THESIS PROPOSAL

MODERNIZATION AT ORGANIZATIONAL FIELD LEVEL:

REPLACING MANUAL WORK PROCEDURES

WITH INFORMATION SYSTEMS

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Preface

This thesis proposal is an outline of my Ph.D. thesis describing the research to be conducted over the next 3½ years. The target audience is the appointed committee, the supervisor, and interested colleagues.

The purpose of presenting this thesis proposal is to get feedback on the work I have produced so far and to discuss the research plan, e.g. is the identified modernizer/modernizee-pattern relevant.

I hope for an open-minded audience providing rich feed-back.

I would like to thank Toke Bjerregaard, Per Svejvig and my supervisor Andrea Carugati for their wise advises and insightful comments to earlier versions of this thesis proposal, and Vibeke Frisenvang for the close reading and very useful language revision.

Charlotte J. Brandt

Silkeborg, August 2012

Summary

The area of concern of this project is the dynamics of change at the organizational field level. The project will be researching change initiatives from one organization (modernizer) aiming to modernize many – typically minor – organizations (modernizees) by replacing manual work processes with information systems (IS).

The current global economic crisis forces organizations around the world to make the most of their daily operations. Recent studies in different industries show that a rise in long-term organizational efficiency can be expected when adopting information systems to support the daily operations as well as administration. Hence adopting IS is a means to prosper or simply to stay in business, and a strong motivation for the individual modernizee organization to modernize could be anticipated. But, despite the consequences of NOT modernizing, the decision is often influenced by entrenched habits and feelings towards status quo. The modernization attempt can produce unexpected outcomes and modernizing through ICT is a process not yet adequately studied.

In studies of modernization attempts focus has primarily been on the organization taking the initiative to the change, the modernizer. The purpose of this study is to analyze how an organization, the modernizee, decides to react to a change initiative from another organization. By shifting focus to the modernizees, this study aims to contribute to the existing theory and knowledge with a more balanced view on the process of modernization through ICT.

The research question of this study is:

- *How does an organizational field modernize by replacing manual work procedures with information systems?*

This is a theory-building, exploratory research project as the aim of this study is to understand and explain rather than identify causal patterns and regularities.

1 Research topic, theory, and research question

The area of concern of this project is the dynamics of change at the organizational field level. The project will be researching change initiatives from one organization (modernizer) aiming to modernize many – typically minor – organizations (modernizees) by replacing manual work processes with information systems (IS).

Modernization is defined in The Oxford English Dictionary as "*…; to change (obsolete spelling, words, or language) for modern equivalents; …*" and used here in the sense of an on-going, evolutionary process performed by organizations in order to survive and prosper. Modernization implies a change, departing a present state for a future, better state; in this case the present state is manual work processes that are to be replaced with information systems.

According to Currie & Guah (2007) the organizational field as a useful framework for identifying relevant actors and phenomena of interest. As I am interested in organizations which does not necessarily compete or maintain a network among themselves, but merely interact through a common modernizer, such as a central government or actor in the supply chain DiMaggio & Powel's (1983) definition of an organizational field comprising "*those organizations that, in the aggregate, constitute a recognized area of institutional life: key suppliers, resource and product consumers, regulatory agencies, and other organizations that produce similar services or products*" will be used here.

This study aims to provide an understanding of the complexity of the modernization of an organizational field by describing and analyzing the modernization process by which the individual organizations change.

The majority of the literature on how to manage change when introducing new information systems has focused on intra-organizational subjects, primarily on how an organization motivates its employees to adapt to changes (Benjamin & Levinson, 1993; Lamb & Kling, 2003; Orlikowski & Gash, 1994). Regarding these changes, the balance of power is skewed because the initiator of the change holds some sort of control over the ones who have to perform the change through an employment agreement.

There are, however, only a few studies on how an organizational field, not under direct control of the initiator, reacts to an introduction of a new information system. Examples of such changes include how milk suppliers react to an initiative from a co-operative dairy, introducing a new production control system; how the local municipalities react to an initiative from the central government to adapt to a joint public IT architecture; how hospitals react to the health ministry, implementing a nationwide electronic patient record. These few studies depict either less complex stories of strategic power of the buyer (Stalk, Evans, & Shulman, 1992) or complex stories where change is seldom accepted as planned. With the aim to explore dynamics of change at the organizational field level this study is placed along these inter-organizational studies.

Traditionally the adoption of information systems has been described as a sequence of a varying number of phases. To name a few, Thong (1999) identifies three phases; initiation, adoption, and implementation, and Gallivan (2001) identifies six phases; initiation, adoption, adaptation, acceptance, routinization, and infusion. These adoption sequences form a general pattern which is depicted in Figure 1 – The traditional understanding of IS adoption. IS adoption initiates with the decision process in which information about the technology at hand is gathered and evaluated. If the organization decides to stay unchanged, the

modernization process is discontinued and the organization remains in the current state. If modernization is chosen, technical as well as organizational implementation of the functionality in the business must follow to ensure the expected effect. If the implementation fails, the modernization process is discontinued and the organization remains in the current state. If on the other hand the technical implementation completes successfully, the organization must adopt the functionality as their new daily routines to ensure the expected effect. If the adoption fails, the modernization process is discontinued and the organization remains in the current state. Failure in any of the three phases will result in the manual work processes remaining status quo and the modernization effect will fail to appear. So, in order to reach the future state, the organization must complete the three phases with a successful outcome.

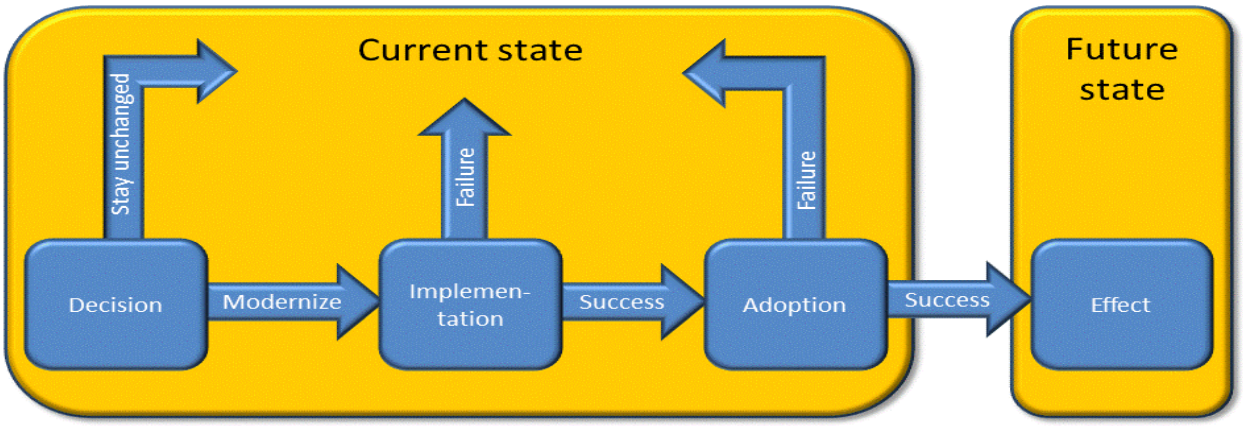

Figure 1 – The traditional understanding of IS adoption, based on Thong (1999) and Gallivan (2001)

This traditional understanding of IS adoption shown in Figure 1 leaves no room for nuances in IS adoption. The result of adoption is either "failure" or "success". This study will challenge this traditional understanding by offering a more nuanced view, claiming that both partial adoption, adoption with subsequent rejection, and an iterative approach to adoption are imaginable results.

1.1 Practical relevance

The current global economic crisis forces organizations around the world to make the most of their daily operations (IMF, 2012). Recent studies in different industries show that a rise in long-term organizational efficiency can be expected when adopting information systems to support the daily operations as well as administration (Krasnikov, Jayachandran, & Kumar, 2009; Menon, Yaylacicegi, & Cezar, 2009; Parry, 2011). Hence adopting IS is a means to prosper or simply to stay in business, and a strong motivation for the individual modernizee organization to modernize could be anticipated. But, despite the consequences of NOT modernizing, the decision is often influenced by entrenched habits and feelings towards status quo.

As shown previously the modernization attempt can produce different outcomes and according to Misa (2003) modernizing through ICT is a process not yet adequately studied; the modernization initiative can be rejected because implementing a system to leverage quality by standardizing a business process is likely to deprive the user – the former expert – of his or her professional pride (Ebrahim & Irani, 2005); or the

modernization initiative can be accepted, because the industry community implies a mimetic pressure convincing organizations to do what other similar and successful organizations are doing (DiMaggio & Powell, 1983).

The practical relevance of this study is to develop a better understanding of the modernization process and thereby possibly develop a framework to overcome the entrenched habits and feelings towards status quo that unchallenged may worsen the economy of the individual organization as well as of the whole industry.

1.2 Theoretical relevance

Changes at the organizational field level have been studied in the modernization of both the private and the public sectors replacing manual work processes with information systems. Stalk, Evans & Schulman (1992) have described how the supermarket chain Wall-Mart has implemented a standard supply chain system and forced its suppliers to adopt it in order to remain suppliers. Senyucel (2008) has described the factors impacting the relationship between user and provider of information and communication technology (ICT) in the public sector in Great Britain. Mola, Rossignoli, Fernandez, & Carugati (2010) have described a major cooperative organization transforming business practices among its members (Italian farmers) by introducing ICT to control the processes of standardization, formalization and traceability of the farmers daily operations. Hence, the pattern of modernizer/modernizee is present in current IS literature. Figure 2 depicts the modernizer/modernizee-pattern by showing specific cases mentioned in this proposal as well as the general pattern.

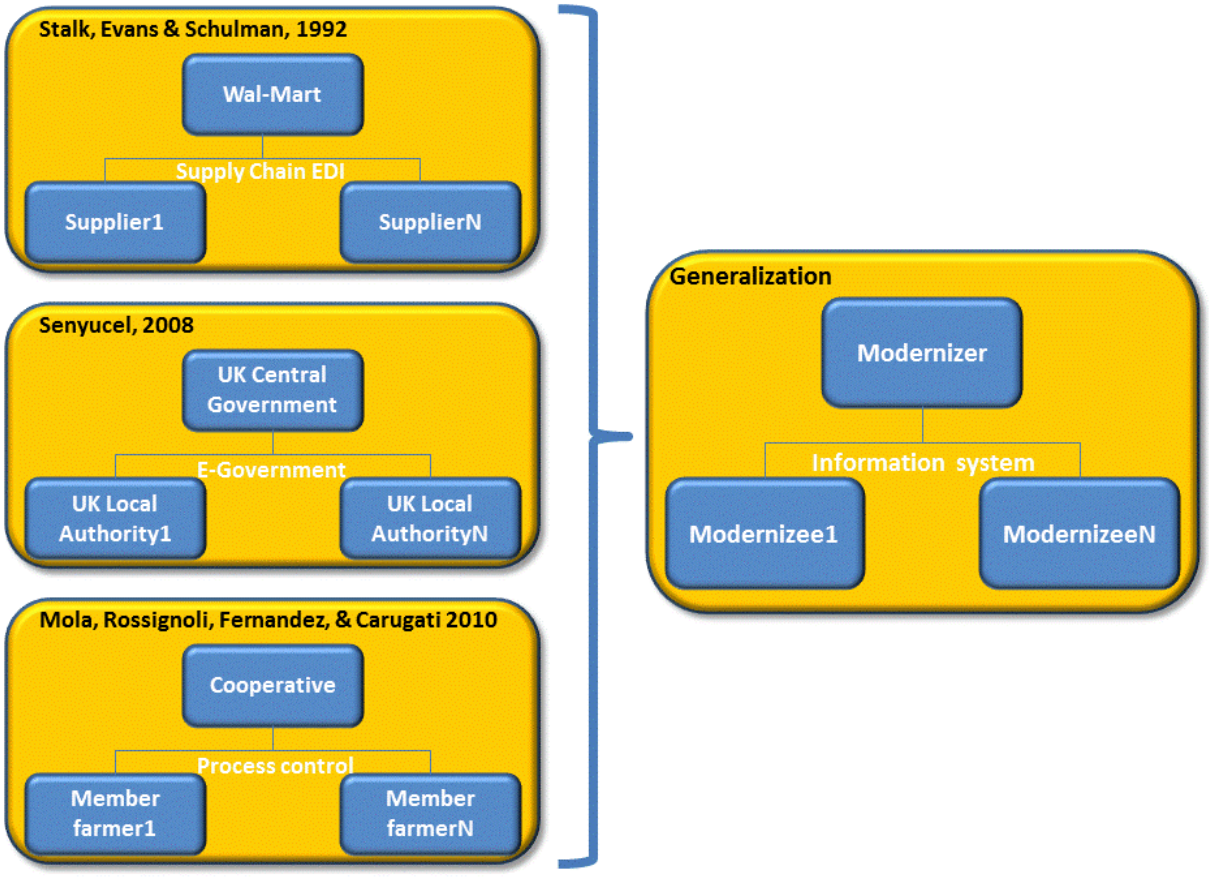

Figure 2 - Modernizer/modernizee-pattern

Until today the studies on modernization has focused on the organization taking the initiative to the change, the modernizer, e.g. Wal-Mart in Stalk, et al. (1992). The purpose of this study is to analyze how an organization, the modernizee, decides to react to a change initiative from another organization. By shifting focus to the modernizees, this study aims to contribute to the existing theory and knowledge with a more balanced view on the process of modernization through ICT.

1.3 Research question

The research question of this study is:

- *How does an organizational field modernize by replacing manual work procedures with information systems?*

In order to answer this research question, different elements in the modernization process must be analyzed. Underlying the main question, several working questions exist, such as:

- Why does the individual organization enter into a modernization originated by another organization – or stay unchanged?
- Does the individual organization's decisions depend on key elements, such as:
  - Economic or social elements?
  - The user's level of trust in the initiative taker?
  - Does the industry community influence the individual organization's decision?
  - Are there other elements influencing the individual organization's decision?

As the aim of this study is to understand and explain rather than identify causal patterns and regularities, this is a theory-building, exploratory research project (Eisenhardt, 1989). This study will be a part of an international research project (Mola et al., 2010) with the guiding research question: How do people in organizations enact modernization strategies?

2 Research design

This section presents the research strategy (as work in progress) and it presents the connection between the ontological, epistemological, theoretical and methodological perspectives which will be applied to make sense of the collected data, and thus to shed light at the central research question guiding the dissertation.

2.1 Reflections on philosophy of science

When regarding the physical world, my ontological stance is realism (Burrell & Morgan, 1979). I do believe that in the natural world, reality is objective. Things (i.e. trees and gravity) do exist – even if I can't currently see them nor have names, concepts or labels for them to discuss them.

When regarding the social world on the other hand, my ontological stance is nominalism. I do believe that the social world is subjective; essentially a product of one's mind. Hence, with regards to the social world I believe we can create – or at least magnify – things (i.e. problems or motivation) by talking about them. I also believe that we can, if not make the same things disappear completely then at least diminish them by not talking about them. A classic example is the Hawthorne studies (Mayo & Thompson, 2003), where the industrial workers were studied to see if changing the light intensity and other physical conditions in the

working environment would affect the productivity. However, both the group experiencing the changed conditions and the control group not experiencing any changes did actually increase their productivity, and the rise is explained by an increase in motivation as an effect of the interest shown and the articulation of the worker's needs.

I am aware that the choice of research strategy depends on the question to be answered – not my personal methodological preference. Nevertheless I will argue that my belief about the subjective paradigm with regards to ontology affects my epistemological stance towards the interpretive approach (Walsham, 2006). This implies that my research approach will be an inductive process leading from data to theory.

The research question is to analyze how an organizational field modernizes by replacing manual work procedures with information systems. This question is answered by establishing knowledge about how people in the field perceive their reality and constructs meaning. Grounded theory will be used as it is a method well suited for efforts to understanding the process by which people construct meaning out of experience in a social context (Goulding, 2002).

The grounded theory method will be used to develop an empirical theory showing patterns of behavior emerging from observations and interviews (Kvale & Brinkmann, 2009).

2.2 Validity Network Schema

The validity network schema proposed by McGrath & Brinberg (1983) divides a research project into three domains with elements and relations between elements in each domain.

1. The conceptual domain in which the elements are concepts, and the relations between concepts are models capturing the behavioral patterns of concepts.
2. The methodological domain in which the elements are methods for making observation, and the relations between the elements are techniques for comparing different sets of observations
3. The substantive domain in which the elements are events, and relations between elements are phenomena or patterns of relations among events.

The research process is also divided into three stages with stage 1 being the preparatory stage in which this research process is now, still developing, clarifying and selecting elements and relations within the three domains. The elements selected are the ones considered by the researcher to be "of value", that is important or interesting for the research question.

Conceptual domain

The conceptual domain comprises the kind of explanation considered meaningful as interpretation of a set of observations (and hence what concepts and conceptual models are drawn from the conceptual domain).

At the element level, I will be looking at values, norms, practices, and discourses in the organizational field representing the culture, surrounding the work processes as well as the concepts, adoption process, coordination mechanisms, and information systems.

At the relational level in the conceptual domain I will be looking at the behavioral pattern between these concepts which is my research question "How does an organizational field modernize by replacing manual work processes?"

Substantive domain

Here we find the aspects of the real world that are regarded as worthwhile to study.

The events that are of value to the study are large change initiatives aiming to replace present manual work processes with information systems. This will form the element level at the substantive domain.

The relations between the events are then

- The organization's motivation for changing (or not changing) to IS
- How did the organization initially perceive the change?
- What elements were comprised in their decision?
- How was the actual adoption process perceived by the organization?

Methodological domain

At the methodological domain I will need to determine the method suitable for collecting and analyzing data in order to answer the research question. As this question is more a "how and why" as opposed to a "how much and how many", the answering of the research question will be an inductive process leading from data to theory. Hence, the choice of research strategies I can sensibly use is limited to case studies, documentary research, grounded theory or action research.

At the element level of the methodological domain, semi-structured interviews with modernizers and modernizees trying to establish knowledge about motivation, initial perception and the decision process will be of value together with observation of execution of manual and digitized work processes.

At the relational level, the value will be created by coding interviews and observations, continuously theoretical sampling and constant comparison until saturated patterns of what drives or hinders the change process appear.

3 Method

3.1 Initiation of the research

As the research question still lacks explicit boundaries, i.e. industry, and geographical area, an initial literature review focusing on discovering these boundaries will initiate the research.

The literature review will establish an understanding of what to expect when looking at organizations adopting IS. It is to be determined if a difference can be found when comparing very traditional companies, where technology is rarely used, with companies having a widespread use of technology.

The practical issues such as how to select the software and hardware required for interviewing and processing the data and how to produce transcription protocols will be more apparent than how to craft ethical protocols and obtain approval, as the subject matter is not controversial.

3.2 Initial data collection

To find knowledge about the research question semi-structured interviews will be conducted with actors not having modernized as well as with actors already having modernized and observations will be carried out while actors are attending industry networks.

Interview questions comprise e.g.:

- What kind of information systems and technology are you using in your daily work?
- Have you been asked to adopt information systems by your customer, supplier, or other stakeholder?
    - If yes, how is your relationship with the initiative taker?
    - If yes, how is your level of trust in the initiative taker?
- Has information systems changed the way you work?
    - If yes, in what way? If no, why not?
    - If yes, do you consider the change a success? Why/why not?
    - If yes, have you derived cost reductions or increase of sales?
- What were/are your expectations towards replacing your manual work routines with an information system?
- Are you aware of colleagues in the industry who have replaced their manual work routines with an information system?
    - If yes, why do you think they did it? And if no, why do you think they haven't done it?
- How is the quality of the information systems you are using?
- Has the information system fully replaced the knowledge you have in the field?

Documents, i.e. company reports and secondary data will be retrieved from different sources depending on the chosen empirical setting. In the case of Arla's implementation of a suppy chain system with their milk producing members, this could be from Landbrugets Rådgivningscenter (an industry community knowledge center), Arla (the largest dairy company in the Nordic region), Mejeriforeningen (the Danish dairy industry association), Agro-tek (an industry exhibition).

3.3 Analyzing and collecting more data

Since the research process has not been initiated, the rest of the research design will only be preliminary thoughts on how the research could be carried out in the grounded theory tradition.

Open coding

To code the interviews, the transcribed interviews will be searched for words referring to central topics.

The open coding of the data analysis will generate categories – whatever they might be:

- Economic or social elements?
- The user's level of trust in the initiative taker?
- Does the industry community influence the individual organization's decision?
- Other elements?

The use of memos

In parallel with the open coding, memos will be produced until reaching closure. The memos will capture the thoughts and ideas of the researcher while the work is progressing and can be revisited to guide or re-direct the research (Goulding, 2002).

Theoretical sampling

The phases of collecting and analyzing data are not separate but carried out simultaneously as a parallel process. The results found when analyzing the data collected initially are used to direct the collection of data onwards. Thus the initial data collection will be used for theoretical sampling reflecting the developing categories and emerging theory. A direct consequence of theoretical sampling is that the researcher cannot decide whom to use as informant or how many to interview or observe before the research is carried out (Goulding, 2002).

Theoretical coding

Relations emerge between codes from the open coding hence forming concepts. The theoretical codes must be grounded in data.

Constant comparison

When categories emerge from the open coding, the incidents of data belonging to the same category must be compared to explore similarities and differences. Constant comparison is an ongoing process when conducting grounded theory research that leads to the identification of concepts explaining the relationship between incidents.

Extant literature

Reading extant literature will provide a source to compare existing data with the grounded data. Reading extant literature improves the theoretical level and refines construct definitions.

Theoretical saturation

Each category has to be saturated, that is when similar incidents are to be found over and over again. Closure is reached when collecting and analyzing more data doesn't contribute to the theory being developed (Strauss & Corbin, 1998).

The empirical setting is not yet decided. Different possibilities, i.e. the Danish cooperative Arla's implementation of a supply chain system with the milk producing members, or the eGOVERNMENT strategy where the Danish public sector is modernizing public services such as schools, the health service and eldercare (Digitaliseringsstyrelsen, 2012).

4 Theoretical lens

Grounded theory researchers have to set aside theoretical ideas (Urquhart & Fernández, 2006), so applying a theoretical lens at this stage is precipitated.

Nevertheless, as this is a multiple level study several appropriate theoretical lenses can be applied. Among those are Actor-Network Theory, Structuration Theory, and Institutional Theory.

This study takes an interest in the change that occurs at the organizational level within an industry which matches that of the organizational institutionalism (Suddaby & Greenwood, 2009). Institutional Theory is well suited to analyze institutional change defined as displacement of one set of institutionalized arrangements by another (Suddaby & Greenwood, 2009). Replacing manual work procedures in an organizational field with information systems can be seen as such an institutional change. As previously mentioned this study is subjective, focusing on how actors experience a change in their institutionalized work processes. The study therefore lies within the interpretive method and thus I will be researching shifts in meaning, understanding, and values. According to Suddaby & Greenwood (2009) this can be done by using traditional ethnographic techniques, participant observation, longitudinal case studies, discourse analyses, content analyses, symbolic interactionism or cultural framing analysis.

5 Research plan

5.1 Conferences

Article abstracts can be found in appendix A.

During the PhD program I have contributed to the following conferences:

Conference	Paper	Authors	Date	Participation
CONFENIS 2011	Deliberately by Design, Or? Enterprise Architecture Transformation at ARLA Foods	Charles Møller, Charlotte J. Brandt, and Andrea Carugati	October 16th to 18th 2011	X
WOA 2012	A Grounded Theory Study of the Acquisition of Technology by Danish Dairy Producers: Individual and Group Decisions	Troels Vammen Brinkmann, Peter René Tandrup, Charlotte J. Brandt, and Andrea Carugati	May 28th to 29th 2012	-

5.2 Change of environment

As this is a 5-year PhD program, no plan for change of environment has been made yet.

5.3 Course plan

During the PhD program I have planned to complete the following courses summing up to 36 ECTS:

Course Title (PhD School)	Date	ECTS	Status
Qualitative Research Methods in Practice: Analytical Ethnography, Documents as Data, Applied Grounded Theory (DOME, AU)	March 15th to 17th 2011	3 ECTS	Completed
Classic Organization Theory (DOME, AU)	June 6th to 10th 2011	5 ECTS	Completed

Qualitative Methods: Case Studies, Grounded Theory, Action Research and Documentary Research (DOME, AU)	August 22nd to 26th 2011	5 ECTS	Completed
Introduction to Research Designs in Organization and Management Research (DOME, AU)	March 26th to 29th 2012	4 ECTS	Completed
The Research Process and How to Get a PhD Out of It (DOME, AU)	May 7th to 11th 2012	5 ECTS	Completed
Institutional Organizational Analysis – Change and Transformation (Doctoral School of Organisation and Management Studies, CBS)	September 17th to 21st 2012	5 ECTS	Accepted
Doctoral Seminar on Doctoral Dissertation Writing (EDEN, EIASM)	June 2013	4 ECTS	Planned
Qualitative Research Techniques (DOME, AU)	October 2013	5 ECTS	Planned

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Appendix

A. Article abstracts

Deliberately by Design, Or?
Enterprise Architecture Transformation at Arla Foods

Abstract: *From 2001 to 2007 Arla Foods, one of the largest dairy companies in the world has undergone a major Enterprise Architecture transformation involving organizational and technological changes. While the changes have been successful and the organization is enjoying a period of unprecedented success, the change process has encountered ups and downs that are easily forgotten in the post-rationalization process that characterizes successes. Starting from the realization that current Enterprise Architecture (EA) literature is quite scant regarding detailed accounts of successful maturity processes, this article sets the stage to investigate in detail the case of EA transformation at Arla Foods. The main goal with this article is to delineate a research design to uncover the transformation process from three perspectives: Design Thinking, Institutional Theory, and Sociomateriality.*

A Grounded Theory Study of the Acquisition of Technology by Danish Dairy Producers: Individual and Group Decisions

Abstract: *The problem of technology acquisition in SMEs represents an under-investigated area in IS research. Most IS literature focuses on either the internal development of systems, which SMEs rarely do, or on issues of usage after the acquisition has taken place. This gap is problematic since acquisition and use are interdependent processes. This research investigates the drivers and reasoning behind technology acquisition in SMEs, using a particular category of dairy farmers, and relates them to the arguments used by technology vendors. Given the novelty of the research question and context, we used grounded theory method for this research. We carried out and analyzed 28 interviews with milk producers and 5 with technology vendors. Our results show that motivations for technology acquisition for milk producers include the economic situation of the farmer, the perceived value of the technology, the production setup, the approach to personal life, the trust in technology, and the personal interest in the profession. In contrast technology vendors had a more narrow focus on the predicted economic performances of the technology and the span of functionalities provided. Conclusions are drawn from comparing the two sets of arguments.*

B. Teaching activities

At this time, I have been teaching 761 hours in 15 months (which averages 609 hours a year of the required 610 hours a year) divided between the following activities:

Spring 2011: 44 hours

- Correcting reexam papers: “It i Virksomheden”, BSc level.

Autumn 2011: 342 hours

- Lecturing: “IS Development”, MSc level.
- Lecturing and examining: “It i Virksomheden,” BSc level.
  In the student evaluations, I scored 4.0, and 3.6 on a 5 point scale based on two classes and 427 students.

Spring 2012: 375 hours

- Lecturing and examining: “Systemudvikling og Databaser”, MSc level.
  Supervision and evaluation of four graduate theses, MSc level.
- Supervision and evaluation of two internships, MSc level.
- Supervision and evaluation of one Master in IT-project, Master level.