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Information Systems in Globalization Process and Their Reflections in Education

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Abstract

Computers and information systems have been integrating quickly in every area of life. Enterprises which conduct their activities in a globalized world have become dependent to information systems in order to survive. In the current technology era where those systems have become indispensable for people, education is one of many areas where we witness reflections of information systems. In a way, a new phase started in education due to those systems which are more productive, effective, optimum and maximize success rate. Therefore, definition, composition, proper utilization, development and adjustment of information systems and interpretation of their results require strategic decision making, application and analysis process. In this study, within the process of globalization, information systems' basic structure will be explained in relation with education area and business process actors. For this purpose, concepts and activities which form the base of this process will be explained and current applications related to theoretical information will be presented. In this way, it is aimed to make the process more understandable.

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1. Introduction

Globalization is one of the most important phenomenon of the current century. With its economic, social, cultural, political and even daily life dimensions, globalization is affecting all the people, societies, countries and

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organizations and interactions are getting more and more intense due to globalization. In the current situation of chaos where the future is full of uncertainties, resources are diminishing very quickly and competition is becoming ruthless. At the current situation technology is developing by creating network societies, information has become very important for people. Computers and information systems are integrating in every area of life very quickly. In the current situation, it will be true to say that, human beings have become depended on information systems to survive. Therefore, in the current technology era such systems have become indispensable and education is one of the areas where we see reflections of those systems. In this study, within the process of globalization, information systems' basic structure will be explained in relation with education and business process actors and it is aimed to make the utilization of information systems in education more understandable.

2. Information Systems

2.1. Defining Information Systems

Concepts of 'data', 'information' and 'knowledge' form the foundation of information systems (ITs). Data is used in production of information and it can be in numerical, alphabetical, symbolical and graphical forms. When the data related to results of reel events are transformed and made more meaningful for users, information is formed (Akolaş, 2004). Knowledge is a type of information which is formed through interpretation by stating rules related to certain subjects and information related to certain goals are made ready to be utilized through various processes (Öğüt, 2001).

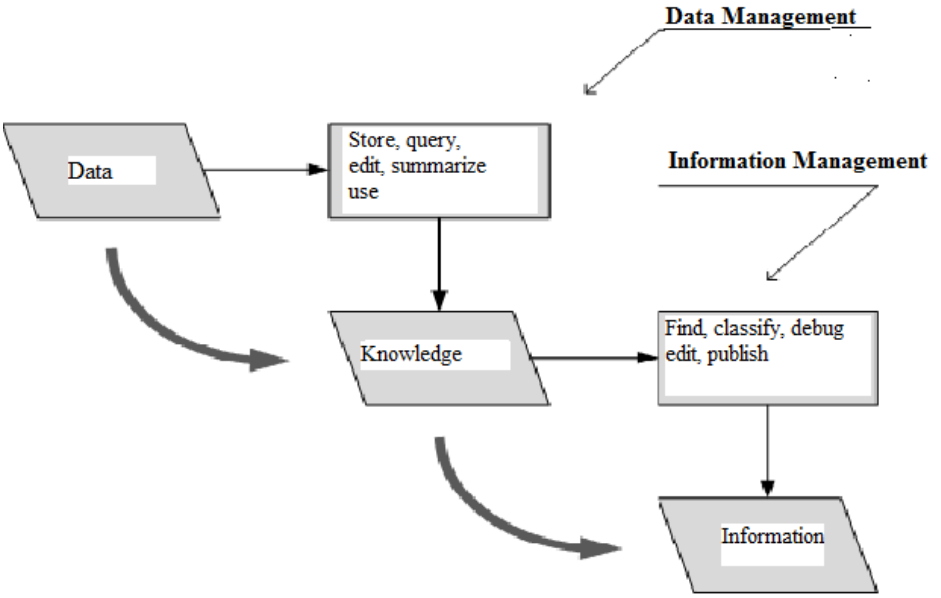

Figure 1: Relations of Data-Information-Upper Information

Source: http://tr.wikipedia.org/wiki/%C4%B0%C5%9Fletme_enformati%C4%9Fi

Before explaining the figure above, it is necessary to explain the concepts of data, information and knowledge. As it can be understand from the explanations, these three concepts are related to each other but they have some content differences. However, in most of the academic writings there is a tendency to evaluate data, information and knowledge concepts under a single title (Yılmaz, 2009). According to Bateson (1979), data is the difference between a system's two situations, information is a situation which creates difference. From Kalseth and Cummings' (2001)

perspective, data is transformed into information through certain processes and by addition of value during the process. Davenport and Prusak (2001) argue that, data does not give an idea about its importance. According to Laudon and Laudon (1998), data has a disorderly nature and only in information we can see the concepts like order, shape, service providing and benefit (Yılmaz, 2009). Based on the explanations above, data can be defined as raw information which is not meaningful by itself, but forms the base of creation of knowledge and information and becomes meaningful as a result of certain processes. Data is combined under certain relations and transformed into knowledge. As we can see in Figure 1, information system processes data and creates knowledge. Knowledge is processed by an information management system to create information. Information systems are the systems which conduct data processing operations by bringing together systematic and formal components in order to meet data processing needs related to a task, assist management in planning, control and decision making processes by providing information and presenting reports about internal and external conditions. Information systems are general systems which support decision making process, assure spread of information, collect data and when it is needed provide feedbacks. In short, information system takes data as an input, processes it and as a result of decision making provides it as an output. Those systems present solutions when the organizations face a crisis and they represent a collectivity which include staff of management, organization and technology (Gurbaxani, et.al., 2000).

2.2. Revelation and Development of Information Systems

Applications of information systems were first conducted by the Incas. This civilization was able to introduce a primitive information system composed of thousands of knots on ropes. Four to five year education was needed to learn that system named as “Quipus”. People who got this education received a privileged status in the society. Another application was seen in Italian city states era. In 1494, A professor from Venice, Luca Pacioli, was introduced a double chart bookkeeping system based on credit account-debit account transactions. Those kind of studies were carried out in following eras, but developments were very slow until utilization of computers. Utilization of ITs has been especially accelerated since 1950s when computers started to be used in commercial life. In general, three main periods have been witnessed in that field. Those periods are “Information Processing Period”, “Micro Period” and “Network Period” which started not long time ago (Ersoy, 2011). Information Processing Period covers the era up to 1980s and during this period ITs are mostly used at internal applications of organizations. However, in Micro Period, utilization of automation systems accelerated quickly. During the last period, big changes and transformations are being seen in every area along with globalization phenomena. Up to 1980s, information was not seen as important for managers, but the development of ITs in a way to remove time and space barriers made information indispensable for managers (Akolaş, 2004).

During the 2000s, social networks based on common interests of participant individuals were created and members of those networks shared files and messages with each other. Social networks have become an important subject for universities and research institutions. The role of information systems has changed overtime. During the 1950s and 1960s information systems were utilized for data processing. In the 1960s and 1970s, those systems carried out important managerial reporting tasks. Information systems, during the 1970s and 1980s, carried out decision support duties while carrying out strategic and final user support duties during the 1980s and 1990s (Dyson & O’Brien, 1998). Internet is an important technology which was used after 1980 and it spread very quickly after 1995 in a way to create network societies. Internet technology provides opportunities for faster and cheaper utilization of information systems and it also provides many user friendly opportunities (Bradford and Florin, 2003).

3. Strategic Importance Of Information Systems

The motivation for sustaining stakeholders’ lives in a changing environment and achievement of a sustainable competition advantage form the foundation for strategic management approach. According to this approach,

achieving an advantage over the rivals is not enough, it is necessary to be in a dynamic process of development to sustain the advantage. This requires proper understanding of changing and developing environment. At this point, it will not be wrong to say that the lives of stakeholders are depended on proper achievement of knowledge and transformation of it into knowledge (Acar, 2008).

The key for successful utilization of ITs is strategic thought. Without proper strategic perspective and concepts it is difficult to define appropriate roles for ITs. The top management should understand the environment and the potential of ITs for changes. Therefore, ITs have become very important success factors at organizations' strategic decisions (Iraz, 2005).

The relation between information management and intellectual capital is important. From a perspective, information management is the management of intellectual capital which is under the organization's control. Intellectual capital can be stated as strategy and measurement. At the strategy it is focused on creation, utilization of knowledge, information and success or creation of value. At measurement, it is focused on development of information systems and measurement of both traditional financial indicators and nonfinancial data. From this perspective, Figure 2 indicates that information management is directly linked to intellectual capital, knowledge development and knowledge support.

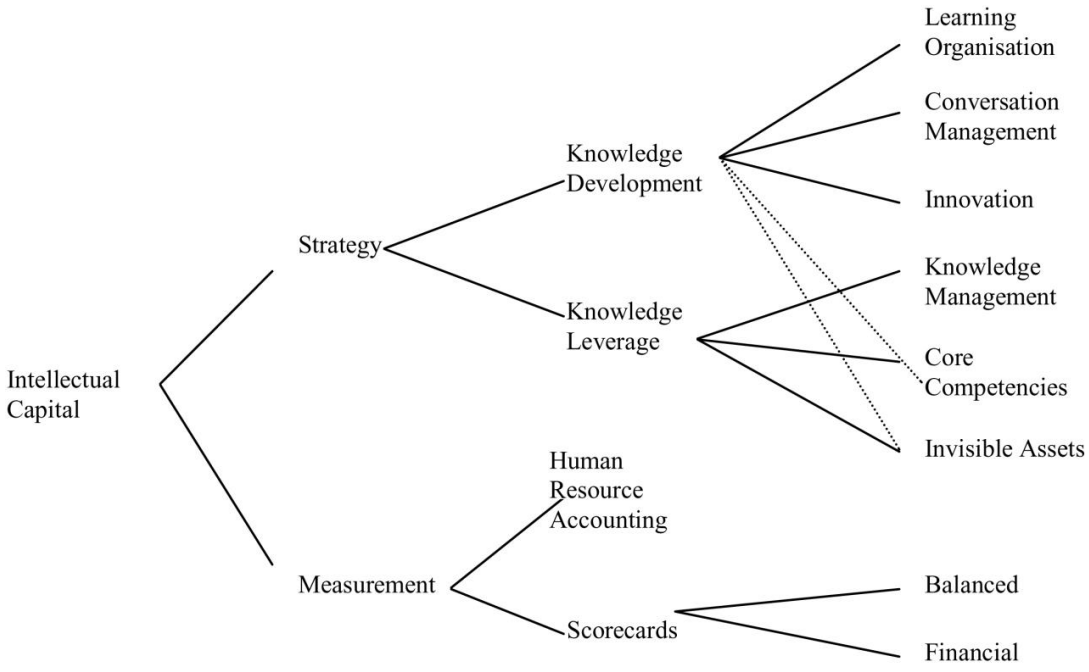

Figure 2: Conceptual Building Blocks of Intellectual Capital
Source: Martensson, 2000, p.206.

In the final analysis, ITs and information systems are shaping rules of the game and changing individuals' and organizations' work styles fundamentally. Modern technology and systems are making possible to carry out business in different organization and control methods in different countries. Those technologies are providing effective communication through the web style organization which can be reached by every individual within an organization and making it possible for every department to be aware of other departments.

4. Information Technology In Education

ITs have been widely used in almost every area of our lives and education is not exception of this trend. On the contrary, education has been an area where ITs have been applied quite extensively. As the level and intensity of ITs change from one country to another, so is the utilization of ITs in education. Although some countries have been leading in application of ITs in education, almost all countries have the intent of using ITs in their educational programs. Especially, over the last two decades many countries have started various projects to increase utilization of ITs in their education programs. Different projects which have been developed in different countries aim at utilization of ITs to enhance the level of success in education. Various studies have been conducted about positive effects of ITs in education (for example see Strampel & Oliver, 2007; Davis, et.al., 1997). For sure, ITs make big contributions in education. On the other hand, it is important to keep in mind that, application of ITs in education is not an easy task. First of all, in order to apply ITs in education, teachers have to be trained about ITs adequately. Teachers should be trained both about new ITs and the techniques about how to teach new ITs. In addition, ITs are developing very fast and keeping up the new technologies, especially among older generation of teachers may not be an easy task. Apart from the problems related to teachers, utilization of ITs in education requires existence of a well-developed infrastructure. In many countries, nationwide infrastructure that can support ITs does not exist. Even in countries where such infrastructure exists, utilization of ITs in education requires high expenses and allocation of public funds to this area. Despite the difficulties in utilization of ITs in education, not only developed countries, but also developing countries are making big investments to give more ITs-intense education to their students. For this purpose, both developed countries like the US, Japan, France, and developing countries like China and Singapore are adopting various projects to enhance utilization of ITs in education (Deloitte, March 2013). Turkey has been a country where various state-led projects have been adopted to enhance utilization of ITs in education. For this purpose, especially the Turkish Ministry of Education has launched several projects. The most comprehensive project is the "Movement of Enhancing Opportunities and Improving Technology", known as FATIH for its Turkish acronym. The main purpose of this project is to transform education and make it more ITs intense. The project is still going on and it is being carried out by the Turkish Ministry of Education with the support from related Ministries. FATIH Project is a nationwide project which aims at equipping 570.000 classrooms with ITs. The project aims at providing tablets and LCD Interactive Boards to all preschool education, primary education and secondary education classrooms. According to FATIH Project, existing 42.000 schools and 570.000 classrooms in Turkey will be equipped with ITs. In the pilot phase of the project, tablet PCs and LCD Interactive Boards were distributed to 52 schools in various parts of Turkey. Later, under the expanded pilot phase, 49.000 tablet PCs were distributed to both students and teachers. Under the project, several programs have been developed to train teachers about ITs. Activities are still being carried out to provide tablet PCs to all teachers and students nationwide (*Turkish Ministry of Education*). Utilization of ITs is not limited with classrooms in Turkey. Students are being assigned with homework where they have to use internet. Apart from the initiatives of the Ministry of Education, different educational organizations in Turkey are also developing new projects to adopt ITs into their activities. Many universities have equipped their classrooms with smart boards and other ITs equipments. Some leading universities are not just using ITs, but also trying to develop existing technologies further and carrying out several studies for this purpose. Apart from ITs' role in education, universities are providing several services to their students via ITs. For instance, in many universities students learn their grades via SMS they get at a time their grades are submitted over the internet to student offices.

5. Conclusion

In our global world ITs are changing in an unprecedented speed. ITs have been part of our lives in every area and for sure education has become an area where utilization of ITs is not only choice but a necessity. Utilization of

ITs in education has several merits. ITs allow interactions of teachers and students to go beyond classrooms without any time and space constraints. When they are able to benefit from ITs, students do not have to limit themselves with libraries in their area, because ITs make available various of sources for them. Utilization of ITs in education requires big investments to be made. However many countries, despite their limited sources, they are making big investments for the integration of ITs into their educational systems. Because, no matter how expensive they are, in the long run ITs create multiplier effects both on society and economy.

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