, according to the Head of the European HRSSC Project Team, the corporation appeared to assume a 'sink or swim' approach to implementation. Evidence intimates that some form of resistance to the e-HRM system in general appears to persist in the subsidiaries in that some line and sales managers seem to maintain what has been referred to by interviewees as 'shadow administration', in the form of Excel or paper-based files, by some of the interviewees to circumvent the use of the global system. While officials know of their existence and their inappropriateness, they appear to have resigned to the fact that they continue to be used.

I am almost certain that there are still managers that still have these. One has to concede that managers do not work daily with PeopleSoft. One can be almost sure that one or the other personnel file still exists. Fine. You can't do anything about it. It also won't change in the near future. (HR Director for the Central Region)

The more recent introduction of a talent management system that requires employees to complete an extended online Curriculum Vitae, which is available to superiors, appears to be the cause of continued resistance in this MNC, whereby employees look to be reluctant to fill in these online profiles of themselves. With respect to the adoption success models presented above, the evidence furnished here evinces that e-HRM, while it may be implemented as far as the European HRIS Centre and US HQ are concerned,

has not been internalised by the subsidiaries. That is, individual subsidiaries have not displayed wholesale commitment, satisfaction or psychological ownership [59] of various e-HRM practices. However, the MNC has introduced a simple but effective way to ensure greater levels of compliance with the e-HRM system – without completing their online talent profiles staff will not be promoted. A similar policy ensures that line managers use the online appraisal mechanism – employees will not receive pay rises or bonus payments if the appraisal has not been conducted via the online system. A different usage pattern emerges when the e-recruitment facility is taken account of. While the Irish manufacturing plant fully capitalises on the system's features, for example, the system is even linked to an external job search website to increase exposure, the German manufacturing plant does not post any vacancies on this system, as stakeholders prefer to attract only local staff. This evidence suggests high levels of corporate control and high levels of embeddedness of the MNC in its home context [1, 30]. For instance, the Irish Manufacturing plant was also able to prevent the implementation of a new system module.

They wanted us to introduce a Salary Modelling tool, which we thought was too complicated. The system we use is Excel based, simple, and very user friendly – different salaries can be determined straight away. So here we have been able to resist the introduction of new practices. (Irish HRIS Super User)

The Irish HR Director remarked on the issue of system implementation

We have now reached a critical mass of 2300 employees where we could say that no new systems would be introduced in Europe without our ok – the economies of scale just would work – there wouldn't be enough people in the rest of Europe to make it work.

As the Irish manufacturing plant also operates a sizeable research and development unit, their impact on system implementation may equally be attributable to sources of micro-political power within the organisation as it may be related to institutional influences [8]. It is apparent that the Irish subsidiary has gained considerable strategic importance and resource power, which it is able to leverage in exchange relations with the HQ and other SBUs [5, 18, 33, 61]. Unlike the Irish Plant, which has far reaching influence on the introduction or non-introduction of some practices, e.g. self-service HR, the much smaller German Plant has virtually no sway. The German manufacturing plant appeared to be somewhat disillusioned after the implementation of the HR system, which the following quote by the German Plant Director highlights.

You introduce such a system, because you want to benefit from its rationalising effects, because you want to introduce a global system that can communicate with each other in entire holding company. For us this means 75% more administration, because nothing is like it used to be, because nothing works the way we would like it to work. And now there is somebody who says, PeopleSoft, there you've got it and he doesn't realise how could they actually manage it? How should they handle it? How much personnel will they need to derive any value from using the system? A [CEO] presses a button and sees his 100 best employees. [...]. He has a staff of 100 people that present everything that they generate out of the system on a silver platter– brilliant. But what use is it to me. I am not [the CEO]. May main priority is that my employees receive their correct wages at the right time. PeopleSoft can't do that. There, I don't care about PeopleSoft. PeopleSoft is at the very back of my priorities. […]

Not all HRIS practices used in Europe originated in the US. In some cases, 'Europe' has been able to successfully develop and implement unique e-HRM practices, which were adopted ex post facto by the US in a process of backward integration [22, 23, 24, 37]. For instance, internet recruitment and manager reports were two initiatives that were developed in Europe and after successful implementation rolled out in the US. The notion of a global uniform e-HRM system in this MNC is somewhat contradictory, as above evidence emphasised. Considerable differences in e-HRM applications exist among the subsidiaries even within the same country. Moreover, each subsidiary appears to rely on a number of parallel systems. In Europe, every subsidiary uses its own payroll and time and attendance system, which is possibly due to differences in national legislation, which governs payroll administration. Other third party systems include training administration, salary modelling tools or quality assurance systems. As the MNC largely expanded through an acquisition strategy, many of these systems were part of legacy systems still used in the corporation. According to some of the key stakeholders interviewed (HRIS specialists and German Plant Manager), the proliferation and incompatibility of these sub-systems with the global system presented a major barrier to the operation of e-HRM in the corporation and as far as they were concerned further evidence of the lack of commitment to the overall system by the HQ. Above discussion has stressed the multifarious nature of institutional factors and isomorphic pressures that impact on the diffusion of e-HRM across the subsidiaries of an MNC. A number of conclusions can be drawn from this analysis.

6 Conclusions

The basis for this paper was the assumption that e-HRM practices in the subsidiaries of an MNC were subject to the same or similar institutional factors as standard HRM practices were. An analysis and discussion of the interview data revealed distinct differences in the e-HRM practices employed in the subsidiaries. Moreover, a range of institutional factors that may account for differences in diffusion of e-HRM practices could be discerned. The evidence presented above highlights the complex nature of the relationship between home and host country effects, pressures for standardisation and resource capabilities of subsidiaries. This phenomenon is frequently referred to as 'institutional duality' [60, 67]. A number of authors have argued that the dynamic nature of national business systems further complicates an accurate assessment of the factors shaping the constellation of HR practices (and thus e-HRM practices) in the MNC [45]. Björkman and Lervik [6] suggest that the transfer of employment practices is first and foremost a social process that is influenced by corporate governance, subsidiary and HQ relationships, the nature of existing HR systems and the strategy used by the HQ to introduce practices. Moreover, the balance of decision making power in the MNC is the result of negotiation and micro-political activities between organisational actors and business units, which is mediated by contextual and structural constraints that the organisation finds itself in [31, 65]. Smale and Heikkilä's [83] study has evidenced that negotiation and micro-political activities are key factors in e-HRM implementation. Evidence from Ireland in this research seems to intimate the impact of micro-political influences in the form of strategic capabilities [38] in the manner in which the subsidiary could influence the introduction of certain e-HRM practices. Despite some evidence for convergence of e-HRM practices in the subsidiaries towards the e-HRM practices promoted by the MNC's US HQ, discernible variations exist between the e-HRM practices used by the multinational abroad and those employed in its home country. This finding is reflective of other studies focusing on the convergence / divergence of HR practices in MNCs [3, 10, 54]. One of the key findings of this paper,

which underlines the applicability of institutionalist theories to e-HRM research, is the dichotomy that exists between what the US and international HQ consider implementation and the conflicting reality in the subsidiaries. Commensurate with Kostova's [59] and Björkman and Lervik's [6] conceptual models of organisational (HR) practice transfer, some e-HRM practices could be considered integrated, for instance basic employee record administration has become part of the organisational routine, while other e-HRM practices such as talent management are merely implemented, that is, enacted. Differences in transfer of e-HRM exist owing to dissimilarities in the institutional, organisational and relational contexts of the subsidiaries in this research [59, 60]. Applying Oliver's [73] strategic response model, the range of responses to the introduction of e-HRM practices in the subsidiaries ranged from acquiescence, compromise, and avoidance to defiance. However, the level of adoption and type of strategic response vary with each practice from one subsidiary to the next. This paper poses that e-HRM research will benefit from the application of these models to ascertain the adoption success of e-HRM practices. While this single case study research is limited in focus, the evidence presented here moots that e-HRM diffusion across the subsidiaries is contingent on an intricate mélange of a variety of institutional factors. Furthermore, this paper has evinced the validity of institutionalist theory as a new research paradigm and macro theoretical foundation for future e-HRM research. This paper also advances the view that aspects of both neo-institutionalism and European institutionalism may advance the field of e-HRM research. However, as this paper is of an exploratory nature, additional research taking into account a broader range and number of MNCs and their subsidiaries will be required to further test these hypotheses.

References

[55] Almond, P., Edwards, T., Colling, T., Ferner, A., Gunnigle, P., Mueller-Camen, M., Quintanilla, J., and Waechter, H. (2005). Unraveling Home and Host Country Effects: An Investigation of the HR Policies of an American Multinational in Four European Countries. Industrial Relations, 44(2), 276-306.

[56] Aycan, Z. (2005). The interplay between cultural and institutional/structural contingencies in human resource management practices. International Journal of Human Resource Management, 16(7), 1083-1119.

[57] Bae, J., Chen, S.-J., and Lawler, J. J. (1998). Variations in human resource management in Asian countries: MNC home-country and host-country effects. International Journal of Human Resource Management, 9(4), 653-670.

[58] Baxter, P., & Jack, S. (2008). Qualitative case study methodology: Study design and implementation for novice researchers. The Qualitative Report, 13(4), 544-559. Retrieved from http://www.nova.edu/ssss/QR/QR13-4/baxter.pdf

[59] Birkinshaw, J. M. (1996). How Multinational Subsidiary Mandates are Gained and Lost. Journal of International Business Studies, 27(3), 467-495.

[60] Björkman, I., and Lervik, J. E. (2007). Transferring HR practices within multinational corporations. Human Resource Management Journal, 17(4), 320-335.

[61] Black, B. (2005). Comparative industrial relations theory: the role of national culture. International Journal of Human Resource Management, 16(7), 1137-1158.

[62] Blumentritt, T. P., and Nigh, D. (2002). The Integration of Subsidiary Political Activities in Multinational Corporations. Journal of International Business Studies, 33(1), 57-77.

[63] Burbach, R., and Dundon, T. (2005). The Strategic Potential of Human Resource Information Systems: Evidence from the Republic of Ireland. International Employment Relations Review, 11(1/2), 97-118.

[64] Carr, C. (2005). Are German, Japanese and Anglo-Saxon Strategic Decision Styles Still Divergent in the Context of Globalization? Journal of Management Studies, 42(6), 1155-1188.

[65] Child, J. (2002). Theorizing About Organization Cross Nationally: Part 2. Managing Across Cultures, M. Warner, and P. Joynt, eds., Cengage Learning EMEA, 40-58.

[66] Child, J. (2002). Theorizing About Organization Cross Nationally: Part 1. Managing Across Cultures, M. Warner, and P. Joynt, eds., Cengage Learning EMEA, 26-39.

[67] Colling, T., and Clark, I. (2002). Looking for 'Americanness': Home-Country, Sector and Firm Effects on Employment Systems in an Engineering Services Company. European Journal of Industrial Relations, 8(3), 301-324.

[68] Creswell, J. W. (2007). Qualitative Inquiry & Research Design (Second ed.). London: SAGE Publications.

[69] Delone, W., & McLean, E. (2003). The DeLone and McLean model of information systems success: A ten-year update. Journal of Management Information Systems, 19(4), 9-30.

[70] DiMaggio, P. J., and Powell, W. W. (1983). The iron cage revisited: institutional isomorphism and collective rationality in organizational fields. American Sociological Review, 48(2), 147-160.

[71] DiMaggio, P. J., and Powell, W. W. (1991). Introduction. The New Institutionalism in Organizational Analysis, W. W. Powell, and P. J. DiMaggio, eds., University of Chicago Press, Chicago, 1-38.

[72] Dörrenbächer, C., and Gammelgaard, J. (2006). Subsidiary role development: The effect of micro-political headquarters-subsidiary negotiations on the product, market and value-added scope of foreign-owned subsidiaries. Journal of International Management, 12(3), 266-283.

[73] Dörrenbächer, C., and Geppert, M. (2006). Micro-politics and conflicts in multinational corporations: Current debates, re-framing, and contributions of this special issue. Journal of International Management, 12(3), 251-265.

[74] Dowling, P. J., Festing, M., and Engle, A. D. (2007). International Human Resource Management - Managing People in a Multinational Context, Thomson Learning, London.

[75] Eddy, E. R., Stone, D. L., and Stone-Romero, E. F. (1999). The Effects of Information Management Policies on Reactions to Human Resource Information Systems: An Integration of Privacy and Procedural Justice Perspectives. Personnel Psychology, 52(2), 335-358.

[76] Edwards, T. (1998). Multinationals, labour management and the process of reverse diffusion: A case study. International Journal of Human Resource Management, 9(4), 696-709.

[77] Edwards, T. (2000). Multinationals, international integration and employment practice in domestic plants. Industrial Relations Journal, 31(2), 115-129.

[78] Edwards, T., Almond, P., Clark, I., Colling, T., and Ferner, A. (2005). Reverse Diffusion in US Multinationals: Barriers from the American Business System. Journal of Management Studies, 42(6), 1261-1286.

[79] Edwards, T., and Ferner, A. (2002). The renewed 'American Challenge': a review of employment practice in US multinationals. Industrial Relations Journal, 33(2), 94-111.

[80] Edwards, T., and Kuruvilla, S. (2005). International HRM: national business systems, organizational politics and the international division of labour in MNCs. International Journal of Human Resource Management, 16(1), 1-21.

[81] EGFSN (2008). Future Skills Needs of the Irish Medical Devices Sector. Expert Group on Future Skills Needs, Dublin.

[82] Eucomed (2007). Competitiveness and Innovativeness of the European Medical Technology Industry , Eucomed Medical Technology, Brussels, 83.

[83] Farndale, E., and Paauwe, J. (2007). Uncovering competitive and institutional drivers of HRM practices in multinational corporations. Human Resource Management Journal, 17(4), 355-375.

[84] Ferner, A. (1997). Country of origin effects and HRM in multinational companies. Human Resource Management Journal, 7(1), 19-37.

[85] Femer, A., Almond, P., Clark, I., Colling, T., Edwards, T., Holden, L., and Muller-camen, M. (2004). The Dynamics of Central Control and Subsidiary Autonomy in the Management of Human Resources: Case-Study Evidence from US MNCs in the UK. Organization Studies, 25(3), 363-391.

[86] Ferner, A., Almond, P., Colling, T., and Edwards, T. (2005). Policies on Union Representation in US Multinationals in the UK: Between Micro-Politics and Macro-Institutions. British Journal of Industrial Relations, 43(4), 703-728.

[87] Ferner, A., and Edwards, P. (1995). Power and the Diffusion of Organisational Change within Multinationals. European Journal of Industrial Relations, 1(2), 1-35.

[88] Ferner, A., and Quintanilla, J. (2002). Between Globalization and Capitalist Variety: Multinationals and the International Diffusion of Employment Relations. European Journal of Industrial Relations, 8(3), 243-250.

[89] Ferner, A., Quintanilla, J., and Sánchez-Runde, C. (2006). Introduction: Multinationals and the Multilevel Politics of Cross-National Diffusion. Multinationals, Institutions and the Construction of Transnational Practices A. Ferner, J. Quintanilla, and C. Sánchez-Runde, eds., Palgrave Macmillan, Basingstoke, 1-23.

[90] Ferner, A., Quintanilla, J., and Varul, M. Z. (2001). Country-of-Origin Effects, Host-Country Effects, and the Management of HR in Multinationals: German Companies in Britain and Spain. Journal of World Business, 36(2), 107-127.

[91] Ferner, A., and Varul, M. (2000). `Vanguard' subsidiaries and the diffusion of new practices: A case study of German multinationals. British Journal of Industrial Relations, 38(1), 115-140.

[92] Festing, M., and Eidems, J. (2007). Transnational Perspectives on HRM Systems - A Dynamic Capability-based Analysis of the Balance between Global Standardization and Local Adaptation. International Human Resource Management Conference Talinn.

[93] Festing, M., Eidems, J., and Royer, S. (2007). Strategic Issues and Local Constraints in Transnational Compensation Strategies: An Analysis of Cultural, Institutional and Political Influences. European Management Journal, 25(2), 118-131.

[94] Fisher, S. L., and Howell, A. W. (2004). Beyond user acceptance: An examination of employee reactions to information technology systems. Human Resource Management, 43(2-3), 243-258.

[95] Florkowski, G. W., and Olivas-Lujan, M. R. (2006). The diffusion of human-resource information-technology innovations in US and non-US firms. Personnel Review, 35(6), 684-710.

[96] Galanaki, E., and Panayotopoulou, L. (2009). Adoption and Success of E-HRM in European Firms. Encyclopedia of HRIS: Challenges in e-HRM, T. Torres-Coronas, and M. Arias-Oliva, eds., Information Science Reference, London, 24-30.

[97] Geppert, M., and Matten, D. (2006). Institutional Influences on Manufacturing Organization in Multinational Corporations: The 'Cherrypicking' Approach. Organization Studies, 27(4), 491-515.

[98] Geppert, M., Matten, D., and Walgenbach, P. (2006). Transnational institution building and the multinational corporation: An emerging field of research. Human Relations, 59(11), 1451-1465.

[99] Geppert, M., Matten, D., and Williams, K. (2003). Change management in MNCs: How global convergence intertwines with national diversities. Human Relations, 56(7), 807-838.

[100] Geppert, M., and Williams, K. (2006). Global, national and local practices in multinational corporations: towards a sociopolitical framework. International Journal of Human Resource Management, 17(1), 49-69.

[101] Geppert, M., Williams, K., and Matten, D. (2003). The Social Construction of Contextual Rationalities in MNCs: An Anglo-German Comparison of Subsidiary Choice. Journal of Management Studies, 40(3), 617-641.

[102] Gerhart, B., and Fang, M. (2005). National culture and human resource management: assumptions and evidence. International Journal of Human Resource Management, 16(6), 971-986.

[103] Gooderham, P., Nordhaug, O., and Ringdal, K. (2006). National embeddedness and calculative human resource management in US subsidiaries in Europe and Australia. Human Relations, 59(11), 1491-1513.

[104] Gunnigle, P., Collings, D. G., and Morley, M. J. (2005). Exploring the dynamics of industrial relations in US multinationals: evidence from the Republic of Ireland. Industrial Relations Journal, 36(3), 241-256.

[105] Hall, P. A., and Soskice, D. (2001). An Introduction to Varieties of Capitalism. Varieties of Capitalism: The Institutional Foundations of Comparative Advantage P. A. Hall, and D. Soskice, eds., Oxford University Press, Oxford, 1-68.

[106] Hamann, K., and Kelly, J. (2007). Varieties of Capitalism and Industrial Relations. The Handbook of Industrial Relations, E. Heery, N. Bacon, P. Blyton, and J. Fiorito, eds., Sage, London.

[107] Harris, H., Brewster, C., and Sparrow, P. (2003). International Human Resource Management, Chartered Institute of Personnel and Development, London.

[108] Harzing, A.-W., and Sorge, A. (2003). The Relative Impact of Country of Origin and Universal Contingencies on Internationalization Strategies and Corporate Control in Multinational Enterprises: Worldwide and European Perspectives. Organization Studies, 24(2), 187-214.

[109] Hubbard, J. C., Forcht, K. A., and Thomas, D. S. (1998). Human resource information systems: An overview of current ethical and legal issues. Journal of Business Ethics, 17(12), 1319-1323.

[110] Keating, M. A. (2004). International Human Resource Management: Some Evidence from Ireland and Germany. Managing Cross-Cultural Business Relations, M. A. Keating, and G. S. Martin, eds., Blackhall Publishing, Dublin, 144-175.

[111] Keating, M. A., & Martin, G. S. (Eds.). (2004). Managing Cross-Cultural Business Relations. Dublin: Blackhall Publishing.

[112] Keim, T., and Weitzel, T. (2009). An Adoption and Diffusion Perspective on HRIS Usage. Encyclopedia of HRIS: Challenges in e-HRM, T. Torres-Coronas, and M. Arias-Oliva, eds., Information Science Reference, London, 18-23.

[113] Kostova, T. (1999). Transnational transfer of strategic organizational practices: a contextual perspective. Academy of Management Review, 24(2), 308-324.

[114] Kostova, T., and Roth, K. (2002). Adoption of an organizational practice by subsidiaries of multinational corporations: insitutional and relational effects. The Academy of Management Journal, 45(1), 215-233.

[115] Kristensen, P. H., and Zeitlin, J. (2001). The making of a global firm: local pathways to multinational enterprise. The Multinational Firm, G. Morgan, P. H. Kristensen, and R. Whitley, eds., Oxford University Press, Oxford.

[116] Lane, C. (2003). Changes in Corporate Governance of German Corporations: Convergence to the Anglo-American Model? Competition & Change, 7(2/3), 79-100.

[117] Lau, G., and Hooper, V. (2009). Adoption of E-HRM in Large New Zealand Organizations. Encyclopedia of HRIS: Challenges in e-HRM, T. Torres-Coronas, and M. Arias-Oliva, eds., Information Science Reference, London, 31-41.

[118] Martin, G., and Beaumont, P. (1999). Co-ordination and control of human resource management in multinational firms: the case of CASHCO. International Journal of Human Resource Management, 10(1), 21-42.

[119] McGaughey, S. L., and Cieri, H. D. (1999). Reassessment of convergence and divergence dynamics: implications for international HRM. International Journal of Human Resource Management, 10(2), 235-250.

[120] Mayrhofer, W., Morley, M. J., and Brewster, C. (2005). Convergence, Stasis, or Divergence. Human Resource Management in Europe: Evidence of Convergence?, C. Brewster, W. Mayrhofer, and M. J. Morley, eds., Butterworth-Heinemannn, Oxford, 415-436.

[121] Morgan, G., and Kristensen, P. H. (2006). The contested space of multinationals: Varieties of institutionalism, varieties of capitalism. Human Relations, 59(11), 1467-1490.

[122] Muller, M. (1998). Human resource and industrial relations practices of UK and US multinationals in Germany. International Journal of Human Resource Management, 9(4), 732-749.

[123] Muller, M. (1999). Human resource management under institutional constraints: The case of Germany. British Journal of Management, 10(3 S1), 31-44.

[124] Muller-Camen, M., Almond, P., Gunnigle, P., Quintanilla, J., and Tempel, A. (2001). Between Home and Host Country: Multinationals and Employment Relations in Europe. Industrial Relations Journal, 32(5), 435-448.

[125] Nah, F. F.-H., Tan, X., and Teh, S. H. (2004). An Empirical Investigation on End-Users' Acceptance of Enterprise Systems. Information Resources Management Journal, 17(3), 32-53.

[126] Olivas-Luján, M. R., and Florkowski, G. W. (2009). The Diffusion of HRITs Across English-Speaking Countries. Encyclopedia of HRIS: Challenges in e-HRM, T. Torres-Coronas, and M. Arias-Oliva, eds., Information Science Reference, London, 242-247.

[127] Oliver, C. (1991). Strategic Responses To Institutional Processes. Academy of Management Review, 16(1), 145-179.

[128] Pudelko, M., and Harzing, A.-W. (2007). Country-of-origin, localization, or dominance effect? An empirical investigation of HRM practices in foreign subsidiaries. Human Resource Management, 46(4), 535-559.

[129] Rikhardsson, P., and Kræmmergaard, P. (2006). Identifying the impacts of enterprise system implementation and use: Examples from Denmark. International Journal of Accounting Information Systems, 7(1), 36-49.

[130] Rosenzweig, P. M., and Nohria, N. (1994). Influences on Human Resource Management Practices in Multinational Corporations. Journal of International Business Studies, 25(2), 229-251.

[131] Royle, T. (1998). Avoidance strategies and the German system of co-determination. International Journal of Human Resource Management, 9(6), 1026-1047.

[132] Royle, T. (2004). Employment Practices of Multinationals in the Spanish and German Quick-Food Sectors: Low-Road Convergence? European Journal of Industrial Relations, 10(1), 51-71.

[133] Royle, T. (2006). The Dominance Effect? Multinational Corporations in the Italian Quick-Food Service Sector. British Journal of Industrial Relations, 44(4), 757-779.

[134] Royle, T., and Ortiz, L. (2009). Dominance Effects from Local Competitors: Setting Institutional Parameters for Employment Relations in Multinational

Subsidiaries; a Case from the Spanish Supermarket Sector. British Journal of Industrial Relations, 47(4), 653-675.

[135] Ruël, H. J. M., Bondarouk, T. V., and Looise, J. K. (2004). E-HRM: Innovation or Irritation?, Lemma Publishers, Utrecht.

[136] Ruta, C. (2005). The application of change management theory to HR portal implementation in subsidiaries of multinational corporations. Human Resource Management, 44(1), 35-53.

[137] Scott, W. R. (2001). Institutions and Organizations, Sage, Thousand Oaks, CA.

[138] Smale, A., and Heikkilä, J.-P. (2009). IT-Based Integration of HRM in a Foreign MNC Subsidiary: a Micro-Political Perspective. Handbook of Research on E-Transformation and Human Resources Management Technologies: Organizational Outcomes and Challenges, T. Bondarouk, H. Ruël, K. Guiderdoni-Jourdain, and E. Oiry, eds., Information Science Reference, London, 153-170.

[139] Sheu, C., Yen, H. R., & Krumwiede, D. (2003). The effect of national differences on multinational ERP implementation: an exploratory study. Total Quality Management & Business Excellence, 14(6), 641-657.

[140] Sparrow, P., Schuler, R. S., and Jackson, S. E. (1994). Convergence or divergence: human resource practices and policies for competitive advantage worldwide. International Journal of Human Resource Management, 5(2), 267-299.

[141] Stake, R. E. (1995). The art of case study research. Thousand Oaks, CA: Sage Publications.

[142] Stone-Romero, E. F. (2005). The Effects of eHR System Characteristics and Culture on System Acceptance and Effectiveness. The Brave New World of eHR: Human Resources in the Digital Age, H. Gueutal, and D. L. Stone, eds., Jossey-Bass, San Francisco, 226-245.

[143] Strohmeier, S. (2007). Research in e-HRM: Review and implications. Human Resource Management Review, 17(1), 19-37.

[144] Taylor, S., Beechler, S., and Napier, N. (1996). Toward an Integrative Model of Strategic International Human Resource Management. Academy of Management Review, 21(4), 959-985.

[145] Tempel, A., and Walgenbach, P. (2007). Global Standardization of Organizational Forms and Management Practices? What New Institutionalism and the Business-Systems Approach Can Learn from Each Other. Journal of Management Studies, 44(1), 1-24.

[146] Teo, T. S. H., Lim, G. S., and Fedric, S. A. (2007). The adoption and diffusion of human resources information systems in Singapore. Asia Pacific Journal of Human Resources, 45(1), 44-62.

[147] Tregaskis, O., and Brewster, C. (2006). Converging or diverging? A comparative analysis of trends in contingent employment practice in Europe over a decade. Journal of International Business Studies, 37(1), 111-126.

[148] Voermans, M., and Van Veldhoven, M. (2007). Attitude towards E-HRM: an empirical study at Philips. Personnel Review, 36(6), 887-902.

[149] Whitley, R. (2000). Divergent capitalisms. The social structuring and change of business systems, Oxford University Press, Oxford.

[150] Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User Acceptance of Information Technology: Toward a Unified View. MIS Quarterly, 27(3), 425-478.

[151] Yin, R. (2009). Case study research: Design and methods (4th ed.). Thousand Oaks, CA: SAGE Publications.

Occasioning change through HR Sourcing

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Abstract. *This article describes how structuration theory can be used to analyze changes as invoked by two HR Sourcing arrangements: HR Shared Service Centers and HR Outsourcing. This approach allows us to understand changing responsibilities, altered HR processes, and the adaptation of web-based tools for HRM, through the eyes of organizational agents. Moreover structuration theory allows that their perspectives can be utilized to explicate the emergence of adversities and advantages that are commonly identified with HR Sourcing, but which often lack interpretation. In order to create a more solid understanding of those perspectives, the notion of an HR Ensemble is developed, which signifies the mental constructs that organizational agents can carry about HRM. By highlighting these constructs before and during the occurrence of HR Sourcing at six organizations, several well-known, but ill expound phenomena are illuminated. This is grounded in the comparison of the two HR sourcing arrangements, which gives the opportunity to explain several differences. The article concludes with three recommendations to make HR Sourcing more viable.*

Keywords: HR outsourcing, HR shared service centers, structuration theory, HR Ensemble

1 Introduction

An examination of the literature on HR Sourcing demonstrates a number of similarities with the studies into electronic HRM (e-HRM). Firstly, e-HRM and HR Sourcing arrangements have experienced similar patterns of growth in modern organizations [15, 41]. Secondly, both initiatives are promised to advance the efficiency of the HRM function and the organization as a whole [21]. The growing adoption of HR Sourcing, combined with the increasing sophistication of the information systems available, presents organizations with the opportunity to manage human capital more effectively [1, 17, 28, 33]. The current generation of HR Sourcing arrangements, associated web-based tools and Information Technologies enable organizations to perform diverse HR practices within- and across organizations. Moreover they also enable the automation and devolution of many routine administrative and compliance functions traditionally performed by corporate HR departments [16].

Driven by suppliers, ample reports have been written on those advantageous effects of HR Sourcing for organizations in general and the HRM function in particular. Yet there

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also have been writings on the possible disadvantages and unfulfilled potential of HR Sourcing [13, 26, 43].The failure of organizations to fully capitalize on the opportunities generated by the establishment of HR Sourcing arrangements to deliver sustained organizational value has been attributed to a number of factors. These typically relate to problems associated with IT implementation including: ill-defined implementation projects, inadequate leadership or planning, employee resistance, a lack of user involvement, underestimation of the complexity of the HRM function, and so forth [37]. These consequences tend to be related to the various ways in which different organizational actors engage with, enact, subvert or avoid new HRM or its planned objectives and thus undermine the anticipated value of HR Sourcing. And while these explanations are undoubtedly valuable, it remains the case that the studies from which they are derived largely ignore post-implementation factors impacting on the performance of, and outcomes associated with, HR Sourcing arrangements.

From this stance we propose to broaden the understanding of the effects of HR Sourcing by including those post-implementation dynamics as well as implementation process issues into research. Our paper considers the role of human agency in the process of HR Sourcing, and the uses of an HR Sourcing post-implementation arrangement. We are engaged with the critical HRM studies, emphasizing the prominent and decisive role of human agency in the enactment of HR Sourcing [9, 10, 22], suggesting that various stakeholders including line managers, users, HR and IT professionals seek to exercise social influence in order to change the pattern of organizational HRM [12, 35]. Further, the institutional context within which HR Sourcing is introduced is acknowledged to play a role in shaping its effect on an organization [34, 47]. Hence, any changes associated with it are likely to be shaped by the interaction between institutional patterns and the interests of individuals and groups within organizations [4, 30].

In order to understand human agency as context dependent and embedded in organizational frameworks, structuration theory is advanced in several researches [e.g. 2, 20, 29]. The theory allows to focus on (managerial) behaviour and its connection with the larger organizational developments in concurrence. Structuration theory thereby enables the understanding of agency before and during the implementation process of HR Sourcing arrangements and its influence within the organizational context. Our study is, therefore, motivated by such research questions as what are the changes that occur with HR Sourcing due to the behavior of organizational agents. We will expand on the characteristics of this process in terms of structuration theory, thus describing the structuration characteristics of HR Sourcing arrangements. The paper is organized as follows. First, we elaborate on HR Outsourcing and HR Shared Service Centers, after which we discuss structuration theory. Thereafter we explicate the conceptual framework which was used in our research. Subsequently the findings and discussion of that research are presented whereupon three recommendations are formulated for HR Sourcing.

2 HR Outsourcing and HR Shared Service Centers

While there are many forms of HR Sourcing [11, 23], this article will focus solely on HR Outsourcing and HR Shared Service Centers. We see several reasons motivating our choice. First of all, these two are paramount in modern organizational life [8, 31] Secondly, the motives for establishing these sourcing arrangements often overlap (see Table 1) which makes them interesting to compare [19].

Both, HR Shared Service Centers (SSC's) and HR Outsourcing can be viewed as a particular kind of HR sourcing arrangement having a long-term and strategic impact [6].

Their popularity originates in a combination of advantages, including efficiency gains and an increase in service quality without giving up the control of the organizational and technical arrangements and expertise [19]. However, SSC's differ from outsourcing models [42]. HR outsourcing models offer contracting out or selling of the organizations certain HR activities (partially or fully) to a third party vendor, which in return provides the service for a specific period of time and monetary fee.

During HR outsourcing, the relationships are built between one client and one-or-more external vendors. This in contrast with HR SSC's which address the relationships between many clients and one vendor, both belonging to the same organization. Further, HR outsourcing is oriented towards external vendors, therefore involves a formal contractual relationships, with clearly defined responsibilities, which are legally shifted to the vendor. HR SSC's are restricted to the boundaries and capabilities of the internal organization, often not being allowed to serve external clients and only be able to use internal resources, - that restricts potential economies of scale and skill [19]. Business models of HR SSC's try to capture the benefits from both centralized and decentralized models that are often conflicting in nature. While serving multiple customers having various needs, standardization and a clear management structure are maintained as benefits of the central model.

As Table 1 reveals, and as other research supports [31], there exists a discrepancy between the motives for commencing with and the eventual accomplishments of sourcing. These discrepancies are of our particular interest since it gives rise to believe that there is an unleveraged potential for HR Sourcing which is not fulfilled. As discussed in the introduction, behavior of organizational agents can result in arrangements that have various 'unintended consequences' [27: p20]. Besides additional advantages, it is more often seen that original motives are not reached because of the behavior of organizational agents [44]. This brings up that HR sourcing is much more than just a senior management decision, but also entails enabling actions of other organizational agents.

We believe that the structuration perspective, while dealing with the post-implementation stage of HR sourcing arrangements, allow us to comprehend the deviation and drifting of the goal-achievement dynamics within these HR sourcing arrangements.

Motives labels	Motives associated with…		Accom-plished motives*
	outsourcing	SSC	
Strategic and organizational motives			
Focus on core business	√	√	√
Gain access to high quality [IT] services and skills	√	√	-
Share risks and rewards	√	√	√
Speedy response to [IT] needs (quick decision-making)	√	√	√
Increase productivity	√	√	-
Professionalism of service provision	√	√	√
Reduction of uncertainty/ complexity	√	√	-
Elimination of burdensome [IT] function	√		
Reduction of a backlog of application development	√		
Re-structuring (devolution), downsizing	√		
Exploiting of new technology	√		
Market testing	√		
Accelerating reengineering benefits	√		
Clear control of the [IT] function		√	-
Synergy and concentration of innovation		√	-
One stop shop		√	√
Standardization of functionality and processes		√	√
Dissemination of successful practices		√	√
Political motives			
Enhancing credibility	√	√	√
Solving internal conflicts	√	√	√
Government legislation	√		
Reaction to the bandwagon	√		
Elimination local and complicated control of [IT] function		√	√
Technical motives			
Access to expertise / technology	√	√	√
Better performance of local [IT] staff	√	√	-
Higher service levels	√	√	-
Concentration of technical and project management expertise		√	√
Standardization of platform and application vendors		√	-
Better information security and authorization by centralizing		√	√
Consolidation of experiences		√	√
Economic motives			
Lowering control and maintenance costs	√	√	-
Accountability of control	√	√	√
Control of [IT] costs and better costs predictability	√	√	√
Generating a cash flow	√		
Converting capital assets to revenue	√		
Freeing resources for core activities	√		
Reduction of overcapacity by consolidation of systems		√	√

Table 1: Motives associated with SSC's and with outsourcing [19], * as accomplished in their case research

3 Structuration theory

Structuration theory understands action as path-dependent and socially embedded in ongoing-practices [14, 39]. These characteristics are grounded in the basic premise of structuration theory that human agents are capable of producing and reproducing social structures over time and space. Social structures concern themselves with how rules and

resources are allocated within social realities. Human agents do not however merely constitute structures, they also draw upon structures that are prior enacted by other human agents. Hence structure comes forth out of action while simultaneously being encapsulated in it. Structures are therefore not only constraining in so far that they shape human action, they are also enabling since they give guidance as well. From this it can be deduced that the division between agency and structure is mainly of analytical importance, since structure is embedded and only visible within action. Each of these domains does however need some explications about its premises.

Agency is the ability of human agents to influence power upon their actions [46]. By exercising power through their actions, human agents can establish and alter structures, although in reality the ability to do so might be marginal. Social practices become ordered and stable across space and time, as they become routinized behaviors. Routinization results from the desire to minimize sources of anxiety and is according to Giddens [14] an intrinsic human characteristic. When the enactment of routinized behavior lasts over time, it can be distinguished as a structure.

From an analytical stance structure can be separated on three dimensions of signification, domination, and legitimation [14]. Signification concerns itself with how meaning is restricted and enabled to make sense of context. Domination is occupied with how resources are controlled and utilized to exercise power. Herein lays the distinction between authoritative resources, which concern the control over people, and allocative resources, which concern the control over materials. And finally, legitimation entails how order and values are restricted and enabled [39]. Since structures are abstract and nonexistent outside the human agency, Giddens introduced the concept of modalities. Modalities are the means by which the bridge between structure and agency is made. Therefore they can be understood as visible, measurable units of analysis which can be used for analyzing the connections between agency and structure. There are three kinds of modalities; ‘schemes’, ‘facilities’ and ‘norms’. Schemes refer to the frameworks that human agents use to interpret societal reality. Facilities are those resources which enable the human agent to accomplish its goals and to exercise power. Norms are the ways how sanctions and appropriate conduct are governed and how legitimacy is given to actions.

In short, structure influences how human agents communicate, enact power, and determine which behaviors to sanction and which to reward [3]. When structure is influencing the actions of human agents and those actions are influencing structure in turn, we can speak of the process of structuration [32]. Because structure can change over time and space [36], and is intrinsically personal in nature [40], various human agents can enact different structures. While discrepancies between structures may not be known, they can become visible when they are enacted. Moreover, when different structures are advocated through the propagation of new modalities, contradictions and conflict with other structures could arise.

4 HR Ensemble

Structuration theory offers the framework to understand, in accordance with our introduction, that human agents are knowledgeable beings who construct the reality and thus, do not necessary perceive HR Sourcing the same as offered by managers [29]. But while the basic premise of structuration theory is simple (we ‘create society at the same time as we are created by it’ [14: p14]), a model is required to understand how this process is shaped around organizational HRM. While HRM can be seen as all managerial activities undertaken by the HR professionals, this would leave short on

reality. Nowadays HRM is regarded to be more than solely the activities of the HR professionals and involves line managers, decision-makers, top managers, employees themselves, and even external agencies [38]. Therefore, in line with the premises of our outlay on structuration theory, it is important to explore how the agents that are involved with HRM perceive it.

This brings us to a model with three domains which correspond with the questions concerning what HRM delivers, by who it is delivered, and how it is delivered. The question on what HRM delivers concerns the *HR Processes*. That HRM consists out of ample processes needs little argue after extensive writings on them and the development of categorization systems to divide them [5, 11, 25]. Besides differences in their focus, whether it is transactional, transformational or strategic, it is also important to mention that their characteristics can differ. Here we would enter the domain of perceived quality, efficiency, and costs. We therefore pose that organizational agents can understand HR Processes as multifaceted in both their focus and characteristics. Who delivers HR processes is a core issue here since, as has been mentioned, shared services or outsourcing might be used to replace the 'traditional' providers. Besides this matter, there are also debates on the division of HRM responsibilities amongst other organizational agents [45]. The question whether the line manager should be accountable for more HR processes [43] is grounded in this issue. Therefore organizational members can have notions about the different *HR Agents* that exist within the organizations who deliver HR Processes. Finally, the contemporary discussion on e-HRM [7, 33] makes it necessary to acknowledge that organizational agents can perceive different channels through which HR processes can be delivered, differently. Where formerly the prime mode of deliverance was paper-based or by face-to-face contact, it got competition from the phone, electronic portals and more advanced e-HRM systems. Not only do these channels alter the form of what is delivered, but can also cause alterations on who delivers it. Therefore it is essential to understand the notions that human agents have about, what we will call, the *HR Networks*. The entirety of HR Agents and HR Networks which exist in order to provide HR Processes within an organization will be called the HR Ensemble. This entirety can be used as a construct that encompasses all the mental notions that organizational agents can have about the form of organizational HRM and simultaneously offers a framework to analyze them.

5 Conceptual Framework

Understanding the HR Ensemble as a mental construct of organizational agents allows us to describe it in terms of structure, and more specifically, in terms of modalities. While structures are in analysis rather vague and opaque, as they are only instantiated in human conduct, direct analysis of them would pose difficulties. Modalities on the other hand lend themselves more for direct analysis. While some have chosen to use 'scripts' [2] to avoid the still abstract nature of modalities, it is believed that given the afore mentioned digression, and witnessing their use in other studies [29, 39] their usage does not put up insurmountable barriers. The HR Ensemble can thus be described by its adherent facilities, norms and schemes.

When HR Sourcing is seen as altering the HR Ensemble, it can be understood as an occurrence that propagates new or different modalities. But by perceiving organizational agents as knowledgeable beings with the power to act otherwise, HR Sourcing is but a mere occasion for change which solely propagates modalities [2]. Transfers between original and propagated modalities are therefore neither inevitable nor impracticable. This is congruent with the observations of HR Sourcing and its

disparity between goals and accomplishments. By focusing our lens upon agency we enable ourselves to uncover possible exchanges that take place between the original modalities of the HR Ensemble and the intended ones, as propagated by the HR Sourcing arrangement. The framework is modeled in accordance with these statements and depicted in figure 1.

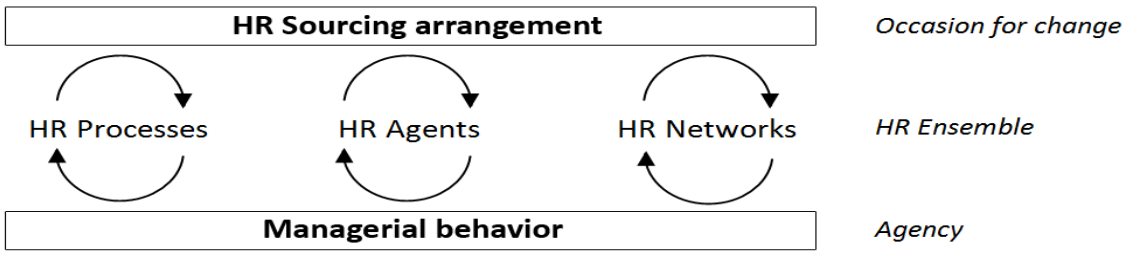

Figure 1: Structuration of the HR Ensemble

How this process of change can be analyzed and understood has been matter of precarious debate [36]. The hardship of structuration theory in empirical research is that it implies a duality of constant dialogue between agency and structure. Since this reciprocal account of social reality gives little opportunity to uncover neither coherence nor causality, complications wait in ambush. Fruitful assistance is however offered by Barley & Tolbert [3] and DeSanctis & Poole [12]. While the latter focus especially upon the interaction between human agents and information systems, the work of Barley & Tolbert addresses how institutional change and maintenance in organizational research can be described and analyzed. Their work offers clear guidelines for conducting empirical research with structuration theory.

Their method shows structure as synchronously constraining action whereas action constitutes structure diachronically. Herewith the process consist out of the encoding of structural principles, the enacting of modalities, revising and replicating those modalities, and finally the objectification or externalization of the actions. Thereby "the model reflects the contention that structuration is a continuous process whose operation can be observed only through time." [3: p100]. Hence, their method dissects the reciprocity of structuration by partitioning the process in distinct periods of time, thus offering a sequential view upon structuration wherein the interaction between structure and agency can be separated. Moreover, the distinct periods can be juxtaposed for analysis to create an account on how structure is maintained and modified in those periods. Thereby allowing the uncovering of social change by comparing the used modalities in separate periods of time.

6 Research methods

Research has been conducted at six organizations in The Netherlands which are mentioned in table 2. The organizations were chosen because they commenced with HR Sourcing two years before the interviews were conducted or even earlier. We deemed this minimal period of two years necessary to assess the potential changes. Furthermore, we have selected three organizations which chose for HR Shared services and three that chose for HR Outsourcing. In the case of Delta, where shared services were established before being outsourced, we specifically focused upon the outsourced HR processes and the changes that occurred after the shared service center was outsourced to a third party vendor. These different HR Sourcing arrangements were chosen deliberately to uncover potential differences in structuration characteristics between them.

Organization	Sector	Number of employees	Sourcing form	Processes sourced	Year of sourcing
Alfa	Public	18.000	Shared Services	Transactional, Transformational	2005
Beta	Energy	10.000	Shared Services	Transactional	2006
Charlie	Public	65.000	Shared Services	Transactional	2004
Delta	Telecom	30.000	Shared Services / Outsourcing	Transactional, Transformational	2001
Echo	Services	20.000	Outsourcing	Transactional	2005
Foxtrot	Consumer goods	80.000	Outsourcing	Transactional Transformational	2006

Table 2: Researched organizations

In order to explore HR Sourcing as an occasion for change a retrospective research was conducted wherein managers that experienced the entire process themselves were interviewed. Both line and HR managers were interviewed because they are frequently confronted with the changes that HR Sourcing invokes. Furthermore, by interviewing both line and HR managers two visions upon HR Sourcing were generated from different perspectives. The persons which were eligible as line manager were those who have an operational responsibility and carry direct responsibility for multiple employees. The interviewed HR managers were those who were carrying the title of HR manager within the organization and were neither part of nor detached by the SSC or vendor. In every organization both a line and HR manager were interviewed, except in Echo where we were only able to interview an HR manager. This resulted in a total of eleven interviews in six organizations with managers who experienced the entire HR sourcing trajectory.

The interviews were semi-structured and information was asked about the HR Ensemble during different periods of the HR Sourcing trajectory. Besides the information on structuration characteristics in these time frames, information was also gathered on the initial situation of the HR Ensemble, and what the future desires and expectations were. The latter was done to get an insight into the interviewees view upon HR Sourcing within their organization.

7 Findings

In this section we describe the structuration characteristics of HR SSC's and those of HR Outsourcing as witnessed in the researched organizations. We will commence by giving a brief sketch of the overlap and discrepancies that existed between the original and intended modalities of the HR Ensembles. Thereafter the agency and effects will be described through time to give a complete overview of the structuration characteristics.

7.1 Structuration characteristics of HR SSC's

It was witnessed that HR SSC's propagated norms which were incongruent with the norms of the line and HR managers. The intended norms were implying a focus upon efficiency, cost-reductions and contractual based responsibilities. Efficiency and

achieving cost reductions were however conflicting with the original norms of accessibility and customization. These norms were connected to the situation wherein HR managers were close to the work floor and were expected to support the line with HR related issues. This was enforced by the norm that obedience to the organizational hierarchy was the prime instrument to coordinate behavior of HR managers and herein legitimacy was found. This was however also intended to be altered since responsibilities were to be based contractually, thus undermining the influence of the line managers which were often of higher rank than HR managers. The schemes had to change accordingly with the altered norms. Originally the appreciation, capability and proximity of HR managers, were defining the schemes in the HR Ensemble. This was however contested when HR SSC's were established. Besides the formalization of the schemes in the form of service level agreements, and the introduction of key performance indicators, their focus also departed from frameworks around appreciation, capability and proximity. Yet the intended changes concerning the facilities were the strongest. The original situation could be defined as one wherein the HR managers were the ones upon who the quality and characteristics of the processes, responsibilities, and networks, were depending. Furthermore the line managers possessed the authoritative resources to influence power upon the HR managers. In the intended situation authoritative resources were changed by dismissing HR managers, transferring them to a centralized location, and by creating distance between the shared services center and the work floor. Consequently this would decrease the authoritative resources from the line. This desired abolishment of informal connections between HR managers and the line can be seen as a part of the intended changes in authoritative resources. Furthermore the allocative resources were promoted to change in several ways too. Initially the HR managers were located close to the shop floor, had their own office wherein they had control over personnel data and several local information systems. But change was expected to occur due to multiple reasons. Firstly the digitalization of HR Processes was enforced. This was causing HR processes to be standardized to fit in a certain template. Secondly e-HRM applications and call centers were propagated to give line managers and employees more self-service possibilities. Which consequently also caused that the office where the HR managers were located was to disappear and their allocative resources had to be detached.

It was generally accepted that the HR Ensemble was altered and it was understood that the original form was not beneficial to the organization as a whole and could be improved on several points. Nevertheless the modalities that HR SSC's propagated were negated in the agency of managers on several points. Therefore a tension was found between the believe in the added value of shared services on the one side, and on the other the perception that the supplier could not offer them what they needed. In line with structuration theory we can see several explanations of this apparent conflict. There existed a tendency among the HR managers to dislike the standardization of procedures and the inability of the supplier to aid the organisation with many of its questions. Moreover the line felt that little personal attention was given to their desires and the complications that they experienced with the SSC or with HRM issues in general. The HR managers therefore retook or maintained informal communication with line managers and thus (re)established the original relations. This desire was originating from both line and HR managers, where the latter felt responsible for dealing with the complications that were experienced. This was possible in the first place because the HR managers were not transferred or detached from the work floor, so enabling them to maintain informal communications. Line managers therefore could pertain to their authoritative resources to influence HR managers. This implied that HR managers were

still performing those processes that the SSC was responsible for. It also implied that the newly attributed responsibilities for HR managers could not be carried out, because they were preoccupied with the desires of line managers. The propagated norm of uniformity could consequently not be achieved. As a result the HR Processes were not so much standardized, more efficient, and cheaper as was desired. This was following from the lacking usage of the propagated facilities like e-HRM applications and call centers. The multiplicity of the HR Network was therefore intensified since new HR Networks like the e-HRM applications did not support the norms that were carried by the line management. Therefore more advanced networks were discarded by the maintenance of face-to-face contact. Thus by maintaining the relations between line and HR managers, originating from their norm for personal attention, not only the schemes and norms were negated, but also the intended facilities.

When we take the previous data into account we must affirm that the desired processes were not provided. Many agents experienced that the supplier did not live up to expectations and the HR processes were below expectations. This might be invoked by the propagation of wrong modalities, while this seemed to be connected to the fall back on the original modalities. This caused that a multiplicity of HR Processes emerged since the organizational agents were evading the supplier and demanded the HR Processes from the original HR Agents. Hence, the HR Agents retained the original distribution of responsibilities. This tendency was enforced because the managers felt a distance between them and the shared service center. The lack of attention that there was for the complaints of the managers also caused that they felt alienated from shared services. We saw that organizations eventually responded to this by sending a contact person of the HR SSC to the work floor to re-establish the intended responsibilities of shared services. And moreover to increase the accessibility of HR Processes, which was one of the original norms amongst the managers.

7.2 Structuration characteristics of HR Outsourcing

In the original situation the HR Ensemble was surrounded by norms of compliancy with the line's desires, high approachability and accessibility. Making appointments with HR managers was for example not necessary, since line managers could drop by in their office at any time. Furthermore the original modalities were similar to those at the organizations that chose for shared services. For instance the line managers were the ones that demanded the HR managers to perform. This was thus a very common norm that was witnessed within the organizations. Outsourcing did not seem to have intentions that departed greatly from these norms. The approachability and accessibility of the HR Ensemble were regarded important. It was also for that reason that the organizations kept silent about the outsourcing. This was justified by the fear that this would create feelings of alienation between the organizational agents and the vendor. Furthermore outsourcing was to promote norms of innovation around the HR Ensemble. The schemes also were subjected to several developments. Originally the HR Ensemble was signified by schemes of who was capable, who could comply to the wishes of clients and who was being personal and in the proximity of the business. Due to the outsourcing some new schemes were introduced, while most original ones were also actively maintained. Formal schemes like service level agreements and contracts were introduced, but were only used as the backbone of the HR Sourcing arrangement. The original schemes were given place within this formal framework. This was done by putting formal emphasis on customer satisfaction surveys, creating incentives for

understanding and collaborating with each other, and promoting personal attention for the clients, which was deemed equally important to assess the HR Ensemble as financial indicators. Therefore enough attention remained for the desires of managers and the original schemes were intended to be just slightly affected. Just as with the organizations that chose for shared services the facilities changed radically. These changes could also be perceived from the perspective of authoritative and allocative resources. Originally a lot of authoritative resources were owned by the line managers and this greatly influenced the shape of the HR Ensemble. The line managers could exercise their power upon the HR managers and on the way how they performed the HR Processes. Furthermore the quality of the HR Ensemble was very much depending upon the quality of HR managers. Few tools were at their disposal and their power was marginal. Outsourcing intended however to alter both the authoritative and allocative resources radically. The authoritative resources would move from the line managers to a more broad array of HR Agents. Not only would HR managers get different responsibilities, also line managers and employees were enforced to carry responsibilities for HR Processes. This means that line managers were losing authoritative resources which was often forcefully established by dismissing or removing HR managers from their proximity. The allocative resources were to be changed because new 'external' facilities were promoted. Facilities like call centers, e-HRM applications and external networks of knowledge became accessible to the HR Ensemble. These changes would also enabled a stronger focus on self-service around the HR Ensemble.

We saw that the intended alterations in the HR Ensemble caused several actions amongst line and HR managers. Line managers reacted rather stoic against the intended changes in facilities. The redistribution of authoritative resources was seen as an understandable development and the allocative resources that were offered to them where used and accepted. The HR managers that were affected by the outsourcing showed initially a great amount of negating actions, but this attitude changed over time. By means of increased career opportunities and offering educational programs this movement was tempered. Also the HR managers that gained more responsibilities were happy with the HR Sourcing arrangements.

We witnessed that these actions find their origin in the choice for rather similar modalities to the ones that existed originally amongst line and HR managers. When we take the previous structuration characteristics into account we must affirm that uniformity of processes was created, i.e. the processes were performed in a more standardized manner. Also the compliance with the service level agreements has positively been introduced within those organizations. This occurred simultaneously with the changes concerning the HR Agents. We saw that not only the responsibilities moved from the HR managers towards the supplier, but also that the responsibilities spread over multiple HR agents. This was enforced by the contracts that were developed on a partnership basis and enforced cooperation between the different HR Agents. The abolishment and removal of the informal structure that existed between the line managers and HR managers happened rather smooth and might have been made possible because the supplier always was very approachable.

8 Discussion

In the previous section the effects of HR Sourcing have been mentioned with regard to the HR Ensemble. These effects were portrayed as the eventual results of the

structuration characteristics that were invoked after the HR Sourcing commenced. Table 3 gives a brief overview of this discussion.

	HR SSC's	**HR Outsourcing**
HR Processes	f. **Differing resources mobilised** **n.** Customised processes expected **s.** Client satisfaction diminished	f. **Propagated facilities utilised** **n.** Effectiveness and reliability are prime **s.** Client satisfaction major
HR Agents	f. **Authority remains at line** n. **Biased norms exist** **s.** Capability is important	f. **Redistributed auth. resources** n. **Collaboration and dutifulness** **s.** Common responsibility
HR Network	f. **Redefined informal connections** **n.** Each available connections is justified **s.** Informal channels are better	f. **Formal connections are enforced** **n.** Approachability and personal touch **s.** Formal channels are used

Table 3: Effects of the structuration characteristics for SSC's and outsourcing:

f = facilities n = norms s = schemes

We believe that by aiming on the discrepancies and overlaps between original and intended modalities, and the witnessed changes of the HR Ensemble, recommendations can be derived for more viable HR Sourcing. It is acknowledged that the process of structuration is unpredictable in its very essence, because the structures that human agents enact are idiosyncratic and their context is specific and multifaceted. Yet, based upon our findings on how intended modalities replace original ones, recommendations can be given on how certain structuration characteristics can be invoked. By understanding the underlying reasons for the structuration processes HR Sourcing can be developed in such a way that intended changes will actually be enacted by line managers.

It was shown that outsourcing was associated with effects wherein the intended changes were actually accomplished. This was also expressed in the interviews where the managers stated that the HR Sourcing was successful. HR SSC's invoked totally different effects. The original and intended modalities were often seen in contradiction with another. This invoked a laborious process wherein eventually both original and intended modalities were typifying the HR Ensemble. Upon close investigation we can see that shared services propagated many changes in the facilities, norms and schemes. Outsourcing on the other side promoted especially changes in facilities, while norms and schemes remained mostly intact and were maintained. Grounded in this comparison

we believe to have found three recommendations to establish congruence between intended and actual practices and to foster the advantages of HR Sourcing.

8.1 Break ties with original facilities

The organisations that chose for HR SSC's experienced that HR managers who stayed close to the work floor still got requests for help from line managers. Moreover the SSC's eventually sent a representative to enhance the contact between the line managers because they were maintaining too much contact with the HR advisors/managers. These contacts enforced that e-HRM applications were not fully used and the face-to-face contact had more importance than intended. We believe that this continued contact was a source of alienation towards the HR SSC's. On the opposite of these developments we saw that after outsourcing commenced, line managers were stoic about the redistribution of the responsibilities and were not opposing the increasing workload. Because HR managers were removed from the organisation, through dismissal or relocation, the authoritative resources of the line faded. This forced them to adapt to the new situation which was taken without many difficulties. Therefore an emphasis should be placed on making line management more capable to deal with the new situation, rather than keeping HR managers close to the work floor in case that complications emerge. Therefore we would advice to propagate new facilities and break the ties with the previous ones since this can cause difficulties to adapt to the intended situation. This also implies that the organization should restrain line managers from depending on HR managers.

In addition it should be stated that this requires organizations to get a complete insight in their HR Processes. At several organisations the complexity of HR Processes was not understood. Transactional processes were perceived as simple repetitive administrative actions and nothing more, causing that the complexities around those processes were disregarded. It was for instance not taken into account that many different forms of these processes could exist throughout the organisation. Also the HR Agents that were connected to it, and the HR Network that was utilised, was not often fully comprehended. Therefore it was not uncommon that when HR Processes got sourced unclear situations came into existence. This caused among others that facilities were wrongly introduced and HR Agents were not able to cope with neither original nor intended modalities. Therefore a good understanding of the HR Processes is an absolute necessity before commencing the changes in modalities.

It was also mentioned that with HR Outsourcing, career chances and the employment contract of the (ex) HR managers improved. Consequently HR Sourcing was not merely perceived negatively by HR managers but also as an opportunity. This contrasted with HR SSC's, where low educated personnel was reported to work in the SSC were little opportunities awaited. They were not educated by the organizations and moreover they had little idea of who they were serving. Subsequently little information was present about the problems that the clients experienced and therefore clients often felt alienated from the shared services, promoting the move towards HR managers which were still in the proximity of line managers. We therefore saw that the quality of the HR SSC and vendor is (at least partially) dependent upon its personnel. By investing in the personnel the quality of the HR Sourcing arrangement can rise. Moreover the norms and schemes that were originally present within the organization can be more easily maintained when the supplier is educated about them.

8.2 Leave the schemes of the clients intact

A finding which caught our attention was that organizations decided to keep the outsourcing 'secret'. In every organization it was seen that line managers often did not know for a long time that the vendor was an external party. While centralization and thus the physical removal of people was often notified, the fact that the personnel was not anymore part of the client organization was not. HR managers said that it was a conscious choice not to correspond about this with the organizational agents. Moreover, we saw that there were considerable efforts to make sure this was not noticed. For example, email addresses and telephone numbers remained the same after the outsourcing. And at Foxtrot the supplier was taking office at the client location, near internal HR managers. Thereby the original schemes concerning accessibility and proximity were not opposed, even though the physical proximity of HR Agents was altered.

In addition to this we saw that when service level agreements were not including measures which respected the original schemes, it was disregarded. Managers did originally not asses the HR Ensemble by formal means at all. And while a service level agreement was not regarded negative per se, HR SSC's foremost did not include the original schemes in the formalized new ones. This caused that the organizations assessed the shared services in total different ways than managers did. The alienation between the shared services and the managers was believed to originate from this. When outsourcing was commenced, client satisfaction for one was included as an important indicator of its success. This enforced that outsourcer and clients were sharing similar schemes to signify the HR Ensemble. We thus found that when schemes around the HR Ensemble are respected the intended changes are easier accepted.

8.3 Sustain norms whoever the supplier might be

A difference that we encountered between SSC's and outsourcing was that the latter had a bigger focus upon increasing the quality of HR Processes. Shared services on the other side had a bigger emphasis on the reduction of costs and increasing efficiency. While cost-reductions are a strong motive to commence HR Sourcing, it is not a common norm that is supported by line and HR managers. These managers adhered to norms concerning the personal attention and accessibility of the supplier. As a consequence demand rose up for HR Managers to aid the line, resulting in an overall increase of HR Processes, their costs, and reduction of quality. So we saw that when organizations focused primarily on cost-reductions these norms were indirectly opposed and managers started to show negating behavior. Reasoning from a cost-motive might thus be an improper mindset for commencing HR Sourcing. While we do not oppose that cost reductions can be achieved with HR Sourcing, we believe this can be achieved easier by respecting the original norms.

Furthermore it must be mentioned that education and investment in the supplier is not solely necessary to keep the schemes intact, but also to sustain norms. When HR Agents learn to signify the HR Ensemble that is accepted by organizational agents, they also should learn about the appropriate tools to legitimatize it. The HR Ensemble is stabilized when there is correspondence between them.

9 Conclusions

The article commenced by stating the goal to describe the structuration characteristics of HR Sourcing arrangements. This was posed with the intention to foster an insight into the discrepancy between motives and accomplishments of HR sourcing. After

elaborating on the characteristics of structuration theory we have developed the HR Ensemble. It has been developed around the three main notions about HRM; who delivers, what it delivers, and how it delivers. By understanding the HR Ensemble as a mental construct and HR sourcing as an occasion for change, we are able to understand the consequent changes in terms of structuration.

The put the framework to the test a research was conducted at six organizations. The approach gave us insight into how organizational agents perceived and reacted upon HR Sourcing in relation with the original HR Ensemble. Thus effects were linked to the agency and structure of line and HR managers. By describing this process in terms of structuration we were able to understand the discrepancies between the intentions of HR Sourcing and the eventual effects. This resulted in three recommendations that advice to change the facilities, while respecting the original norms and schemes to a large degree. Our findings make us believe that if these recommendations are not taken into consideration during implementation, managers are very well capable of maintaining or returning to the original HR Ensemble. This was uncovered after comparing shared services and outsourcing and seeing that the latter succeeded in changing the original modalities to a larger extent. While we are aware that there are also HR Outsourcing arrangements that fail to live up to their potential, our three case examples give recommendations for future HR Sourcing arrangements alike. Therefore we can conclude by stating that existing structures can confine HR Sourcing in multiple ways but when modalities are understood, HR Sourcing can be more easily effectuated.

References

[1] Ball, K. (2001). The use of human resource planning system: a survey. Personnel Review, 30(6): 44-68.

[2] Barley, S. R. (1986). Technology as an occasion for structuring: Evidence from observation of CT scanners and the social order of radiology departments. Admin. Sci. Quart. 31: 78–108

[3] Barley, S. R. & Tolbert, P. S. (1997). Institutionalization and Structuration: Studying the Links between Action and Institution. Organization studies 18(1): 93-117.

[4] Barrett, M., & Walsham G. (1999). Electronic trading and work transformation in the London Insurance Market, Information Systems Research, 10(1): 1-22.

[5] Belcourt, M. (2006). "Outsourcing — The benefits and the risks." Human Resource Management Review 16(2): 269-279.

[6] Bergeron, B. (2003). Essentials of Shared Services. Hoboken, New Jersey: John Wiley & Sons.

[7] Bondarouk, T. & Ruel, H.J.M. (2009). Electronic Human Resource Management: challenges in the digital era. Guest-editors' Introduction to a Special Issue. The International Journal of HRM, 20(3): 505 - 514

[8] Chakrabarty, S. (2006). Making Sense of the Sourcing and Shoring Maze. In H. S. Kehal & V. P. Singh (Eds.), Outsourcing and Offshoring in the 21st Century: A Socio-Economic Perspective (pp. 18-53). London: Idea Group Publishing.

[9] Cooke, F. L. (2006). Modelling an HR Shared Services Center: Experience of an MNC in the United Kingdom. Human Resource Management 45(2): 211-227.

[10] Cooke, F. L., J. Shen, et al. (2005). "Outsourcing HR as a competitive strategy? A literature review and an assessment of implications." Human Resource Management 44(4): 413-432.

[11] Delmotte, J. & L. Sels (2005). HR-outsourcing: Kans of bedreiging? Brussel, Federgon.

[12] DeSanctis, G., & Poole, M.S. (1994). Capturing the complexity in advanced technology use: Adaptive structuration theory. Organization Science, 5: 121-147.

[13] Frase-Blunt, M. M. (2004). "Keeping HR on the Inside." HRMagazine 49(10): 57

[14] Giddens, A. (1984). The Constitution of Society. Berkeley, University of California Press

[15] Gurchiek, K. (2005). Record Growth in Outsourcing of HR Functions. HRmagazine. June: 35-36

[16] Hendrickson, A.R. (2003). Human resource information systems: Backbone technology of contemporary human resources. Journal of Labor Research, 24(3): 381-95.

[17] Hussain, Z, Wallace, J., & Cornelius, N. (2007). The use and impact of human resource information systems on human resource management professionals. Information & Management, 44: 74-89

[18] Jamrog J., & Miles, H. (2004). Building a strategic HR function: Continuing the evolution. Human Resource Planning, 27(1): 51 – 63.

[19] Janssen, M., & Joha, A. (2006). Motives for Establishing Shared Service Centers in Public Administrations International Journal of Information Management, 26(2), 102-115.

[20] Jarzabkowski, P. (2008). Shaping Strategy as a Structuration Process. Academy of Management journal 51(4): 621.

[21] Kanter, R. (2003). Foreword in: Effron, M., Gandossy, R., and Goldsmith, M. (Eds.), Human Resources in the 21st century. Hobeken: John Wiley and Sons.

[22] Kessler, I., J. Coyle-Shapiro, et al. (1999). Outsourcing and the employee perspective. Human resource management journal 9(2): 5.

[23] Lacity, M.C., & Willcocks, L.P. (1998). Practices in Information Technology Outsourcing: lessons from experiences. MIS Quarterly, September, 22, (3), 363 – 408.

[24] Lawler, E. E., Levenson, A. & Boudreau, J. (2004). HR metrics and analytics: Use and impact. Human Resource Planning 27(4): 27-35.

[25] Lepak, D. P., K. M. Bartol, et al. (2005). A contingency framework for the delivery of HR practices. Human resource management review 15(2): 139.

[26] Manocha, R. R. (2006). Front-line services. People management 12(6): 16.

[27] Martin, G., Reddington, M., & Alexander, H. (2008). Technology, outsourcing and transforming HR. Jordan Hill, Oxford: Butterworth-Heinemann.

[28] Ngai E., & Wat, F. (2006). Human resource information systems: A review and empirical analysis. Personnel Review 35(3): 297-314.

[29] Orlikowski, W. (2000). Using Technology and Constituting Structures: A Practice Lens for Studying Technology in Organizations. Organization science 11(4): 404.

[30] Orlikowski, W., & Barley, S. R.. (2001). Technology and institutions: What can research on information technology and research on organizations learn from each other? MIS Quarterly, 25(2): 145-165.

[31] Redman, T., Snape, E., Wass, J., and Hamilton, P. (2007) Evaluating the human resource shared service model: evidence from the NHS, International Journal of Human Resource Management, 18(8): 1486 – 1506

[32] Rose, J. (1998). Evaluating the contribution of structuration theory to the is discipline. In Proceedings of the European Conference on Information Systems.

[33] Ruel, H., Bondarouk, T., & Looise, J.C. (2004). E-HRM - Innovation or irritation: An explorative empirical study in five large companies on web-based HRM. Management Revue, 15: 364-380.

[34] Schuler, R. S. and S. E. Jackson (1995). "Understanding Human Resource Management in the Contect of Organizations and their Environments." Annual Reviews in Psychology 46(1): 237-264.

[35] Schultze, U., & Orlikowski, W.J. (2004). A practice perspective on technology-mediated network relations: The use of internet-based self-serve technologies. Information Systems Research, 15: 87-106.

[36] Sewell, W. H. (1992). A Theory of Structure: Duality, Agency, and Transformation. The American Journal of Sociology 98(1).

[37] Stone, R. A., & Davis, J.M. (2009). Change management: Implementation, integration, and maintenance of the HRIS. In M.J. Kavanagh & M. Thite (Eds.), Human Resource Information Systems: Basics, applications, and future directions: 173-205. Thousand Oaks, Ca: Sage.

[38] Storey, J. (Ed.) (2007). Human Resource Management: A Critical Text. London: Thompson Learning

[39] Sydow, J. and A. Windeler (1998). Organizing and Evaluating Interfirm Networks: A Structurationist Perspective on Network Processes and Effectiveness. Organization science 9(3): 265-284.

[40] Thompson, M. P. A. (2004). Confessions of an IS consultant or the limitations of structuration theory. Cambridge Research Papers in Management Studies, No. 1.

[41] Tremblay, M., Patry, M., and Lanoie, P. (2008). Human resource outsourcing in Canadian organizations: an empirical analysis of the role of organizational characteristics, transaction costs, and risks. International Journal of Human Resource Management, 19, (4), 683 – 715.

[42] Ulbrich, F. (2003). Introducing a research project on Shared Services in Governmental Agencies. In 17th Scandinavian Academy of Management (NFF) Conference. Reykjavik, Iceland: August 14-16.

[43] Ulrich, D. (1997). Human Resource Champions. Boston, Harvard Business School Press.

[44] Ulrich, D. (1998). A new mandate for human resources. Harvard business review 76(1): 124-34

[45] Valverde, M., G. Ryan, et al. (2006). Distributing HRM responsibilities: a classification of organisations. Personnel Review 35(6): 618.

[46] Whittington, R. (1992). Putting Giddens into Action: Social Systems and Managerial Agency. Journal of Management Studies 29(6): 693-712.

[47] Wright, P. M. and S. A. Snell (1998). "Toward a Unifying Framework for Exploring Fit and Flexibility in Strategic Human Resource Management." The Academy of Management Review 23(4): 756-772.

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SESSION G

Topic: **e-HRM "Cases"**

Chair: **Carole Tansley**

Transitioning from a Proprietary to Vanilla HRIS: The Resulting Implications for Talent

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Abstract. *There is an increasing awareness of the significance of talent and talent management to an organisation's performance and competitive advantage. Similarly there is increasing recognition that human capital and talent issues permeate throughout most segments of an organisation. Accordingly, when an organisation decides to change its processes and the way that it conducts its business, talent management will be affected. Based on an in-depth case study, this paper shows that the decision to transition from a proprietary to a vanilla HRIS, significantly affected the way in which the organisation viewed and managed its talent. By applying a social construction of technology based approach (SCOT), this paper further argues that it is important for academics, practitioners, consultants and organisations to be mindful of the potential positive and detrimental talent management implications of altering technology.*

Keywords: Human Resource Information Systems (HRIS), E-HR, talent management, implications, social construction of technology (SCOT)

1 Introduction

The argument that an organisation needs to manage its human capital assets has a long history and has been previously addressed by academics, practitioners and consultants interested in personnel management, human resource management, and strategic human resource management. However changes in demographic patterns, the 'war for talent', talent shortages and several other factors have today combined in a manner which further encourages organisation's to identify, recruit, maintain and develop individuals who are deemed 'talent'. The above changes have provided compelling reasons for organisations to attend to their human assets through talent management. So much so that the increasing importance of 'talent' has prompted many senior executives of organisations to not only state that "our people are our greatest asset" but to undertake tangible strategic actions that embody these claims. Furthermore the ability to effectively manage talent within an organisation has benefited from the introduction of

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technology. The range of technology available to organisations is diverse, and within the academic and practitioner sphere is referred to in a number of ways including E-HRM [e.g. 39, 40, 44], web-based HR, virtual HR and/ or Human Resource Information Systems (HRIS) the focus of this paper is on the later. HRIS are integrated systems used "to gather, store and analyse information regarding an organisation's human resources" [23] and are considered to be one of the most dynamic and potentially useful technologies in business today [29]. Increasingly organisations are using information technology to support and enhance activities that are critical to their competitive advantage [11].

Literature that advocates for connections between technology, specifically HRIS and talent management exists [e.g. 3, 10, 47] however very little empirical research has been conducted to date. Similarly, very little research has been offered which examines the how changes in HRIS impact upon talent management. As such this paper will focus on the impact of an organisation's decision to alter their legacy HRIS technology upon its human capital assets. Overall this paper will present a comprehensive examination and analysis of one organisation's decision to transition their HRIS and the consequential impact of this decision for talent management. The findings suggest that it is important for academics, practitioners, consultants and organisations to be mindful of the potential positive and detrimental talent management implications of altering technology.

The paper comprises of six main sections. In the first section we review the literature that discusses HRIS paying particular attention to previous studies and reports that recognise the connection between technology and talent management. In the second section we discuss the methodology applied. In the third section we provide an overview of the organisation and its history with E-HR and HRIS. This section is then followed by a discussion of our results which has discovered that altering technology has resulted in two significant changes. The final section summaries the findings and provides recommendations for academics and practitioners.

2 Introducing Human Resource Information Systems (HRIS) and Talent Management

The term human resource information systems (HRIS) has been researched and discussed by a number of academics [e.g. 8, 18, 20, 25] and although there appear to be differences in the way that HRIS are specifically defined, there are common elements believed to be associated with the term. Some of the confusion that stems from defining HRIS is associated with the desire for some academics, practitioners, consultants and vendors to assume that a HRIS is hardware or software associated with information technology (IT). To enable a more comprehensive analysis, HRIS are believed to include more than just hardware and software, it also includes people, policies, procedures and data required to manage the Human Resource function and also the human capital assets of the organisation. Thus a functional HRIS must allow and enable the assimilation of procedures and policies to manage an organisations human capital as well as the hardware and software associated with the HRIS [23, 25].

It is not surprising to learn that one of the first perennial issues that organisations need to deal with when embarking on the selection and implementation of technology is the extent to which they will seek customisation. Most specifically, organisations need to determine whether they will tailor their existing human resource processes to fit with the functionality of the technology versus customising the functionality of the

technology to fit their existing human resource processes. With reference to HRIS, the first category, where modifications are made to organisational processes is commonly referred to as 'vanilla' or 'vendor' HRIS and the later category, where modifications are made to the technology are known as 'proprietary' or 'customised' HRIS. Evidence to date shows that most organisations choose to select, implement and maintain 'vanilla' HRIS because of the considerable costs associated with making changes to the technology [41]. Regardless of the approach adopted, the implications of the decision has found to be complex [13, 16].

The use of the term 'talent management' gained momentum and popularity in the late 1990's as the phenomena, today referred to as the 'war for talent' began to rise. The realisation that a number of previously separated demographic and global business patterns were combining in a manner which was about to have important implications for business lead to an increase need for talent management. The McKinsey & Company's study of 1998 [9] drew widespread attention to a rising demand for talent-intensive skills that would outpace supply in many industries and markets. Stahl et al [42] further elaborate upon this influential change in the value of human capital assets by stating that in the context of the late 1990's 'talent management' came to appear synonymous with human capital management and its influence on an organisations strategy.

In direct contrast to traditional HRM, organisations that adopt talent management '…emphasise decisions about the talents of their employees, rather than simply HR service delivery, and how these talents affect traditional measures of financial and competitive success' [6]. Talent management involves moving beyond a focus on HR policies/practices, towards a '…deep and logical framework connecting talent to organisational success…' [6]. Talent management involves looking at business strategy while having both eyes constantly evaluating the talent needs of the organisation pursue its business strategy today and in the future. It is not essential that academics, practitioners and organisations agree on definitions of talent and talent management as it can be argued that an organisation needs to define and pursue talent management in a manner that is specific to the organisation and its business strategy.

Furthermore, and more specifically HRIS are believed to have the potential to be the mechanism by which companies monitor and deploy their talent in order to attain and sustain a competitive advantage [21]. The more contemporary aim underlying the strategic use of HRIS in regards to talent management is to focus on making better decisions, not just producing data faster [27]. More specifically and of greater interest to the study of talent management, is the ability for HRIS to produce metrics, analytics and data about an organisations human capital assets and hence 'talent.' In contrast to arguments that proclaim a relationship between the use of technology and talent management, this paper will focus on the impact of changing a HRIS, a technology used to manage talent, on an organisations understanding of talent and their talent management practices.

There are a number of debates about technology which have highlighted the importance of including and considering the role of both the social and material context upon the selection, adoption and use of technologies [e.g. 14, 17, 33] including HRIS. Such social construction approaches emerged as a response to the previous assumptions regarding the deterministic influence and impact of technology. Embracing the social construction approach, we apply the Social Construction of Technology (SCOT) approach to both the impact of technology as well as the understandings of talent and

talent management. That is, we assume that the organisations use of their HRIS and their understandings of talent are socially constructured. The social construction of technology (SCOT) approach is relevant to this study as it challenges more technological deterministic approaches and the idea that technologies and technological artefacts have a pre-given and fixed meaning and in its place argues that the process, design and selection of technologies are open and can be subjected to contestation [35]. Thus a technology is seen to be characterised by 'interpretative flexibility' and various 'relevant social groups' who articulate and promote particular interpretations of it. This meaning, over time tends to become accepted and the interpretation of the technology stabilised [14]. The application of SCOT is useful as it enables the authors to recognise that when considering relationships and experiences with technology and talent, it is essential that social factors and previous experiences be considered. Hence the process of talent involves individuals interacting with 'facilities', 'norms' and 'interpretative schemes'. Therefore the opinions of respondents can only be understood in the context of individuals and groups comprehending, interpreting, using and engaging with the technologies [14].

Furthermore this paper will transgress from the themes of previous studies of this technology which have mainly focused on the type of applications that predominated in HRIS [e.g. 19, 25, 37], the contexts necessary for the successful implementations of HRIS [e.g. 4, 26], as well as the conditions that support successful use of HRIS [e.g. 2, 23]. Consideration of previous studies combined with arguments regarding connections between technology and talent management this has led this paper to be guided by the following research questions:

- *Does changing from a proprietary HRIS to a vanilla HRIS impact on an organisations understanding of talent?*
- *If so, what changes can be observed?*
- *What are some of the consequences for the organisation?*

By adopting interpretative and constructivist approaches, this research sought to describe, interpret, analyse and understand the social world from the participant's perspective [15] regarding the use of technology in talent management which was achieved using the following methodology.

3 Methodology

An interpretative epistemology is considered the most appropriate for this paper as it advocates two essential assumptions regarding the creation of meanings; that is that individuals create their own meanings and secondly that context can affect such meanings. Furthermore Orlikowski & Baroudi argue that the context of the use of technology is important, 'the design and use of technology in organisations, in particular, is intrinsically embedded in social contexts, marked by time, locale, politics, and culture. Neglecting these influences may reveal an incomplete picture of information systems phenomena' [34].

As the existing literature which examines the combination of these two areas is limited, the research was undertaken as an exploratory case study with the phenomena being the impact of transitioning HRIS on the concept of talent. Investigation of the research question's required a qualitative research methodology and in keeping with the social

constructivist approach, the paper utilised a number of methods to capture the situated dynamics that emerge as the HRIS transitioned and the implications of this. Furthermore an emergent process was followed [31] and involved the author's moving between emic and etic perspectives [46].

This research adopted an exploratory single site case study methodology [5] which will be the use of technology, specially HRIS, for talent management. A case study for the purposes of this research enabled the researchers to systematically gather information about social settings, event or group which will enable the researcher to understand how the subject operates or functions [5]. This approach is appropriate as it is well suited to the study of complex organisational processes and practices [e.g. 1, 22] and has been used by other researchers whose projects share similarities [e.g. 12, 32]. The data collection process involved conducting semi-structured in-depth interviews [45] with five members of the organisation. All five participants are members of the Human Resource function of the organisation and were selected on the basis of their knowledge, understanding and use of HRIS for talent management in the organisation.

The interviews were conducted within the natural setting over 18 months between February 2008 and October 2009 and were between 37 to 126 minutes in duration. All interviews were later transcribed and reviewed by the authors [38]. Through such methods, this paper sought to add rich empirical data which tells of the stories and experiences of individuals regarding talent management within the organisations. The empirical interview data was then analysed [28] through a double hermeneutic process.

4 The Case Organisation

The case organisation, ManuOrg has been allocated an assumed name. It is a leading diversified manufacturing company with operations throughout Australia, Asia and New Zealand and employ's more than 7,200 individuals across its businesses. Throughout its history, ManuOrg has experienced a number of significant changes in relation to its structure and operations. Despite such changes, the organisation has continued to maintain and manage their talent management processes and human resource activities primarily through a highly customised proprietary HRIS. As such the use of their legacy HRIS was complex and steeped in history.

Today ManuOrg's primary HRIS, has become a system that has been "…maintained, developed, and run…totally in-house" (HR Manager A). Through progressive implementations and the changes made to the functionality of the HRIS over the past ten years, ManuOrg now has an integrated HRIS that is in no way a 'vanilla' HRIS. Rather ManuOrg's current HRIS is a tailored system that specifically addresses the needs of its different businesses and the organisation as a whole; '…the company has been pretty well served from something that has been done in-house and tapered according to the needs' (Executive HR Manager). Representing a significant break with the past, in 2008 the decision was made to transition away from its proprietary HRIS to a more vanilla system provided by a major HRIS vendor SAP.

The data derived and analysed for this paper has discovered that the organisational change in question has resulted in two significant changes. Firstly the organisations understanding of talent and hence desired skills and capabilities altered from more general information technology skills combined with a long history of the organisation and its internal operations to specific information technology skills (those which are needed to use SAP) and the ability to deal with change. The second change encompasses a number of alternations experienced in the structure and management of

talent in the organisation. The second talent management changes are seen to be direct consequences of the first.

5 Key Changes

5.1 What is considered to be 'talent' begins to change

The change from the organisation's proprietary HRIS to SAP has resulted in ManuOrg repositioning its understanding of talent and the desired skills and capabilities which will add value to the business and enable it to pursue its strategic goals. As one of Australia's oldest organisations, ManuOrg has been able to create an organisational culture that is steeped in tradition and history. Such an emphasis on history can be viewed in their ability to create, build upon, and maintain a legacy HRIS that in 2008 was more than 20 years old. The organisations understandings of talent, has previously included notions of history and loyalty such that many employees have created career paths within the organisation. The pursuit of organisational focused career's can have a number of benefits for the organisation and the individuals involved. Firstly the organisation is able to gain greater returns from investments in training and development combined with the ability to maintain knowledge about the organisation within the organisation. Similarly the individuals that stay with the organisation have been rewarded for their loyalty and organisational commitment with security in employment and promotions. During the data collection phase of this research, the research team personally liaised with a number of employees who had been with the organisation for more than 20 years. More surprising was that our primary point of contact for the project had served an impressive four decades with the organisation. Despite continuing to recognise the value of long term organisational commitment, members of the human resource function within ManuOrg recognise that the guard is changing and as such the supremacy of organisational careers are beginning to wain. The Executive HR Manager recognised this change:

> I think historically from talking to people around the business, you can talk to people who've had careers in a number of streams within the various businesses that ManuOrg has owned over the years, but I don't get a sense of that from more current joiners.

The change in mindset regarding the essentialness of long serving employees coupled with the changes resulting from the implementation of a new HRIS has also encouraged ManuOrg to re-evaluate the skills and capabilities that it desires from the 'talent' within the organisation. Given the long and established history of ManuOrg as one of Australia's oldest organisations (ManuOrgs website) it may be unsurprising to learn that previous human resource and talent management policies and practices have been normalised in the organisation. As such, individuals deemed as 'talent' for the organisation centred upon the possession of an extensive knowledge and understanding of the organisation and its different businesses.

Furthermore one category of employees within the organisation that will be significantly affected by the transition is those employed within the existing HR department. As the legacy proprietary HRIS has been customised to meet the needs and demands of a wide range of stakeholders, including the existing HR function, the structure and approach of the HR function will be required to change. To date, individuals employed within the HR team have lived through very few technology platform changes over the years. Similarly the composition of the HR team has experienced very few changes. Despite the small number of individuals located in the

HR team, the length of service for the team is noteworthy. Both team members that were associated with implementing the original HRIS in 1986 are still both with the organisation.

> Yeah well we've had a really good system, customised system and that's mainly because of [HR Manager A] and [HR Manager A]'s got a very like sharp mind and stuff and has done some brilliant things with it and he's got [HR Team Member C] who works with him who is again very sharp (HR Team Member A).

Consideration of the above analysis illustrates that the previous desire to retain talented individuals because of their knowledge and expertise in the organisations proprietary HRIS was seen as a significant driver of the organisations understanding of talent. On the most general level, the desired skills and capabilities included general information technology skills combined with a long history of the organisation and its internal operations. In contrast, the significant change to be undertaken has resulted in a new skill set to be added to the understanding of talent for the organisation: the ability to undergo and contend with change. Now one of the most valued talents is the ability to change: "The most obvious one is the capacity for change." (Executive HR Manager).

The ability for the organisation to maintain its traditional approach recently came under fire when one of the two key individuals with the required talent to maintain the system decided to retire. It was during this time that the dangers of their approach to talent were explicitly recognised: "But [HR Manager A] is retiring…so we need to look at upgrading because our human capital was within two people and we need to upgrade it" (HR Team Member A) and hence the current project to replace their proprietary HRIS gained momentum. The organisation, through its senior management realised that their traditional talent management processes, which centred on retaining key talent with the concentrated and specialised organisational knowledge, may not be the most appropriate for the organisation going forward. To continue the traditional approach to talent was seen as risky:

> Our risk, and what one of – not the only, but one of the big reasons going out, looking ahead – was the fact that the more sophisticated and complex we become, the more dependent we are on principally two people (HR Manager A).

Recognition of the risks has encouraged the Executive HR Manager to re-evaluate the future needs of the HR function. The selection of SAP as the future HRIS, is seen by the organisation as a strategic decision that explicitly considers the future needs of the business in regards to technology capabilities as well as the different capabilities of talent.

> …but I see it's pretty critical for us to focus on and looking at a new system, how we future-proof it in our thinking as much as possible rather than just assuming that what we've done for the last period of time as organisations is going to see us through. But the world of technology and the mind set is just changing so quickly (Executive HR Manager).

The strategic selection of SAP will directly impact on the skills and capabilities that the organisation requires to go forward. The implementation and adoption of SAP will require the organisation to acquire and retain skills, knowledge and expertise in SAP. The ability to acquire such talent will not only affect the success of the technology but it also has the ability to enhance or hinder future talent and operational elements of the business. Prior to selecting the new HRIS, the organisation had limited SAP talents held

internally. More telling of this widening talent gap was the complete lack of SAP skills in their existing HRIS maintenance and HR teams. To fill this void in the short term, the organisation has selected to engage a consulting company with specialised and certified SAP skills and knowledge to assist with the project. The need to include SAP skills as a talent in the organisation not only requires modifications to training and development processes but it also requires a change in mindset. The change in mindset will "…actually add value to the business" (Executive HR Manager)

Despite the use of consultants, ManuOrg now faces the challenge of acquiring SAP skills and knowledge for the longer term. This can either be achieved through providing traditional training and development for existing employees or targeting the acquisition of SAP skills, knowledge, and expertise through external recruitment. Regardless of the decision made, each approach will require the organisation to make trade offs between organisational knowledge, and specific technological knowledge.

Changes in the external environment coupled with the decision to implement a new and different HRIS has encouraged ManuOrg to re-evaluate the skills and capabilities that they consider as talents required to achieve their business objectives. The outcomes of this re-evaluation have had both positive and detrimental implications upon the way that the organisation manages its talent.

5.2 Implications of changing an HRIS for Talent Management

A new understanding of the skills and capabilities regarded as talent has resulted in a number of talent management implications. Furthermore, we have found that three specific consequences have been observed in the short term. These are; the need to balance generational demands, repositioning of teams and functions within the organisation, as well as the ability to revise their remuneration policies.

Firstly, the organisation's explicit desire to increase the number of activities that are conducted online and facilitated through E-HR processes has implications for the organisation with regard to their ability to cater for, manage and balance, the differing needs of employee cohorts such as Generation X and Y with Baby Boomers. The ability to do this effectively is seen as an important talent management challenge. Generational differences regarding expectations of technology has factored into the decision making processes associated with the future technology requirements of the business. The need to consider and address this area was seen as important by the Executive HR Manager:

> So, how do you target the technology in a way that meets the business need but also is meeting different generations that are in the work force, because clearly there's still a lot of people, I'm sure in this organisation, that are going to struggle with the concept of a payslip coming via SMS on their mobile phone, whereas, for the generation coming into the work force, that 'where is it?

Furthermore career progression and talent development is seen to also differ between generational cohorts of employees:

> I mean like I've dealt with a lot of Gen Y people and you've got some really open Gen Y people, and then you've got some others that are like well I'm a graduate, when I come in here today I'll be the managing director tomorrow. So it's trying to manage those types of people (HR Team Member B).

As ManuOrg adapts their understanding of talent in order to appreciate the differing skills and capabilities that generational cohorts can provide, polices and processes regarding recruitment, selection, succession planning and training and development

activities have also been required to adapt. Overall managing different generational demands and expectations of technology, E-HR and more specifically for the purposes of the paper, a SAP HRIS, leads to changes in talent management.

The repositioning of certain functions and teams within the organisation and its structure are considered as the second category of consequences of transitioning the HRIS for talent management. As discussed previously, the current HRIS project has required the organisation to re-evaluate the talents that are required and the strategic contributions of those talents. This has further caused the organisation to recognise that many talents held currently within the organisation may not be required to meet the future direction of the business;

> I guess the challenge for ManuOrg now is what the world looks like going forward and whether the staff within the current operation are the necessary fit to what the mission looks like going forward. (Executive HR Manager).

One outcome of the re-evaluation is the desire to centralise information technology (IT) skills and talents. In order to centralise and unite IT talent, the organisation is seeking to reposition existing employees with specialised proprietary HRIS technical knowledge who currently sit within the HR team to the Business Information Systems (BIS) team. Previously the HR function, included all of the HRIS team however the retiring employee recognised very early in the process that this was going to change:

> My team, we call HR Services, and as the name implies, we provide services across the whole [organisation]… The services include the HRIS system, so I have a team of IT professionals reporting to me, and we maintain and develop the present HRIS system. That won't continue in the future… (HR Manager A).

The Executive HR Manager also saw that the transitioning in HRIS would have talent implications for the existing HRIS team:

> So obviously one of the things that will probably come out of the new system is… a move towards a more conventional structure of that [the HRIS] team within the IT structure.

The decision to relocate the existing HRIS team from HR to BIS recognises that the individuals with extensive knowledge of the proprietary HRIS and the organisation are no longer regarded as contributing strategically to the performance of the HR function. The individuals affected by this transition will not only be relocated to become members of the BIS team, but they will also need to be found alternative roles as their previous positions are now redundant. When asked by the research team about what will happen to the current HRIS team when the transition to SAP is finalised, the HR Manager discussed how the team will be totally disbanded and that particular members may leave the organisation if alternative positions can not be found. The Executive HR Manager shared similar sentiments during the same discussion. He stated:

> I mean clearly we're not going to need HRIS skills. Each of the individuals have a broad set of business skills, the issue is if there is a suitable role that they can move into to. So, it's really more around is there actually a meaningful role that makes sense both from the company standpoint and obviously from the individual standpoint.

Given the move to SAP knowledge, skills and capabilities, the organisation has also sought to externally recruit additional individuals to strengthen the capacity of the BIS team. To date the organisation has recruited three such individuals that reside in the BIS

team and are working in hands-on positions regarding the roll out of the new SAP HRIS. Despite their talents in SAP, it is important to recognise that none of these individuals have knowledge of ManuOrg and its operations. The organisation recognises that they have needed to make talent management trade offs. The newly appointed HR Manager (replacing the retiring manager) accepted this talent management decision point:

> I think whether you go with an SAP versus business knowledge, its like anything, it's like when you recruit for any role. Do you go with someone who has got subject matter expertise, which one can you learn the quickest to actually get you over the line (HR Manager B).

The most significant change regarding the management of talent for ManuOrg as a result of transitioning their HRIS involves the relocation of their Accounting function, including their payroll team from Brisbane to Sydney. Consequently this decision involves not only a relocation of a function from one state to another, but also the "phasing out" out and replacement of an entire team of employees. Again recognising the talent implications of changing from a proprietary to vendor HRIS has directed the organisation to re-evaluate the role and position of the payroll team in a similar manner to the HRIS IT team. Members of the payroll function previously located in Brisbane were given the opportunity to relocate to Sydney however all declined and as such, all of the employees now employed as part of the payroll function located in Sydney are new to the organisation. This has been challenging for the organisation. "…I had another challenge in that ….my payroll team, for instance changed. You know, they were up in Brisbane and now we've moved them down here. It's a whole new team" (HR Manager B). During the process of relocating, the organisation resolved to operate both payroll teams simultaneously. This presented additional talent management challenges as neither team was knowledgeable of both the new system and the organisation:

> Unfortunately what we've ended up with is not surprisingly a disenchanted Brisbane team, the team that know the business and a completely new team who don't know the business at all (HR Manager A).

The organisation has also needed to manage the talent and knowledge implications of this move which has compounded some of the challenges. Furthermore the decision to transition their HRIS has required the organisation to choose between the organisational knowledge and technology talents in regards to their payroll team. The existing payroll team members were employees that were well versed in the proprietary system rather than SAP payroll and hence their talent set was deemed less salient. In contrast, the new payroll team is well versed in SAP but not the organisation. The new HR Manager reflected upon this during our most recent interview (October 2009):

> All that knowledge is gone. Not gone, sorry, all that knowledge you can no longer use in the new systems, so I think that is some of the challenges that we have.

He then continued:

> I guess that it would be great to have people who had very, very good knowledge in the business of SAP and our payroll, but you see that's quite difficult because all of our expertise has been with our legacy HRIS system… So unless you buy it in, and then your not getting the organisational bit, so it's a bit of a catch-22 (HR Manager B).

The organisations decision to reposition the IT experts from the previous HRIS team from members of the HR team to the BIS team, combined with relocating and replacing the payroll function are two direct talent management consequences of the transitioning from a proprietary to vendor HRIS.

The third consequence of undertaking an upgrade of the organisations HRIS is seen to centre upon perceived opportunities for ManuOrg to adopt a more strategic talent management mindset. This change in mindset would then be reflected in the organisations remuneration policies and distribution of short, medium and long term incentives. The Executive HR Manager recognises that their remuneration policies and practices have adopted more traditional human resource management approaches which pursue equity. Although the more traditional human resource approach is believed to have served them well in the past, it may not be the best way for the organisation to manage the remuneration aspects of the business in the future:

> …I think it is, but for a whole lot of good reasons, we've tended to have the one-size-fits-all, and that's going to have to be tested and I suspect changed to reflect where the different streams of the business are… At the moment, the LTI [long term incentives] is obviously structured around an equity plan and what's the value of that to people who are in one side of the business vis-à-vis another…

The desire to exploit the move towards SAP technology to help drive changes in the way employees are rewarded is seen as an important strategic issue. To represent such beliefs the Executive HR Manager continues:

> But I think strategically… it's around what are the reward programs around that, both short term and long term, but I think increasingly the world is moving to-wards more of a medium term incentive type approach.

In contrast to equity and consistency approaches, ManuOrg see's that the adoption of a SAP HRIS will provide them with additional functionality that can be utilised to pursue remuneration in a way that targets and rewards individuals and/or groups of individuals that posses the talents required for the organisation to achieve its future business objectives. The new technology is seen to also enable the organisation to reward talented individual's that add value. Such a transition in thinking represents a move towards a more strategic approach to talent management through the generation and management of information.

6 Discussions and conclusions

An examination of the existing literature regarding talent management and E-HR encouraged the authors to seek a greater understanding about the possible talent and talent management implications of an organisations decision to alter technology which was highly customised. The results from a detailed exploration of one organisation's transition from a long standing, highly customised proprietary HRIS, to a vanilla HRIS provided by SAP has uncovered a direct impact between this transition and the organisations understanding of talent and approach to talent management. In this case, it appears that the change in the HRIS approach, i.e. the move to SAP has influenced the desired skills and capabilities of the human resource and IT functions. Given the nature of existing academic arguments regarding the need for organisations to define the talents that are essential for the organisation, one could have expected the decisions surrounding the selection and adoption of a HRIS would have been made with direct

consideration of the organisations talent management strategy and that the organisations talent management strategy should determine the HRIS. However this appears not to be the case. In this instance the transitioning of a HRIS had implications for talent. Although this research draws on only one case, additional research should be undertaken to consider the causal relationships between technology and talent management.

The data derived and analysed for this paper has enabled the authors to discover that the organisational change in question has resulted in two significant implications. Firstly the organisations understanding of talent and hence desired skills and capabilities shifted from more general information technology skills combined with a long history of the organisation and its internal operations, to specific information technology skills (those which are needed to use SAP) and the ability to deal with change. The second impact encompasses a number of changes experienced in the structure and management of talent in the organisation. The second impacts are seen to be direct consequences of the first.

The results also show that an organisations understanding of talent is socially constructured. Furthermore it is argued that an organisations understanding of talent, and their approach to talent management should change as the organisation undergoes change. It is believed that such changes are an essential consequence of pursuing talent management because talent management involves the management of talent in connection to the organisations business strategy of today and the future. Through the presentation of one case organisation, ManuOrg has demonstrated how the decision to make changes within the organisation, such as a change in HRIS, should encourage the organisation to re-evaluate the skills and capabilities that they desire and that contribute to the pursuit of their strategy. Changes in technology will also affect talent management policies, processes and activities. The impact of transitioning technology on talent and talent management is an area that currently lacks extensive consideration by academics and practitioners. It is suggested that future research and studies that address E-HR, HRIS and/ or talent management may like to further consider such impacts and extend this body of knowledge.

By adopting a social construction of technology approach to the study of talent, the paper's findings demonstrate that the study of technology and its impact on talent management is determined in part by the agency of the individuals involved and the social context within which the organisation operates [33]. In sum, it is only through the appreciation of both the material and the social can more informed understandings of E-HR and talent management be obtained. These findings corroborate those of existing literature that apply SCOT to the study of technology [e.g. 14, 16].

As organisations increasingly compete through talent [7], and continue to realise that the management of their talent is critical to their operations and survival, the use and application of HRIS, through access to encompassing information, may allow organisations to more effectively and strategically manage their talent and allocate resources. A growing awareness of the changing nature of business through globalisation combined with changing demographics such as an ageing population and talent shortage, compels business to focus more of their attention and energy on not only retaining their talent but also keeping them actively engaged in their work [24, 30, 36, 43]. In this environment, it will be critical for organisations to manage their talent in a more strategic manner than they have been accustomed. Furthermore it is believed

that the technological factors, such as HRIS, which are also constantly evolving will bring with them talent management opportunities and solutions.

Despite the findings and contributions made by this paper, the potential connections between technology and talent management still present an area for future research. There are possible connections that can be made between technologies such as HRIS and talent and talent management however additional in-depth comparative case studies considering a diverse range of organisations according to industry, location and size will further enhance our understanding of this phenomenon. Furthermore, additional theoretical lens such as technological determinism, discourse analysis and the resource-based view of the firm could also be applied by future analysis.

Regardless of whether organisations choose to upgrade, downgrade, combine or replace any form of technology, this paper shows that academics, practitioners, consultants and organisations should be aware of, and sympathetic to the possible positive and detrimental talent management implications of pursuing changes in technology. Furthermore, it is important to recognise that analysis of relationships between E-HR, HRIS and talent management may be limited however it is important and as such this paper has drawn upon empirical data to present evidence that making changes to technology can and will impact talent management.

References

[1] Allan, G. A., & Skinner, C. J. (Eds.). (1991). Handbook for research students in the social sciences London ; New York :Falmer Press.

[2] Ball, K. S. (2001). The use of human resource information systems: a survey. Personnel Review, 30(5/6): 677-693.

[3] Bassi, L., & McMurrer, D. (2007). Maximizing Your Return on People Harvard Business Review: 1-10.

[4] Beckers, A. M., & Bsat, M. Z. (2002). A DSS Classification Model for Research in Human Resource Information Systems Information Systems Management, 19(3): 41-50

[5] Berg, B. L. (2009). Qualitative Research Methods for the Social Sciences (7th ed.). Boston: Allyn & Bacon

[6] Boudreau, J. W. (2003). Sustainability and the Talentship Paradigm: Strategic Human Resource Management Beyond the Bottom Line (CAHRS Working Paper 03-21). Ithaca: New York: Cornell University, School of Industrial and Labor Relations, Center for Advanced Human Resource Studies. .

[7] Boudreau, J. W., & Ramstad, P. M. (2005). Where's Your Pivotal Talent? Harvard Business Review, 83(4): 23-24.

[8] Bussler, L., & Davis, E. (2001). Information Systems: The Quiet Revolution in Human Resource Management Journal of Computer Information Systems, 42(2): 17-20.

[9] Chambers, E. G., Foulton, M., Handfield-Jones, H., Hankin, S. M., & Michaels Ill, E. G. (1998). The War For Talent McKinsey Quarterly(3): 44-57.

[10] CIPD. (2005). People Management and Technology: Progress and Potential Survey Report June 2005 ed. London: Chartered Institute of Personnel and Development

[11] CIPD. (2006). HR and Technology: Beyond Delivery Change Agenda Change Agenda ed. London: Chartered Institute of Personnel and Development

[12] Dery, K., Grant, D., Harley, B., & Wright, C. (2006a). Work, organisation and Enterprise Resource Planning systems: an alternative research agenda. New Technology, Work and Employment, 21(3): 199-214.

[13] Dery, K., Grant, D., & Wiblen, S. (2009). Human Resource Information Systems: Replacing or Enhancing HRM. Paper presented at the 15th World Congress of the International Industrial Relations Association IIRA 2009 'The New World of Work, Organisations and Employment', Sydney, Australia.

[14] Dery, K., Hall, R., & Wailes, N. (2006b). ERPs as 'technologies-in-practice': social construction, materiality and the role of organisational factors. New Technology, Work and Employment, 21(3): 229-241.

[15] Glaser, B. G., & Strauss, A. L. (1967). The Discovery of Grounded Theory: Strategies for Qualitative Research New York Aldine Publishing Company

[16] Grant, D., Dery, K., Hall, R., Wailes, N., & Wiblen, S. (2009). Human Resource Information Systems (HRIS): An Unrealised Potential Annual CIPD Centres' Conference Nottingham, United Kingdom

[17] Grint, K., & Woolgar, S. (1997). The Machine at Work: Technology, Work and Organisation Cambridge: Polity Press.

[18] Grossman, M. E., & Magnus, M. (1988). The Growing Dependence On HRIS. Personnel Journal, 67(9): 52-59.

[19] Gueutal, H. G. (2003). The Brave New World of E-HR. Advances in Human Performance and Cognitive Engineering Research 3: 13-36.

[20] Haines, V. Y., & Petit, A. (1997). Conditions for Successful Human Resource Information Systems. Human Resource Management, 36(2): 261-275.

[21] Hannon, J., Jelf, G., & Brandes, D. (1996). Human resource information systems: operational issues and strategic considerations in a global environment. International Journal of Human Resource Management, 7(1): 245-269.

[22] Hartley, J. F. (2000). Case Studies in Organizational Research. In G. Symon, C. Cassell, & R. Dickson (Eds.), Qualitative Methods in Organizational Research and Practice 208-229. Hove: Psychology Press

[23] Hendrickson, A. R. (2003). Human Resource Information Systems: Backbone Technology of Contemporary Human Resources. Journal of Labor Research, 24(3): 381-394.

[24] Joerres, J., & Turcq, D. (2007). Talent Value Management. Industrial Management, 49(2): 8-13.

[25] Kavanagh, M. J., Gueutal, H. G., & Tannenbaum, S. I. (1990). Human resource information systems: development and application. Boston, Mass: PWS-Kent Publications Co.

[26] Kinnie, N. J., & Arthurs, A. J. (1996). Personnel specialists' advanced use of information technology. Personnel Review, 25(3): 3- 19.

[27] Kovach, K. A., & Cathcart, J. C. E. (1999). Human Resource Information Systems (HRIS): Providing Business with Rapid Data Access, Information Exchange and Strategic Advantage, Public Personnel Management, Vol. 28: 275: International Public Management Association for Human Resources.

[28] Lawler, J. (1998). Choosing a Research Approach: Matching Questions with Methodologies In J. Lawler (Ed.), Writing qualitative research 69-80. Sydney: Hampden Press.

[29] Mayfield, M., Mayfield, J., & Lunce, S. (2003). Human Resource Information Systems: A Review and Model Development Advances in Competitiveness Research, 11(1): 139-152.

[30] McConville, T. (2006). Devolved HRM responsibilities, middle-mangers and role dissonance Personnel Review, 35(6): 637-653.

[31] Miles, M. B., & Huberman, A. M. (1994). Qualitative data analysis: An expanded sourcebook (2nd ed.). Thousand Oaks, CA: Sage

[32] Orlikowski, W. J. (2002). Knowing in Practice: Enacting a Collective Capability in Distributed Organizing. Organization Science, 13(3): 249-273.

[33] Orlikowski, W. J., & Barley, S. R. (2001). Technology and Institutions: What Can Research on Information Technology and Research On Organizations learn From Each Other? . MIS Quarterly, 25(2): 145-165.

[34] Orlikowski, W. J., & Baroudi, J. J. (1991). Studying Information Technology in Organizations: Research Approaches and Assumptions. Information Systems Research, 2(1): 1-28.

[35] Pinch, T. J., & Bijker, W. E. (1984). The Social Construction of Facts and Artefacts: or How the Sociology of Science and the Sociology of Technology might Benefit Each Other. Social Studies of Science (Sage), 14(3): 399-441.

[36] Ready, D. A., & Conger, J. A. (2007). Make Your Company a TALENT FACTORY. Harvard Business Review, 85(6): 68-77.

[37] Robinson, D. (1997). HR information systems: stand and deliver Brighton UK: The Institute for Employment Studies.

[38] Roulston, K., deMarrais, K., & Lewis, J. B. (2003). Learning to Interview in the Social Sciences. Qualitative Inquiry, 9(4): 643-668.

[39] Ruël, H., & Bondarouk, T. (2008). Exploring the Relationship between e-HRM and HRM Effectiveness: Lessons Learned from Three International Companies In G. Martin, M. Reddington, & H. Alexander (Eds.), Technology, Outsourcing and Transforming HR 161-191. Oxford: Butterworth- Heinemann.

[40] Ruël, H., Bondarouk, T., & Looise, J. K. (2004). E-HRM: Innovation or Irritation. An Explorative Empirical Study in Five Large Companies on Web-based HRM Management Revue, 15(3): 364-380.

[41] Shrivastava, S., & Shaw, J. B. (2003). Liberating HR Through Technology Human Resource Management, 42(3): 201-222.

[42] Stahl, G. K., Bjorkman, I., Farndale, E., Morris, S. S., Paauwe, J., Stiles, P., Trevor, J., & Wright, P. M. (2007). Global Talent Management: How Leading Multinationals Build and Sustain Their Talent Pipeline In INSEAD (Ed.), Faculty & Research Working Paper 2007/34/OB. France: INSEAD

[43] Stevens, H. P. (2008). Total Quality Management Now Applies to Managing Talent. Journal for Quality & Participation, 31(2): 15-18.

[44] Strohmeier, S. (2007). Research in e-HRM: Review and implications Human Resource Management Review, 17: 19-37.

[45] Taylor, S. J., & Bogdan, R. (1984). In Depth Interviewing, Introduction to qualitative research methods: the search for meanings Vol. Second Edition: 87-116. New York: Wiley.

[46] Thompson, C. J., & Haytko, Diana L. (1997). Speaking of Fashion: Consumers' Uses of Fashion Discourses and the Appropriation of Countervailing Cultural Meanings. Journal of Consumer Research, 24(1): 15-42.

[47] Williams, H. (2009). Job Analysis and HR Planning. In M. Thite, & M. J. Kavanagh (Eds.), Human Resource Information Systems. Basics, Applications, and Future Directions 251-276. California: SAGE Publications Inc.

Putting e-HR into practice: the case of the University of Alicante

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Abstract. *Nowadays it is not likely to find any large organization, either public or private, that does not have some sort of computerized information system for their Human Resource Management (HRM) processes. However, not all of them use it successfully and effectively. Lessons need to be extracted, both from theoretical research and case studies in order to show HR managers how to boost the added value of people by integrating an e-HRM perspective in their businesses.*
Strohmeier's e-HRM [36] framework posits that researchers need to understand the context in which the practitioner works, along with the relationships between the actors affected, the firm's strategies and activities, and the technologies implemented before attempting to determine its consequences and ways to improve HRM performance. Taking this into account, this paper offers an analytical, qualitative view of the e-HRM context, actors, activities and technologies developed by the University of Alicante, comparing the perspectives of the employees and their supervisors, in order to identify which key issues need to be considered prior to undertaking a quantitative research on e-HRM performance. Our main contribution is to find evidence supporting that the most relevant issues to be considered are those of communication, conflict management and trust between employees and supervisors.

Keywords: case study, e-HRM, Intranet, University, Spain.

1 Introduction

Lately, there has been a strong interest in the relationship between Human Resource (HR) managers and the way they add value to organizational performance, surpassing the exploration of the effectiveness of single HR policies and practices [5, 32]. Even though Teo [37] presented evidence on the fact that technology-related competences were considered less competitive than soft relationship management issues (trust, commitment, etc.), it cannot be denied that a dramatic change is taking place in the HR area, which affects everyone within and on the fringes of the organization (applicants, retirees, outsourcing contractors…). This change is both supported and led at the same time by information technology (IT), specifically Internet, which is permeating, slowly but surely, the HR manager's function.

Strohmeier, S.; Diederichsen, A. (Eds.), Evidence-Based e-HRM? On the way to rigorous and relevant research, Proceedings of the Third European Academic Workshop on electronic Human Resource Management, Bamberg, Germany, May 20-21, 2010, CEUR-WS.org, ISSN 1613-0073, Vol. 570, online: CEUR-WS.org/Vol-570/ , pp. 342-359.

The root of this change is the knowledge that a successful firm will be the one compelled both to adapt and anticipate to the current environmental changes, evolving from a solid, hierarchical and mechanical entity to a fluid, organic organization built on information flows [44].

Some consequences of the introduction of Internet in the world of HR are the following [11]:

- IT destroys traditional, intensive manual labor, but gives birth to new jobs (Webmasters, media brokers, html programmers, etc).
- Teleworking and flexible consideration of time and space are part of the job's description. Privacy has also become a relevant issue, since the distinction of personal and professional related information is blurred, as well as blending personal time and working hours.
- Geographical barriers disappear, up to the point in which some businesses are working 24 hours a day by using time zones appropriately.
- Multifunctional skills and team working are required abilities for new economy's employees.
- Modern organizational structures, flat and team-based, are taking over traditional forms (virtual organizations being the epitome of this phenomenon).

The integration of IT in the organization of work has brought certain benefits which lead to new conceptions about work relations, but not about work itself [12]. Business have to learn to "e-manage" their human resources, as opposed to simply "manage" them, in order to survive in today's digital environment. However, many organizations do not react to these environmental challenges suitably. This problem often results in policies, practices, and strategies that may be outdated.

Thus, the quest of present time HR managers is making the most of this pervasive technology while addressing the abovementioned challenges in an effective manner. And this can be achieved by implementing e-HRM functions. Strohmeier [36] defines e-HRM as the application of IT for both networking and supporting at least two individual and collectives actors in their shared performance of HR activities. Therefore, e-HRM extends outside of the HR department to the whole organization.

The paper's purpose is to address a case study in which it is shown how to boost the added value of people as a company asset by means of an IS, specifically intranets, to integrate an e-HRM perspective in their businesses. It focuses on the issues raised by the employees of the University of Alicante (UA) who are currently implementing intranet-supported applications for their HRM practices. This case study is the first part of a larger research project, which comprises another stage in which a quantitative survey will be carried out. This survey will study whether the Technology Acceptance Model [9, 10], or TAM, is applicable to the context of the UA's e-HRM policies as a tool for predicting HR attitudes, and its consequences for HR performance.

The layout of the paper is as follows: the following section will approach the concepts of e-HRM, Strohmeier's framework and the role of the intranet and its HR applications for e-HRM performance. A third section presents the methodological aspects of this stage of the research. Afterwards, the results and discussion section shows an analytical, qualitative view of the e-HRM functions carried out by the UA through its corporate intranet. The paper finalizes with some conclusions and the consequences that the

findings presented here will have for the second stage of our research, as well as future lines of work for new economy's HR managers, as extracted from the case studied.

2 State of the art: e-HRM

2.1 E-HRM concept, advantages and models

E-HRM refers to conducting HRM transactions using the Internet and other IT. Although the 'e' part is a reflection of the 'electronic' meaning that it has in 'e-business' or 'e-commerce', it really means online HR. An e-HR system aims to provide useful information to managers and employees anytime, anywhere. For instance, it allows employees to take over some of the administrative roles of the HR department, by controlling their personal information, updating records and keeping control of timing and agenda. As for managers, it helps them to access information and data, conduct analyses, and make HR related decisions without consulting the HR department [29].

E-HRM is a more specific vision of how HRM and its associated processes can benefit from a rational use of IT. According to Voermans and van Veldhoven [40], there exists "*a positive relation was expected between reported ease of use, usability, user support and output quality of an IT system and the attitude towards E-HRM*". The cost of doing HR transactions is lowered and response times are improved, as well has quality and consistency of the HR information [27]. Likewise, HR managers are able to focus on strategic functions instead of carrying out administrative tasks. But there are also some disadvantages: as said by Noe et al. [26], e-HRM *"pose a challenge that is especially significant for human resource management: they lack the personal touch of face-to-face communication*". Also, less administrative and paperwork tasks usually lead to less HR personnel needed, thus considering e-HRM as a blessing and a course [20].

This is the principle underlying the notion of e-HRM: It can only support true competitive advantages in combination with soft HRM practices, knowledge management and trust relationships [13, 17]. This means that firms must enhance their employees´ skills, behavior and attitude towards creating and sharing knowledge in technology-based work environments, like an intranet. For a more elaborated view on IT-based HR innovations, see [13].

This case study will benefit from being approached from a comprehensive organizational perspective, like that presented by Strohmeier [36]. For this author, e-HRM is a multilevel phenomenon; this is, its effects are both macro level (organizational) and micro level (individual). Both levels need to be considered for the dimensions of their framework (see figure 1):

- The **context** considers the different environments that influence the e-HRM system, namely cultural, legal, industrial and organizational.
- The **configuration** seeks to integrate the operative part of e-HRM. The actors involved can be external assessors, employees, HR professionals, managers, applicants, virtual teams, etc. The activities are those HR processes and functions that could be improved with IT. As for technology, it is clearly identifiable with the equipment and applications that support e-HRM. Finally, the strategy refers to the connection between e-HRM implementation and HR objectives.

- The **consequences** will attend to the different levels. Operational consequences are actors' attitudes, whereas transformational (organizational) consequences will happen when HR play a key role in sustaining competitive advantages.

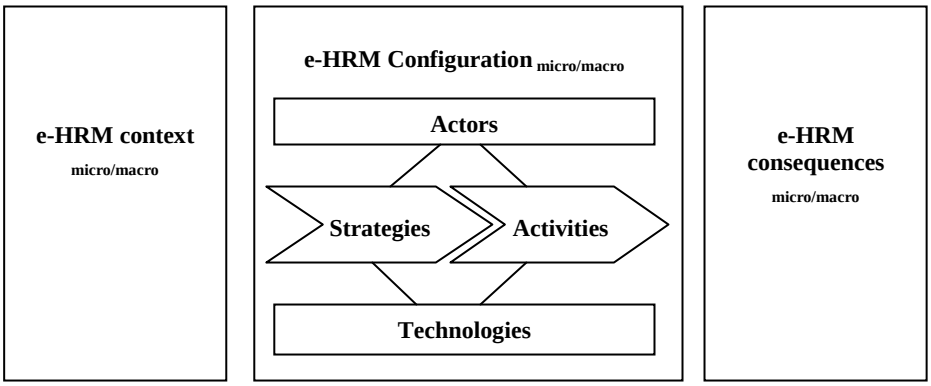


Figure 1. Framework for e-HRM [36]

2.2 E-HRM activities and processes

Almost every e-HRM activity can be carried out by means of an intranet. An intranet is defined as a network based on TCP/IP protocols (an internet) belonging to an organization, usually a corporation, accessible only by the organization's members, employees, or others with authorization. The intranet's purpose is to safely share part of an organization's information or operations with its employees and to facilitate the sharing of this information. They support many real job functions and can become the primary avenue that employees use to communicate with people in other groups within the organization and the way you find the information you need to do your job effectively and easily [25]. Sometimes the term refers only to the most visible service, the internal website, generally restricted to employees of the organization.

Intranets have inherited from Web parenting the low cost, inexpensive fees, scalability and excellent support advantages, but these will only come out if it is properly designed and managed [17]. This means that the Internet's interactivity and real-time interaction collude with the advantages of having the information on HR systematized, allowing for most efficient decision making.

Figure 2 illustrates the key e-HRM processes most commonly found on corporate intranets [5, 15, 39].

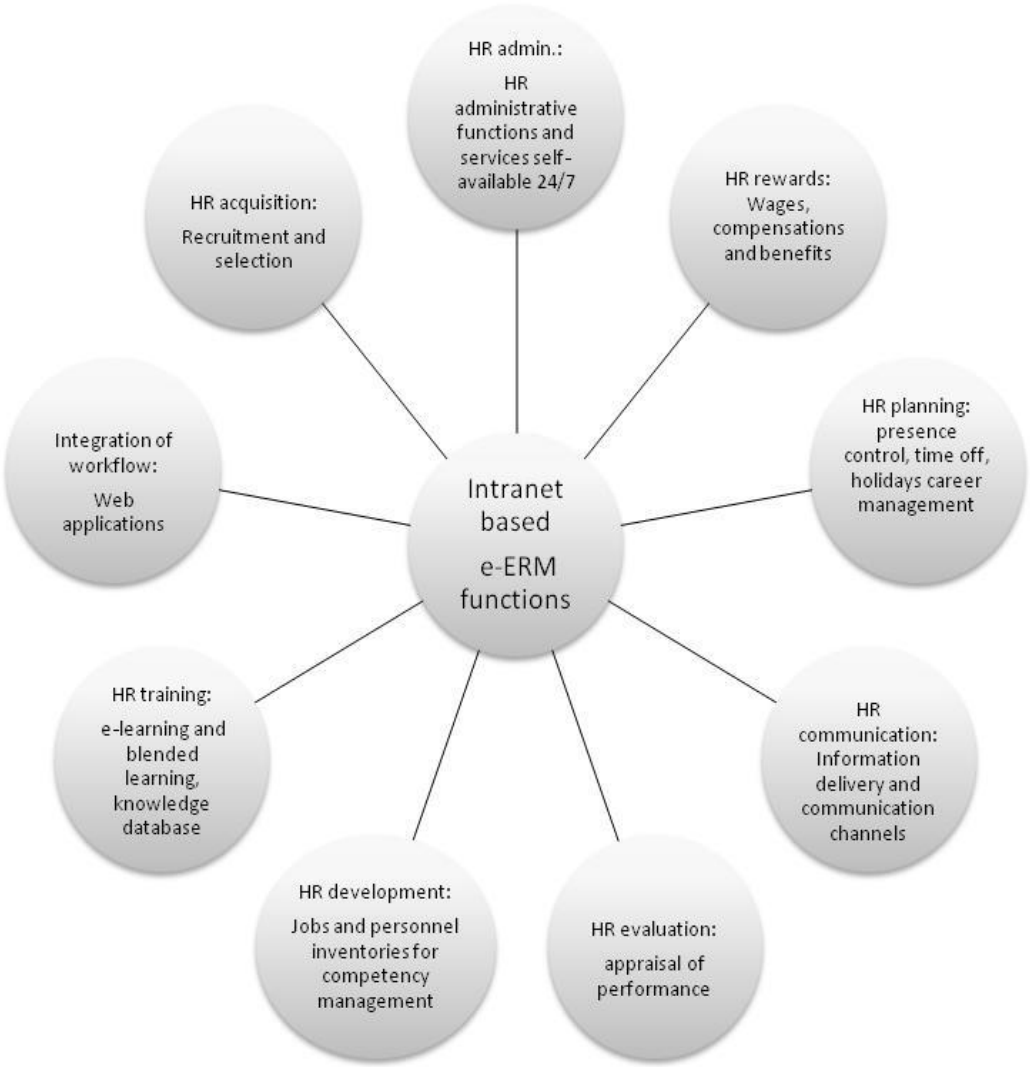


Figure 2. Key e-HRM functions

It can be seen in Figure 2 that there is a variety of functions available for e-HR managers, from the simple publishing of information, to more sophisticated HR practices that contribute in the long term to skill and knowledge base within the organization [42]. Let us elaborate on these functions.

HR selection and recruitment may be carried out by means of an applicants' tracking system, a software application that enables the electronic handling of corporate recruitment needs. Most include a corporate career site, allowing companies to post jobs on to their own websites, and applicants to log on their curriculum vitae. Candidates can apply for either specific or non-specific job vacancies. Effective solutions store the candidate data into a database to allow efficient searching, filtering, and routing of applications. It can be complemented with the information provided by an online, integrated solution using Web-based management tools, which allow applicants (job seekers) to submit (upload) and manage their electronic Curriculum on the Internet [39].

HR administration allows for e- self-service applications that diminish the charge of routine work for the HR department while increasing transparency and visibility for employees in regards to their personal information. This indicates an increase in information access and sharing, shifting away from the traditionally centralized and hierarchical approach. Furthermore, the operational efficiency and effectiveness of the HR area improves, leaving their managers to focus on the more strategic functions of their profession [8].

Payroll administration is known to be one of the earliest HR processes to become automatic [20]. **Wages and benefits** are easier to calculate and personalize since the information needed is mostly uploaded in the system, like time attendance and productivity figures.

This is related to **HR planning** in terms of presence control, and requests for holidays and time off. The traditional time clock often no longer makes sense and simply does not meet the needs of the current work environment. The intranet may be used to track and monitor employee attendance accurately in real-time, even if they are not working physically ate the organizational premises However, it may lead to a "Big Brother" experience for the more technophobic employees [1].

Information dissemination and intra-organizational communication are two of the most common purposes of the intranet [5, 24]. However, e-HRM takes this information level up a few notches, by offering employees online access to information about HR in a self-service way. E-mail, forums, videoconferences and other applications are set up on the virtual desktop of the employee to provide them with several communication channels that break the trade-off between reach and richness of information [8].

Payne et al. [29] provide evidence that **online performance appraisal** systems are viewed as superior to paper and pencil systems in many respects, but not in terms of the perceived quality of the performance appraisal ratings. Actually, the gain comes from having the information gathered in one system that allows for comparison and feedback of the HR manager, although not so much from the employee´s point of view.

Jobs inventories and staff profiles can be loaded into the system and used as the starting point of the **HR development** function. A series of assessments are carried out to match peoples' competencies and job requirements, as well as planning promotions and careers, and detecting training needs. These databases should be kept always updated, so that HR managers are able to identify and lack or excess in any competency of any employee at any given time [39].

HR training has a wide scope, from an application to request courses to e-learning and e-mentoring processes. It also contributes to organizational effectiveness by managing knowledge repositories and creating social and intellectual capital [20]. According to Murray et al. [23], most distance education technologies can be used for training, are cheaper for the firm to use (as compared to the use of a live instructor) and trainees thus trained perform better, especially in virtual environments. However, the average trainee prefers a live trainer that any e-learning resource, unless there is a strong intercommunication among trainees.

The use of web technologies has changed the way in which data and computational resources are brought to the desktop of the employees. Since **web based solutions** are easy to establish [32], a plenty and quickly increasing number of resources can be made available on Intranet application [15]. This function refers to an e-HR form which focuses on the automation of transactions, under the principles of business process

reengineering, where paperwork is replaced by electronic work flows, even integrating and combining several application programs, under ERP software.

Now that the e-HRM functions have been shown, the next stage would be to measure their performance and the employees' attitude towards them, for which the TAM has been considered for the next stage of the project that is being discussed in this paper.

The Technology Acceptance Model

As we have seen in Strohmeier's framework, the performance levels of the e-HRM depend on several factors, like the level of commitment and qualifications of the HR manager, the IT used, the organizational culture and the expectations and demands of the employees and managers [5, 11, 27]. In order to be able to measure this performance, several models and theories have been developed. Particularly, the Technology Acceptance Model (TAM) is an information systems theory that models how users come to accept and use a technology. This model may be valuable as a tool for helping with analyzing and understanding intranet usage [16] and attitudes toward e-HRM [40].

Davies et al. [10] presented a model which suggested that when users are presented with a new technology, a number of factors influence their decision about how and when they will use it (see figure 3):

- Perceived usefulness: refers to the degree to which a person believes that using a particular system would enhance his or her job performance. That is, the application results in a positive use-performance relationship. In the context of e-HRM, this definition can be interpreted as whether or not actively participating in the online management of one’s time would help the employee to become more productive.
- Perceived ease-of-use: refers to the degree to which a person believes that using a particular system would be free from effort; i.e., if the application can be easily used for the intended purpose. For instance, in e-HRM, whether the platform is easy to access and to work with.

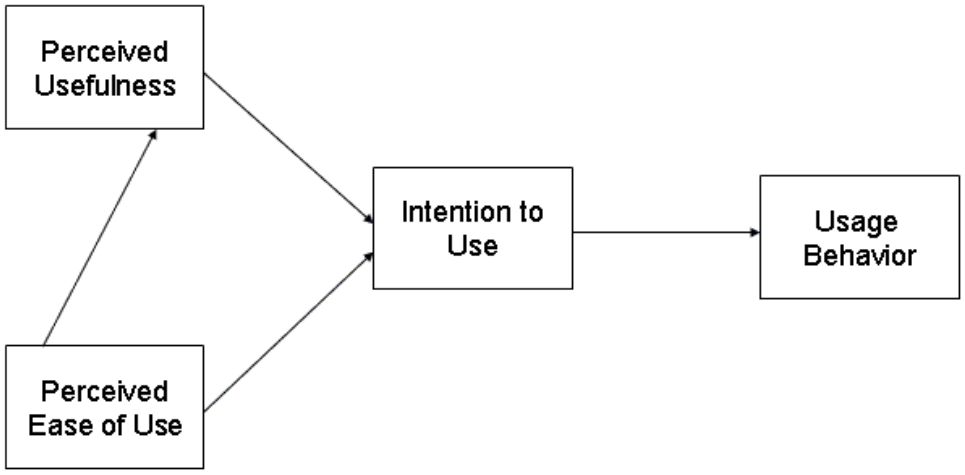


Figure 3. Technology Acceptance Model [9]

This model is quite popular among researchers. It has been tested within a wide variety of computer settings and has been shown to be a robust predictor of computer use [40] The TAM should also be a successful predictor of online course use [22] thus being applicable to study online training practices.

However, a common denominator is that the model is seldom useful as designed by Davis [9], and therefore changes have to be made so that it may adapt to the circumstances of the analyzed industry and business. In practice constraints such as limited ability, time, environmental or organizational limits, and unconscious habits will limit the freedom to act. For instance, Horton et al. [16] found out that its applicability may be variable between intranets and demonstrates that self-report and actual measures of usage are not interchangeable when applying such a model. Further criticisms of TAM as a "theory" include its lack of falsifiability, questionable heuristic value, limited explanatory and predictive power, triviality, and lack of any practical value [3]. Attempts to overcome these hindrances have generally taken one of three approaches: by introducing factors from related models, by introducing additional or alternative belief factors, and by examining antecedents and moderators of perceived usefulness and perceived ease of use [34]. For instance, Venkatesh and Davis extended the original TAM model to explain perceived usefulness and usage intentions in terms of social influence and cognitive instrumental processes. The extended model, referred to as TAM2, was tested in both voluntary and mandatory settings. The results strongly supported TAM2 [40]. The variables added by [40] are: image (the degree to which use of an innovation is perceived to enhance one's status in one's social system), job relevance (individual's perception regarding the degree to which the target system is relevant to his or her job), output quality (the degree to which an individual believes that the system performs his or her job tasks well), result demonstrability (tangibility of the results of using the innovation), subjective norm (a person's perception that most people who are important to him think he should or should not perform the behavior in question), and voluntariness (the extent to which potential adopters perceive the adoption decision to be non-mandatory). The latter dimension appeals to our research since we are dealing with public servants.

Other attempts to establish a perfected model are those of [31], who proposed a framework integrating three categories of factors for the analysis of teleworking adoption: technological, human resources, and organizational factors. [2], using data gathered from the implementation of an ERP system, affirmed that managerial interventions in training and project communication influence the acceptance of technology, since perceived usefulness and ease of use contribute to behavioral intention to use the technology.

All in all, these discrepancies on the applicability of TAM for e-HRM reinforce our belief in carrying out a previous analysis of the context, actors, activities, strategies and technologies, so that we can tailor the model to our organization's features.

3 Methodology

This paper presents a qualitative research [43], based on an open group-based interview regarding the intranet’s working and their perceptions and attitudes. This interview was responded by the employees of the CV division of the Information Systems Department of the UA, one of them a middle manager, thus applying the “person of interest” approach. Following [14, 33], the majority of the studies in HRM performance neglect

the perspective of the employee, which is necessary evidence to have a comprehensive view of HR politics, and has the added value of improving labor climate.

These specific employees were selected because, firstly, they possess technical knowledge about CV and coached us in how the system works and which applications are still being implemented. Secondly, the interviewees' job is to answer the questions, issues and suggestions of the university's employees regarding CV usage, thereby providing the researchers with first hand information about behavior usage. Therefore, the interview was conducted in an interactive manner, in which the interviewees described how the system works and stressed the most important issues they have come across during the implementation period in regards to its users.

Following their recommendations, we selected for analysis the following subsystems of the e-HRM of the UA because of their higher level of development, describing them from both perspectives, those of the administrative employee and the supervisor:

- Employee: time attendance tracking, time off request, holiday period request.
- Supervisor: employee absence monitor, time off request and holiday period request approval.

This will allow for a 360º vision of every function, illustrating the interactions among both agents involved [4]. Also, the information was limited to the experience of the administrative staff since they form a numerous group with similar tasks, at least in regards to the manner in which to conduct these HR functions, whereas the faculty do not have these online time management functions because of the special nature of their jobs.

4 Results and discussion

4.1 The context

The UA had a teaching staff of 2212 people and 1240 administrative staff in December 2007 [21]. Besides, the 2007 budget was roughly 265 million €. Therefore, although the UA is a public organization, it can be considered a "big-size enterprise" in terms of personnel and operative budget, albeit a very complex one. Also, being a public organization, strict bureaucratic rules need to be followed, especially for administrative tasks. This means that the assessment of e-HRM is seen as the extent to which e-HRM applications are perceived as appropriate in use [30].

4.2 The strategies

The e-HRM system of the UA was developed as a result of its strategic plan for achieving higher levels of service quality and cost efficiency, as well as complying with its environmental policy [6]. Its use is compulsory for everybody and training courses are offered to the employees once the applications are implemented and in use.

4.3 The technology

Since 1995, the UA makes use of a self-made platform called Campus Virtual [6]. Campus Virtual is a web application that supports both teaching and learning processes and administrative tasks, and it is used by more than 95.000 users in a mandatory manner [38]. As a proprietary IT system, it is customized to UA staff's needs and demands, and any difficulties are being dealt with as soon as they are detected. It is on this platform, which was already known to the employees, that was decided to

implement the HRM functions. This is important since, as [19] have demonstrated, web experience and task interdependence impact intranet usage and perceived ease of use.

The e-HRM platform the UA is personalized, secure, and accessible from any computer with an internet connection. Obviously, the e-HRM limits access to information to only authorized users in the UA: privacy is an important issue, because HR information is confidential and not suitable for posting on a website for everyone to see. Currently, the e-HRM offers the following main functions to employees, but every year the features and functions of e-HRM are improved:

- Enroll in and participate in training programs online (e-learning).
- Time attendance tracking.
- Time off request.
- Check holiday entitlements and request holiday periods.
- View and print the payroll online.

Moreover, the e-HRM system of the UA supports other functions as e-recruiting and knowledge sharing. For example, all the new job positions are made public on the UA web portal; all the information about health care and other benefits, UA's policies regarding work hours and holiday periods, and model documents are available on the UA web portal.

Besides, UA employees keep their personal records up to date by themselves. For example, an employee can submit an address or bank account change through the e-HRM. With employees helping themselves to information transaction and changes, UA is able to cut the number of staff members required to administer some HR tasks and it is able to offer a more personalized and up-to-date information, which concurs with the benefits and drawbacks presented before.

4.4 The activities and actors: e-HRM functions in the University of Alicante.

4.4.1 The employee's perspective

As it was explained before, the Campus Virtual of the UA is used to track and monitor administrative employees' attendance accurately in real-time. Instead of employees punching a time-card, they simply connect to the Campus Virtual, enter their user and password and select the function to punch in. Employees can punch in only from their assigned computer; therefore, it is avoided fraudulence: an employee cannot punch in at home or from another computer in the University.

Figure 4 shows the e-HRM interface that is used punch in both the entrance and the exit. As we can observe, the interface is very simple: the time of the last punching is shown, and two buttons allow the employee to punch in the coming in or the coming out.

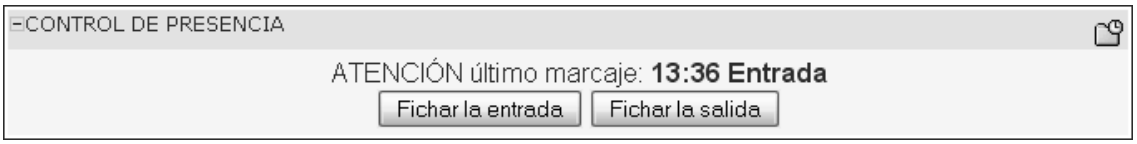


Figure 4. Punching in work

Sometimes, employees can make a mistake and can forget to punch in at the right time. In this case, the employee has to use the function to correct a mistaken punching: the employee has to fill up the date and time of the mistaken punching, the event (come in or come out) and the reason, as shown in Figure 5.

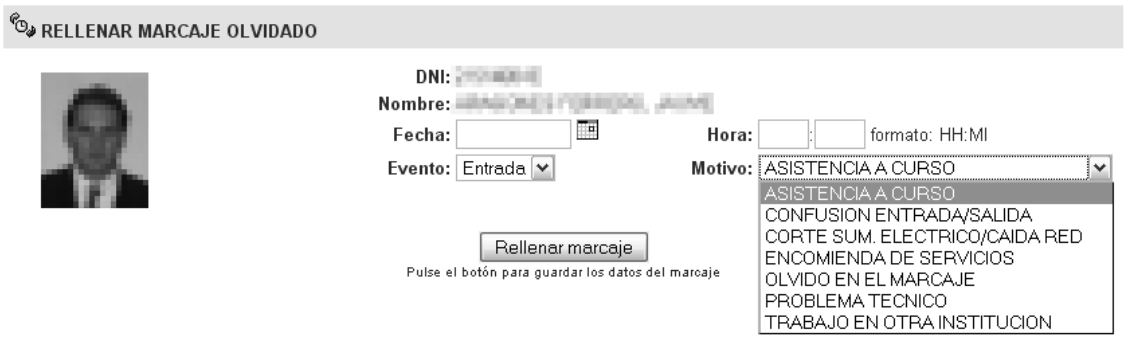
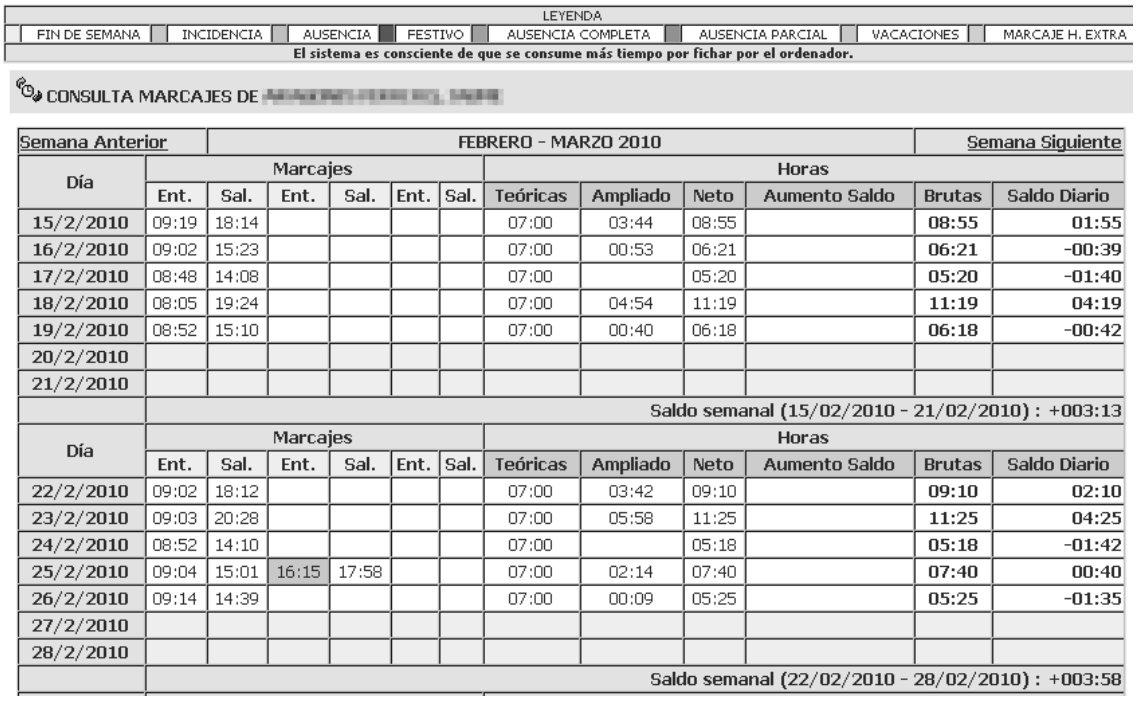


Figure 5. Correcting a mistaken punching

Moreover, the e-HRM offers an on-demand report generation that allows employees to review their own attendance data and to check their balance (theoretical and real hours), as shown in Figure 6. This is very important since for the most bureaucratic organizations, wages and productivity are usually calculated in according to working hours. In this report, special events, such as bank holidays or sick leaves, are shown with a different color.



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18/2/2010	08:05	19:24					07:00	04:54	11:19		11:19	04:19
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Figure 6. Time attendance balance report

On the other hand, employees can make time off requests and enter time off taken through the e-HRM of the UA. Figure 7 shows the interface of this function, where the employee has to fill up the reason and the starting date and ending date of the time off.

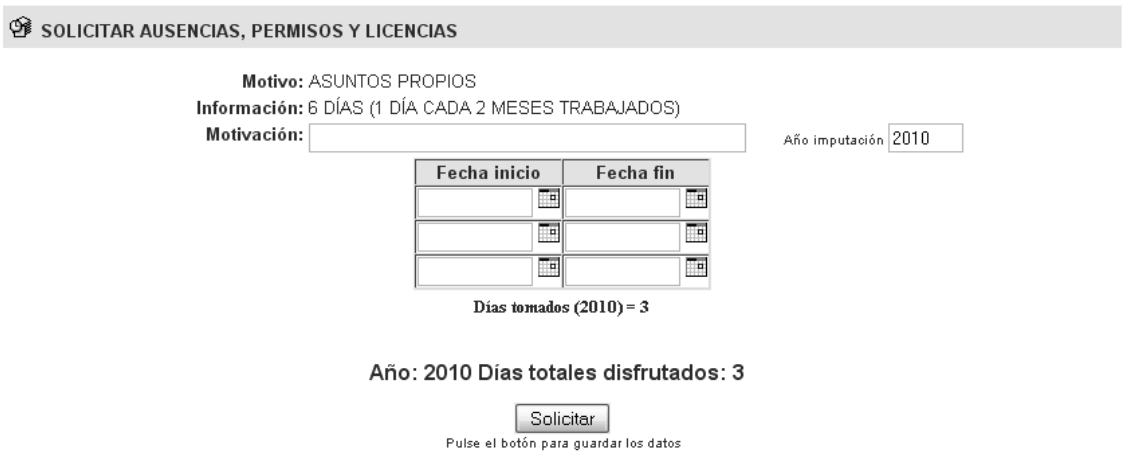

Figure 7. Requesting time off

The requests for time off are automatically routed to their supervisors and automated email notifications notify supervisors the existence of pending time off requests. Supervisors could approve or reject with detailed comments any request. Automated email notifications notify employees when time off requests are approved or rejected.

Lastly, employees can also request holiday periods, as shown in Figure 8. The employee has to fill up the type of holiday period and the starting date and ending date of each one of the holiday periods.

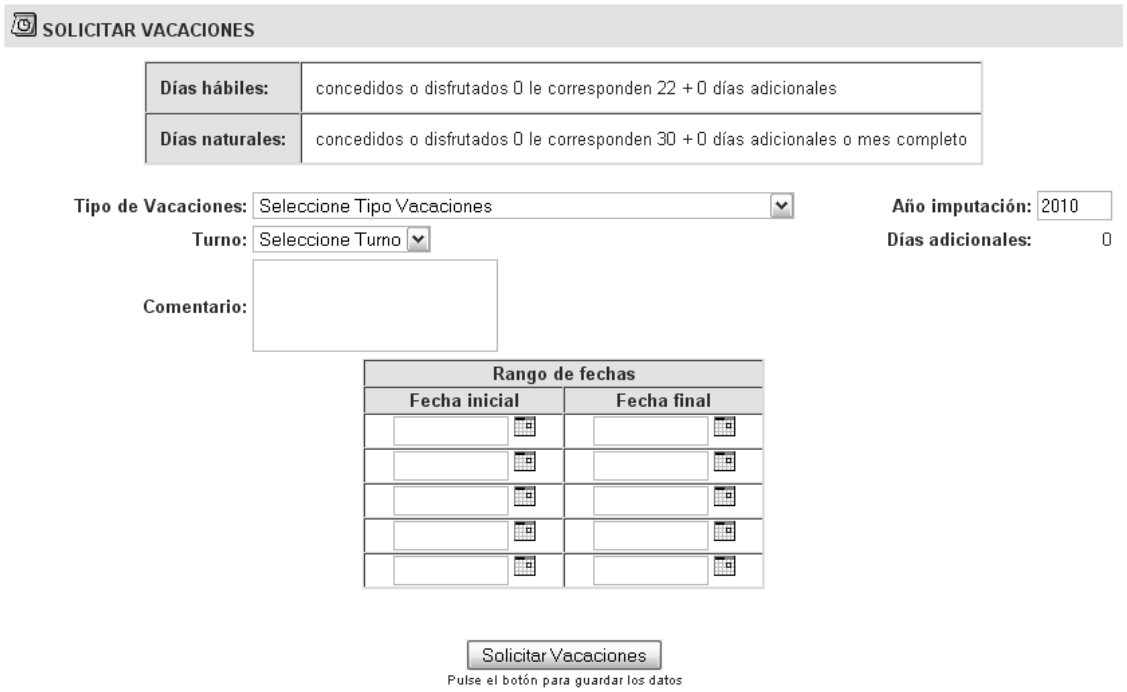

Figure 8. Requesting holiday periods

4.4.2 The supervisor's perspective

Supervisors can monitor and manage employee attendance and absence in real-time from any computer with internet connection. The e-HRM allows supervisors to note exceptions such as tardiness or absences and adopt corrective decisions.

For example, Figure 9 shows the time attendance tracking of an employee during a week. A mistaken punching that the employee has corrected is highlighted with yellow background color. The supervisor can check the reason and can approve or reject this correction.

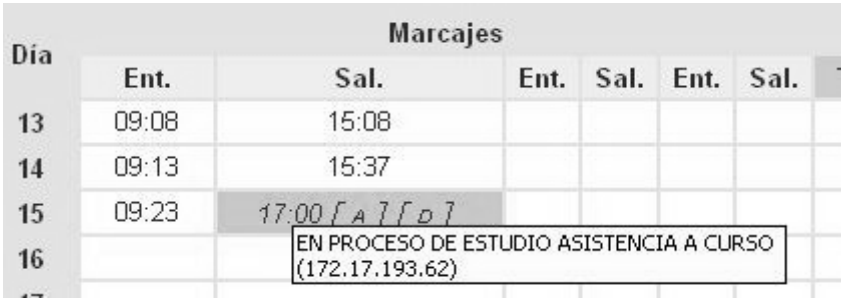

Figure 9. Time attendance tracking of an employee

Regarding time off and holiday period requests, supervisors receive automated email notifications. Supervisors review time off and holiday period requests and approve or reject them with detailed comments according to scheduling criteria or whether balances will be available. Then, automated email notifications notify employees when time off and holiday period requests are approved or rejected. Figure 10 shows the interface of this function, where the supervisor has to fill up the reason of rejecting a time off request.

Figure 10. Approving or rejecting a time off request

Finally, UA's e-HRM platform allows supervisors to generate on-demand reports. Supervisors can review the time attendance of a particular employee or can check the balance of all the members of a work group. For example, Figure 11 illustrates a report about the time attendance and time off requests of five employees from May to June.

Different colors are used to highlight the special events, such as bank holidays, employee holidays and full and part-time time offs. It is easy to see and compare the dates of attendance and time off of every person, thus providing their supervisor with exact and relevant information concerning the work time of their employees.

Figure 11. Report of time attendance

4.5 Discussion

The present comparison of perspectives aims to help the organization to understand the electronic interactions between managers and employees, preventing miscommunications and misinterpretations of information, as posited by [2]. For instance, online presence control may be considered overwhelming for the less willing employees, because the fell that they are under constant vigilance. Measures against this feeling should be set up.

Other topic regarding the collusion of the employees and supervisors' jobs that should be addressed is the possibility of correcting mistakes produced by the employees that use the system without direct surveillance, limiting the damage in time. This will help to counteract computer anxiety [40] or the degree of an individual's apprehension, or even fear, when she/he is faced with the possibility of using computers.

Besides, any reports on performance and time management generated by the system should be discussed between employees and managers to generate feedback on the causes and consequences of their performance. In accordance with [4], the difference in perspectives must be addressed not only when data discrepancies arise, but also when tacit incongruencies may happen, due to diverse frame domains.

As for the nuances that must be introduced in TAM's questionnaire, the analysis of the context (that of a public organization, highly bureaucratic and formalized), the strategies (platform of mandatory use from top management) and activities (self-management of time functions are the most developed) lead to think that, out of the two dimensions considered by Davis [9], we should concentrate on the perceived usefulness of the platform. The perceived easiness of use will also affect the attitude towards its use and the acceptance of online control of their tasks, especially considering the role that web experience has on this dimension, as was shown by [34]. Nonetheless, if the employees feel more in control of their time despite the online supervision process, then they will accept the platform more easily as seen in [37], especially in terms of trust and

communication between employees and supervisors. Trust, communication and support are all interrelated, even more where IT is concerned, like [18] establish.

The intention to use, on the contrary, is not relevant in itself, due to the compulsory nature of the application, but it should be considered because it may be a source of future "mistakes" due to negligence and carelessness from the employees and supervisors. Therefore, we strongly feel the need to add the voluntariness dimension to the questionnaire, as proposed by [40].

5 Conclusions, limitations and future research.

In this paper we have presented a case study following Strohmeier's framework, consisting in the organizational analysis of the intranet that supports the e-HR functions of a Spanish university, the University of Alicante, as the context and technology supporting e-HRM policies. We have also considered the perspectives of the administrative staff of the UA in regards to the deployment of these functions, as channeled by the IT staff that support the intranet. This case is doubly interesting because it is a public administration, with its special cultural features, and center for science development itself, which means that it benefits from an advanced tailor-made IT system to support e-HRM. This paper provides the reader with illustrative examples of how e-HR technology may be strategically aligned with HR needs, even in such a big enterprise with a diverse workforce and a bureaucratic culture.

Indeed, IT offers the opportunity to combine both perspectives due to its ability to break the trade-off between reach and richness of information within the organization. A strategically planned IT system may provide with dynamicity, adaptation and low costs, save time and supply useful information for better decision making.

The intranet is the most commonly deployed IT system for e-HRM, due to its adaptability and scalability. The intranet's main advantages are increased efficiency in decision making and a decrease in the required time for internal and external communication. These both result in a cut down of coordination and communication costs, removing bottlenecks in the decision making system and eliminating duplicated and routine administrative tasks. These positive effects could also be transferred onto HR policies to lessen their subjectivity, with the help of a rigorous competency management system, as presented by Valdes-Conca et al. [39].

HR managers now face the challenge of shifting from a bottom-line, expense control perspective towards organizational effectiveness and knowledge sharing. This is even more radical when they work for public administrations, characterized by their bureaucratic attitude against change in their work routines. Evidently, cultural issues are bound to exist and have to be taken care of by means of training programs and other benefits. Therefore, motivation and communication programs should be in the agenda of e-HR managers to increase willingness and acceptance of changes.

According to our results, the main issues to consider carefully when setting up e-HRM applications are those of communication, conflict management and trust between employees and supervisors. If these needs are not addressed, people will be reluctant to accept the system therefore creating more challenges than benefits. These findings will be introduced in the deployment of the TAM in a second stage of the research, so that it tailors to the specific characteristics of the UA's administrative workforce.

Our main limitation is that of presenting only the qualitative part of the case study, along with the small size of the sample. We are currently engaged in the quantitative

study regarding the satisfaction levels, attitudes and expectations of the UA administrative employees. It will be necessary to adapt the model to give more importance to the issues of commitment, trust, leadership and motivation, and less to those related to intention of use. Moreover, we have found that there is a lack of studies regarding the attitudes of University's employees towards e-HRM, in particular, and public employees faced with mandatory use of intranets, in general. Future lines of work in this field are the promotion of more case studies from which to learn directly the opportunities and threats of e-HRM, and the solutions provided by field-HR managers.

References

[1] Aberdeen Group Inc (2007). Evolving Time and Attendance. http://www.aberdeen.com/launch/report/research_previews/4699-RP-evolving-time-attendance.asp

[2] Amoako-Gyampah, K. & Salam A. F. (2004). An extension of the technology acceptance model in an ERP implementation environment. Information & Management, 41 (6), 731-745.

[3] Bagozzi, R. P. (2007). The legacy of the technology acceptance model and a proposal for a paradigm shift. Journal of the Association for Information Systems, 8(4), 244-254.

[4] Bondarouk, T. & Looise, J.K. (2009). Framing the implementation of HRM innovation. Personnel Review, 38(5), 472-491.

[5] Boselie, P., Paauwe, J. (2004). Human resource function competencies in European companies, Personnel Review, 34 (5), 550-556.

[6] Campus Virtual. http://www.ua.es/es/servicios/si/ite/cv/index.html

[7] Chen, R.S., Hsu, C.J., Chang, C.C., Yeh, S.W. (2005). A web-based monitor and management system architecture for enterprise virtual private network. Computers and Electrical Engineering, 31, 503-524.

[8] Clarke, K. and Preece, D. (2005). Constructing and using a company Internet: "it's a very cultural thing". New Technology, Work and Employment, 20 (2), 150-165.

[9] Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, 13(3), 319-339.

[10] Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. Management Science, 35(8), 982-1003.

[11] de Juana-Espinosa, S.; Valdes-Conca, J. Fernandez-Sanchez, J.A. and Manresa-Marhuenda, E. (2009). La Sociedad Digital y el mundo del trabajo. IV Congreso para la Cibersociedad. http://www.cibersociedad.net/congres2009/es/coms/la-sociedad-digital-y-el-mundo-del-trabajo/935/

[12] del Águila, A.R. (2000). Comercio electrónico y estrategia empresarial. Hacia la economía digital. Ed. Ra-Ma.

[13] Florkowski, G.W. & Olivas-Luján, M.R. (2006). The diffusion of human-resource information-technology innovations in US and non-US firms. Personnel Review, 35(6), 684-710.

[14] Guest, (1999). HRM: the workers verdict. Human Resource Management Journal, 9 (3), 5-25.

[15] Güntzer, U., Müller, R., Müller, S., & Schinmkat, R.D. (2007). Retrieval for Decision Support Resources by Structured Models. Decision Support Systems, 43 (4), 1117-1132.

[16] Horton, R.P.; Buck, T.; Waterson, P.E. & Clegg, C.W. (2001). Explaining intranet use with the technology acceptance model. Journal of Information Technology, 16(4), 237 – 249.

[17] Kearns, G.S., & Lederer, A.L. (2000). The effect of strategic alignment on the use of IS resources for competitive advantage. The Journal of Strategic Information Systems, 9 (4), 265-293.

[18] Kowalski, K.B. & Swanson, J.A. (2005). Critical success in developing teleworking programs. Benchmarking: An international review, 12 (3), 236-249.

[19] Lee, S. & Kim, B.G. (2008). Factors affecting the usage of intranet: a confirmatory study. Computers in Human Behavior, 25, 191-201.

[20] Lengnick-Hall, M. L. and Moritz, S. (2003). The impact of e-HR on the human resource management function. Journal of Labor Research, 24 (3), 365-379.

[21] Memoria Universidad de Alicante 2007-08. http://memoria.ua.es/es/

[22] Miller, M.D.; Rainer, R.K. & Corley, K.J. (2003). Predictors of Engagement and Participation in an On-Line Course. Online Journal of Distance Learning Administration, 36 (1).

[23] Murray, L.W. and Efendioglu, A.M. (2009). Addressing global labor need using e-training. In Torres-Coronas, T. and Arias-Oliva, M. (eds.). Encyclopedia of Human Resources Information Systems. Ed. Information Science Reference (IGI Global), 12-17.

[24] Ngai, E.; Law, C.; Chan, S. & Wat, F. (2008): Importance of Internet to human resource practitioners in Hong Kong. Personnel Review, 37(1), 66-84.

[25] Nielsen, J. (2000). Designing Web Usability. New Riders Publishing. USA.

[26] Noe, R.A.; Hollenbeck, J.; Gerhart, B. and Wright P.M. (2004). Fundamentals of human resource management. McGraw-Hill. 2nd ed.

[27] Olivas-Lujan, M.R.; Ramirez, J.; Zapata-Cantu, L. (2007). e-HRM in Mexico: adapting innovations for global competitiveness. International Journal of Manpower, 28 (5), 418-434.

[28] Ruel, H.; Bondarouk, T.V. & Van der Velde, M. (2007). The contribution of e-HRM to HRM effectiveness: Results from a quantitative study in a Dutch Ministry. Employee Relations, 29 (3), 280 – 291.

[29] Panayatopoulou, L.; Vakola, M.; Galanaki, E. (2007). E-HR adoption and the role of HRM: evidence from Greece. Personnel Review, 36 (2), 227-294.

[30] Payne, S.C.; Horner, M.T.; Boswell, W.R.; Boswell, W.R., Schroeder, A.N.; Stine-Chayne K.J. (2009). Comparison of on-line and traditional performance appraisal systems. Journal of Managerial Psychology, 24 (6), 526-544.

[31] Perez Perez, M.; Martinez Sanchez, A.; de Luis Carnicer, P. & Vela Jimenez, M.J. (2004). A technology acceptance model of innovation adoption: the case of teleworking. European Journal of Innovation Management,7 (4), 280 – 291.

[32] Power, D.J., & Kaparthi, S. (2002). Building web-based decision support systems. Studies in Informatics and Control, 11(4), 291-302.

[33] Prowse, P. & Prowse, J. (2009). Whatever happened to human resource management performance?. International Journal of Productivity and Performance Management, 59 (2), 145-162.

[34] Schepers, J. & Wetzels, M. (2007). A meta-analysis of the technology acceptance model: investigating subjective norm and moderation effects. Information & Management, 44(1), 90-103.

[35] Shih, H.P. (2004). Extended technology acceptance model of Internet utilization behavior. Information & Management, 41(6), 719-729.

[36] Strohmeier, S. (2007). Research in e.HRM: Review and implications. Human Resource Management Review, 17, 19-37.

[37] Teo, S.T.T (2002). Effectiveness of a corporate HR department in an Australian public sector entity during commercialization and corporatization. The International Journal of Human Resource Management, 13 (1), 89-105.

[38] Universidad Virtual – Estadísticas. http://www.ua.es/es/univirtual/estadisticas.htm

[39] Valdes-Conca, J.; Canos-Daros, L. & de Juana-Espinosa, S. (2009). B2E relationships, Intranets and competency management. In Torres-Coronas, T. and Arias-Oliva, M. (eds.). Encyclopedia of Human Resources Information Systems. Ed. Information Science Reference (IGI Global), 77-83.

[40] Venkatesh, V. & Davis, F.D. (2000). A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. Management Science, 46, 186-204.

[41] Voermans, M., & van Veldhoven, M. (2007). Attitude towards E-HRM: an empirical study at Philips. Personnel Review, 36 (6), 887-902.

[42] Wood, S. & Wall, T. 2002. Human Resource Management and Business Performance. In P. Warr, (Ed.), The Psychology of Work (Penguin), 351-74.

[43] Yin, R.K. (2003). Case study research: design and methods. 3rd ed. Sage.

[44] Zimmermann, H.D. & Koerner, V. (1999). New emerging industrial structures in the digital economy – the case of the finance industry. America's Conference on Information Systems, Milwaukee, WI.

Arguments for practice-based studies in e-HRM Case study of HR transformation at Sandvik Corp.

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Abstract. *This paper promotes philosophical arguments for a practice based view to e-HRM, as an alternative to evidence based management, to close the gap between HRM academics and practitioners. A reflexive theorizing of HR work is proposed, encouraging diversity in epistemological and ontological assumptions to support a mindful problemization of empirical work. In my study of an HR transformation project at Sandvik Corporation I argue for a positioning of e-HRM studies towards a deeper acknowledgment of situated work practices. I also propose some contemporary discussions within organization studies and information systems research, acknowledging especially the entanglement of technology and every day practices, and ethnography as a strategy of investigation. Finally I conclude with a discussion of the contribution of this research approach to the study of e-HRM.*

Keywords: e-HRM, HR transformation, practice-based, relationality, ethnography

1 A gap to practice

In recent years 'e-enabled HRM' and the idea of evidence-based HRM has had significant impact upon HR professional skills and the way organizations design HR practices. Within Multi National Corporations (MNC) technological developments and the use of integrated Human Resource Information Systems (HR IS), have promoted reengineering of processes and made possible the integration, centralization and rationalization of administrative work within HR departments [35, 49]. The use of such "pull technologies", and the mass customization of terms and conditions, have revealed a transformational potential of HR IS [33], and positive associations between technical and strategic effectiveness have also resulted in a situation where HRM is more often understood as a major competitive advantage [16].

A key driver in the rhetoric behind this development has been Ulrich's (1997) highly influential *business-partner model*. This value-driven business model for HRM, based on research, has for more than a century figured as a benchmark for the creation of modern HRM. It is widely dispersed and discussed in businesses, and to be found as guidance in many HR transformational projects and consultancy marketing information. The basic idea of this business partner model includes the use of integrated software solutions to support and enable benchmarking of global HR processes. This gain in

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efficiency through automating information structures and often outsourcing HR administration, is supposed to "release" HR professionals into more strategic activities as 'business partners'. Instead of being preoccupied with routine work, HR professionals are ideally released into more analytical work tasks taking on a more proactive role in the organization working with people development and change issues in line with corporate strategy. This is supposed to contribute to the organizational mutual interests of employees and share holders, and raise the professional standing of HR [86].

'Business partnering makes HR accountable to the business, and expects HR to add real value. This is a shift away from traditional HR functions where purpose, priorities and successes were defined within HR' [18]

Though, in "reality" there seems to be general disappointment in the use of these high performance work models. HR managers seem to have failed to seize the opportunities outlined by Ulrich's 'business partner model'. A majority of participating managers in a recent study don't believe in the structure of this model and that one out of four also questioned it's effectiveness [65]. There also seems to be a lack of clear definitions of the roles for HR professionals within this model [7].

From a more general point of view there seams to be large discrepancies between research findings and practitioners' beliefs in "how it is in reality" [74]. Professionals often do not agree with research findings and this in turn leads to a general problem of getting companies to put scientific knowledge into practice, i.e. Evidence-Based Management (EBM) as companies [practitioners] often make decisions based on false beliefs that stem only from personal experiences [62, 63]. Why is this? Why do practitioners not just do as we think?

Rynes, Giluk, et.al. (2007) argue that this is because of academics inability to communicate their research findings. They suggest academics agree about evidence that supports the use of specific practices, and that intermediate HR journals should communicate this information to practitioners, but fail to do so. They claim that information distribution is the main problem; that academics are miss-interpreted and that we are not good enough at communicating our facts. Managers need information that is timely and relevant for their jobs, providing them with fresh insights and meaningful solutions that help them also within the political game. But academics miss out on this opportunity, and instead management gurus and consultants take over and fill out the "expertise gaps", using good narratives and emotionally appealing, and efficient, marketing [31].

A second explanation is the difficulty for managers to relate to our research, and when using it they still miss out interpreting them wrong because of poor scientific understanding [70]. This is arguably because management is not a profession, like medicine, psychology, education, or law that shares a common knowledge base (Leicht and Fennell 2001; Trank and Rynes 2003; Rynes, Giluk et al. 2007). Highly structured practices, such as these, are in stark contrast to the messy and ambiguous practicing of management in contemporary organizations [95]. Managers generally don't read scientific articles, but consult other managers to solve problems [15, 99].

A third explanation may be found in Deadrick and Gibson's findings about interest areas. Looking at the interest groups of HR professionals and practitioners there seem to be a gap in interest areas. In a content analysis of 4300 HR related articles, in two academic and two professional journals, Deadrick and Gibson (2007) found a significant difference in the interest areas of HR professionals and HR academics and a

general lack of interest in everyday activities by HR academics. This was especially prevalent in studies of HR technology, strategic HR, managerial change efforts, and role of HR departments. In total these subjects (HR department, strategic HR and technology issues) covered 29 % of the professional articles, while just found in 7 % of the academic articles [20]. While professionals seems to be more interested in the technical and day-to-day aspects of their work, academics devoted more attention to generalizable phenomena (macro/statistical research) [20].

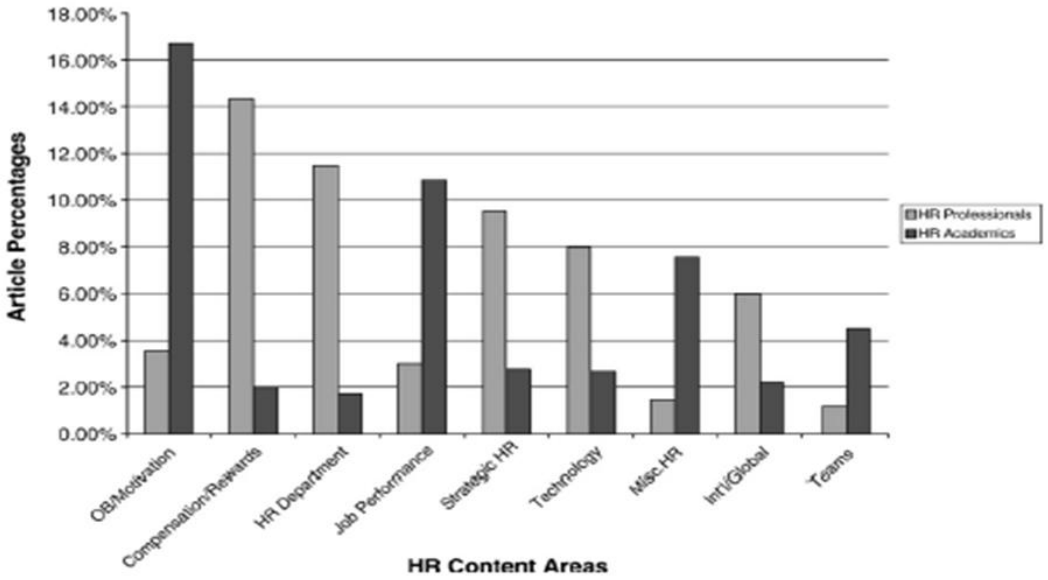

Figure 1: Largest content-area gaps, represented by percentage of articles published in HR professional and HR academic journals (1986–2005). Deadrick & Gibson 2007, p. 134

'As long as the professed goals of HR Academic and Professional journals diverge, the espoused (and published) interests of the two groups will also diverge. As a result, the privileged knowledge of HR Professionals and Academics will differ, which will lead to knowledge gaps and, most likely, "doing" (implementation) gaps.' [20] p.138

To sum up, I see two clear arguments for why these gaps exists, but weather this gap to practice exists because of incompatible ways of communicating what we academics know, or professional's ability to understand academic results, one question still lingers: why are the interest areas so diverse and why are not academics focused on problems as they are experienced by those who own them?

For sure Dave Ulrich, takes his responsibility responding to the critique, and gradually developed his model [87-89], but the general gap between practitioner and HR research is more profound and complex than to be answered by some leading authors. Fact is that despite the attention paid to the strategic agenda of future HR work, there is up to 2005 still little empirical evidence yet to support the HRM-performance link and the actual enactment of HR practices and employees perception of them [11, 59]. Arguments regarding the proposed shift from transactional to more strategic work in real practices is lacking evidence [60], and studies of the impact of HRM on different stakeholders are sparse [10]. Also regarding HR IS research, little has been done to address the perceived benefits and potential barriers to the implementation and use of HR technology [9, 37,

50, 82]. Studies of the implementation of integrated Enterprise Resource Planning (ERP) software, specifically, is still in it's infancy [9].

a. A way forward

Arguably there seem to have been a loss in philosophical reasoning about the knowledge that EBM scholars argue we are in consensus of, and a problematic distance between practitioners and academics interest areas and understanding as a consequence of this [31]. These questions need to be deeply thought through, searching for answers that can bridge this gap. Guest (2007) firmly steer this question towards a broader understanding of what is consensus within the academic discussion. Arguably, functionalistic writers seem to assume that we have the scientific knowledge of those basic principles that should guide HR practicing. Seeing this calling for EBM from a European perspective, Guest (2007) argues the situation being a bit different in Europe. For sure, there are fairly strong national initiatives supporting the development of evidence based management in the UK (e.g. Social research council, ESRC, and additional funding to universities that can demonstrate a strategy for transfer of knowledge). Still, compared to the development in the United States, in Europe EBM may be an even more disputed territory. In the context of a strong pluralist tradition in European industrial relations, with strong trade unions sustained and even reinforced by homogeneous legislation within European Union, European critical management scholars [1, 44], have fundamentally questioned the positivist (functionalistic and rationalistic) paradigm, drawing instead on the salience of issues such as power, social structures, and social relations, acknowledging a fundamentally different understanding of what is valuable knowledge.

'On the one hand, strategic HRM is characterized by the dominant organizational imperative for performance and productivity, which derives from an industry-based view of the firm and is informed by a rationalistic view of human action. On the other hand, HRM is concerned with meeting a more complex and often ambiguous needs and expectations of employees, the humanizing of work,…' [57] p.185

Through inquiries into the field priorities and limits, critical scholars have produced a viable critique of rationalistic approaches, arguing that value centric and unitary solutions too many complex and emergent organizational phenomena are simplistic. Instead this critical view of HRM argues for a pluralist approach that cares for diversity and the multiplicity of managerial conduct [31]. But, this critique seems to have fallen somewhat in the shade. European scholars argue that there has been a neglect of critical perspectives within HRM research between 1995 and 2000 [41]. Compared to European management and organizations theory journals, HRM journal appear to be oriented towards a consensus perspective, while organization theory construct HRM both in a way that strives for consensus and critique of reigning paradigm.

However, there are viable examples in the contemporary HRM debate [3, 96]. Going back to the critique of the 'business partner' model, Francis and Keegan (2007) critically evaluate the idea of 'e-enabled HRM' and the key underpinning assumptions behind the business partnership (i.e. CIPD notion of the 'thinking performer'). They argue that instead of enhancing the creative and progressive roles (strategic partner, change agent and employee champion), HR professionals seem to miss out on the classical employee facing roles that are so important to maintain the social and human capital [27]. Guest and King suggest the same interpretation, arguing HR managers seem to put heavy emphasis on the rationalizing infrastructure designed to support line management, and so they neglect paying more attention to build good relationships with

line managers and taking an explicit role in change management issues, [32]. Francis and Keegan (2006) argue that the profession needs to reflect seriously about the consequences of this framing of HR work. As business-values may be given as the only supposed contribution, this might render in a depersonalization and a lack of strategic amplification of HR professionals relationship with employees, employee well-being and the career paths of HR professionals. As soft elements cannot be measured in objective terms, and the ´high commitment´ HRM practices are still shaped by a rhetoric concerning "right" attitudes and behaviours, a great cost may instead occur when loosing empowerment and its potential to facilitate the incorporation of broader issues of employee well-being [27]. Arguably, there is a need for more constructive and balanced dialogue on the employee-facing role in the HR and a deeper understanding of the diversity of work practices as a basic building block in a sustainable way forward [26, 46].

Guest (2007) suggest academics need to stop thinking too much of what is "perfect information" and go back to "the roots" of what good communication is, and in particular, we need to readdress the perspective of the practitioners and reflect on what happens in organizations and understand why practitioners do not find the same value in EBM. Instead of thinking information distribution, we should be realistic about what the intermediate HR publications can do, and that we instead must see the plethora of different communication channels open to us in a modern society, including the formation of new relationship building constellations that take on more "direct" activities, such as joint forums and networks for further collaboration [71]. This work also involves our engagement in helping HR professionals education, to develop enhanced critical understanding and a capacity to conduct there own scientific inquiry and to know where to find and validate academic results and find workable solutions [68]. There is obviously a need for HR professionals to understand how power, responsibilities and critical reflection may help balance the inherent tensions in the employer contract, and it's centrality for the psychological contract between employee and organization [27, 69].

What looks to be an apparent gap between rhetoric and reality in HRM research [45] has only one way forward: we need to start again paying interest into what HR managers every day work is really like. We need way forward that once again focuses upon "real" practices, giving attention to empirical setting. We need to ask our selves if a the every day problems and challenges for HR professional and management in general (often concerned with existential affairs, relying on good relationship building and flexible solutions to resolve everyday problems) can seriously be compared with other professions, such as medicine or law, and if not, what are the negative consequences of these "hard practices" in such a "soft practice" as HRM,? These issues need to be addressed in a way that cares for the totality of human organizing. It needs to be a perspective that better conceptualize the development of the HR profession, not from what they are supposed to be, but from where HR managers are today, relating stronger to 'workers verdict' of what is valuable HR work.

The enactment of HR models occurs in 'actual' organizations and if we are to educate managers in relevant know how, we need to study practicing management's knowledge to solve the real puzzles, also reflecting on the effects of the scientific rhetoric on this reality that we try to understand [21]. We supposedly need to get closer to the problems of organizations and experience them personally, rather than describing them from the outside [21]. We need to come closer to this reality and understand lived organizations,

conducting empirical research that account for the richness in organizational 'sensemaking' [98]

'…we need to be more aware of the structural and experience-based contexts of our investigation; to see more than we understand.' [21] p.554

This needs to be done in a constructive and balanced way, not just in opposition to the functionalist paradigm, advocating a deconstructive logic, but systematically investigating the impact of HRM models on the shop floor. However, this is not to say that we shall adapt to the "marketization" of HRM research where scholars try to compete with consultants and journalists, in a consumer driven research. This could result in knowledge generations methods that loose both rigor and relevance, adopting an atheoretical language, close to what organizations already feel that they know and say [21, 75]. Rather, we need to explicitly target both HR managers and their reasons for their sticking with conventional truths and the misuse of EBM [62], and at the same time reflect upon our scientific rationale [meta-theory] and how such might lead to a "quick fix" mentality [36]. This way a critical view, need not to be in contrast to an EBM approach, but can be a complement to the critique forwarded by Guest (2007) and Lawler (2007), arguing for an 'engaged academy' [19]. Extended with behavioural theorizing, the functionalist perspective can readdress the weight of employee well-being and work based dynamics for the actual performance within embedded HR practices [23].

2 e-HRM at Sandvik Corp.

Answering this call for more empirical work and new types of research approaches, the aim of my doctoral thesis is to contribute with a case study of HR transformation at Sandvik Corp. Sandvik Corp. is a knowledge-based Swedish engineering group with advanced products and a world-leading position within the selected areas such as mining and construction, hard materials and industry tools. With over 40' employees and an order intake of approx. 9 billion EURO and, the company is one of the largest companies in Sweden.

Since 2003 the corporation drives a large HR change program called CONNECT. The program was created to introduce new ways of working with HR questions on a global basis, securing efficient and common ways of working and changing focus from administrative tasks to more strategic HR work. The program consists of four corner stones being the implementation of a Enterprise Resource Planning (ERP) software ('Peoplesoft'), to enable a global HR information handling, introducing global HR processes, a new HR role on both global and national level, called 'HR advisor' and a service centre solution, responsible for delivering effective HR administration services. Having had strong support from top management team, the program has over the last six years overcome many breakdowns and developed an experienced project management group. Focusing on all four cornerstones in each country implementation, introducing processes to streamline the organisation on a global basis, the program have had fundamental impact on the way HR is delivered at Sandvik Corp.

Figure 2: Sandvik HR transformation model; CONNECT. From Sandvik web-presentation.

a. Technology, processes and everyday routines

Initial findings of the 20 interviews conducted, and observation of CONNECT project management group, can be bracketed into two areas of concern: CONNECT project management group and the use of Peoplesoft, and the development at a production plant in Gimo, Sweden.

Historically the HR work at Sandvik has been dispersed, having uneven quality within the different business areas. The organization has been characterized by a decentralized organizational culture and varied ways of coping with HR problems and opportunities. With the help of offensive change management and internal marketing the CONNECT program management group have delivered the tools necessary to raise the general quality on HR work, but the different business areas seem to have made very different progress in their work with the CONNECT agenda, most significantly on the use of 'Peoplesoft' and it's more formal routines. The system seems to be thought of as hard to handle. Line managers complain about the interface and that the system is built on the wrong philosophy, being to rigid. There seem to be significant influence from system requirements, and dependency on system architecture where much work needs to be focused on getting the basic functionality running, globally, before the more qualitative and parts can be developed. It's arguably a communication challenge; that in order to get the value adding parts working the basic functions need to be in place; adjusting system modules to local requirements, and getting service centres working and operational reporting done by managers and employees. This seem to have affected the way CONNECT has influenced the practice, often through the connection HR professionals and technical experts on a global level. They work as a sort of 'high competence support', but in reality they are reasonable apart from the ongoing business of day to day HR work practices played out in the relationships between line managers and HR advisors.

' -As commented from a globally responsible HR advisor, all the four corner stones in the delivery model are all as important and he insists that they would not suspend the idea of a system support, just because of old routines, but for him it is a question that needs support from top management and it needs to gratify line managers and HR advisors in their everyday work [77]

As an example at the production unit, HR advisors and line managers thought they needed to take another turn in clarifying role descriptions, reasoning at all level in the business area about current situation and future expectations.

‘- We noticed that during this transformation we needed to do this more than once, because they forget and you go back on the same track. [77]

This reflective activity was conducted all over the production unit, where all involved managers had the opportunity to state their point of view and collectively make sense of the new situation, find their responsibilities and figure out the contribution of the new technology.

‘ -People often miss, or choose not to tell the main reason, the most significant reason for managers not getting efficient in their work with ‘Peoplesoft’, that they don’t want to work with the system.. They think It’s much better to call someone…but It’s not inefficient to use the system. [77]

‘-I have no reason to defend ‘Peoplesoft’, but I have had great reason to see, do we do the right quality, and my conclusion is: It’s not rationally conditioned, It’s a resistance to change, and we all have the responsibility to get this working. It’s OUR responsibility to work with this change and that’s why the program management is not such a powerful instance. [77]

This constant centrality of the CONNECT program management and the use of Peoplesoft, in relation to every day work practices and organizational routines, have become a central phenomena for ongoing investigation and theorizing process. The whole HR philosophy at Sandvik, as such, and this tension between the rationalizing goals of program management, and how it is answered and interpreted by individuals and groups in the organization, in everyday work practices, will be the main mystery being described and analyzed in the study of HR work at Sandvik Corp.

3 Contribution to e-HRM

In trying to connect this study to current discussion within e-HRM, I recently got in contact with the work of Tatyana Bondarouk and Huub Ruël, who have made recent attempts to find a common conceptual umbrella of this kind of transformational process [72, 73]. Traditionally, the definition has touched upon the implementation and structuring process of technology driven HR transformations and the consequence of these organizing activities in creating HR network structures throughput the organization [83]. Ruël, Bondarouk & Van der Velde (2007) further suggest a definition of e-HRM as a complete approach for modern HRM, also including en explicit recognition of the relevance of integrated ERP systems. Bondarouk and Ruël (2009) continue this definition, arguing that we need to find a consensus in a definition covering the integration of HRM and IT, focusing also on targeted employee and managers, often being the value creating consumers of web-based technologies:

‘…an umbrella term covering all possible integration mechanisms and contents between HRM and Information Technologies aiming at creating value within and across organizations for targeted employees and management. [9]

To focus the problemization on Sandvik I have used this definition of e-HRM, and four interrelating aspects of e-HRM proposed as relevant for further elaboration: content of e-HRM, implementation of e-HRM, targeted employee and managers and e-HRM consequence. From my experiences at Sandvik Corp. this made explicit four study objects that guide the investigation:

1) Use of HR IS: providing global information handling, as a central mechanism to understand the development of CONNECT. Studying the appropriation process of technology may show the logical demands of the integrated system and its role as a boundary object. By studying the demand of integration of HRM strategy and policies, as they are documented in web-based and other communication material, the aim is also to understand the intended HR practices

2) Transformation of HR work practices: understood as real time changes in both management and shop floor practices. Studying interpretations of formal roles and processes to uncover differences in the way this transformation is enacted and perceived in actual HR practices

3) New roles and relationships between top and line management: studying how CONNECT program management, HR advisors and line management collaboratively/relationally make sense of their new work situation, to understand how new work roles/identities are played out, and how these relationships changes over time as work is routinized.

4) Value creating HR work: the subjective experience of value in the constructing HR tools, transformational leadership, and every day practicing of HR. A deeper understanding of the practical knowledge needed to produce value will unravel important competency needs. A relative appreciation of the contribution within the organization from HR problem solving and the development new tools and policies, will show both the political and creative/productive value.

a. Practice-based theorizing

The construction of these four study objects, as understood in the empirical setting, has also been constantly influenced by a parallel theorizing process. The guiding principle in my research has been the iterative "dance" between different explanatory frameworks and the experiences at Sandvik Corp. From the early framing the empirical phenomena and the interrelation of technology, HR practice transformation and HR managerial competence, I was trying to find research that could help me get a better general understanding.

In this theorizing process I was initially inspired from contemporary academic debates within relevant academic fields, and interviews with key stakeholders at Sandvik Corp. Reading literature on the area of HRM resulted in a broad informing research base that supports the problemization of the case, pointing out some relevant theoretical questions and concepts regarding HR IS and HR transformations [35, 47], subsequent changes in competency demands for HR professionals [28, 38, 87, 89, 90], and the changing role of line managers [8, 66, 93]. This reasoning was further complicated with arguments from adjacent disciplines such as Information systems (IS) research, Organization Studies (OS). Driving this process is my fundamental interested in the link between research and practice, and the 'practice turn in social science' [67, 79]. From a sociological background [13, 30] practice-based studies have offered a pragmatic (re)orientation in organizational studies through the observation of everyday practices [14, 43, 53, 56, 61, 103].

'…beyond its canonical abstractions of practice to the rich, full-blooded activities themselves. And it must legitimize and support the myriad enacting activities perpetrated by its different members.' [14] p. 53.

Basically these influences handles the phenomena of organizational learning [14, 29, 43, 51, 79, 84, 85], and within information systems research a substantial research of 'IT and organizational change' [6, 12, 48, 52, 54, 91, 102, 103].

In later developments this iterative process has resulted in a framing of more distinct theoretical constructs. To further focus my elaboration of central mechanisms (i.e. the study objects), I refer to some key constructs in a number of converging debates within information systems research, organization studies and science and technology studies. These concepts gain their relevance in explaining central phenomena at Sandvik Corp., but their common philosophical argument is just as interesting. From a sociology and science and technology perspective [5, 42, 64, 79] scholars argue we need relational view of organizational practices, understanding technology and human organization on an ontological level as fundamentally entangled. Rather then talking about objects and humans as having distinct properties, these authors, and I, argue we need to better understand the social and technical phenomena as fundamentally relational phenomena, i.e. the one cannot exist without the other.

'The thrust of site [practice] ontology, consequently, is that human coexistence inherently transpires as part of a context of a particular sort...What makes them ('sites') interesting is that context and contextualized entity constitute one another: what the entity or event is tied to the context, just as the nature and identity of the context is tied to the entity or event (among others).' [78] p. 465

We do not "come into" a situation, but we constantly are in situations as we go about, together, and with the use of tools and cultural artefacts, to take purposeful action, already 'being-in-the-world' [34]. I refer to this relational ontology and its phenomenological grounding as a new meta-theoretical starting point [36]. As a sort of 'pragmatic pluralism' [97], or what may be called 'interpretive repertoire' [4], I will reflexively refer to theoretical concepts relevant for empirical interpretation, also trying to ensure that central concepts within the are used together in a coherent way, introducing a framework of assumptions that has its own ontological, epistemological and methodological integrity [97].

This framework will involve relational concepts such as 'socio-technical agency' and 'performativity' [5, 39], 'reflection-in-action' and the constitutive 'entanglement of sociality and materiality' in organizational life [55]; all used as tools to cut the rose out of the cake. Based on such theoretical background knowledge, the aim is to present a relevant vocabulary and analysis of HR work as sociomaterial practices, and a direct argument for a relational view of both HR transformations, and HR professional competence and expertise needed in contemporary HR work [22, 76].

b. Methodological and theoretical awareness

Charreire Petit & Huault (2008) argues forcefully that the general deployment of constructivist approaches in studies of organizational knowledge is unreflective as to the specificity of the research design and the basic philosophical assumptions [17].

A practice-based problematization needs an inquiry where data are inextricably fused with theory, and where academics and practitioners constructs the mystery by deepening their understanding of the phenomena [2]. Theorizing practices this way also becomes a problem of recognizing the interplay between theory and method [94]. It is an iterative research process where there is no blueprint, but every approach needs to be justified and the contribution needs to be constructed [92] via recursive cycling among

the case data, emerging theory, and later, extant literature [25], theorizing 'up' from grounded practices [51, 100].

Through the constant negotiation of the role of technology and how modern HR practices may look like, the subjective elements of powerful stakeholders and creative users at Sandvik Corp. plays a subtle but very significant role. Whether or not these changes are objective in the form of materialized technology, or subjective in the form of line managers understanding of their formal HR responsibility, what we experience as a change is always happening in the every-day coping with HR service delivery at Sandvik Corp. Arguably then, a practice-based approach need to have an appropriate methodology for research of what it is people in organizations actually do, and In contrast to traditional triangulation of data or methods, a constructivist approach requires an emphasis on the varied and engaged nature organizational practices. This needs an commitment seeking approach, such as ethnography [80] or action research, that forces the researcher to participate and familiarize oneself with the situation and to gain empirical access into these knowledge based processes to "get a feel" for the place. I use an ethnographically inspired investigative method, using three distinct methodological lenses (time, breakdowns and narratives) [61] to distil the rich and tacit knowledge to be found in every day informal organizing activities.

4 Summary

This paper is an argument for the understanding of HR design practices and the design of HR practices that takes into count the situated character HR transformations. Rather than just affirming the 'black box' view of organizations, a situated perspective can probably help closing the gap between theory and practice in HRM research, contributing with a critical discussion of modern HRM. A practice-based approach argues that we need better knowledge of how rules, routines and roles are affected by these premises of complex technology and program management. From this understanding I hope to achieve an analysis and vocabulary relevant both to academics and practitioners, and strong consistent arguments for alternative ways to understand success or failure of HR transformations.

Engaged by voices that encourages scholars in the field of HRM to continue exploring empirical investigations through innovative theoretical and methodological approaches [40, 58, 81], the main aim is to theorize these changing HR practices in a way that informs discussions within the field of HRM and e-HRM, and practitioners interest in this process. Hopefully my study will be of value for those interested in the phenomena of HR transformation projects, presenting a case that works as a reference frame for discussion and debate and work as a catalyst of new theoretical knowledge [24, 25, 101], crossing both academic and occupational boundaries. With the help of other modern ways of communicating this academic knowledge, as suggested by Guest (2007) (e.g. homepage, forums and networks for Swedish e-HRM research, and pedagogical interventions/feed back sessions within Sandvik Corp.), a secondary aim is also to contribute directly to the development at Sandvik Corp. and other Swedish organizations conducting this type of transformation.

References

[1] Alvesson, M. and Deetz, S. (2000): Doing critical management research. SAGE, London.

[2] Alvesson, M. and Kärreman, D. (2007). CONSTRUCTING MYSTERY: EMPIRICAL MATTERS IN THEORY DEVELOPMENT. Academy of Management, City, 2007.

[3] Alvesson, M. and Kärreman, D. (2007). Unraveling HRM: Identity, ceremony, and control in a management consulting firm. INFORMS: Institute for Operations Research, City, 2007.

[4] Alvesson, M. and Skjöldberg, K. (2000): Reflexive methodology. Sage, London.

[5] Barad, K. (2003). Posthumanist performativity: Toward an understanding of how matter comes to matter. Signs, 28 (3), 801-831.

[6] Barley, S. R. (1990). The alignment of technology and structure through roles and networks. Administrative Science Quarterly, 35 (1), 61-103.

[7] Bentley, R. (2008). From hero to zero. City, 2008.

[8] Bondarouk, T., Looise, J. K. and Lempsink, B. (2009). Framing the implementation of HRM innovation: HR professionals vs line managers in a construction company. Personnel Review, 38 (5), 472 - 491.

[9] Bondarouk, T. V. and Ruël, H. J. M. (2009). Electronic Human Resource Management: challenges in the digital era. The International Journal of Human Resource Management, 20 (3), 505 - 514.

[10] Boselie, P., Brewster, C. and Paauwe, J. (2009). In search of balance – managing the dualities of HRM: an overview of the issues. Personnel Review, 38 (5), 461 - 471.

[11] Boselie, P., Dietz, G. and Boon, C. (2005). Commonalities and contradictions in HRM and performance research. Blackwell Publishing Limited, City, 2005.

[12] Boudreau, M.-C. and Robey, D. (2005). Enacting integrated information technology: A human agency perspective. Organization Science, 16 (1), 3-18.

[13] Bourdieu, P. (1977): Outline of a theory of practice Cambridge University Press, Cambridge.

[14] Brown, J. S. and Duguid, P. (1991). Organizational learning and communities-of-practice: Toward a unified view of working, learning, and innovation. Organization Science, 2 (1), 40-57.

[15] Brown, J. S. and Duguid, P. (2000): The social life of information. Harvard University Press, Boston.

[16] Burke, R. J. and Cooper, C. L. (2006). The new world of work and organizations: Implications for human resource management. Human Resource Management Review, 16 (2), 83-85.

[17] Charreire Petit, S. and Huault, I. (2008). From practice-based knowledge to the practice of research: Revisiting constructivist research works on knowledge. Management learning, 39 (1), 73-91.

[18] CIPD. (2009). Chartered Institute of Personnel and Development. City, 2009.

[19] Cummings, T., G. (2007). Presidential address: Quest for an engaged academy. Academy of Management Review, 32 (2), 355-360.

[20] Deadrick, D. L. and Gibson, P. A. (2007). An examination of the research-practice gap in HR: Comparing topics of interest to HR academics and HR professionals. Human Resource Management Review, 17 (2), 131-139.

[21] Down, S. (1999). (Yet) Another side of HRM? Organization, 6 (3), 543-558.

[22] Dreyfus, H. L. and Dreyfus, S. E. (2005). Expertise in real world contexts. City, 2005.

[23] Editors;JOMS (2009). Human Resource Management (HRM) and Performance: Progress and Prospects. Journal of Management Studies, 46 (1), 127-128.

[24] Eisenhardt, K. M. (1989). Building theories from case study research. Academy of Management Review, 14 (4), 532-550.

[25] Eisenhardt, K. M. and Graebner, M. E. (2007). Theory building from cases Challanges and opportunities. Academy of Management Journal, 50 (1), 25-32.

[26] Francis, H. and Keegan, A. (2006). The changing face of HRM: in search of balance. City, 2006.

[27] Francis, H. and Keegan, A. (2006). The changing face of HRM: In search of balance. Human Resource management journal, 16 (3), 231-249.

[28] Gardner, S. D., Lepak, D. P. and Bartol, K. M. (2004). Virtual HR: The impact of information technology on human resoruce professionals. Journal of Vocational Behavior, 63, 159-179.

[29] Gherardi, S. (2000). Practice-based theorizing on learning and knowing in organizations. Organization, 7 (2), 211-223.

[30] Giddens, A. (1984): The constitution of society: Outline of the theory of structuration. Polity Press, Cambridge.

[31] Guest, D. (2007). Don't shoot the messenger: A wake up call for academics. Academy of Management Journal, 50 (5), 1020-1026.

[32] Guest, D. and King, Z. (2004). Power, innovation and problem-solving: The personnel managers' three steps to heaven? Journal of Management Studies, 41 (3), 401-423.

[33] Haines, V. Y. and Lafleur, G. (2008). Information technology usage and human resource roles and effectiveness. Human Resource Management, 47 (3), 525-540.

[34] Heidegger, M. (1962): Being in time. Blackwell, Oxford.

[35] Hendrickson, A. (2003). Human resource information systems: Backbone technology of contemporary human resources. Journal of Labor Research, 24 (3), 381-394.

[36] Hesketh, A. and Fleetwood, S. (2006). Beyond measuring the human resources management-organizational performance link: Applying critical realist meta-theory. Organization, 13 (5), 677-699.

[37] Hoobler, J., M. and Johnson, N. B. (2004). An analysis of current human resource management publications. Personnel Review, 33 (6).

[38] Hussian, Z., Wallace, J. and Cornelius, N., E. (2006). The use and impact of human resource informations systems on human resource management professionalls. Information & Management, 2007 (44), 74-89.

[39] Introna, L. D. (2007) Towards a post-human intra actional account of socio-technical agency (and morality). In Proceedings of the Moral agency and technical artefacts scientific workshop (NIAS, Hague, 10-12 May 2007, 2007), [insert City of Publication],[insert 2007 of Publication].

[40] Janssens, M. and Steyaert, C. (2009). HRM and Performance: A Plea for Reflexivity in HRM Studies. Blackwell Publishing Limited, City, 2009.

[41] Keegan, A. and Boselie, P. (2006). The lack of impact of dissensus inspired analysis on developments in the field of human resource management. Blackwell Publishing Limited, City, 2006.

[42] Latour, B. (2005): Reassembling the social: An introduction to actor-network-thoery. Orford University Press, Oxford, UK.

[43] Lave, J. and Wenger, E. (1991): Situated learning: Legitimate peripheral participation. Cambridge University Press, Cambridge.

[44] Legge, K. (1978): Power, innovation and problem solving in personnel management. McGraw Hill, London.

[45] Legge, K. (1995): Human resource management: Rhetorics and realities. Macmillan, Basingstoke.

[46] Legge, K. (1999). Representing People at Work. City, 1999.

[47] Lengnick-Hall, M. and Moritz, S. (2003). The impact of e-HR on the human resource management function. Journal of Labor Research, 24 (3), 365-379.

[48] Markus, M. L. (2004). Technochange management: using IT to drive organizational change. Journal of Information Technology (Palgrave Macmillan), 19 (1), 4-20.

[49] Martin, G. (2005): Technology and people management: Challanges and opportunities. Chartered Institute of Personnel and Development, Wimbledon.

[50] Ngai, E. W. T. and Wat, F. K. T. (2006). Human resource information systems: A review and empirical analysis. Personnel Review, 35 (3).

[51] Nicolini, D., Gherardi, S. and Yanow, D. (2003): Knowing in organizations: A practice based approach. Armonk, NY: M. E. Sharpe.

[52] Orlikowski, W. J. (1992). The duality of technology: Rethinking the concept of technology in organizations. Organization Science, 3 (3), 398-427.

[53] Orlikowski, W. J. (1996). Improvising organizational transformation over time: A situated change perspective. Information Systems Research, 7 (1), 63-92.

[54] Orlikowski, W. J. (2000). Using technology and constituting structures: A practice lens for studying technology in organizations. Organization Science, 11 (4), 404.

[55] Orlikowski, W. J. (2009). The sociomateriality of organisational life: Considering technology in management research. Cambrige Journal of Economics Advance Access, 1-17.

[56] Orr, J. E. (1996): Talking about machines: An ethnography of a modern job. Cornell University Press, Ithaca, NY.

[57] Paauwe, J. (2004): HRM and performance Achieving long term viability. Oxford University Press, Oxford.

[58] Paauwe, J. (2009). HRM and Performance: Achievements, Methodological Issues and Prospects. City, 2009.

[59] Paauwe, J. and Boselie, P. (2005). HRM and performance: what next? Blackwell Publishing Limited, City, 2005.

[60] Parry, E. and Tyson, S. (2007). Technology in HRM: The means to become a strategic business partner? Thomson Learning, City, 2007.

[61] Patriotta, G. (2003 (b)): Organizational knowledge in the making. Oxford University Press, Oxford.

[62] Pfeffer, J. (2006): Hard facts, dangerous half-truths, and total nonsense: Profiting from evidence-based management. Harvard Business School Press, Harvard.

[63] Pfeffer, J. and Sutton, R. I. (2000): The knowing-doing gap: How smart companies put knowledge into action. Harvard Businesss School Press, Boston.

[64] Pickering, A. (1995): The mangle of practice: time agency and science. Chicago University Press, Chicago.

[65] Pitcher, G. (2008). Backlash against business partner model as managers question results. Personnel Today, 2-2.

[66] Purcell, J. and Hutchinson, S. (2007). Front-line managers as agents in the HRM-performance causal chain: Theory, analysis and evidence. Human Resource management journal, 17 (1), 3-20.

[67] Reckwitz, A. (2002). Toward a theory of social practices: A development in culturalist theorizing. European Journal of Social Theory, 5 (2), 243-263.

[68] Rouleau, L. and McCarthy, S. (2007). Educating management froma an evidense-based perspctive. Academy of Management Learning and Education, 6, 84-101.

[69] Rousseau, D. M. (1995): Psychological contracts in organizations: Understanding written and unwritten agreements. SAGE, THousand Oaks, CA.

[70] Rousseau, D. M. (2006). Is there such a thing as "evidence-based management"? Academy of Management, City, 2006.

[71] Rousseau, D. M. (2007). A sticky, leveraging, and scaleable strategy for high quality connections between organizational practice and science. Academy of Management Journal, 50 (5), 1037-1042.

[72] Ruël, H., Bondarouk, T. and Looise, J. K. (2004): e-HRM: Innovation or irritation? An exploration of web-based human resource management in large companies. Lemma, GH Utrecht, Netherlands.

[73] Ruël, H., Bondarouk, T. and Van der Velde, M. (2007). The contribution of e-HRM to HRM effectiveness: Results from a quantitative study in a Dutch ministry. Employee relations, 29 (3), 280-291.

[74] Rynes, S. L., Colbert, A. E. and Brown, K. G. (2002). HR professionals beliefs about effective human resource practices: Correspondence between research and practice. Human Resource Management, 41 (2), 149-174.

[75] Saari, L. (2007). Bridging the worlds. Academy of Management Journal, 50 (5), 1043-1045.

[76] Sandberg, J. and Pinnington, A. H. (2009). Professional competence as ways of being: An existential ontological perspective. City, 2009.

[77] Sandvik. (2008). Interview Global HRA Sandvik Tooling (Coromant) Sypply. City, 2008.

[78] Schatzki, T. R. (2005). Peripheral vision: The sites of organizations. Organization Studies, 26 (3), 465-484.

[79] Schatzki, T. R., Cetina, K. K. and Savigny, E. (2001): The practice turn in contemporary theory. Routledge, London.

[80] Schwartzman, H. B. (1993): Ethnography in organization. Sage, Newbury Park.

[81] Scullion, H., Collings, D. G. and Gunnigle, P. (2007). International human resource management in the 21st century: Emerging themes and contemporary debates. Human Resource management journal, 17 (4), 309-319.

[82] Stone, D. L. (2007). The status of theory and research in human resource management: Where have we been and where should we go from here? Human Resource Management Review, 17 (2), 93-95.

[83] Strohmeier, S. (2007). Research in e-HRM: Review and implications. Human Resource Management Review, 17 (1), 19-37.

[84] Tansley, C. and Newell, S. (2007). A knowledge-based view of agenda-formation in the development of human resource information systems. Management learning, 38 (1), 95-119.

[85] Tsoukas, H. and Vladimirou, E. (2001). What is organizational knowledge? Journal of Management Studies, 38 (7), 973-993.

[86] Ulrich, D. (1997): HR champions. Harward Business School Press, Boston, MA.

[87] Ulrich, D. and Beatty, D. (2001). From partners to players: Extending the HR playing field. Human Resource Management, 40 (4), 293-307.

[88] Ulrich, D. and Brockbank, W. (2009). The HR business-partner model: Past learnings and future challenges. People & Strategy, 32 (2), 5-7.

[89] Ulrich, D., Brockbank, W., Johnson, D. and Younger, J. (2007). Human resource competencies: Responding to increased expectations. Employment Relations Today (Wiley), 34 (3), 1-12.

[90] Ulrich, D., Brockbank, W., Yeung, A. K. and Lake, D. G. (1995). Human resorce competencies: An empirical assessment. Human Resource Management, 34, 473-495.

[91] Walsham, G. (1993): Interpreting information systems in organizations. Wiley.

[92] Walsham, G. (2006). Doing interpretive research. European journal of information systems, 15 (3), 320-330.

[93] Valverde, M., Ryan, G. and Soler, C. (2006). Distributing HRM responsibilities: A classification of organisations. Personnel Review, 35 (6).

[94] Van Maanen, J., Sörensen, J. B. and Mitchell, T. R. (2007). The interplay between theory and method. Academy of Management Review, 32 (4), 1145-1154.

[95] Watson, T. (1994): In serach of management. Routledge, London.

[96] Watson, T., J. (2004). HRM and critical social science analysis. Journal of Management Studies, 41 (3), 447-467.

[97] Watson, T. J. (1997). Theorizing managerial work: a pragmatic pluralist approach to interdisciplinary research. British Journal of Management, 8 (1), 3-8.

[98] Weick, K. E. (1999). Theory construction as diciplined reflexivity: Tradeoffs in the 90s. Academy of Management Review, 24 (4), 797-806.

[99] Wenger, E., McDermott, R. and Snyder, W. M. (2002): Cultivating communities of practice. Harvard Business School Press, Boston.

[100] Yanow, D. (2006). Talking about Practices: On Julian Orr's Talking About Machines. Organization Studies, 27 (12), 1743-1756.

[101] Yin, R., K. (1989): Case study research. Sage, London.

[102] Zammuto, R. F., Griffith, T. L., Majchrzak, A., Dougherty, D. J. and Faraj, S. (2007). Information technology and the changing fabric of organization. Organization Science, 18 (5), 749-762.

[103] Zuboff, S. (1988): In the age of the smart machine. Basic Books, New York.

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SESSION H

Topic: **Miscellaneous**

Chair: **Stefan Strohmeier**

Generation Y at Work: The Role of e-HRM in Building Positive Work Attitudes

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Abstract. *Gen-Yers are the new generation of employees; they are talented, self-starting and technology-oriented, but they are also controversial with respect to their employment drivers. Developing effective work arrangements for Gen-Yers is crucial for the future development and sustainability of firm competitive advantage. Adopting the Employee-Organization Relationship framework, we suggest that e-HRM systems facilitate work arrangements that produce positive outcomes; they signal and reinforce the organization's investment in the employee-organization relationship. In this vein, the paper aims to explore the possible strategic role of e-HRM systems in sustaining these relationships. Specifically, we focus on the relationship between e-HRM systems and Gen-Yer work attitudes such as affective commitment, perceived procedural and distributive justice, intent to quit, trust in HR departments and job satisfaction. Our broad survey provides valuable and at times unexpected results particularly for the new and thus far little-known Gen-Yers, serving as the basis for defining some useful guidelines to design strategic e-HR systems - not only for the new Y-Gen - to actually enhance the sustainability of organizational competitive advantage.*

Keywords: electronic-Human Resource Management (e-HRM); Employee-Organization Relationship (EOR); Y Generation; Strategic Human Resource Management (SHRM); employee work attitude.

1 Introduction

Modern firms remain competitive if they are able to continually develop distinctive competencies [39], [89], [60], [25], maintaining their agility and efficiency [68]. Accordingly, firms invest in their human capital to generate new knowledge and skills and yet continually search for organizational solutions capable of addressing unpredictable changes. These dynamics have a substantial impact on the organizational structures and operating systems that influence working practices [65], [33], [34]. These new work arrangements have increasingly spread in recent years, affecting work attitude and performance [44].

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All these changes have deeply influenced employee-organization relationships, not only in a juridical way, but – even more significantly – from an organizational perspective [70], [12]. The new employees – and not only new organizations - have become more flexible, more mobile and more technology-oriented, building and choosing their own career paths [4], [45].

These factors have sparked an ongoing debate on how to sustain work relations in the changing socio-economic scenario. Great emphasis is placed on analysing the influence of diverse formal contracts, human resource practices or management styles in shaping the nature of the relationship. However, little attention has been paid to understanding the relevance of information and communication technology (ICT) as a work solution that could influence employee behaviour, especially of those particularly embedded in technological issues, such as the so-called Virtual or Y Gen [62]. From a Human Resource Management perspective, the ICT possibilities are endless: electronic-HRM (e-HRM) systems are a way of implementing HR strategy polices and practices in organizations through the direct support of web-technology-based channels [66].

Our paper aims to explore the possible strategic role of e-HRM systems in sustaining employee-organisation relationships, specifically considering a new group of young people in the work force [74], [62], [2]. They are talented, self-starting and especially technology-oriented, but also controversial with respect to the drivers of their work relationship outcomes [91].

Taking a broader look at the impact of e-HRM: how does it affect the nature and quality of employee performance and their attitudes towards the organization? From an employer perspective, does investing in e-HRM systems prove beneficial in terms of the critical and technology-embedded new work force?

The current study was designed to answer these questions. We collected data from a large sample of Y Generation employees. Our research set its sight on the role of ICT in managing the Gen-Yers relationship, analysing how these employees conceive the wide range of e-HRM systems and the consequences in shaping their work relationships [62], [2].

Our results are particularly relevant from the HRM perspective, since they prove that the e-HRM employment approach can be truly strategic.

2 Theoretical background

Various research streams describe the different employee-organisation relationship arrangements - such as flexible work solutions or management practices oriented to work-life balance - analyzing their effects on a variety of outcomes such as commitment and extra-role behaviours [58], [80], co-worker helping behaviour [8] and organizational performance [37]. Specifically, several studies rooted in transaction cost theory and RBV, focus on the effect of differentiating HR architecture on organizational performance [36]. Other studies, based on work-life balance literature, are more focused on understanding how new work solutions can influence job quality perceptions [32]. Still others, drawing on HR literature, highlight the effect on performance of HR practices orientated to promoting engagement and motivation through flexibility [22], [28].

Notwithstanding the above-mentioned theories, little attention has been devoted to providing a picture of the effects of e-HRM on the employee-organization relationship.

These effects seem particularly crucial and relevant for YGen employees described as technology-oriented [62]. However, the ongoing debate on the validity of the generational approach in explaining the differences in work attitudes does not consider differences arising from personal experiences, age, career or life-cycle stage [43].

Combining the employee-organization relationship framework with the e-HRM research stream allows us to understand the strategic role of e-HRM systems in effectively managing Gen-Yers work attitudes. They are described as resourceful, original and well-suited to innovation challenges; they are also the new Virtual Generation, always connected and having specific learning and relational styles. If these considerations are true, the development of new e-HRM solutions should help companies manage their new young talent.

In the following sections, we first present the concept of e-HRM, within the HRM framework; we then critically illustrate the principal traits and research evidence on the technologically embedded employee generation. Finally, we propose the adoption of the employee-organization relationship framework to better understand the role of e-HRM systems in shaping working relationships. Our assumption is that e-HRM systems produce positive effects on employee work attitudes - such as commitment, job satisfaction, perceived justice and intention to stay, which are crucial antecedents of employee task and contextual performance [27], [55], [31], [67].

2.1 HRM and e-HRM

HRM departments must become actual 'business partners' able to generate and sustain a company's strategic value according to the specific sources of competitive advantages [83], [36]: the ability to design and manage effective work arrangements and HR systems aligned with changing labour force needs, such as time and space flexibility, professionalization and boundary-less careers, is a source of strategic success for many modern organizations that compete in fast, global and continuously pioneering industries.

The rapid development of the Internet in recent years has propelled HR systems towards the new e-HRM approach [76]. New technological opportunities are a bridge that could help connect the two sides of the working relationship; for organizations, e-HRM solutions are a way to support organizational flexibility and knowledge-sharing, while for the new and 'technologically embedded employees', they represent a way of managing their working preferences [28].

E-HRM can be designed with three kinds of goals in mind: improving traditional HRM strategic orientation, improving efficiency and improving client service orientation, thus resulting in three different types of e-HRM: operational - concerning the administrative area (such as payrolls; on-line conference systems); relational - concerning the way to manage the relationship between the organization and employees (such as HR services through the intranet; online firm communities); and finally - transformational, towards the alignment of employees and organizational strategy (such as knowledge management systems; e-recruitment and online employer branding) [66].

Although this research field is still new and results are sometimes controversial and unconsolidated, academic interest in e-HRM has increased [71], [77], [7]. More research is needed to address different user-types and attitudes and to propose e-HRM design and implementation strategic processes. There is some evidence of diverse reactions to e-HRM, including perceptions of attraction, but no evidence focuses

specifically on particular kinds of users (such as the Y-Gen). Moreover, considering the evidence on strategic intent and the consequences of e-HRM on an operational level, efficiency is still controversial; relational and transformational consequences are almost entirely lacking in research findings and the strategic approach has not yet been fully analyzed and defined [76].

2.2 Y Gen

According to Generational Theory [73], YGen designates a cohort of people born between 1982 and 2003 [75]. There are various studies describing Gen-Yers from different perspectives: from a wider sociological point of view [91], [30] to more work-related and managerial approaches [2], [92], [81], [16].

Wilson & Gerber [91] identify seven Gen-Yer distinguishing traits. They are 'special' in terms of their parents' care; 'sheltered' – namely, wrapped in cotton wool; 'confident' – namely, optimistic about their future prospects; 'team-oriented' – i.e., skilled in their collaborative efforts; 'achieving' particularly in respect of their careers, without involvement in idealistic activities; 'pressured', especially by their workaholic parents and 'conventional', namely strongly attached to family even if born in a divorce culture.

Alsop [2], from a managerial perspective, describes Gen-Yers as having a strong sense of entitlement. Their work expectations include high pay, flexible work, fast-track careers and work-life balance. They are multitasking with low power distance attitudes.

Proserpio and Gioia [62], focusing more on the technological side, describe them as the Virtual Generation, familiar with virtual technologies and therefore characterized by virtual cognitive, learning and communication styles, requiring aligned pedagogical teaching and means of interaction: non-linear, autonomous, networked and conceiving learning as fun.

From a generational perspective, they seem to be different from the previous Generation X, but there are still numerous grey areas concerning their work expectations and careers drivers [16]. How to design effective organizational systems to manage them is still an enigma [14], [74], [19], [20].

There is also evidence that not all traits are the same within these generations. Giancola [24] suggests that it cannot be assumed that all members of any given generation will experience the same key socio-cultural or social-economic events in the same way, depending mainly on social class, gender, ethnicity or culture [18]. Nevertheless, some commonalties cross generations. Montana and Lenaghan [50] find that generations X and Y are identical in rating their top six work drivers. Cennamo and Gardner [10] demonstrate that the value of person-organization fit is always crucial to sustain job satisfaction and organizational commitment across all generations. A further methodological problem concerns determining the temporal extraction point at which to segregate the various generations [54].

2.3 Technology Readiness

Aware of the debate on the strength of the generational perspective to identify different groups within the workforce, according to the preceding literature, we presuppose the broad technological orientation of Gen-Yers, but do not take it for granted.

In general, people experience different psychological reactions when faced with technology-based systems [40]. Some feel comfortable, see advantages in using it and

therefore appreciate acting in a technology-injected environment. Others, to the contrary, feel uncomfortable and frustrated [57]. Negative feelings prevail, even if they are aware of the benefits of using ICT, inducing them to avoid it [46]. Concepts such as computer anxiety and technophobia were formed to describe the most acute situations [57]. Technology readiness (TR), defined as people's propensity to embrace and use new technologies to accomplish goals in their home life and at work [57], helps in understanding whether users will appreciate and adopt new technologies.

TR is an important driver of user satisfaction. Moreover, it positively influences favourable behavioural intentions regarding technologies. This means that the more satisfaction customers experience when using technology, the more likely they are to use it again and recommend it to others [41].

The concept of TR has been used in the marketing domain to study customer appreciation of Self Service Technologies. However, further application and greater generalization of the measure in the sphere of other technologies and user categories is required [57].

E-HRM is a recent technology and its role should be further discussed and demonstrated. Although implemented in firms, its positive effects and success also depend on user attitudes and intentions to make use of it. Users in this case are employees, a different category of stakeholder who can directly take advantage of this technology and even find it an interesting aspect of their relationship with their employer. In particular, Gen-Yers should feel comfortable, even relaxed, when interacting through technological systems.

For these reasons, it would appropriate to apply the construct to this different domain and further study the real technological orientation of Gen-Yers and the validity in assessing their appreciation and intention to use e-HRM systems.

2.4 The Employee-Organization Relationship and work attitudes: the research framework

Rousseau & Parks [65] describe employee-organization exchanges as promissory contracts, where commitment of future behaviour is offered in exchange for payment. According to this definition, the employee/employer relation is a social exchange where the two parties develop certain expectations from the contractual content and adapt their behaviours according to their perception of the reciprocal obligation [26], [38].

Research on labour contracts suggests that these obligations are idiosyncratically perceived and understood by individuals [64] confirming that employees look for reciprocity and that work attitude and performance are heavily influenced by their perceptions: the more the relationship is perceived as balanced, the more employees are disposed to contribute and perform, even beyond their called-for duties, in a framework described as a mutual investment approach [1], [79], [84], [12]. This kind of employment relationship is especially appropriate in the context of high environmental uncertainty and rapid change [15]. Analogous systems are so-called high involvement and high performance work systems [5], or Walton's commitment strategy [87], and Arthur's employee commitment system [3]. There are also several earlier conceptual equivalents of this approach, including, among others, Etzioni's normative involvement [21] and Ouchi's clan [56].

Our main hypothesis is that e-HRM systems facilitate employment solutions with a positive outcome on the employee's perception that the organization intends to invest

in, meeting their needs and reinforcing the described mutual investment employee-organization relationship [80]. In other words, e-HRM systems could have a positive impact on shaping and making employee-organization relationships both more explicit and valuable from the employee's point of view; this positive impact can be assessed by measuring the effects on employee working attitudes.

Work attitudes are the employee's perspectives on many aspects of their job, career and organization [67]. There is copious evidence that the mutual investment employment relationship positively influences employee work attitudes, defined as work commitment [90], [59], intention to stay [80], perception of fairness - both procedural and distributive justice [6], trust [49], [63] and job satisfaction [85]. Several studies have proven that positive work attitudes are significant antecedents of both task and contextual work performance [85], [35], [6], [67].

Considering the evidence presented, we postulate that e-HRM systems signal organizational investments in the employee-organization relationship and contribute to clarifying and making the content of the relationship more explicit, reducing possible misunderstandings and, in this way, aligning the employee's and the organization's interpretations: they are signals of respect and transparency.

E-HRM systems oblige organizations to pay 'extra' attention to both defining the criteria that guide the HRM system design (distributive justice) and communicating and structuring them into stable systems (procedural justice). Literature demonstrates that when HRM systems are considered transparent, respectful, explicit and based on stable and shared rules and procedures, they have a positive effect on perceived organizational justice [23], [13].

From these considerations, we assume that e-HRM systems have a positive effect on perceived procedural and distributive justice. For instance, job posting, online succession plan and e-career systems enable the organization to better define, share and clarify the opportunities offered and the underlying decision-making criteria.

From these preliminary considerations, we propose the following hypothesis:

> *Hypothesis 1: Employees who are highly embedded in technology (Gen-Yers) perceive higher distributive and procedural justice the higher the perceived level of organizational adoption of e-HRM systems is.*

Podsakoff and MacKenzie [59] suggest that creating an attractive work environment increases employee commitment and improves employee retention.. Affective commitment can be broadly defined as an attachment characterized by identification with, and involvement in, the target entity [47]; [48].

A presupposition of affective commitment to the organization is the perceived organizational support, which reflects the global beliefs that employees develop on the extent to which their organization values their contribution and cares about them [17]. According to organizational support theory, employees who feel supported by their organization will attempt to repay their debt through affective commitment [69].

In this perspective, e-HRM systems are a signal of organizational support. Especially for employees who are comfortable with technology, in a social exchange framework, e-HRM investments can be considered as an indicator of a long-term approach and attention to their needs. This could be the case of many e-HRM systems, from simple information tools (i.e. online HR information, newsletters) to more sophisticated

development tools (i.e. e-learning and knowledge management systems) and work-life balance arrangements (i.e. teleworking, online handling of bureaucratic matters).

According to the organization-employee relationship approach, we develop the following hypothesis.

> *Hypothesis 2: The affective commitment of employees who are highly embedded in technology (Gen-Yers) will be higher the higher the perceived level of organizational adoption of e-HRM systems is.*

Research frequently considers affective commitment together with turnover intent. There is, however, evidence that they are negatively correlated [86]:

> *Hypothesis 3: Intent to quit is lower for employees who are highly embedded in technology (Gen-Yers) the higher the perceived level of organizational adoption of e-HRM systems is.*

Job satisfaction is defined as a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences [42]. Steers and Porter [72] suggest that employees are satisfied when they find tasks rewarding and enjoyable and when they perceive working within a promising interpersonal environment.

Employees experiencing a pleasant overall working environment - also in terms of the availability of communications systems – together with support from the firm for their personal wellbeing and good relationships with colleagues, are more likely to be satisfied with their jobs [59], [85]. Positive relationships are significant antecedents of job satisfaction in highly competitive contemporary organizations that frequently downsize and change work processes [78].

In accordance with this research evidence, and considering technology-oriented employees, it is reasonable to suppose that e-HRM systems can contribute to job satisfaction in a number of ways. For employees who are particularly interested in new technological possibilities, e-HRM systems - especially the more advanced (i.e. on-line conferences, e-recruiting) - are considered in themselves a valuable reward; more generally, e-HRM systems can contribute to making work activities more enjoyable (i.e. online communities, e-learning and e-recruiting games and simulations) and to managing the work environment more effectively in terms of interpersonal relations (online firm forum, firm chat), work-life balance opportunities (i.e. mobile-work and distance work arrangements) and effective communication (i.e. intranet, bulletin board, newsletter).

Thus, the following hypothesis emerges.

> *Hypothesis 4: Job satisfaction will be higher for employees who are highly embedded in technology (Gen-Yers) the higher the perceived level of organizational adoption e-HRM systems is.*

Finally, e-HRM systems facilitate a more direct and clearly defined relationship between employees and the HR Department. These are direct communication tools, not supervisory-mediated, that enable employees to better understand the actual HR policies and philosophy. This is the case, for instance, in the development e-HRM systems such as online career management systems and web-based performance evaluation procedures.

Hypothesis 5: Trust in the HR Department will be higher for employees who are highly embedded in technology (Gen-Yers) the higher the perceived level of organizational adoption e-HRM systems is.

Organizational adoption of different e-HRM systems is not exhaustive in predicting the nature of the employee-organization relationship, since it does not reflect the employees' thoughts on perceived value. It could be assumed that the quantity of e-HRM systems is not the only dimension that should produce a positive impact on work attitudes. Consistency between the level of e-HRM perceived utility and their degree of adoption can also contribute to explaining employee attitudes: if perceived utility is high and organizations do not adopt some systems, employees can feel frustrated and disappointed. If perceived utility is lower than the level of adoption, we assume that a negative reaction could also be possible: people can feel overwhelmed and puzzled by technological over-service and they could think that the organization is investing in something that is not relevant to them.

We then assume that there is an interaction effect between the alignment of utility and the level of adoption of the e-HRM systems that impact on the work attitudes considered.

These assumptions are translated into the following hypothesis:

Hypothesis 6: The positive relationships in hypotheses 1-5 will be stronger if the perceived utility and level of adoption of e-HRM systems are aligned.

This last hypothesis is relevant since it enables us to broaden our final discussion considering not only Gen-Yers, but also all employees who demonstrate different degrees of technological attitude and high-perceived utility of e-HRM. Moreover, it suggests the relevance of the perceived value and not only the quantity of e-practices within the employee-organization relationship.

3 Methods

A wide and structured survey was used to collect data on workers that are part of the Y Generation.

The sample was drawn from the alumni of two important northern Italian universities and four colleges. People were randomly selected and the sample was composed taking into consideration the proportion of the population of each institution. Only alumni born in or after 1981, with at least a three-month work contract, were eligible to participate. Self-employed and internship workers were excluded.

Data was collected via an e-mail survey (two rounds) sent to 1024 (first round) and 754 (second round) Gen-Yers, yielding a response rate of 21%, i.e. we have thus far obtained 373 valid responses[12]. The respondents included in our analysis fell into four occupational categories and work in ten different industries. All enterprises have over 100 employees, since otherwise their HR systems would not be adequately developed. 12% of the enterprises included have over 500 employees. The average age of all respondents is 25.8 years; 57% are men.

[12] The sample is not yet complete - respondent are still sending their questionnaires back. Considering the actual redemption rate, and to enlarge our sample, we decided to extend the deadline to the 31st of March.

3.1 Measures

To test our hypotheses we designed a four-section questionnaire: perceived adoption and utility of various e-HRM systems; level of technological familiarity; employee work attitudes - job satisfaction, affective commitment, trust in the HR Department, intent to quit; perceived justice; information on personal job conditions and the enterprise.

E-HRM adoption and utility

The level of adoption and perceived utility of e-HRM systems was measured using a broad list of these systems and practices (65 items) developed from the literature review and validated through several in-depth interviews with five HR managers of large companies in the ICT industry noted for having advanced HR practices and technologically based working solutions.

The list was repeated twice. The first time, respondents were asked to indicate the extent to which e-HRM systems are implemented in their firm and actually used by employees. Respondents were provided with a seven-point Likert-type scale, ranging from "not adopted" to "habitually used by all employees". The second time, the focus was on the perceived utility of these systems, regardless of their implementation in the company. In this case, the seven-point Likert-type scale varied from "unknown" to "very desired". We collected information on the employees' work environment with respect to e-HRM adoption, and, on the other hand, employees' overall knowledge of, and positive response to, these systems.

The various e-HRM systems considered were the following - for each system several items were considered:[13] teleworking, online conferences, intranet with generic HR information, online information about health, safety and security, online management of work-time, online staffing plans, HR-practice online help; online training; e-recruiting and recruiting through social networks, online succession planning, online climate surveys, knowledge management systems; online payroll, online career systems, online meeting and event management, job posting, electronic organizer system, online parking management, online firm communities, online company bulletin board, forum, chat, online personal profile management system, online handling of bureaucratic matters, web-based performance record and employee potential evaluation systems, newsletter.

Technological familiarity

To measure the extent to which people feel comfortable with technology and what their individual feelings are when faced with technology-based systems, we used the Technology Readiness Index (TRI) [57].

The TRI consists of a 36-item scale based on four dimensions: Optimism (a positive view of technology and a belief that it offers people increased control, flexibility and efficiency); Innovativeness (a tendency to be technologically pioneering); Discomfort (a perceived lack of control over technology and a feeling of being overwhelmed by it) and Insecurity (distrust of technology and scepticism on its ability to work properly). Of these, optimism and innovativeness are the positive drivers of TR; they encourage users

[13] At this preliminary stage, we decided to consider all the e-HRM practices that emerged during our analysis (literature review and field interviews).

to use technological tools and to have a positive attitude towards technology. Discomfort and insecurity are the negative attitudes; they make users reluctant [41].

Survey participants responded to a seven-point Likert scale anchored at ‘‘strongly agree’’ (7) and ‘‘strongly disagree’’ (1). Scores related to the discomfort and insecurity dimensions were then reversed. From the preliminary analysis (100 records), the internal consistency was adequate (Cronbach’s $\alpha = 0.83$).

Employee work attitudes

Work attitudes were assessed with a multi-dimensional measure. The first dimension considered employee commitment. The measure was comprised of 11 items adapted from Mowday and colleagues’ [52] OCQ (items 1-8) and from Cook & Wall’s [11] commitment scale (items 9-11). A sample item is, “I am willing to put in a great deal of effort beyond that normally expected in order to help this organization be successful”. From the preliminary analysis the internal consistency was adequate (Cronbach’s $\alpha = 0.72$).

A second multi-dimensional component was how employees feel they are treated at work and the following dimensions were measured: procedural and distributive justice. Procedural justice was assessed with a nine-item scale adapted from Moorman [51], distributive justice was measured with six items from Price & Mueller [61] covering typical employee reward motives: responsibilities, training, experience, effort, performance, stress and strain. From the preliminary analysis the internal consistency was adequate (Cronbach’s $\alpha = 0.76$ for procedural justice and 0.71 for distributive justice).

Trust in the HR department was assessed with a seven-item measure adapted from various contributions. Items 1, 2, 3 were taken from Cook & Wall [11], items 4, 5, 6 were adapted from Butler’s Trust Inventory Scale [9] and item 7 was reversed from Cook & Wall [11]. This construct was developed to assess feelings and opinions that YGen employees have towards HR department managers. From the preliminary analysis the internal consistency was adequate (Cronbach’s $\alpha = 0.78$).

Intent to quit was measured with an item taken from Muchinsky & Tuttle [53]. The item is, “What are your plans for staying with this organization?” Respondents were given a four-point scale where 1= I intend to stay until I retire, 2= I will leave only if an exceptional opportunity turns up, 3= I will leave if something betters turns up, and 4= I intend to leave as soon as possible.

The last dimension considered was job satisfaction, assessed with a seven-item measure derived from Van de Ven & Ferry [83]. Items included, “how satisfied are you with the friendliness and cooperativeness of your *co-workers*?” A 1 to 7 scale was used, where 1 = very unsatisfied, and 7 = very satisfied. From the preliminary analysis the internal consistency was adequate (Cronbach’s $\alpha = 0.70$).

Control variables

Several additional variables were controlled in order to exclude alternative explanations for our findings. Gender, tenure, department, job title, age and number of employees were considered since they could plausibly influence feelings and experiences about technology and consequently the appreciation of e-HRM systems in managing the work relationship.

3.2 Analysis

At this stage, we analysed 100 records in a preliminary test with two objectives: first, to preliminary verify our hypotheses and, second, to find new suggestions and ways to proceed with the data analysis. The actual findings are encouraging.

We performed an exploratory factor analysis of employee work attitudes and TR Index items (four components). The preliminary analysis confirms the consistency of the measures as stated.

We also performed some descriptive analyses to obtain evidence on the mean and standard deviations of our variables, which enabled us to compare our statistics with previous studies (especially considering the TR Index) (Table 1).

	Employees	Tenure	AGE	TR Index	TR Discomfort (reverse)	TR Innovation	TR Insecurity (reverse)	TR Optimism
N	100	100	100	100	100	100	100	100
Mean	689.3500	3.2000	24.9000	3.5149	4.1710	4.0429	4.6733	4.8611
SD.	1397.38491	1.85320	2.77616	.56304	.58019	.91021	.91935	.72893

Table 1. The analysed sample

To test our hypotheses we performed both correlation and regression analyses with work attitudes as dependent variables (see Appendix).

As reported in the following section, the first findings seem relevant and promising, but the robustness of the model has to be consolidated considering all respondents.

4 Preliminary results

Even in view of the preliminary sample, the analyses seem to confirm part of our hypotheses and suggest some outcomes and future directions to develop the study.

4.1 Are Gen-Yers technological ready?

The analysis shows seemingly average TR Index mean and standard deviations for Gen-Yers (compared with the previously cited research evidence [40]). TR Optimism and Innovativeness are particularly high although standard deviations are also high. Insecurity is even higher, that is to say, it is not true that the Y Generation is highly (on average) and uniformly technology-oriented. Moreover, at this preliminary stage, the TR Index does not seem to be strongly correlated with other variables (see Appendix 1).

These results suggest that there is not only one best way to manage YGen employees, considering their technological attitude: they are optimistic, but they also feel insecure when dealing with technology.

4.2 Are e-HRM systems adopted and useful?

A somewhat unexpected finding was the partial misalignment between perceived e-HRM system adoption and utility. The utility is on average perceived as higher than adoption. Moreover, considering these two dimensions, all four combinations are possible and the mean differences are almost significant.

High levels of both perceived utility and adoption of e-HRM systems were found for: HR intranet arrangement (mean 4.12 adop.; 4.64 utility), on-line payroll (mean 5.33 adop.; 5.35 utility), online performance evaluation (mean 4.56 adop.; 4.57 utility), job posting (mean 4.55 adop.; 4.98 utility), company bulletin (mean 4.78 adop.; 4.74 utility), online working time management (mean 4.59 adop.; 4.99 utility). High levels of adoption and low perceived utility are for online personal profile management systems (mean 4.88 adop.; 3.66 utility), and online staffing plans (mean 4.64 adop.; 3.2 utility). Low levels of both adoption and perceived utility were found for mobile work arrangements (mean 2.29 adop.; 2.62 utility), chat (mean 2.72 adop.; 3.21 utility), and online succession plan systems (mean 3.21 adop.; 3.4 utility). Finally, high perceived utility and relatively low adoption were found for web-based health & wellness programmes (mean 4.34 adop.; 5.6 utility), online surveys (mean 3.75 adop.; 4.58 utility), company forum (mean 2.7 adop.; 3.85 utility), e-recruitment systems (mean 3.09 adop.; 4.74 utility), e-learning (mean 3.82 adop.; 5.03 utility), HR online help (mean 3.17 adop.; 4.38 utility), knowledge management systems (mean 2.91 adop.; 4.20 utility), online bureaucratic matters (mean 3.83 adop.; 5.2 utility), and online company communities (mean 2.56 adop.; 4.04 utility).

At this preliminary stage, it is interesting to note that e-HRM systems on average show a high degree of utility (mean = 4.41; SD = 0.8). Even the adoption degree, although lower, is quite high (mean = 3.79; SD = 0.97). The most evident misalignments are work-life balance and development systems and the most aligned are operational and mainly informative (one-way) systems.

4.3 Do e-HRM systems influence employee work attitudes?

This third section of findings concerns the hypotheses tests. Part of the hypotheses are e verified, but with some annotations.

We can confirm the general positive relevance of the adoption of e-HRM systems in influencing some of the work attitudes considered. Some other interesting tentative results are presented, considering not only the level of e-HRM systems adoption, but also their perceived utility.

E-HRM and justice (Hyp. 1). The hypothesis is partially confirmed by the regression analysis. The relation is positive and significant ($\beta = 0.277$; $R^2 = 0.8$; sig. 0.001) with reference to the procedural justice. The model improves when including TR optimism ($\beta = 0.249$; $R^2 = 0.138$; sig. 0,000).

The relation between e-HRM adoption and distributive justice is not confirmed.

E-HRM, affective commitment and intent to quit (Hyp. 2 and 3). The hypotheses are preliminarily not confirmed by the regression analysis. However, significant correlations were found between the level of adoption of specific e-HRM tools and commitment, which is negatively correlated with the adoption of online recruitment systems (-0.302) as well as Web communities (-0.278). These results suggest the importance of further analysis with a larger sample.

Intention to quit instead is negatively correlated with the alignment between adoption and perceived utility of e-HRM (-0.263).

E-HRM and trust in the HR Department (Hyp. 4). The results of the regression analysis confirmed that the adoption of e-HRM positively influences trust in the HR department ($\beta = 0.4$; $R^2 = 0.16$; sig. 0,000).

Correlations are significantly high with two groups of e-HRM tools, specifically:

- systems that aim at reinforcing and making the relationship between the HR department and employees more direct, i.e. online surveys to measure the degree of employee satisfaction or to make relevant decisions, tools that allow self-managing employee personal profiles, e-learning and training management systems, online help with HR practices, newsletter.
- tools useful to schedule and settle employee bureaucratic and job activities, i.e. electronic organizer and calendar sharing systems, tools used to plan and manage online meetings and events, online forums and tools to manage bureaucratic matters.

E-HRM and job satisfaction (Hyp. 5). The hypothesis is preliminarily not confirmed by the regression analysis. Moreover the results of the correlation analysis evidence that a strong positive and significant relationship exists between job satisfaction on the one side and trust (0.416) and distributive justice (0.645) on the other, with a significant negative relationship between job satisfaction and intention to quit (-0.315). This seems to confirm the theoretical meaning of job satisfaction, i.e. the fact that job satisfaction is a comprehensive concept of the work attitudes previously considered. For these reasons, we decided to analyse this construct further within our research framework.

4.4 Is alignment between e-HRM systems adoption and utility relevant?

Alignment between the level of adoption and the level of perceived utility of e-HRM systems seems to improve the impact of e-HRM on work attitudes (considered the absolute value). A misalignment means that e-HRM system adoption is lower or higher than the perceived need for them; from the employee's point of view, it seems to be a kind of HR Department 'mis-service'.

The preliminary correlation analysis points to a significant relationship between e-HRM practice alignment and intent to quit (negative) and distributive justice (positive) (see Appendix). These results are also confirmed by the regression analysis considering the two aforementioned attitudes as dependent variables (intent to quit as dependent variable: $\beta = 0.26$; $R^2 = 0.07$; sig. 0.009; distributive justice as dependent variable: $\beta = 0.29$; $R^2 = 0.08$; sig. 0.004).

Regression significance is also higher for trust in the HR department when considering alignment (β for alignment = 0,332; $R^2 = 0.23$; sig. 0.000).

Finally, in a preliminary test we also decided to investigate the interaction effect of the perceived e-HRM alignment and level of adoption; the correlation analysis suggests that there is a significant 'combination effect'. These results are confirmed by the regression analysis: for distributive justice $\beta = 0.335$; $R^2 = 0.112$; sig. 0.001; for affective commitment $\beta = 0.25$; $R^2 = 0.06$; sig. 0.012.

5 Discussion

Our research aims to explore the role of e-HRM systems in shaping the employee-organisation relationships of the new workforce of young people known as Generation Y. In particular, we investigate if and eventually what kind of e-HRM systems positively influence the work attitudes and behaviours of these new employees and thus obtaining better performance.

In our preliminary study we first found that not all our pilot sample employees are endowed with high technological readiness, as the literature on Gen-Yers assumes; but interestingly they are on average more technologically optimistic (although more discomforted!) than other employees in previous studies.

This first consideration has both theoretical and managerial implications.

From a theoretical perspective, the results contribute to the debate on the validity of the generational approach. The duality described needs to be better analysed, also in combination with the perceived utility and adoption of e-HRM systems, to try to understand if there are some generational technological traits, or if life-cycle and previous personal experiences are prevalent.

From a managerial perspective, the data shows that there is not one single way to manage new talent, differing in terms of technological orientation and lower sensitivity.

Considering the adoption level of e-HRM systems, our study confirms that this is not homogenously widespread: adoption of the operational systems and one-way informative e-practices is perceived as relatively high but remains relatively low for many two-way e-practices (i.e. e-recruitment, company chat and communities, knowledge management systems). Moreover, our data also demonstrates a misalignment between adoption and the perceived utility of e-HRM practices. On average, higher adoption is requested: this is especially true of all e-HRM systems that sustain work-life balance and development systems; the request is lower for operational systems and an over-service is at times perceived (i.e. online personal profile).

From a theoretical point of view, this suggests the validity of e-HRM classifications from a company perspective [66], but also the need for more detailed studies with a classification from the employee's perspective, perhaps based on 'hygienic' and 'motivational' factors [29].

From a managerial point of view, the results suggest that these new employees are ready for a further technological leap: they request more 'interactive' e-HRM systems, able to satisfy more sophisticated employee needs such as development and wellbeing.

Considering the relationship between e-HRM systems and work attitudes, our results confirm that these generally have a significative impact. This impact in some cases is related to adoption quantity and in other cases to perceived effectiveness with respect to employee needs (alignment).

From a theoretical perspective, according to the E-O Relationship framework, the results suggest that the quantity of e-HRM significantly improves intelligibility of the working relationship (considering its impact on trust and procedural justice); e-HRM perceived utility (in combination with quantity) seems to signal the organization's consideration and concern towards its employees (in terms of the impact on commitment, distributive justice and intent to quit).

From a more practical perspective these results suggest that organizations have to increase their e-HRM investments, but they also have to communicate and introduce them better in order to be consistent not only with the technological optimism of the new employees but also with their technological discomfort.

6 Limits and forthcoming steps

The main limitation of this study is the sample size: only a preliminary analysis has thus far been performed. The next step is the analysis of the entire sample data.

Useful suggestions could also come from closer attention to the combinative approach, since we assume that there are no single types of e-HRM systems to implement and the degree of technology readiness is not entirely good or poor, but there is a variety of possible positive organizational combinations (considering for example desired and implemented e-HRM, degree of technology readiness and eventually significant control variables concurrently). Clusters of users could be formed based on different criteria: i.e. types of e-HRM systems actually adopted and desired, technological readiness and desired e-HRM or e-HRM and control variables that eventually demonstrate a positive influence on work attitudes.

The research could also evolve in a different direction, considering the type of e-HRM endowment that can better support the HR department in performing its activities along with the alternative roles it can carry out, such as, for example, in the Ulrich framework [82]. The assumption is that different combinations of e-HRM systems can better suit the needs of the different aims of HR departments.

Finally, the research framework could also be adopted to study the influence of e-HRM on the work attitudes of all employees (also considering sub groups as a control mechanism), and this would become more relevant especially if e-HRM carries on gaining importance in the ICT endowment of all firms.

Our article would serve as a prelude to the growing body of theory and research seeking to explain the emergence and existence of the e-HRM challenge in shaping the employee-organization relationship.

References

[1] Adams, J.S., Rosenbaum, W.B. (1962). The relationship of worker productivity to cognitive dissonance about wage inequities. Journal of Applied Psychology. 46(3), 161-164.

[2] Alsop, R., (2008) The trophy kids grow up: How the millennial generation is shaking up the workplace. Jossey-Bass, New York.

[3] Arthur, J.B. (1992). The link between business strategy and industrial relations systems in American steel minimills. Industrial and Labor Relations Review, 45, 488-506.

[4] Arthur, B., Hall, D.T., Lawrence, B.S (1989). Generating new Directions in Career Theory. In M.B. Arthur, D.T. Hall, B.S. Lawrence (Eds.). Handbook of career theory, Cambridge University Press, New York, 7-25.

[5] Becker, B.E., Huselid, M.A (1998). High performance work systems and firm performance. Research in Personnel and Human Resources Management, 16, 53-101 .

[6] Blader, S.L., Tyler, T.R. (2003). What constitutes fairness in work settings? A four-component model of procedural justice. Human Resource Management Review, 13, 107-126.

[7] Bondarouk, T., Oiry, E., Guiderdoni-Jourdain, K. (2009) (Eds.), Handbook of Research on E-Transformations and Human Resources Management Technologies: Organizational Outcomes and Challenges. IGI Global, Hershay, PA: USA.

[8] Broschak, J.P., Davis-Blake, A. (2006). Mixing standard work and non-standard deals: the consequences of heterogeneity in employment arrangements. Academy of Management Journal, 49, 371-393.

[9] Butler, J.K (1991). Toward understanding and measuring conditions of trust: Evolution of conditions of trust inventory. Journal of Management, 17, 643-663.

[10] Cennamo, L., Gardner, D. (2008). Generational differences in work values, outcomes and person-organisation values fit. Journal on Managerial Psychology, 23(8), 891-906.

[11] Cook, J.,Wall, T. (1980). New work attitude measure of trust, organizational commitment and personal need non-fulfillment. Journal of Occupational Psychology, 53, 39-52**.**

[12] Coyle-Shapiro, J.A.M., Shore, L.M (2007) The employee-organization relationship: where do we go from here? Human resource management review, 17(2), 166-179.

[13] Cropanzano, R., Prehar, C.A. Chenn, P.Y. (2002). Using Social Exchange Theory to distinguish procedural from interactional justice. Group and Organization Management, 27(3), 324-351.

[14] D'Amato, A., Herzfeldt, R. (2008). Learning orientation, organizational commitment and talent retention across generations. Journal of Managerial Psychology, 23(8), 929-953.

[15] Davis-Blake, A., Uzzi, B. (1993). Determinants of Employment Externalization: A Study of Temporary Workers and Independent Contractors. Administrative Science Quarterly, 38(2), 195-223.

[16] Dries, N., Pepermans, R., De Kerpel, E. (2008). Exploring four generations' beliefs about career. Journal of Management Psychology, 23(8), 907-928.

[17] Eisenberger, R., Huntington, R., Hutchinson, S., Sowa, D. (1986). Perceived organizational support. Journal of Applied Psychology, 71, 500-507.

[18] Egri, C.P., Ralston, D.A. (2004). Generation cohorts and personal values: a comparison of Cina and US. Organization Science, 15(2), 210-220.

[19] Erickson, T.J. (2008). Plugged In: The Generation Y Guide to Thriving at Work. Harvard Business School Press, Boston.

[20] Erickson, T.J., Alsop, R., Nicholson, P., Miller, J. (2009). GenY in the Workforce. Harvard Business Review, 87(2), 43-49.

[21] Etzioni A., (1961). A comparative analysis of complex organizations. Free Press, NY.

[22] Fleetwood, S. (2007). Why work-life balance now? International Journal of Human Resource Management, 18(3), 387-400.

[23] Folger, R., Cropanzano, R. (1998). Organizational Justice and HR Management. Sage, Thousand Oaks, CA.

[24] Giancola, F. (2006). The generation gap: more myth than reality? HR Planning, 29(4), 32-37.

[25] Grant, R.M. (1991). Contemporary strategy analysis. Concepts, techniques, applications. Blackwell, London, UK.

[26] Gouldner, A.W. (1960). The norm of reciprocity: A preliminary statement. American Sociological Review, 25, 161-178.

[27] Iaffaldano, M. R. & Muchinsky, P. M. (1985). Job satisfaction and job performance: A meta-analysis. Psychological Bulletin, 97, 251–273.

[28] Imperatori, B., DeMarco, M. (2009). Labour Processes Transformation'. In T. Bondarouk, E. Oiry, and K. Guiderdoni-Jourdain (Eds.), Handbook of Research on E-Transformations and Human Resources Management Technologies. IGI Global, PA. USA, 34 - 54.

[29] Herzberg, F. (1959). The Motivation to Work. John Wiley, NY.

[30] Howe, N., Strauss, W., (2000) Millenials rising: The next great generation. Vintage, NY.

[31] Judge, T.A., Thoresen, C. J., Bono, J.E., Patton, G. K. (2001). The job satisfaction-job performance relationship: A qualitative and quantitative review. Psychological Bulletin, 127, 376–407.

[32] Kelliher, C., Anderson D. (2008). For better or for worse? An analysis of how flexible working practices influence employees' perceptions of job quality. The International Journal of Human Resource Management, 19(3), 419–431.

[33] Kogut, B. & Zander, U. (1992). Knowledge of the Firm, Combinative Capabilities, and the Replication of Technology. Organization Science, 3(3), 383-397.

[34] Kogut, B., Zander, U. (1996) What Firms Do? Coordination, Identity, and Learning. Organization Science, 7(5), 502-518.

[35] Konovsky, M.A., Pugh, S.D. (1994). Citizenship behavior and social exchange. Academy of Management Journal, 37, 656–669.

[36] Lepak D.P., Snell S.A. (1999). The Human Resource Architecture: Toward a Theory of Human Capital Allocation and Development. Academy of Management Review, 24(1), 31-48.

[37] Lepak D.P., Takeuchi, H.A., Schnell S.A., (2003) Employment flexibility and firm performance. Journal of Management, 29(5) 681-703.

[38] Levinson, H., Price, C.R., Munden, K.J., Mandl H.J., Solley, C.M. (1962). Men, management and mental health. Harvard University Press, Cambridge, MA.

[39] Levitt, T. (1960). Marketing Myopia. Harvard Business Review, 38(4), 24-47.

[40] Liljander, V., Gllberg, F., Gummerus, J. & vanRiel A. (2006). Technology readiness and the evaluation and adoption of self-service technologies. Journal of Retailing and Consumer Services, 13, 177-191.

[41] Lin, J.S.C., Hsieh, P.L. (2007). The influence of technology readiness on satisfaction and behavioral intentions toward self-service technology. Computers in Human Behavior, 23, 1597-1615.

[42] Locke, E.A. (1976). The nature and causes of job satisfaction. In M. D. Dunnette (Ed.), Handbook of industrial and organizational psychology. Rand McNally, Chicago.

[43] Macky, K., Gardner, D., Forsyth, S. (2008). Generational differences at work: introduction and overview. Journal of Managerial Psychology, 23(8), 857-861.

[44] McKinley, W., Sanchez, C.M., Schick A.G., Higgs A.C. (1995). Organizational Downsizing: Constraining, Cloning, Learning [and Executive Commentary] The Academy of Management Executive, 9(3), 32-44.

[45] McLean Parks, J., Kidder, K.L. (1994) "Till death do us part …": Changing work relationships in the 1990s. In C.L. Cooper & D.M. Rousseau (Eds.), Trends in organizational behavior, Vol. 1, Wiley, Chichester UK, 111-136.

[46] Meuter, M.L., Ostrom, A.L., Roundtree, R.I., Bitner, M J. (2000). Self-service technologies: understanding customer satisfaction with technology-based service encounters. Journal of Marketing, 64(3), 50–65.

[47] Meyer, J.P., Allen, N.J. (1991). A three-component conceptualization of organizational commitment. Human Resource Management Review, 1(1), 61-89.

[48] Meyer, J.P., Herscovitch, L. (2001). Commitment in the workplace: toward a general model, Human Resource Management Review, 11(3), 299-326.

[49] Mobley, W.H. (1982). Some unanswered questions in turnover and withdrawal research. Academy of Management Review, 7, 111-116.

[50] Montana, P., Lenaghan, J. (1999). What Motivates and Matter Most to Generation X and Y. Journal of Career Planning & Employment, 59(4), 27-30.

[51] Moorman, R.H. (1991). Relationship between organizational justice and organizational citizenship behavior: do fairness perceptions influence employee citizenship? Journal of Applied Psychology, 76, 845-855.

[52] Mowday, R., Steers, R., Porter, L. (1979). The measurement of organizational commitment. Journal of Vocational Behavior, 14, 224–247.

[53] Muchinsky, P.M., Tuttle, M.L. (1979). Employee turnover: an empirical and methodological assessment. J. of Vocational Behavior, 14, 43-77.

[54] Noble, S.M., Schewe, C. D. (2003). Cohort segmentation: an exploration of its validity. Journal of Business Research, 56(12), 979-987.

[55] Organ, D. W. & Ryan, K. (1995). A meta-analytic review of attitudinal and dispositional predictors of organizational citizenship behavior. Personnel Psychology, 48, 775-800.

[56] Ouchi, V. (1980). Markets, bureaucracies, and clans. Administrative Science Quarterly, 25, 129-141.

[57] Parasuraman, A. (2000). Technology readiness index (TRI): A multiple-item scale to measure readiness to embrace new technologies. Journal of Service Research, 2(4), 307–321.

[58] Pearce, J.L. (1993). Toward an organizational behavior of contracts laborers: Their psychological involvement and effects on employee co-workers. Academy of Management Journal, 36, 1082-1096.

[59] Podsakoff, P.M., MacKenzie, S.B. (1997). Impact of organizational citizenship behavior on organizational performance: A review and suggestions for future research. Human Performance, 10, 133-151.

[60] Prahalad, C.K., Hamel G. (1990). The core competence of the corporation. Harvard Business Review, 68, May-June, 79-91.

[61] Price, J.L., Mueller, C.W. (1986). Handbook of organizational measurement. Pittman, Marshfield, MA.

[62] Proserpio, L., Gioia, D.A. (2007). Teaching the Virtual Generation. Academy of Management Learning & Education, 6(1), 69-80.

[63] Rhodes, S.R. & Steers, R.M. (1990). Managing employee absenteeism. Addison-Wesley, Reading, MA.

[64] Rousseau, D.M. (1989). Psychological and implied contracts in organizations. Employee Responsibilities and Rights Journal, 2(2), 121-139.

[65] Rousseau, D.M., Parks, J.M. (1993). The contracts of individuals and organizations. In Cummings & Staw (Eds.), Research in organizational behaviour. 15, 1-43. JAI Press, Greenwich, CT.

[66] Ruel, H., Bondarouk, T., Looise, J.K. (2004). E-ERM: Innnovation or irritation. An explorative empirical study in five large companies on web-based HRM, Management Revue, 15(3), 364-380.

[67] Saari, L.M. & Judge, T.A. (2004). Employee Attitudes and Job Satisfaction. Human Resource Management, 43(4), 395-407.

[68] Sambamurthy, V., Bharadwaj, A., Grover V. (2003). Shaping Agility through Digital Options: Reconceptualizing the Role of Information Technology in Contemporary Firms. MIS Quarterly, 27(2), 237-263.

[69] Settoon, R.P., Bennett, N., Liden, R.C. (1996). Social exchange in organizations: Perceived organizational support, leader–member exchange, and employee reciprocity. Journal of Applied Psychology, 81(3), 219-227.

[70] Shore L.M., Barksdale K. (1998). Examining Degree of Balance and Level of Obligation in the Employment Relationship: A Social Exchange Approach. Journal of Organizational Behavior, 19, 731-744.

[71] Stanton, M., Coovert, M.D. (2004). Turbulent waters: The intersection of information technology and human resources. Human Resource Management 43(2), 121–125.

[72] Steers, R., Porter, L. (1983). Employee commitment to organizations. In R. Steers & L. Porter (Eds.), Motivation and work behavior. McGraw-Hill, New York.

[73] Strauss, W., Howe, N. (1991). Generations: The History of America's Future, 1584 to 2069. William Morrow, New York.

[74] Strauss, W., Howe, N. (2000). Millenials rising: The next great generation. Vintage Books, New York.

[75] Strauss, W., Howe, N., Markiewicz, P. (2006). Millennials and the pop culture: Strategies for a new generation of consumers in music, movies, television, the Internet, and video games. Lifecourse Associates, Great Falls VA.

[76] Strohmeier, S. (2007) Research in e-HRM: Review and implications. Human Resource Management Review, 17, 19-37.

[77] Townsend, A.M., Bennett, J.T. (2003), Human resources and information technology, Journal of Labor Research, 24(3), 361–363.

[78] Tsai P.C.F., Yen YF., Huang LC., Huang I.C. (2007). A study on motivating employees' learning commitment in the post-downsizing era: Job satisfaction perspective. Journal of World Business, 42, 157-169.

[79] Tsui, A.S., Pearce, J.L., Porter, L.W., Hite J.P. (1995). Choice of employee-organization relationship: Influence of external and internal organizational factors. In G.R. Ferris (Eds.), Research in personnel and human resource management, 13, 117-151. JAI Press, Greenwich CT.

[80] Tsui, A.S., Pearce, J.L., Porter, L.W., Tripoli, A.M. (1997). Alternative approaches to the employee-organization relationship: Does investment pay off? Academy of Management Journal, 40, 1089-1121.

[81] Twenge, J.M., Campbell, W.K. (2008). Increases in positive self-views among high school students: Birth cohort changes in anticipated performance, self-satisfaction, self-liking, and self-competence. Psychological Science, 19, 1082–1086.

[82] Ulrich, D. (1997) HR of the Future: Conclusions and Observations. Human Resource Management, Spring, 36, 30-41.

[83] Van de Ven, A.H., Ferry, D.L. (1980). Measuring and assessing organizations. Wiley, New York.

[84] Van Dyne, L., Cummings, L.L., McLean Parks, J. (1995). Extra-role behaviors: in pursuit of construct and definitional clarity. Research in Organizational Behavior, 17, 215-285.

[85] Van Scotter, J.R. (2000). Relationships of task performance and contextual performance with turnover, job satisfaction, and affective commitment. Human Resource Management Review, 10(1), 79-95.

[86] Vandenbergh, C., Bentein, K., Stinglhamber, F. (2004). Affective commitment to the organization, supervisor, and work group: Antecedents and outcomes. Journal of Vocational Behavior, 64(1), 47-71.

[87] Walton, R.E. (1985). From control to commitment in the workplace. Harvard Business Review, 63(2), 77-84.

[88] Weiss, H.M. (2002). Deconstructing job satisfaction. Separating evaluations, beliefs and affective experiences. Human Resource Management Review, 12, 173-194.

[89] Wernerfelt, B. (1984). A resource-based view of the firm. Strategic Management Journal, 5, 171-180.

[90] Williams, L.J., Hazer, J.T. (1986). Antecedents and consequences of satisfaction and commitment in turnover models: A reanalysis using latent variable structural equation methods. Journal of Applied Psychology, 71, 219-231.

[91] Wilson, M. Gerber L.E. (2008). How Generational Theory Can Improve Teaching: Strategies for Working with the "Millennials". Currents in Teaching and Learning, 1(1), 29-44.

[92] Wong, M., Gardiner, E., Lang, W., Coulon, L. (2008) Generational differences in personality and motivation: Do they exist and what are the implications for the workplace? Journal of Managerial Psychology, 23(8), 878-890.

Appendix 1. Correlation table

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. TR Index																	
2. TR Discomfort	-.644(**) .000																
3. TR Innovativ.	.745(**) .000	-.172 .088															
4. TR Insecurity	-.675(**) .000	.568(**) .000	-.115 .255														
5. TR Optimism	.796(**) .000	-.261(**) .009	.772(**) .000	-.227(*) .023													
6. N. of Empl.	-.055 .584	.008 .937	-.039 .703	-.074 .466	-.209(*) .036												
7. Department	.003 .974	.150 .139	.102 .313	.014 .893	.020 .845	.095 .350											
8. Work tenure	-.017 .864	.002 .987	-.025 .806	.093 .359	.096 .344	.026 .798	-.029 .773										
9. Job title	-.095 .346	-.056 .580	-.085 .400	.112 .266	-.091 .369	.094 .350	.056 .579	-.108 .285									
10. Alignment	-.014 .894	.073 .469	-.029 .776	-.056 .580	-.018 .859	.011 .910	.098 .336	-.191 .057	-.049 .629								
11. E-HRM utility	.034 .735	-.088 .383	-.041 .684	-.018 .862	.065 .523	.096 .343	.110 .278	-.038 .707	-.029 .776	.320(**) .001							
12.E-HRM adopt.	.045 .655	-.184 .067	-.075 .461	-.005 .958	.080 .431	.063 .532	.006 .954	.183 .068	-.021 .838	-.535(**) .000	.270(**) .007						
13.Commitment (affect.)	-.089 .378	.279(**) .005	-.068 .501	-.054 .592	-.036 .720	.008 .940	.088 .384	-.067 .509	-.238(*) .017	.201(*) .045	.022 .830	.039 .701					
14.Proced. Just.	.191 .057	-.053 .604	.086 .397	-.131 .195	.278(**) .005	.051 .615	.018 .862	.112 .268	-.203(*) .042	-.041 .686	-.025 .803	.273(**) .006	.504(**) .000				
15. Distrib. Justice	-.071 .482	.381(**) .000	-.004 .965	.034 .739	.132 .191	-.035 .729	.094 .357	-.097 .335	-.080 .431	.276(**) .005	.026 .795	.005 .964	.590(**) .000	.487(**) .000			
16.Trust in HR	.127 .208	-.042 .681	.111 .273	-.003 .977	.218(*) .029	-.078 .442	.068 .506	-.074 .462	-.107 .290	.035 .732	.109 .279	.393(**) .000	.366(**) .000	.574(**) .000	.432(**) .000		
17.Intent to quit	.056 .580	.008 .935	.092 .365	-.031 .757	.026 .797	.008 .938	.001 .995	-.096 .344	-.170 .091	.263(**) .008	.335(**) .001	-.074 .464	-.163 .104	-.249(*) .012	-.262(**) .008	-.114 .258	
18.Satisfaction	-.072 .479	.322(**) .001	.077 .448	.097 .335	.062 .540	.059 .559	.137 .177	-.115 .256	-.084 .408	.132 .190	-.176 .079	.057 .572	.586(**) .000	.322(**) .001	.645(**) .000	.416(**) .000	-.315(**) .001

Note: (**) = Correlation is significant at the 0.01 level (2-tailed); (*) = Correlation is significant at the 0.05 level (2-tailed).

Appendix 2. Regression analysis

Dependent Variable: TRUST

Model		Non-standardized coefficients	Standardized coefficients	t	Sig.	
		B	Std. error	Beta	B	Std. error
1	(Constant)	3.267	.378		8.648	.000
	E-HRM Adoption	.405	.094	.400	4.302	.000

Dependent Variable: TRUST

Model		Non-standardized coefficients		Standardized coefficients	t	Sig.
		B	Std. error	Beta	B	Std. error
1	(Constant)	3.267	.378		8.648	.000
	E-HRM Adoption	.405	.094	.400	4.302	.000
2	(Constant)	2.219	.492		4.513	.000
	E-HRM Adoption	.585	.107	.578	5.482	.000
	Alignment	.417	.132	.332	3.149	.002

Dependent Variable: PROCEDURAL JUSTICE

Model		Non-standardized coefficients		Standardized coefficients	t	Sig.
		B	Std. error	Beta	B	Std. error
1	(Constant)	4.140	.319		12.963	.000
	E-HRM Adoption	.226	.080	.277	2.835	.006
2	(Constant)	2.843	.585		4.857	.000
	E-HRM Adoption	.208	.078	.255	2.683	.009
	TR Optimism	.281	.108	.249	2.614	.010

Dependent Variable: DISTRIBUTIVE JUSTICE

Model		Non-standardized coefficients	Standardized coefficients			
		B	Std. error	Beta	t	Sig.
1	(Constant)	5.054	.082		61.409	.000
	Combination align-ment*adoption	.290	.083	.335	3.497	.001

Dependent Variable: AFFECTIVE COMMITMENT

Model		Non-standardized coefficients		Standardized coefficients	t	Sig.
		B	Std. error	Beta	B	Std. error
1	(Constant)	5.350	.087		61.260	.000
	Combination align-ment*adoption	.224	.088	.250	2.546	.012

Dependent Variable: INTENT TO QUIT

Model		Non-standardized coefficients		Standardized coefficients	t	Sig.
		B	Std. error	Beta	B	Std. error
1	(Constant)	2.730	.108		25.275	.000
	Alignment	.249	.093	.263	2.684	.009

Dependent Variable: DISTRIBUTIVE JUSTICE

Model		Non-standardized coefficients		Standardized coefficients	t	Sig.
		B	Std. error	Beta	B	Std. error
1	(Constant)	4.791	.121		39.576	.000
	Alignment	.307	.104	.288	2.962	.004

Group Support Systems: Tools for HR Decision Making

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Abstract. *Recently, many quantitative or qualitative techniques have been developed to support human resource management (HRM) activities, including Human Resource Information System (HRIS). More importantly, HRIS can include Expert System (ES), Decision Support System (DSS), and Executive Information System (EIS). As DSS and Group Support System (GSS) are able to facilitate human resources (HR) groups to gauge users' opinions, readiness, satisfaction, etc., increase their HRM activity quality, and generate better group collaborations and decision makings with current or planned HRIS services. Consequently, GSS can help HR professionals exploit and make smart use of soft data and act intelligently in their decision making process. This paper presents an in-depth discussion on what GSS is and how it works, which may shed some enlightenments to HR professionals on what grounds GSS can be integrated as part of HRIS and support HRM.*

Keywords: Decision Support System (DSS), Group Support System (GSS), Group Decision Support System (GDSS), human resources (HR), human resource management (HRM), Human Resource Information System (HRIS)

1 Introduction

Decision making is not necessarily a group phenomenon. However, with the growth of team work, team decision making has become a common process in business and organizations. Often these teams are dispersed geographically which makes group decision making difficult and costly. The development of group support system solved the problem and enhanced group decision making process because this technology facilitates communications of information among remote team members. Group support system was developed after the appearance of decision support system, another important technology for decision making for organizations. In the late 1960s, a new

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type of information system came about; model-oriented DSS or management decision systems. By the late 1970s, a number of researchers and companies had developed interactive information systems that used data and models to help managers analyze semi-structured problems. These diverse systems were all called *decision support systems* (DSS). From those early days, it was recognized that DSS could be designed to support decision-makers at any level in an organization. DSS could support operations, financial management and strategic decision-making.

Group decision support systems (GDSS) which aims at increasing some of the benefits of collaboration and reducing the inherent losses are interactive information technology-based environments that support concerted and coordinated group efforts toward completion of joint tasks [10]. The term *group support systems* (GSS) was coined at the start of the 1990's to replace the term GDSS. The reason for this is that the role of collaborative computing was expanded to more than just supporting decision making [23]. For the avoidance of any ambiguities, the latter term shall be used in the discussion throughout this paper.

Human resources (HR) are rarely expected like other business functional areas to use synthesized data because HR groups have been primarily connected with transactional processing – getting data into the system and on record for reporting and historical purposes [11]. For them soft data doesn't win at the table; hard data does. In most of the business functional areas, data collected from transaction processing systems (TPS) may not exhibit much sense to managers before they are processed. Whereas after being processed with certain software, they can produce significant value to managerial decision making to the extent that information gathered from the processed data can be the determinant of the final decision. Data collected for HR through TPS on the other hand seldom requires further processing or synthesis. However, the HR decision making process may require human determinants, computers, information systems, and communication technology in addition to the soft data, especially in collaborative decision making where anonymity may play a key role. Data generated and/or collected from these sources for the decision making are more facilitating and decisive, thus making them the more vigorous, powerful and hard-earned data in HR decision making process.

Recently, many quantitative or qualitative techniques have been developed to support human resource management (HRM) activities, classified as management sciences/operations research, multiattribute utility theory, multi-criteria decision making, ad hoc approaches, and human resource information systems (HRIS) [7]. More importantly, HRIS can include the three systems of expert systems (ES), decision support systems, and executive information systems (EIS) in addition to transaction processing systems and management information systems (MIS) which are conventionally accepted as an HRIS. As decision support systems, GSS is able to facilitate HR groups to gauge users' opinions, readiness, satisfaction, etc., increase their HRM activity quality, and generate better group collaborations and decision makings with current or planned HRIS services. Consequently, GSS can help HR professionals exploit and make smart use of soft data and act more intelligently in their decision making process.

The paper will first discuss what GSS is and the strengths and weaknesses of GSS. Understanding of GSS, its pros and cons in particular, can assist HR professionals to appreciate its functions and values in the decision-making process of HRM. Then recent

research findings in GSS will be discussed with a hope of stirring up an inspiration in the e-HRM research on the application of GSS in HRM. Finally, future trends of GSS will be briefed to promote the incorporation of the improvements in communication technology for better collaboration in HRM.

2 Group Support Systems

In the early 1980s, academic researchers developed a new category of software to support group decision-making. Execucom Systems developed Mindsight, the University of Arizona developed GroupSystems, and researchers at the University of Minnesota developed the SAMM system *[24]*. These are all examples of early Group Support Systems. "A Group Support System could be any combination of hardware and software that enhances group work. GSS is a generic term that includes all forms of collaborative computing" [27]. The increased need for GSS arises from the fact that decision-making is often a group phenomenon, and therefore computer support for communication and the integration of multiple inputs in DSS is required. The desire to use GSS therefore comes from the need of technological support for groups.

GSS *are* designed to remedy the dysfunctional properties of *decision*-making *groups, such as groupthink, lack of coordination, information overload, concentration block, etc.* These systems are becoming popular in aiding *decision*-making in many organizational settings by combining the computer, communication, and *decision* technologies to improve the *decision*-making process. These systems use a key tool to improve the quality of *decisions made by a group.* This key tool is the anonymity of members of a *decision*-making *group*. The purpose of GSS is to maximize the benefits of group work, while minimizing the dysfunctions of group work. This maximization and minimization can be made possible by GSS mainly by two factors: anonymity, which is enabled by removing the identifications of those who are contributing ideas and parallelism, which refers to ideas from contributors can flow to the facilitator simultaneously via electronic media without additional interference. In this way, genuine idea generation and communication are maximized and interfering factors are minimized within the group, especially a hierarchical group.

2.1 Strengths and Weaknesses of GSS

GSS provides support for communication, deliberation, and information flow especially for group activities that may be distributed geographically and temporarily. Group work has numerous benefits and advantages. First, groups are better at understanding problems and catching errors than individuals [15], [16]. Second, a group has more information than any one member which when combined can create new knowledge. Third, working in a group stimulates creativity and synergy. Finally, groups balance out the risk-tolerant and risk-averse. GSS offer many benefits. First, GSS support parallel information processing, parallel computer discussion, and generation of ideas. Second, they promote anonymity, which allows shy people or those who do not want to disclose their identities to contribute and helps prevent aggressive individuals from driving the meeting. Finally, these systems help keep the group on track and show the bigger picture. The two keywords here are parallelism and anonymity [27].

Some of the potential dysfunctions of group work are not automatically eliminated by GSS: first, groupthink, as suggested above, where people begin to think alike and not tolerate new ideas; second, lack of coordination, excess time consumption, poor quality solutions, and nonproductive time; third, duplication of efforts and high cost of

meetings, including travel; finally, information overload, concentration blocking (disturbance from inappropriate influences, free-riding discussions), and group misrepresentation (improper or badly chosen groups) can be added as the potential dysfunctions of group work. Process dysfunctions are caused by structural characteristics of the group setting that could hinder a group from reaching its full potential. Process dysfunctions hinder productivity because of unequal participation or unequal air time. This happens in a setting where only one person can take control of the floor. This sort of dysfunction can be countered by the use of computerized exchanges because people may enter their comments and thoughts simultaneously. Power [24] utters that simultaneous expression of ideas may be beneficial to the quantity of ideas generated. This is because computers have the capacity for concurrency. Finally, process dysfunctions are usually caused by limitations in the structure and forms of meetings.

Social dysfunctions, as Power [24] describes, can hinder group productivity through undesirable social processes that occur in the group. Social processes refer to those activities, actions, and operations that involve the interaction between people [8], [20]. For example, a group may limit the quality and quantity of input from any of its members by social processes such as evaluation apprehension, conformity pressures, free riding, social loafing, cognitive inertia, socializing, and domination due to status imbalance, groupthink, and incomplete analysis. These problems arise from processes present in all groups and are rooted in the ways in which group members change their behavior to adapt to the group. Finally, the prevalent analysis of group decision-making is that social influences within the group lead the rational individual astray.

The view of GSS portrayed by Power [24] is that they are text-based tools made with purpose of remedying some problems of *decision*-making in co-present *groups.* These *systems* claim to remove the social obstacles that prevent individuals from attaining their full potential in the *group.* Anonymity is central to achieving this full potential of individuals in a group. Shy people tend not to speak in a group discussion face-to-face. This hinders them from contributing to the group. GSS solve this problem by allowing these individuals to evade their shyness in the public and input their contributions through individual human computer interaction devices, thus achieving the goal of removing this social obstacle from these individuals and facilitating them to reach their full potential in the group. Meanwhile, the systems help prevent aggressive individuals in the group from driving the meeting, which is typically a potential intimidating source to the shy people in a group.

2.2 Recent GSS Research Findings

Decision-making in an organization today has become more the work of some form of group. Whether this group is a board, team, or a unit, important issues can be at stake. It is fair to ask, given the possible problems that occur in a group setting: Would the group setting have a negative effect on the quality of decisions that have to be made by the group? Current research in this area suggests that GSS, if implemented and used correctly, can improve the quality of group decision making significantly by minimizing the negative effects of group decision-making and by maximizing the benefits of group collaboration and decision-making. GSS have come a long way since their inception. Current and previous research efforts have made significant findings on the effects of the numerous criteria that affect the decision making process in a group setting while using GSS. The results show that while the Internet has made it easier and less costly to use GSS than ever before, the social effects of group decision making can have a

significant effect on the quality of decisions made in a group setting using GSS. By manipulating things such as visual cues, group versus individual-based incentives, anonymity, group size, feedback, leadership role, communication mode, type of tool used, social presence (degree of personal connection in communication settings) [13], [18], [21], face-to-face versus distant, shift work or non-shift work, the fit between facilitation style and agenda structure, and finally, a relationship versus a task focus, it is possible to significantly impact the quality of decisions made by a group using GSS.

According to Barkhi, Jacob, and Pirkul [3], GSS are divided into two groups; Distributed GDSS(DGDSS) and face-to-face GDSS(FGDSS). DGDSS groups consist of members who use a GSS at the same time but at different places. On the other hand, FGDSS groups consist of members who use a GSS at the same time and same place. The authors studied and compared the decision process and outcomes of groups that use FGDSS to those that use DGDSS. The results indicate communication mode and incentive structure can influence the effects of each other. Therefore, the appropriate design of incentive structures may be important to the success of virtual organizations.

The Web-based Multi-Criteria Group Support System (MCGSS), according to Lu et al., [17], Zahir and Dobing [28], is designed so that users can enter their preferences in an easily understood and user-friendly interface through a web browser. They state that easy-to-learn and user-friendly interfaces are essential if GSS are to become more commonly used in organizational decision-making and that MCGSS uses a new visual mode of preference entry. The relative importance of any two objects is expressed through a pair of side-by-side bars drawn in a graphical window. The ratio of the heights of two bars represents the user's relative preference for the two objects. Bar heights can be adjusted dynamically by dragging the mouse or utilizing some other device. Their article presents the design of a web-based MCGSS that can be used by a group of geographically dispersed decision-makers. This system takes advantage of Internet technology and enables a novel procedure to aggregate intensities of preferences.

In line with Kim [14], the role of leadership facilitates group processes by adding structure to group interaction. The effects of leadership on group performance in GSS settings still remains one of the least studied areas of GSS research. An analysis of comments by group leaders show that they are more efficient when making comments on group objectives and interaction structure, but this is only true in the early stages of group interaction. In the later stages, it is of increasing importance that group leaders make comments that encourage interaction and maintain cohesion between members of the group. Dennis and Wixom [9] presented a meta-analysis investigating five moderators. These moderators are as follows; tool, the type of group, task, the size of the group, and facilitation. The authors studied their effects on GSS. Results of the study draw multiple conclusions. First, process satisfaction is less for decision-making tasks than it is for the idea-generation tasks. Second, the GSS tool itself influences decision quality. Finally, the authors conclude that group size is an important moderator when it comes to measuring satisfaction with the process and decision time.

Rutkowski, Fairchild, & Rijsman [26] demonstrated experimentally that in the context of dyadic conflict, patterns of interpersonal communication, supported by a particular Group Support System technology, affect the quality of decision making. The authors found that GSS are efficient tools that support inter-group communication and relations. The authors also delved further into this topic and discussed the implications of their research on the study of intercultural negotiation and conflict resolution. They observed

that groups are becoming increasingly important in organizations and that intercultural negotiation and conflict resolution use electronic groupware to facilitate communication and workflow. Barkhi [2] compared the performance and information exchange truthfulness of groups under these various experimental conditions. The author utilizes a game theory perspective to study the behavior of members in these groups. The results indicate that communication channel and incentive structure mitigate strategies that lead to decision choices and information exchange truthfulness among members in a group.

GSS can improve communication and learning as demonstrated by Bandy and Young [1]. Their study examined the impact of two collaborative technologies and a priming agent upon communication complexity and learning style in a group decision-making context. Their findings revealed that communication complexity was significantly greater in groups using a GSS compared to groups using a simple chat system, suggesting that characteristics of the GSS served to structure discourse among group members. Burke [6] examined how GSS learning environments (face-to-face vs. distant) and task difficulty level (simple vs. difficult) influenced participation levels and social presence among accounting students working collaboratively on an accounting task.

Hostager, Lester, Ready, & Bergmann [12] examined the effects of agenda structure and facilitator style on participant satisfaction and output quality in meetings employing GSS. This study indicates that GSS facilitators should try to find a fit between their facilitation style and the agenda structure, while not forgetting to adopt either a relationship or a task focus and ensuring that they are consistent with their choice. GSS are designed as an analysis tool to support the decision processes of a group. Inherent in the design is the developer's desire to make the basic meeting process better either by increasing process gains or reducing process losses. Further, it is suggested by Martz and Sheperd [19] that one way that GSS attack these losses is by providing immediate feedback.

2.3 GSS in the Real World

There are three options for setting up GSS technologies. One of them is in a special-purpose decision room, another is at a multiple-use facility, and the third is a web-based groupware with clients running wherever the group members are.

2.3.1 Facilitating Meetings

One example of the use of GSS is the system developed by a group of researchers of the University of Arizona to facilitate the organization of meetings. A typical meeting room consisted of a microcomputer for each participant, as well as a large projector for the display of either individuals' work or the combined results of the group efforts. A typical meeting is composed of a three-tier process consisting of electronic brainstorming, idea generation, as well as voting. Under the electronic brainstorming phase, all group members typed at separate terminals using electronic brainstorming software, and recorded their ideas regarding questions posed for the day. Even though these sessions were anonymous, everyone could see the abundance of ideas. Additionally, an issue analyzer assisted the group in identifying and consolidating key ideas generated from the idea generation. Lastly, a voting tool provided various methods for prioritizing key terms. Here, even though voting is anonymous, the results are readily displayed for all to view. This GSS by Nunamaker et al [22] was used at an

IBM site. It was found that process structure helps focus the group on key issues and discourages irrelevant digressions and unproductive behaviors.

2.3.2 Web-Based GSS

A web-based decision support system (DSS) is a DSS built with web technologies so that the DSS users access with web browsers through an internet connection. In addition, web-based DSS applications that are developed by companies may be deployed on company intranets to support internal business processes or can be integrated into public corporate websites to enhance services to trading partners [25].

Most web-based DSS are currently individual DSS systems [4]. On the contrary, web-based *GSS*(GSS) provide a broader approach to solving complex problems that are less structured. As noted earlier, there are a few web-based GSS and one of them, GroupSystems, is a local area network-based client-server that exists for online collaboration. Several commercially available web-based GSS products also contain decision-making tools. These products provide support to the group decision-making process with tools that facilitate brainstorming, idea generation, organization, prioritization, and consensus development.

2.3.3 Distance Learning

Several courseware packages that have GSS functions facilitate distance learning. They range from such tools like Blackboard, through Microsoft NetMeeting, to PlaceWare Virtual Classroom. Distance learning, as a tool, can be an effective part of GSS. Many corporations have taken advantage of it mostly through web-based streaming and other private company intranets. Distance learning, therefore, can act as a strong collaborative and knowledge management tool in GSS, with a distinctive feature, namely, being accessible every hour of the day.

2.3.4 GSS for Political Events

The multi-faceted use of GSS is reflected in the dynamism inherent in organizational structures. For instance, political risk associated with corporations' decisions to expand internationally could be alleviated using GSS. This is because the key to analyzing political events is obtaining good information about these events. GSS thus provides higher reliability in accessing this needed information, through anonymity, simultaneity (may apply only to certain types of GSS), and documentation, features that are lacking in face-face interactions. Among other advantages, anonymity offers participants a greater degree of freedom in expressing their thoughts, and presents them with a greater sense of confidence to be more critical. Blanning & Reining [5] suggest a two-characteristic framework depending on whether analysis of the event under consideration is static or dynamic, as well as whether the analysis is one-dimensional or multi-dimensional.

3 Future trends of GSS

GDSS is transforming into GSS and the same ideology used for enhancing group meetings is being used in other areas as well. The idea is not just to increase the effectiveness of decision-making, but to incorporate the current improvements in communication technology to redefine collaboration. Anonymity is also becoming more and more widespread in this new Internet culture; its effects on collaboration are very interesting as discussed, e.g., allowing shy people to contribute and helping prevent

aggressive individuals from driving the meeting. The findings presented in this paper uncover the social effects that might affect group work. These findings can also be applied to other fields in which collaboration is experiencing growth as in education and social networking. By combing the Internet, emerging technologies, and the findings in social behavior as they relate to group work, with the exploding growth currently being experienced in communication, the results and the rate of introduction of new ways of collaborating will be absolutely amazing.

4 Conclusions

GSS, if implemented and used correctly, can improve the quality of group decision making significantly by minimizing the negative effects of group decision-making and by maximizing the benefits of group collaboration and decision-making. GSS have come a long way since their inception. Current and previous research efforts have made significant findings on the effects of the numerous criteria that affect the decision making process in a group setting while using GSS. The results show that while the Internet has made it easier and less costly to use GSS than ever before, the social effects of group decision making can have a significant effect on the quality of decisions made in a group setting using GSS. Based on the unique functionalities and by manipulating things such as visual cues, group versus individual-based incentives, anonymity, group size, feedback, leadership role, communication mode, type of tools used, social presence, face-to-face versus distant, shift work or non-shift work, the fit between facilitation style and agenda structure, and finally, a relationship versus a task focus, it is more than likely possible to significantly improve the quality of decisions made by a HR group using GSS.

References

[1] Bandy, K. E. & Young, J. S. (2002, Fall). Assessing Cognitive Change in A Computer-Supported Collaborative Decision-Making Environment. *Information Technology, Learning, and Performance Journal,* 20 (2), 11-23.

[2] Barkhi, R. (2005, October). Information exchange and induced cooperation in Group Decision Support Systems. *Communication Research*, 32 (5), 646-678.

[3] Barkhi, R., Jacob, V. S., & Pirkul, H. (2004, May). The Influence of Communication Mode and Incentive Structure on GDSS Process and Outcomes. *Decision Support Systems,* 37 (2), 287-305.

[4] Bharati, P. & Chaudhury, A. (2004). An Empirical Investigation of Decision-Making Satisfaction in Web-Based Decision Support Systems. *Decision Support Systems,* 37(2), 187-197.

[5] Blanning, R. & Reinig, B. (2005). A Framework for Conducting Political Event Analysis Using Group Support Systems. *Decision Support Systems,* 38, 511-527.

[6] Burke, J. A. (2001, Fall). Collaborative Accounting Problem Solving Via Group Support Systems in a Face-To-Face Versus Distant Learning Environment. *Information Technology, Learning, and Performance Journal,* 19 (2), 1-19.

[7] Byun, D.-H. (2003). Human Resource Management. In Kent, A., Hall, C. M., Daily, J. E. & Lancour, H. (Eds.) *Encyclopedia of Library and Information Science*, NY: Marcel Dekker Inc., 59(Supl. 2), 153-175.

[8] De Millo, R. A., Lipton, R. J. & Perlis, A. J. (1979). Social Processes and Proofs of Theorems and Program. *Communications of the ACM*, 22(5), 271-280.

[9] Dennis, A. R. & Wixom, B. H. (2001/2002, Winter). Investigating the Moderators of the Group Support Systems Use with Meta-Analysis. *Journal of Management Information Systems*, 18 (3), 235-257.

[10] Dennis, A. R., George, J. F., Jessup, L. M., Nunamaker, J. F. & Vogel, D. R. (1998). Information Technology to Support Electronic Meetings. *MIS Quarterly*, 12(4), 519-616.

[11] Dudley, B. (2007). HR Vision Software – A Decision Support System for Human Resource Professionals. SAS Institute Inc.

[12] Hostager, T. J., Lester, S. W., Ready, K. J. & Bergmann, M. (2003, April-June). Matching Facilitator Style and Agenda Structure In Group Support Systems: Effects on Participant Satisfaction and Group Output Quality. *Information Resources Management Journal*, 16 (2), 56-71.

[13] IJsselsteijn, W. (2003). Stay in Touch: Social Presence, Connectedness through Synchronous and Asynchronous Communication Media. Proceedings of HCI International Conference on Human-Computer Interaction, 924-928.

[14] Kim, Y. (2006, April-June). Supporting Distributed Groups with Group Support Systems: A Study of the Effect of Group Leaders and Communication Mode on Group Performance 1. *Journal of organizational and End User Computing*, 18(2), 20-37.

[15] Korpela, J., Sierila, P. & Tuorninen, M. (2001, January). A GDSS-Based Approach to the Strategy Analysis of Forest Industries. Proceedings of the 34th Hawaii International Conference on System Sciences, 8.

[16] Kwok, R. C.-W. & Khalifa, M. (1998, January). Effect of GSS on Meaningful Learning. *Proceedings of the 31st Hawaii International Conference on System Sciences*, 1, 463-469.

[17] Lu, J., Zhang, G. & Wu, F. (2005, June). Web-Based Multi-Criteria Group Decision Support System with Linguistic Term Processing Function. *IEEE Intelligent Informatics Bulletin*, 5(1), 35-43.

[18] Markopoulos, et al. (2003). Supporting Social Presence through Asynchronous Awareness Systems. In Riva, J., Davide, F. & IJsselsteijn, W. A. (Eds.), *Being There: Concepts, Effects and Measurement of User Presence Synthetic Environments*, Amsterdam, Netherlands: Ios Press.

[19] Martz, W. B. & Sheperd, M. M. (2003, Summer). The Impact of Immediate Feedback on Group Decision Satisfaction. *The Journal of Computer Information Systems*, 43(4), 41-45.

[20] NASA, (1996). Social Processes. Working Draft Framework, Version 2. Sustainable Development Indicator Group.

[21] Nowak, K. (2001). Defining and Differentiating Copresence, Social Presence and Presence as Transportation. *Presence 2001*, 4th Annual International Workshop, Philadelphia.

[22] Nunamaker, J. F., Briggs, R. O., Mittleman, D. R., Vogel, D. R. & Balthazard, P. A. (1996-1997). Lessons from A Dozen Years of Group Support System Research: A Discussion of Lab and Field Findings. *Journal of Management Information Systems*, Winter, 13(3), 163-207.

[23] Patrick, H. & Garrick, J. (2006, April). The Evolution of Group Decision Support Systems to Enable Collaborative Authoring of Outcomes. *World Futures: The Journal of General Evolution.* 62(3), 193-222.

[24] Power, D. J. (2003). A Brief History of Decision Support Systems. Retrieved Dec. 5, 2008, from http://dssresources.com/history/dsshistory.html.

[25] Power, D. J. & Kaparti, S. (2002). Building Web-Based Decision Support Systems. *Studies in Informatics and Control,* 11(4), 291-302.

[26] Rutkowski, A., Fairchild, A. & Rijsman, J.B. (2004, March). Group Decision Support Systems and Patterns of Interpersonal Communication to Improve Ethical Communication in Dyads. *International Negotiation: A Journal of Theory and Practice,* 9(1), 11-29.

[27] Turban, E., Aronson, J. & Liang, T. (2005). *Decision Support Systems and Intelligent Systems.* Upper Saddle River: Pearson Prentice Hall.

[28] Zahir, S. & Dobing, B. (2002, Summer). Designing a Web-Based Multi-Criteria Group Support System (MCGSS). *The Journal of Computer Information systems*, 42 (4), 50-60.

HRIS impacts implementation in a SME: a contextualist longitudinal case study

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Abstract. *This article analyses HRIS impact in a SME based on a longitudinal case study. This SME evolves in the educational sector and has just operated a fusion of four private schools. A HRIS (time management & activity software) is launched. A contextualist perspective is taken from 2002 to 2010 based on various stakeholders interviews (external actors as consultant; internal actors as HR manager, Financial manager, school directors etc..). We present the "contextualist" analysis (context, content, and process) on three key periods. We underline their specificities and explain HRIS implementation situation through a "conventionalist" lens.*

Keywords: SME, HRIS, time management & activity software, contextualist perspective, conventionalist lens.

1 Introduction

E-management model is often perceived as *an ideal-type* applied in flexible and reactive companies and positive technological innovations [11]. This specific vision of the organization has led to the development of Human-Resources-Information-System, including in small structures (SME). HRIS is tied with interdependent logics of personalization, adaptation, division and anticipation which gradually irrigated the HR function [16]. However this function and underlying "logics" are variously perceived in SME.

E-HR constitutes a proper research theme in HRM, but few articles exist in the establishment of HRIS and its consequences in SME. However Boundarouk et al..(2009) [5] conclude in their article that their exploratory study leads to the conclusion that SME that use ITC in their HRM program declare a improving in HRM.

Our article lies on an exploratory perspective and more specifically on a case study research realized between october 2006 and may 2010. The study relates the process *from* launching an IT system dedicated to social information, *to* the produced result and use effects.

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The case study is concerns «Sainte-Croix»[14] entity. This private school involves 3000 pupils & students from nursery school to advanced vocational training certificate and 95 employees. Its current organization results from the fusion of five establishments in 2002. The idea was to harmonize operations; particularly HRM and management control.

We propose to study the various phases of the HRIS implementation and its impacts on HRM. Our research is based on a longitudinal study and on semi structured interviews.

Identification of the HRMIS effects in an organization, but also uses and actors' strategies of actors have been analyzed through decision makers', users', IS designers' interviews. This analysis emphasize, according to contextualist method [17,18,19], interactions which can exist between organisational context, HRIS implementation process and content. We describe different stages in order to study how, why and when organizational changes lead to this new HRIS. The objective of this study is to define voices of research and to nourish a debate with the experts.

If the observation is focused on the HRIS we discuss the relevance to extend our conclusions to E-HR. Lastly, we propose perspective of use and appropriation of the system. In a first part we make a literature review and expose a model of research. A second part is devoted to the methodology and the results of our observations.

2 The HRIS a management tool in SME: theoretical bases of an exploratory research

The HRIS indicates that softwares are conceived for social information management, in order to realize pay processing for example. When HR function uses internet technology to manage information, communication and interactive web applications, then we can speak of E-HR. Historically articles in IS and HRM are focused on HRIS or on ITC and finally on E-HR. The division between HRIS and E-RH is not so clear now as more and more softwares can be reached today using a web navigator, from the Intranet of the company. After a presentation of ITC and HRIS as HR process support, we analyze the HRIS implementation strategy in the context of SME. ITC is in general lower in small entity but what about e-HRM impact in SME? To deep this problematic, we present an E-HR model which underlines technologies impact of technologies on HRM. Uses themselves are influenced by factors technical, social, organizational and individual factors. Finally we expose our empirical study, inspired by the contextualist perspective. We analyze HRM changes in «Sainte-Croix» SME.

2.1 Definition of the HRIS associated with E-HR

The concept of HRIS is not new. In 1990 Tannenbaum publishes the following definition: a HRIS is a system used to acquire, store, handle, analyze, sort, distribute relevant information concerning human resources in an organization. Hendrickson (2003) adds that it is not limited to technical aspects (computer equipments, software applications) but includes also individuals, procedures and policies, necessary data to manage HR function. Use and appropriation are underlined, but certain confusions emerge concerning the technology infiltration in HR function. In spite of the inexorable development from the HRIS, various authors stress that the use of these systems is not optimum and remains on an administrative level [1, 27,12].

[14] The name of this private school is fictitious for confidentiality reasons.

However, for Harisson and Deans [9], the HRIS includes various facets from employee information, applicant alignment; recruiting; equal employment opportunity/affirmative action; position control; performance management; compensation; payroll; benefits; training; to square development/skill inventory; human resource planning.

Nowadays, HRIS is defined as a system managing various software bricks automating a certain number of tasks related to human resource management and to ensure follow-up.

HRFunction is tied with strategic, operational and administrative activities (vacation, absences, wages management, etc.) on which ITC have undeniable impact.

However, Ruël (2005) [25] specifies that HRIS must not be confused with E-HR because *the HRIS is a tool for HR function* whereas E-HR have a target outside the HR department. Ruël et al.. (2004) [24] indicate that E-HR is supporting HRM process by the use of internet technology. Firms have different choices: it can privilege face to face relations or remote relations, virtual or not, technology mediatized or not. Lepak and Snell (1998) [13], Wright and Dyer (2000) [29] distinguish three types of impact of the TIC: impact on administrative activities, impact on activities concerning RH functional policies (policy of recruitment, remuneration, formation, evaluation, participation), impact on value added strategic activities.

First impact is *operational* with HRIS setting up (basic of data, administrative activities automation…). Second impact is *transactional* with E-HR development. It relates to more sophisticated HR activities. Underlining is not laid any more on administrative one but on HR supporting managerial process tools (recruitment, training, remuneration). Finally last impact is *transformational* with a virtual function RH creation. This reorganization leads to focus on certain strategic activities according to their value and specificity.

2.2 Strategic management of HR in SME and HRIS impact

SME chief executive defines strategy and centralizes power. This leads to functional decision strategic integration (commercial, financial, HR, or information systems). After having characterized the HRM in SME, we consider information systems in SME. Then we conclude on the link between HRIS and HRM.

For Bayad and Chanal (1998) [3], HRM in SME is from the very beginning at a strategic level simply because the CEO is in charge of it. According to Mahé de Boislandelle (1999) [15], design of SME HRM rests primarily on CEO vision. This vision relies on two variables: leader's personal characteristics and environment & internal company characteristics.

Academic articles in information systems also emphasize the leader importance. Levy et al.. (2001) [14] evoke managerial limits concerning the IS development. This is due to the leader's age, leader's experience, leader's interest for this field, lack of time, lack of confidence towards consultants and budget problems (financial, human, material).

Ramdani and Kawalek (2007) [23] observe that in SME: IS are less sophisticated compared to large companies, Environment information, information scanning are less relevant, There is little opportunities to collect information and there is a management resource concentration.

We can logically think that ITC presence is, in general more modest in small structures. However, firm size does not limit their use in HRM field [24].

In that way, in our article, we study a HRIS implementation in an SME based on Ruël et al (2004) [24].

Internal actors as top&line management, employees, worker council are in the center of the model. IT use is a behavior which results of technology perception. Davis' TAM Technology Acceptance Model [7] is an explanatory model of this behavior. According Mahé de Boislandelle (1999) [15] HRM in SME reflects its ambition level. Its configuration is similar to Pichault & Schoenaers' "*arbitrary model*" [modèle arbitraire in French], [22] where formalization degree is weak, hiring are unplanned, promotion are informal etc... SME can also focus on *"codifying model"* [modèle objectivant in French], in order to rationalize HRM. It can be use for the organization to be in conformity with law regulations.

The next variable is the finality of such a strategy in SME. The literature evokes costs reduction (efficiency), which corresponds to first ambition level [15]. The required goal can be also, a stronger coherence of HRM practices. In the studied case it can be also a stronger HRM practices coherence. The impact of the HRIS, in this organizational configuration is probably operational, even operational and relational. Lastly, obtained benefit could take the form of conformity improvement, of better costs control and finally greater managers' implication in firm management.

2.3 A longitudinal case study of a private scholar group: «Sainte-Croix»

«Sainte-Croix» is a private school, tied with a pedagogical contract to French government. This entity receives a mission letter from diocese supervision. There are specific conditions to respect to explain Christian specific characteristics as pastoral teams, mission organization etc (in French "mise en oeuvre du caractère propre"). Families contribute to the finance of private schools. They rest on a french juridical system named "association loi 1901" which cannot do profits. It houses nearly 3000 pupils from nursery school to advanced vocational training certificate (BTS). Non teaching personnel is affected to pedagogy support function at nursery school, college and high school. "Sainte-Croix" applies private sector law and represents 95 people [80 Equivalent Full Times (ETP in French)]. These people are in charge of various missions: education, pastoral animation, maintenance, household, administration, communication, financial management and accountancy.

In 2010, organization chart corresponds to the following diagram:

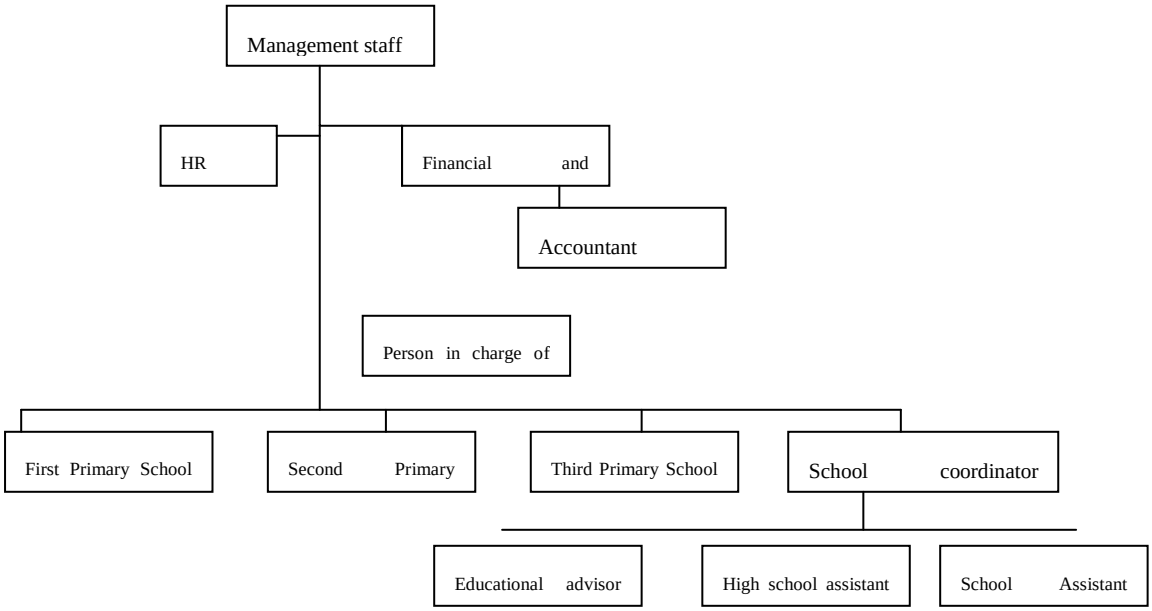

Figure 1: organization chart.

Actually, a staff board manages the school system and is composed of ten persons. The school coordinator manager, the three directors of primary schools, the high school assistant manager, the school assistant manager, the financial and administrative manager, the HR manager, the educational adviser, the person in charge of pastoral animation.

The person in charge of financial and administrative tasks is the hierarchical manager of accountants and maintenance & cleaning team. The HRD is the hierarchical manager of secretaries, ad employees of the documentation center. The educational adviser is responsible of non teaching employees' information keyboard data and of weekly planning. The Accountant integrates in the computerized system, absence (illness, training).

The school unit and its current organization follows a strategic evolution. There has been a fusion of 4 establishments in 2002, which have harmonized their operations (in particular contracts, vacation and working time). An agreement on annual working time within 35 hours system allows schedules modulation with high week (with 39 hours) and low week (with 35 hours). Nevertheless, wage bill is the first company financial cost (50% of the budget). Due to this specific situation, a rigorous management of the wage bill was necessary. The group wanted to benchmark the new group to other similar establishments and to readjust costs by services. In order to do that, they followed ratio (example number of employees by service/ pupils' numbers). A first financial study was undertaken in 2003 by a consulting group, specialized in financial analysis and catholic establishments of teaching sector.

This consulting group develops and sells a HR software named «TERH». This last supports organization, regulation updating, wage bill analysis for non teaching staff. It proposes a data base allowing personnel administrative management (contract,

remuneration, status …), tied with a working time management software. Here are some functionalities examples of this software: Legislation (employment contract management; 35 hours follow-up; Checking of legal obligations in term of work length), Organization (Weekly planning (per salaried employee, per place of employment, per service); Annual planning with vacation calculation of the vacation); Analyze (personnel allocation (time and activity); Flow of replacement/management of absences; Equipments and costs by service compared with national statistics.), Forecast: wages **s**imulation (per variation of pupils size or per variation of employees).

The stake for «Sainte-Croix» consists in software deployment success, in order to guarantee wage bill control.

The empirical study is led according to contextualist perspective [17, 18, 19]. According to this method, analysis of any organisational process is articulated around two central and inseparable pillars:

- need for registering the process in the context which surrounds it and this, at various levels,
- need for studying this same process with past, present and future perspectives.

Contextual factors analysis must take into account key factors of the company internal context, history, culture, structure. It must integrate as well, power relationships which represent the internal mosaic through which takes place HR development.

Past is alive at the present time and can precede the evolutions to come. This approach makes it possible to understand continuously events sequence. Reciprocal effects of context and action, structures and human agents are underlined.

Three axes are identified in a contextualist method: a multi levels context, a temporally directed process, a non deterministic content.

This step allows of explicit processes through a change situation. Firm transformation is seen as multidimensional, iterative but, not resulting necessarily from rational relations. This approach is articulated around the interconnection of three concepts:

- *Context*: includes internal context and external context. It explains "why" changes and "whom" of this evolution (actors). It is multi levels since bringing into play various stake holders. Direct and indirect users position HRIS impact at various levels. Within ”Sainte-Croix”, it intervenes according to users and their position.
- *Process*: it translates actions, reactions, interactions of various actors who make evolve organization. It is the "how" which is apprehended here. The process of HRIS implementation is temporally directed. Indeed, TERH HRIS deployment constitutes a long-term project. Control of process management depend similarly on former practices (pre establishment), of objectives posted at implementation time and finally reported practices (post-establishment).
- *Contents*: refers to studied transformation field. It answers the "what" of change. Contents study must be based on a nondeterministic approach taking into account multiple trajectories. This indetermination characterizes extended information systems, as HRIS, whose modules are various. This could generate various uses in HRM field.

The contextualist model which is applied to our case study can be represented like that:

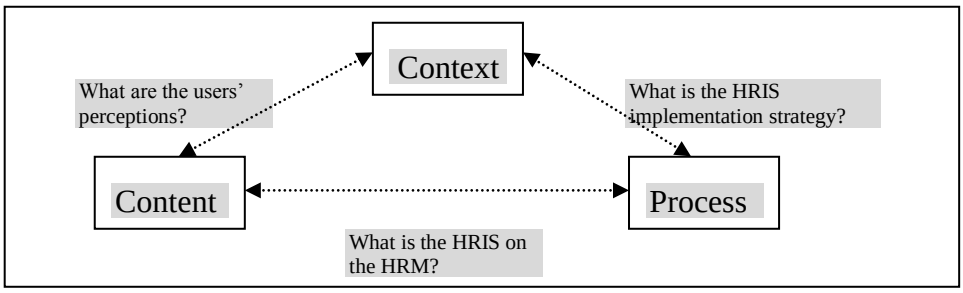

Figure 2: contextualist model.

We will consider that *contents* relate to "what" of change, while the "how" and the "why" of change are treated by internal and external *context* analysis, and by the process analysis *of process* as such. We mobilize contextualist perspective because it insists on studying change in its context, by articulating various levels of analysis (individual, group, organization).

The general question is: which is the impact of the HRIS on the HRM in SME? But, in the light of the diagram we can specify our questioning: which is the implementation strategy of the HRIS? Which is the impact of HRIS on HRM? Which is the perception of HRIS in this SME?

3 From HRIS launching decision to appropriation

We present the methodology of the study then the case analysis, according to contextualist perspective [6]. Finally our conclusions and scientific and practical contributions are developed in a third and last part.

3.1 Methodology of study

Semi-structuring interviews have been realized in face to face relationships. Work is divided into three phases: preparation (framework definition and preparation of the interview guidelines), realization (confidence phase with the interviewer, interview, and discussion synthesis with interviewed person) and the follow-up. Semi-structuring interview is adapted to the study of social phenomena and organizational problems.

Concerned items are : «TERH» histories and its use ,Implementation of such a system, «TERH» choice between others, Links with pay system, Software perception (advantage drawback).

The following actors have been met once between October 2006 and June 2007 and a second time in January 2010. The stakeholders' interviews concerns different specific themes .

- Director (initial needs, reasons of HRIS choice, links with the "Sainte-Croix" strategy)
- Consulting («TERH» designer) – (order formulation, response in term of services and "play and plug" product, users training, stages of the project, implementation plan)
- educational adviser (HRIS use, communication with its team, implication)

- IS manager (Adaptation with the existing information system training of the users, assistance)
- 3 Directors of the primary schools (organisational and strategic specificities of the establishments, perception and use of tools, management, implication)
- Accountant in charge of the pay, of administrative tasks related to contracts, of the management of vacation (use, connection with pay, defects and lacks, advantages, extent of the needs, division of work, saving of time, automation, reliability, user-conviviality, emergence of new missions, evolution of work, amelioration of the service quality, effectiveness, other requirements ideas on social management in HRM)
- Countable head (initial needs, reason of the choice of HRIS, Definition of the needs compared to the functionalities for «TERH», users help, links with fusion of the establishments and strategy, efficiency, effectiveness).

3.2 HRIS impact on "Sainte-Croix" HRM

By articulating context, process and content we aim to understand and to explain the dynamic of the evolution and the transformation of the firm. The longitudinal case rests on interviews concerning the period 2002-2010.

3.2.1 Context: from the fusion to strategic integration

- *2002-2004 : fusion, restructuration, financial charges*

This period has started with the four teaching institutions fusion, followed by a restructuration which generates a heavy debt spread out on 25 years. In a tended financial context related to the significant investments devoted to mortgage, the school group must control financial expenses, to maintain stable wage, while improving work organization. We give several interview extracts which shows lack of organization. Manager tells: "We realized our ignorance of our team activities. We did not know who was doing what and when! This is why we ordered a study on the organization chart in order to obtain a financial analysis of our wage bill " The person in charge of accounting: "the financial situation will be tense during the 25 next years because of loan settlement, managers are not enough conscious on financial equilibrium weakness"

A study has been undertaken by TERH consulting group in 2002, but we needed a more dynamic answer to analyze wage bill variations and to carry out prospective management. Manager asserts: "It is a photograph at "T" moment and I wished to have a film: a financial analysis on schedule allowance distribution per service and on resource allocation».

- *2005-2008: a need for control*

In 2005, a financial alert is done due to a high wage bill . This revives the HRIS launch and precise the objectives. Schools managers declare: "«TERH» was really needed because of too high ratios concerning the wage bill"

The choice of the consultant was naturally made on the TERH consulting group specialized on school sectors. The consulting one of the S RH: "With the 35 hours, a reflexion on the organization of work appeared in the heads of establishments. No tool existed, we created a software for plannings in one 1 ^{er} time, then for RH and financial management " The director coordinator: "It is the person in charge for the accountancy which will carry out the analyses of the dashboards left «TERH», will carry out the consolidations for the budget or the cost accounting"

The first version of «TERH» arrived in 2003, but does not allow to carry out estimated N+1. «TERH» is exploited as a pilot software by the accounting department and requires adaptations, which do not arrive immediately.

The accountant in charge of employees management: "the goal was to enter contracts and planning, in order to check if accounting analyses were coherent compared to the number of people dedicated to each service. The software will evolve according to our needs"

Computerized management of planning towards managers intervened only in 2006, after the awakening of the importance of HRM in the organizational control.

Educational advisers declares: "software set up for a very long time at accountancy, but inaccessible for the other persons in charge. The access for all the network has been operational in 2006, but there are many dysfunctions»

- *2009-2010: Strategic and "market oriented" perspectives*

HRIS is used by the management staff to control "Sainte-Croix" group. HR function becomes more strategic with a 10% wage bill increase. A new collective agreement is executed. This leads to big financial stake (personnel days off buying in). An analysis of the employees' absence is done. The HR manager says "It can help in case of pandemic development of Asian flu…". Program on stress detection is launched. "Sainte-Croix" acts on working conditions. Services towards families are raised. Handicapped children are better welcome. A program concerning seniors begins. The person in charge of HRM says " In 2002, everything was informal. Today there is far more requirements. Absences are justified, we develop competence management".

3.2.2 Process: software implementation, functionalities perceptions

- *2002-2004*

The first version of the software is dated of 2003. The software is just for the accountant for dashboards analysis, consolidation, cost accounting which does not allow to carry out estimated budgets. However numerous bugs were present. The accountant declares "with "TERH" version 1.4 was really heavy and screwed up all the time". "at the beginning, I had no positive perception of "TERH". I had the impression of doing analysis for nothing because there was a gif gap with the reality.

- *2005-2008*

The second version of the software is launched in 2006 with a decentralization towards the managers of the computerized management of planning (access in network). It was necessary to wait for the second software version to finish some with slowness technical problems due to "Access" implementation.

The coordinating director seems to have laid down alone his objective of operational realization for 2008, without inevitably clarifying points of stages, of evaluation, nor to have sensitized the users at the limit.

The analysis of the needs was carried out into external by the consulting one of the S RH, on the basis of its experiment in other establishments.

"TERH" was not presented to the users in term of opportunity and optimization. Perceived utility perceived remained far from the operational managers' immediate concerns of the operational managers, appropriation and adhesion did not follow.

The use of the system is rather convivial and users'' modifications requests have been taken into account. The data-processing person in charge declares: " «TERH» interface is colored with intuitive navigation. Users can also make send wishes of software evolution, according to their needs"… "For the moment all the users have the same access, but there is the possibility of locking the access according to uses'". The educational adviser insists: "the required modifications were quickly made". The person in charge of IT says: "NetMySQL version is really more convivial".

Various technical problems have appeared. The accountant declares that he did not install "TERH" 2.0 because there was an incompatibility with my treasury software that I use every day."

Uses perception are various. The educational advisor thought that with "TERH", he was spending more time for the personnel management. He says "I have found rapidly the limits of this software: slowness to go from the weekly planning to the annual planning, slowness of comparing weeks, bug, non taken into account the law on working at night… finally the software reliability was calling into question.

Concerning the training session on "TERH". Two sessions have been organized in June and September 2006. However the users consider that it does not respond to their needs. They want the session to be spread in a longer period. The director claims "retrospectively training sessions was too early compared to the strategic objectives". School directors add" we were present at the june session to discover TERH"; but we have refused to assist to the second session because we didn't know if we will use it. After all why would we keyboard planning ourselves".

Little by little, TERH has been bettered. It has evolved according users' requests. The "TERH" consultant declares : "When a software is introduced in an organization, we progress according to people practice and IS evolves according to these practices. For example the educational adviser has asked to do n+1 organizational & resources simulation. The software has been adapted for him"

- *2009-2010*

Development of functionalities is expected but according the human resource manager, one of the brakes is the fact that the software updating is not automatic… It needs several clicks to launch the updating process and then it needs to re-start the application. This is nothing difficult to do but without that manipulation we cannot reach the application.

3.2.3 Contents: HRIS Impact on HRM

- *2002-2004*

At the beginning, the objective was to underline non controlled costs, procedures non-conformity. There was a need to management rationalization. Uncertainty exists as it is shown in the director's declaration: "do we allocate the right resource to the right service?".

Then a resistance movement appears from the managers point of view. Organizational problems were not resolved after the fusion and the software was not THE solution. As the consultant remarks "the group was in "reengineering" after the fusion. It works on a consensus logic. Managers are not used to receive directives. They have difficulties to accept imposed methods". For school directors: "«TERH» is not a priority, therefore we do not use it"… "Time spent on «TERH» is a problem because we have already many things to do. It would be good to consider a time discharge for that. We are teachers

above all. We have a semi time of teaching and a semi time for the management of school. We do not have time released for the staff management " "We have a position hierarchical and a specific statute. We do not have time to keyboard data in software. There is of personnel for that. Our mission is elsewhere. We are not always in front of our PC in our office. We just need results in order to take care of the employees working time "

- *2005-2008*

The managers' opinion evolves with responsibilities consciousness The strategic integration of the HRF begins. The objective is the harmonization and the valorization of the manager role. The HRIS reinforce the employees' confidence because they want to be OK with procedures conformity; That partly influences the individual and collective performance at work. The accountant says: "Modifications were before written on flying paper which were circulated from the hierarchical person to the accountant, sometimes directly towards accountancy without the visa of N+1. Today I see less and less employees in my office to manage problems of making up, vacation, planning"

- 2009-2010

There is a study which has been published on the non teaching employees population. New jobs and new needs exists (for example educational psychologist post, IS and multimedia competence, handicapped children assistant,..). Competence gaps have been noticed. There is not enough vocational training. The annual development and activity interview must be generalized. In 2010 the institution must put into practice the new collective convention to non teaching personnel. There will be just only one pay-scale which as has an impact on the wage bill (+ 10%).

There are actually four "TERH" users: education advisor, administrative and financial manager, human resource manager and the accountant. A fifth user (the high school assistant) consults now the time planning. The employees don't use "TERH" software.

I think that the entities fusion has remove HR responsibilities for school directors. They simply try to endover this kind of tasks.".

The high school assistant refers to "TERH" only since recently because he has become conscious of time management problems. He has recognized serious errors in the laboratory technician's planning management which have done more hours than he shouldn't. This error can be avoid if the person takes the time to look at "TERH" . With TERH, the human resource manager can better position the person who helps the handicapped children. "It his planning is well done, this women can be present on 6 days ½ instead of 4 ½. Besides, due to permutation in timetable, employees can follow vocational training sessions and earn a training allowance. This avoids absence and a replacement by temping work.

	2002-2004	2005-2008	2009-2010
Context	Fusion of the 4 schools Restructuration Financial charges (mortgage)	Organizational stabilization Increase of the Consulting group implication	New collective convention implementation Increase of 10% for the wage bill Senior plan, stress plan, handicapped children services development
Process	First software version available for the accountant which do not permit to elaborate projected budget	Second software version available also for the manager (decentralization, network access) More functionalities	Software Updating , user training, software interface, functionalities development,
Content	Slow start Virtualization of the process	Various use perceptions Several bugs Administrative HRM	More strategic HR function 5 users, managers become aware of a more rational HRM (controlled wage bill); awareness of the social law, of HR competence

Figure 3: contextualist view.

HRIS has, in this case, a real operational impact on HRM. It also appears that E-HR supports HR activities sharing with managers: it is an illustration of ITC relational impact . IS implementation must be managed in a project mode and if not; its development is chaotic. This weakness seems to be a characteristic of IS management in SME.

The method used for the tool installation was not carried out according to classical stages of a project management.

The strategies of actors were not taken into account:

- The strategic objectives were not presented, and were thus not integrated by the persons in charge in their operational activity,
- No coordination around the project was founded, to generate a division of practices and a positive emulation.

Our empirical knowledge leads us to propose a second explanation of the appropriation process of the tool, complementary to actors' strategies. Indeed the chaotic character of the process evokes the coexistence of different "*conventions*". According to our observations three "*economies of worth* " can coexist for the moment in the organization (Boltanski, Thévenot 1996):

- *Civic world*: which justifies the action by the research of the interest of the employees, the improvement of their recognition, working conditions granted by the organization,
- *Industrial world*: which acts for the effectiveness and efficiency through a rational HRM (Employment and Expertise Plan and controls wage bill),
- *Market world:* which privileges the quality of service in order to improve the level of families' & pupils satisfaction.

The HR director currently seeks a mode of regulation and of resolution of the tensions which we could qualify "*arrangement*" because it makes it possible each one to remain

in its own "orders of worth". Let us take the case of the Primary school directors who are potential users of the “TERH” application, they are discharged from the acquisition the data and the management of planning of the ASEM (specialized agents of the nursery schools) assigned to their establishments. Before fusion they managed this personnel not teaching. During their interview in 2007, they state not to have time to use “TERH” and to be "teachers above all".

In 2010, the situation did not evolve said the HR director "the establishments’ fusion led to a centralization of the decision-making power. That did not make Primary school directors aware of their HR responsabilities, they shift HR responsibilities to others"."As financial & Administrative manager and HR manager we, in addition to the annual planning of the personnel not teaching, the weekly planning of the personnel assigned to the primary schools in the place of the principals which do not use “TERH”.

We observe a resistance to change which can be explained by a double explanation:

- strategic, i.e. by a location of the individual & corporatist stakes,
- and “conventionalist”, by observing tensions resulting from the relations between various "worlds", those of the managers (functional jobs) and those of teachers and people in charge of the pupils.

The “TERH” “contextualist analysis” appears relevant if it is completed with a conventionalist view which explains the slow down or the solidification of this change management process. This longitudinal study could reveal the interest of this double perspective, which constitutes a theoretical contribution of this research.

The tool appropriation intervenes after its effective implementation: it is useful to let emerge from the operational practices "invented" by certain users, who will become then of new functionalities shared by all. We recommend, as Tixier and Deltour (2004) [28] did, a work of actors identification, in a HRIS project development. The deployment must have as an ambition to support the strategic purposes of the HRM while answering the objectives of these various stakeholders.

Consultants can facilitate information systems launch in SME, by proposing probation periods before the final implementation [23]. It permits to SME discovering the system functionalities, testing its compatibility with existing system, having an idea of its complexity. Lastly, study of the perception of E-HR in SME, carried out by Bondarouk et al.. (2009) [5], presented a model connecting SME characteristics of SME (size and strategy), HRM & e-HR practices, use, acceptance, and perceived HRM effectiveness. We confirm their conclusion: the applications of E-HR are perceived like useful although difficult to use. E-HR contributes to the effectiveness of the HRM in SME. In our case, we have shown that “TERH” permits to improve efficacity, efficienty (improve the economic situation, control wage bill, less appeal to temporary work) but also employees interests (improve working conditions, earn more money) and also service quality (improve family’s satisfaction).

4 Conclusion

In the studied case, HRIS has played a catalyst role and has clarified organizational structure needs. More particularly organizational process, hierarchy role must be reconsidered.

Launched at the time as the fusion, the organizational structure was not ready to assume technology, whereas the teams had already to manage numerous changes.

The “TERH” second version appears during the phase of development of «Sainte-Croix». An HR culture is embryonic in managers spirits and the organizational structure is stabilized. The HR function RH thanks to the HRIS has an operational and relational evolution. The great challenge for the company is to found a broad dialogue in order to prevent natural change resistance. This leads to more transparency into process by explaining the aims in clear view perspective, by mentioning openly risks to be avoided and by introducing actors in various working groups.

To set up a HRIS is managing change, is taking care of the actions coherence, regulating the evolutions speeds, managing information and finally learning continuously [8]. It seems obvious that the software appropriation is a key success factor and this phenomenon rests partly on the employees’ satisfaction.

References

[1] Ball K. (2001), The use of human resource information systems: a survey, Personnel Review, vol30, n°6, p677-693

[2] Bassett P., Campbell G., Licciardi R. (2003), Tunnel Vision: Limited Use of Human Resource Information Systems, Working Paper, Victoria University. http://www.business.vu.edu.au/MgtContent/ Working%20Paper.pdfs/HRIS.pdf

[3] Bayad M., Chanal M., (1998), Application d’un modèle de HRM à l’étude d’une Pme en forte croissance : le cas de l’entreprise METALEX, communication au 4ème *congrès international francophone de la PME*, Metz

[4] Boltanski, L., Thévenot, L. 2006, On Justification. The Economies of Worth, Princeton, Princeton University Press.

[5] Bondarouk, T., et al. (2009). Exploring perceptions about the use of e-HRM tools in medium sized organizations. In: T. Bondarouk, T., H.J.M. Ruël, E. Oiry, & K. Guiderdoni-Jourdan (Eds.), *Handbook of Research on E-Transformation and Human Resources Management Technologies,* Information Science Reference

[6] Browers I., Cornet A. et al (1997), Fonction ressources humaines et management humain : cadre d’analyse contextualiste et modèles explicatifs, p27-48 dans Management humain et contxte de changement : pour une approche constructiviste, De Boeck Université.

[7] Davis F. (1989), Perceived usefulness, perceived ease of use, and user acceptance of Information Technology, *MIS Quarterly,* September, p. 319-340.

[8] Haines V.H., A. Petit (1997), Conditions for successful human resource information systems, *Human Resource Management*, vol 36, n°2, p261-275.

[9] Harisson J.K., Deans P.C. (eds) (1994), *Global Information Systems and Technology: Focus on the Organisation and its Functionnal Areas,* Idea Group Publishing, Harrisburg, Pennsylvania, p. 444-461.

[10] Hendrickson A. (2003), Human Resource Information Systems: Backbone Technology of Contemporary Human Resources, *Journal of Labor Research*, Vol XXIV, n°3, p381-394.

[11] Kalika M., (2000), « Le management est mort, vive le e-management ! », *Revue Française de Gestion*, n°129, 68-74.

[12] Kovach K.A., Hugues A., Fagan P., Maggitti P. (2002), Administrative and strategic advantages of HRIS, *Employment Relations Today*, vol29, n°2, p43-48.

[13] Lepak D., Snell S. (1998), "Virtual HR: strategic human resource management in the 21st century", *Human Resource Management Review*, vol. 8, n°3, p.215-234.

[14] Levy, M., Powell, P., Yetton, P., (2001), SMEs : aligning IS and the strategic context, *Journal of Information technology*, 16, pp. 133-144.

[15] Mahe de Boislandelle H. (1999), *Gestion des ressources humaines dans les PME*, Economica, Paris, 2ème edition.

[16] Peretti J.M. (2007), Développement des SIRH : Des outils au service de la performance et de l'intelligence RH, *Personnel N° 478*

[17] Pettigrew, A.,M., (1985), Contextualist research : a natural way to link theory and practice, In LAWLER, E. (Ed.), *Doing Research that is Useful in Theory and Practice*. San Francisco : Jossey-Bass : 222-249.

[18] Pettigrew, A.,M., (1987), *The Management of Strategic Change,*. Oxford, England; Basil Blackwell.

[19] Pettigrew, A.M., (1990). Longitudinal field research on change : theory and practice, *Organization Science*, vol. 1, N°3, August.

[20] Pichault F., Nizet, J., (2000), *Les pratiques de gestion des ressources humaines*, éditions du seuil, Paris, 2000

[21] Pichault P. (2009), Andrew Pettigrew : le cadre d'analyse contextualiste, coord J. Allouche, *Encyclopédie des ressources humaines*, Vuibert p1753-1768.

[22] Pichault F., Schoenaers F. (2003), HRM practices in a process of organizational change: a contextualist perspective, *Applied Psychology: an International Review*, 52, 1, pp. 120-143.

[23] Ramdani, B., Kawalek, P., (2007), SME adoption of enterprise systems in the northwest of England : an environmental, technological, and organizational perspective, in IFIP International Federation for Information Processing, Volume 235, *Organizational Dynamics of Technology-Based Innovation : Diversifying the Research Agenda*, eds. Mc Master, T., Wastell, D., Ferneley, E., and DeGross, J., (Boston : Springer), pp. 409-430.

[24] Ruël H., Bondarouk T., Looise J K (2004), *E-HRM : Innovation or Irritation ? An exploration of web based Human Resource Management in Large Companies*, Utrecht, Lemma Publishers.

[25] Ruël H. (2005), E-HRM Disaster or Destiny, 1st Biennial European Conference on ICT, the Knowledge Society and Changes in Work will be held in The Hague, The Netherlands 9 & 10 June 2005

[26] Tannenbaum, S.I. (1990), Human Resource Information Systems : User group implications, *Journal of Systems management*, n°41, p.27-32.

[27] Tansley, C; Newell, S; Williams, H (2001) Effecting HRM-style practices through an integrated human resource information system: An e-greenfield site?, *Personnel Review*; Volume 30 No. 3; pp.351-370

[28] Tixier, J., Deltour, F., (2004), Du contrôle des performances à la coordination des pratiques RH : le SIRH entre ambition et pragmatisme, communication au Congrès de l'AGRH.

[29] Wright, P.M., Dyer, L., (2000), *People in the e-business : new challenges, new solutions*, working paper 00-11, Center for advanced human Resources Studies, Cornell University