The Effects of Information Technology (IT) on Employee Productivity in Shahr Bank (Case study of Shiraz, Iran)

Mohammad Rezaei
Young researchers and Elite club, Arsanjan Branch, Islamic Azad University (IAU), Arsanjan, Iran.
Maryam Rezaei(Corresponding Author)
Young researchers and Elite club, Sarvestan Branch, Islamic Azad University(IAU), Fars, Iran.
Majid Zare
Young researchers and Elite club, Arsanjan Branch, Islamic Azad University (IAU), Arsanjan, Iran.
Hamidreza Akbarzadeh
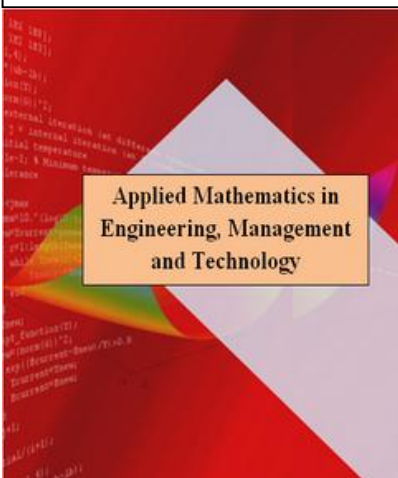Young researchers and Elite club, Sarvestan Branch, Islamic Azad University(IAU), Fars, Iran.
Farid Zare
Young researchers and Elite club, Arsanjan Branch, Islamic Azad University (IAU), Arsanjan, Iran.

Abstract

The main objective of the present study was to examine how IT affects the productivity of human resources. Based on a review of theoretical background and the literature and exploratory interviews with the participants, eight indices of human resources productivity were identified in this study, including motivation, creativity and innovation; spirit of competitiveness, activity cost reduction, the improvement of the quality of activities, work time reduction, job satisfaction, and human resources spirit. Results suggested that that there is a positive relationship between IT and human resources productivity.

Keywords: Information and Communication Technology (ICT), productivity, human resources

1.Introduction

Nowadays, the significance of information both as a strategic and tactical resource in organization and as a major resource of added value is known well to everyone. Information has always been considered as a competitive advantage in the business environment. But the important thing is that the actual changes that could increase the potential value of information would occur if the organization is able to use this important resource through the application of new technology. IT with features such as storing, processing, marketing, and transferring a large bulk of data can assist managers to improve the organization's performance. In addition, the significance of productivity and the necessity of its assessment have received much attention given the increasing levels of competition, technology complexity, diversity of tastes, lack of resources, and rapid exchange of information.

For a time, some suggestions are offered on how to manage human resources with an approach emerged as Employee Resource Management (ERM). In fact, ERM emerged through widespread use of Crew Resource Management (CRM), aiming at transferring communication structure principles based on IT dealing with issues related to clients and employees. ERM is, in a general sense, an efficient mechanism, plan, and technology in the field of management dealing with how companies are communicating with their new and old employees. Like other new managerial concept, ERM is viewed as an efficient mechanism that provides mutual and shared values for employers and employees. Among the major values offered to employees is the highest satisfaction with their personal needs will the most promised values for employers are employees' willingness, survival, motivation, and their increased performance. ERM has been promoted by various practitioners such as consultants and software suppliers. In addition, it seems that there are some organizations that have adopted recently some features of ERM. Although ERM is a new and growing concept, there are some knowledge and consensus available about it. However, it still lacks a general theory so the existing concepts either are too vague or give rise to multiple interpretations. For instance, ERM as a given strategy refers to methods of managing human resources or includes specific human resources information systems. Besides, there are some

comparable terms in this regard such as "Human Capital Communication Management" and "Selective Communication Management". Nonetheless, it is not whether such terms convey the same concept or not. The current conflicts between ERM promises and ambiguities clearly result in an unfavorable situation concerning the research in this field as well as mechanisms offered (Stefan, 2013, p. 93).

The impact of information technology on labor productivity has been one of the significant issues discussed in the economy from the 1990s onwards. Many different theoretical and empirical studies have been conducted in developed and developing countries so far in this regard. Although most studies have emphasized the positive effects of IT on labor productivity, some results do not match what is expected and they have led to some inconsistencies with regard to productivity. For that reason, the present study attempted to provide a systematic framework about the way IT potentially affect productivity as an awareness of this issue can increase the managers' and professionals' knowledge regarding the effects of IT on productivity. Taking a systemic approach to this issue can pave the way for the assessment of IT, productivity, and the interaction between these two variables.

2.Review of Literature

An overview of the studies conducted on the impact of IT on the organizational productivity shows how these studies have progressed over time. Three approaches have been taken in this regard. In the first approach, the researchers have directly assessed IT productivity using traditional productivity assessment practices. The studies performed using this approach show a positive relationship between IT and productivity.

In the second approach, to find the possible causes of the productivity paradox and to determine the relationship between IT and productivity, the researchers have the impact of IT on intermediate measures such as diversity, quality, time, and timely delivery and they have concluded that IT have been effective in improving some intermediate measures. However, there was no positive correlation between IT and other intermediate measures. In the third approach, the aim is to find what other complementary investments are made along with investments in IT by organizations to achieve higher productivity in the field of IT. Lots of studies have been performed concerning the impact of information technology on labor productivity. Alipour (2009) studied "The effects of using automation systems on human resource productivity (Case study of Mazda Yadak Comapay)". The results suggested that there is a strong direct relationship between efficiency and effectiveness. Similarly, Taqi Zadeh (2006) examined the impact of information technology on organizational effectiveness in The Organization of Libraries, Museums, and Documents Center of Astan Quds Razavi. The results indicated that the employment of IT systems has increased the effectiveness of the organization. In addition, IT system users who employ such tools to provide services to clients believed that the pace of doing things, timely data recovery, and the speed of accessing to information have improved dramatically comparing the period prior the deployment of IT systems to the extent that this improvement has enhanced the organization's effectiveness because of providing quality services to clients. Human capital and investment in ICT have a positive significant impact on labor productivity. However, they are less effective than other variables. Sahragard Jahromi (2005) examined the effect of IT on the organizational productivity from the perspective of managers in the Kosar Financial Corporate. Of the components of productivity, pace of work, work procedures, and organization costs were selected to examine the impact of IT on these variables. The results indicated that according to managers in the organization under study, the use of IT is effective in the increased pace of work, improving work practices, reducing organization costs, and increasing the overall productivity of the organization. Aghaei (2005) examined the relationship between IT and productivity in the South Pars Gas Complex Company and concluded that the application of IT will increase the productivity. Furthermore, Mazidabadi Farahani (2004) observed that the application of information technology has empowered the employees working in the Qom Social Security Department.

In today's fast and complex world, each new twist and change is accompanied by new and sometimes complicated problems that cannot be resolved without the adoption and the application of new approaches and technologies. One of the new technologies that is gaining growing popularity and has assumed a strategic and practical position in communities, especially in organizations and firms is information and communication technology (ICT). In recent years, ICT has served as a major empowering factor for organizations. In addition, the development rate in organizations concerning the use of ICT can be seen as one of the main indicators of development.

3.Information Technology (IT)

Information Technology (IT) refers to all forms of processing, storage and transmission of information that are used in an electronic format. Physical equipment that is used for this purpose includes: Computers, communication networks and tools, fax machines, and electronic software [38]. Generally, IT covers a wide range of equipment, computers, tools, data storage, means of communication and networking, applications and services that are used by organizations to create data and knowledge.

Before being considered as a hardware system and a set of patterns, IT is seen as an intellectual and cultural system that can be termed information production culture. IT system is not able to survive without creating the information production culture. Therefore, the most important thing in IT is the information-oriented thinking. IT is composed of a combination of useful ideas created rather than being a set of computers, supercomputers, wires, cables, and tools. In information technology, it is the thinking of wise people that generates information.

IT refers to methods of producing and collecting information. IT makes data accessible to anyone from everywhere by making computer programs smaller, cheaper, more applicable, and simpler to the extent possible [1]. Databases, created based on the idea of IT, simplify complex informational processes within the organization, create organizational networks by connecting organizations together, and change managers' midterm perspectives into long-term ones. In general, the concept of information technology covers the following components: Culture of producing information, information-orientation, collecting, summarizing, and analyzing data, informational sensitivity, processing, network thinking, optimization, integration, research-orientation, method-building, storing, and transmitting information (839. pp. 2-3).

4.Necessity of Using ICT

For over two decades, information has been seen as a valuable resource along with other factors of production. Following the expansion of business activities, globalization, and rapid changes in the organizations' environment, information is considered as a strategic factor to the extent that today it is seen as a powerful tool in dealing with environmental problems and challenges as well as a tool that makes proper use of opportunities. Accordingly, the establishment of an appropriate information system using ICT for collecting, processing and storing of data is of vital importance. Although ICT and the use of computer have never replaced for human decision making, their power to help managers and employees to make the right decisions using accurate information and speeding up tasks cannot be neglected. Many organizations have realized the importance of information technology and its impact on speeding up and accurate performance of tasks and increasing customer satisfaction, support systems, managers' decision-making, and especially the organization's effectiveness. Such awareness has caused most organizations to quickly move towards the application of IT (Yardley, 2005, p.1).

5.Applications of IT in organizations

IT has different applications in organizations and most scholars have classified these applications into two categories: operational and informational use.

A. Operational Application

The use of IT in a profession is called "operational application". Preparing payroll lists, issuing personnel orders, forecasting inventory, planning for production planning, distribution and allocation of labor, industrial costing, and other specialized tasks are included in the operational applications of information technology. The use of computers for such applications results in automation of tasks and administrative affairs so the tasks are performed more economically and rapidly.

B. Informational Application

Informational use of IT will facilitate the collection, storage, and dissemination of information. In other words, the operational use of computers and IT serves as a mechanical tool to change inputs into outputs. While the informational use is seen as an element and a major factor in collecting, transferring and disseminating information (Ahmadi, 2002, p. 457).

6.CRM Strategy

In order to achieve the desired objectives, the CRM processes demand efficiency fulfillment. Depending on the type and scope of the proposed activities, the use of appropriate information systems is a vital requirement. To begin with, the continuous engagement with individuals and mainly that of irregular and sporadic customers requires information technology support. Hence, the current CRM systems provide a larger set of common features such as instruments for the realization and management of common special sectors (customer interaction centers) or provide a synchronized method to manage and keep in touch with customers across all channels and places. Technological channels, especially the Internet-based partnerships (e-commerce) that play a leading role, are widely supported. The Internet-based product support is one notable examples of using collaborative services. In addition, since individual and operational marketing, sales, and service activities have increased clearly, there is an urgent need for effective performance. CRM systems as a sequence provide a wide range of operational characteristics that are normally put under automatic marketing, sales and service categories. These categories provide the possibility of mass customization of a broad range of activities and vital general capabilities. Mass customization of advertising content provides the possibility of producing electronic advertising, for example operational marketing. Basically, the analytical processes need to be supported by advanced information systems. As a result, CRM systems provide complex analytical features. Aside from the obvious questions and relevant data, advanced predicted assessments have been provided which not only describe events, but also predict the relevant phenomena and recommend proper activities. In the analytical sales, for example, the assessment of "the shopping cart' results in the formation of a predicted evaluation that is used for gaining awareness of specific customer product preferences for specific product offers. In short, CRM systems illustrate CRM processes perfectly. Since the processes cannot operate effectively without the relevant CRM systems, such systems are mandatory requirements that enable CRM processes. In this way, systems, CRM systems provide the prerequisites for CRM processes and highlight CRM strategy consequently. Therefore, CRM systems are almost the third component of CRM. Accordingly CRM represents a managerial concept based information systems as a mandatory component of "fulfillment" while CRM cannot be reduced to CRM systems. At present, there is an extensive market for customized and ready CRM systems that are considered as a single system or a set of related systems that supply the functions needed for the implementation [6, p. 98].

In general, IT results in human resource development in terms of the following dimensions:

6.1. Professional Development

One of the operational symbols of developed human beings that helps the employment or facilitate the employment process is the possession of skills needed for development. When skills are ready for development but they lack the proper content, these skills become antiquated and they cannot meet the requirements of individuals and organizations. At this time, information resuscitates vacant and obsolete capabilities and contributes to the development of staff skills. This is due to the fact that new information creates new expectations for the organization's members and such information changes into skills and work practices after some time and new skill and working grounds will emerge [839 pp. 4 & 5].

6.2.Productivity

Productivity literally means the production power, fertility, and generation. In Persian literature, it refers to usefulness and profitability. In addition, different practical definitions have been proposed for productivity, some of which are as follows:

The Japan's Productivity Center has defined productivity as "to maximize the use of physical resources, human resources, and other factors in a way that results in lower production costs, expansion of markets, increased employment and, and the rise of living standards for all groups of the society. The European Productivity Agency has defined productivity as the level and intensity of use of each of the factors of production and maintains that "Productivity is thinking and approach based on which that each person can do everyday jobs and tasks more efficiently". Belief in the improvement of productivity means having faith in human progress. As the above definitions suggest, the main idea expressed by all these definitions is almost the same. In addition, the main point in these definitions is what is used in the process of production and what results from it. However, the main focus of productivity is on human resources as all attempts are made with the purpose of improving human resources productivity. In other words, the driving force of each type of productivity is human resources. However, these resources have gone through changes over time as shown by the evolution of the idea of productivity in economics. One of the most important elements needed for organizational change and survival and the achievement of the desired missions and objectives is human being. In addition, human resources are what gives life to change and guarantees the survival of the organizations.

Accordingly, factors such as motivation, creativity, innovation, competitiveness, activity cost reduction, the improvement of the quality of activities, work time reduction, job satisfaction, and human resources spirit significantly affect human resources productivity.

7.Motivation

Motivation refers to forces and derives that make people behave in a given way. In managerial terms, motivating employees is done in a way that their behaviors bring about the highest benefits for the organization. Motivation is a set of forces that make people seek the satisfaction of their needs and behave accordingly. Consequently, such behaviors result in a number of rewards or punishments.

One of the important tasks of managers in organizations is to identify the potential talents of their employees and pave the way for their growth and prosperity as it is crucial to improve the productivity within the organization. In other words, an awareness of employees' motivational factors is very important to improve organizational performance and productivity.

One of the things that points to the development of people is having cognitive skills. Cognitive skills refer to the ability to understand that different functions of the organization are interdependent and changes in any of the sections necessarily affect the other sections. The development of cognitive skills is not something that can be created overnight through a theoretical training course. In contrast, the development of such skills requires changing the way people think so that cognitive thinking changes into cognitive action [3]. Systemic thinking serves as a foundation for the development of cognitive skills. In addition, IT can be used to create and develop such skills because IT is a system that instructs people how to develop cognitive skills and how to think and act systemically [839, p. 6 & 7].

8.Relationship between IT and Productivity

Information and Communication Technology (ICT) is one of new technologies that has affected the organizational and industrial environment around us. Until a few decades ago, it was hard to imagine that such technology could affect the business environment around us in such extensive way. However, this technology has overwhelmed all aspects of our life and its impacts are increasing day after day even in a society like Iran that has a far way ahead in order to reach the required standards to benefit from information technologies [31].

In a classical sense, technology is the knowledge embodied in the means and methods of production. The effects of technology on the growth have long been the subject of much controversy and these effects can be divided into three categories:

In the first place, the impact of technology has embodied in the form of capital goods, resulting in the improved capital productivity. Secondly, technology improves labor productivity and finally, the overall productivity does not necessarily enhance labor or capital productivity [27].

9.The role of productivity in organizations

Productivity is a subtle combination and optimal use of human and material resources available. Although performance determines productivity in some way, these two terms are not necessarily the same. Performance shows that how much we are getting close to the desired objectives. In other words, it shows the quality and quantity of the obtained efficiency. In contrast, productivity simply means the ratio of the input to the output that is shown as a fractional number. However, productivity refers to a series of coordinated and planned actions taken in the organization to improve programs and make a better and more efficient use of spaces, facilities, and talents. These actions are planned and implemented in the form of codified programs. Efficiency and effectiveness are two important components of productivity (Naderian, 2007, p 232).

10.The conceptual Model of the Study

The conceptual model of the study was developed based on the review of the literature and the theoretical studies done in the field as shown in Figure 1:
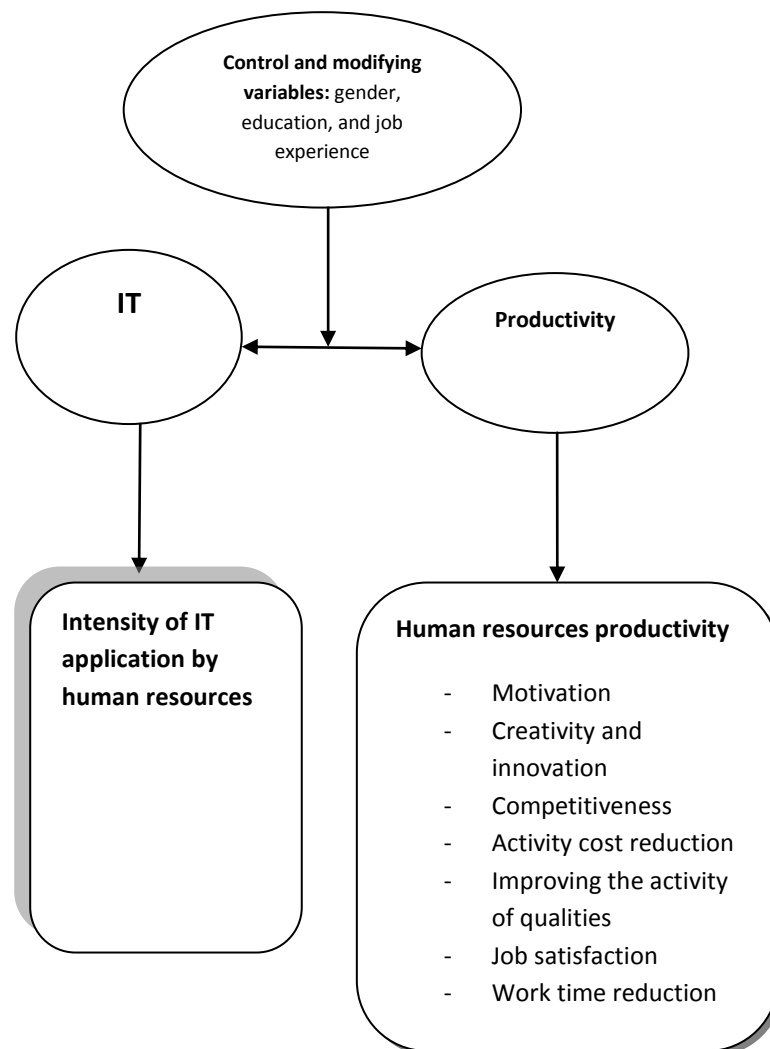
Figure 1: The conceptual Model of the Study

11.Results and suggestions

According to the achievement motivation theory, achievement motivation is in principle a stimulus that induces individuals to do their best to achieve their desired objectives. Individuals with such motivation are willing to take the highest level of risk, to receive immediate feedback about their careers, to enjoy doing their roles, and finally focus their attention on their works to perform it successfully [6]. Since according to the comprehensive management model, motivation for doing things optimally is one of the factors influencing productivity and given that the application of IT will motivate people, it will result in the improved productivity. In addition, as innovation, creativity, and the existence of a proper context for the growth of creativity are among the factors affecting productivity, it can be concluded that the use of information technology will enhance individuals' creativity and innovation, and as a result improving productivity. The use of IT involves the constant generation, processing, and the management of the data. Therefore, IT will serves as a tool for solving the problems only when it is used for the purpose of human development. In this case human capabilities are mixed, resulting in development and productivity.

The present study examined the relationship between the employees' use of IT and factors affecting human resources productivity. The results indicated that the use of IT by employees will improve the productivity indices among them. This makes employees more willing to perform their roles which results in the improved human resources productivity. In addition, IT as a set of generated ideas provided through software mechanisms to employees and organizations will play a significant role in human resources development.

Today, the needed trainings and changes and orienting them through IT are performed easily and develop the organization or the society in different fields. Accordingly, IT plays an effective role in developing professional skills, contributing to the institutionalization of change and innovation, the improvement of cognitive skills, facilitating decision making, development of exploration spirit among employees, and facilitating standard thinking; leading to the creation of the balanced and multi-faceted human development [839, p. 8].

IT changes the method of science but our knowledge on the quality of this change is limited and this is due to the lack of awareness of how IT is associated with the scientists' creativity and dynamism. This weakness can be compensated for by creating EITNET and DNS databases and combining them with data histories and the publication of models.

Three features of model publication are assessed: 1) Number of publications, 2) Increasing the publication colleagues, 3) New method of involvement. This requires finding the type of the data that link EITNET and DNS in 430 agencies that have been used as a sample by scholars. Although the direct effects of IT were not observed in this study, the research hypotheses confirm that IT has various effects on the scholars' creativity and efficiency in terms of their individual personality and their positions in the following ways:

1.   Female scholars were benefited more from IT than male scholars. This is in line with the fact that IT is beneficial for the people with more mobility limitation.

2.   Scholars, who start their professions with a delay, will not benefit from the adoption of IT in their agencies while those scholars who are at the initial stages of their professions will benefit more from the extent and the quality of their research and cooperation networks.

3.   The significant impact of IT is related to cooperation which is consistent with numerous references that shows IT contributes to the increasing number of authors and publishers since 1980. The findings of the present study will contribute to policy making and innovation in the field of IT and enhance the positions of individuals who perform scientific research (Ding et al, 2009, p. 20).

 Finally, it should be noted that human beings are the center for productivity. In addition, given the significance of human resources and their role in the achievement of organizational goals, the employee productivity is one of the most important concerns of the today's managers that must be reduced by training powerful and professional employees.

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