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Role of information technology and information systems in the process of improving the quality of education manager's decisions

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Abstract

In the complex and high-speed world of modern era, along with technological advances and knowledge, today more than ever, managers need access to data and information about the inner workings of the organizations and status of activities and knowledge of them. IT and information systems are among effective factors in improving the management decisions in education system which can allowing managers to make appropriate decisions for the of the educational system and is used as decision support to them. managers can control the effectiveness of organizational decisions and activities using this information and with planning and timely decisions, empowering their organizations. The present research has been shaped by perceiving the importance and necessity of research that modern technology now plays a role in improving the quality of management decisions and its purpose is the role of information technology and information systems to improve the quality of decision in director of education. So, from where , educational system is as the context to the development of any country, having accurate, relevant, timely and fast information increase the speed and accuracy of decision by manager of education and prevent choice of many wrong decisions. Therefore, due to the sensitivity of the issue and the need to clarify the article, first, the definition of information technology and information systems and its forms, explain systems of management decision making and the role of information systems in decision quality of education director is discussed and at the end , the suggestions and resources are provided.

Keywords: IT, information systems, decision-making, Education, manager.

Introduction:

Ministry of Education, as the constitution and its subsidiaries nature functions shows, is responsible for taking education of society in terms of social and cultural by planning guidance, decision-making and monitoring to provide useful human resources.

Social movement towards industrialization has made tangible need to guide human resource management in various aspects of society,

Readiness of educational system for cooperation with other education institutions in the era of information and communication technology in human development that could play a role in this era is essential **.** Therefore, it is appropriate for managers in new age of new technology to use and consider it effectively in their decision-making and educational systems and give more importance to it (Farid et al., 2011) Because we live in an age of knowledge and information which is wonderful era of knowledge and information, information technology and incredible acceleration(Ranji Jifroudi, 2012) **.** Obviously, in such a situation, understanding the impact of information technology and information systems become increasingly important. The importance of information and communication is obvious. Information as the main source of power and controling others plays an important role and the most important characteristic of a powerful community is giving priority to the data element. An important application of information can be seen in the decision-making of education director and achieve organizational objectives. Using accurate information, accurate and timely management tasks can be an effective step towards solving many of the problems in education (Karegar 2015). In recent times the role and importance of education in guidance and administration of the community and make fundamental changes in the scientific and cultural development in the country is clear to everyone. Since the educational system is one of large and complex organizations which are associated with human resources more than other organizations and are responsible for the training of specialists and efficient society, enjoys a special sensitivity.

Also according to the human development in line and consistent with the great transformations of society which is the main task of the educational system, this requires directors with necessary qualifications.(Abedian Aval, 2012) , especially because educational organizations have task of educating our children and the future of society takes another effect.

The educational system on the one hand has duty to provide a foundation for the development of creativity and innovation and making good use of the talents and abilities of the individual which in turn help the development of cultural, social and economic community and on the other hand for its mobility need cultivation and utilization of innovations at the organizational level(Imam Verdi et al., 2014). Tabarsa (2012) investigate the relationship between information systems and decision making process in middle managers of the private banking system in terms of increase decision-making efficiency through receive information timely, accurate, relevant and comprehensive and possibility of re-control system

and based on the results it can be concluded that information systems greatly increase the effectiveness of decision making processes and management and their application to take appropriate and effective decision in organizations is vital(Tabarsa, Gilani, 1390). Saeedi Keshavarz (1390) in his study of

Telecommunication Company of Tehran Province concluded that information systems management impact human resource management and will help managers who are end users of any system in the work of planning, decision-making and monitoring **(**Saeedi Keshavarz, 2012)

Result of research by Nekoei Moghaddam (2009), Kianfar (2009) Ali Chavoshani (2010) and Ali Davoudi (2014) Show the influence of information systems on decision-making, activities of the organization and realize organizational goals and increase the efficiency of organizations (Nekoei Moghaddam et al., 2009) and (Kianfar, 2009) and (Chavoshani, 2010) and (Davoudi, 2014).

So given that the education system is considered as one of the most important social systems and has important role in developing the country's human resourcesits decision quality, its decision quality is of growing importance. This competence can be influenced by various factors such as information technology and managers information systems. Obviously, any shortcoming in this regard, can lead to poor decisions that have harmful consequences to the educational system and society.

(Mahdiyani et al., 2015)

Information Technology

The complexity of human life in today's world and having the ability and power of knowledge is subject to exploitation of new tools in the field of time in order to access the transmission

(Makvandi, 2013) . Information technology because of evolution and frequency of intensity in the development of educational, cultural, economic and ....,is one of the most dynamic and controversial field of science and technology (Bacillus, 2010). This technology is meant to express a wide range of information, ideas, concepts and provides messaging, thus improving

the productivity and production of countries in all fields is important especially in education institution that undertakes the training of the country's future human resures and resulting in the development of the country. Technology also is among the main factors to achieve competitive advantage and improving the ability of organizations and domestic and international competition in the country(Mohammad Nejad, 2010).

This phenomenon due to having different characteristics has various definitions. There are many definitions for IT that although each expressed in different terms, but they all have common features, such as definitions as follows:

IT is to collect, organize, store and disseminate data such as audio, video, or number that can be done using the tools of computing and communications (Amiri, 2009).

IT is toolset, machines, knowledge, skills and use them in the production, transmission, handling and processing, preparation and consumption of information, from the simplest to the most complex, from the first to the most advanced stages of information (Jadidi, Mohammad Abadi, 2011)

IT referes to interconnected set of methods, hardware, software, and communications equipment that provides information in various forms (audio, video and text) collection, storage, retrieval, processing, transmission or supply them.

Advantages and opportunities arising from the development of information technology in educational system

Nowadays, sustainable and comprehensive development is based on human development and is expressed as the main indicator of developing in countries and ducational system is also responsible for training the skilled and efficient manpower that help the development of cultural, economic and social issues in the community.

The main advantages and opportunities arising from the development of information technology in educational system include:

- all-round assistance to the quality of education and increase productivity.

- Improve the quality of the education system processes(Ensour and alinizi,2014)

- involved in all levels of education and participation in decision making process

- Training qualified staffs to meet the needs of entrepreneurs and help create jobs

- easy access to information resources

- Reduce the cost of education in the long term

- updating the administrative system and the educational system

-create motivation and effort and innovation in education programs based on the document of fundamental transformation

- The training of skilled and efficient staffs.

- The use of international experience in the educational system . (Imam verdi et al., 2014)

Information systems

Today, a successful organization is highly dependent on information systems to improve their work on the one hand and on the other hand to achieve the goals and benefits in a competitive world, because information systems helps managers to solve decision problems both in structured and non-structured environment (Alkhaffaf, 2012).

Information systems means the collection, storage, processing and use of information. This problem is not limited to software or hardware, but encompasses the importance of human and the use of technology, values and criteria it applies in selecting and overall assessment of how these tools are a means to achieve their goals . This system provide required information from internal and external environment to decision-

making. Obviously, this information will be useful in the event that there is fast, accurate and reliable director in special circumstances (Talebi et al., 2011).

The importance of information systems

In recent years, information systems have faced attention and governments and organizations have investing huge amounts in this regard, especially in developed countries this attention is relatively high.

Information systems is a tool for decision and on the other decision is the essence of management and management find meaning when a decision making is occur.

In other words, we can say that the management is equal to decision-making. since information is base of decision making, aspects of organizing that describes flow of information process takes so much attention.

"A good guideline to take decisions is constitute of 90 percent information and 10 percent inspiration and insight". Accordingly, it is considered that an important factor in management decisions is information. Having accurate, appropriate and timely information increase the speed of decision-making and stop making wrong decisions. Also, if the decision is not based on the information in the organization, decisions will be based on people taste, and then the people will certainly get away from their goals(Safarzadeh, 2009).

Information technology and management levels

Experts management science has considered duties and responsibilities for managers of various organizations, including educational institutions. Attention of educational system's administrators to these tasks have been considered important for effective administration of the organization. In fact administrators will be able to run educational organizations properly through planning, organizing, directing, controlling decision-making (Aghaei, 2011). Technology can provide very valuable information for managers. In general, different levels of management needs different information. Here the needs of top managers, mid-level and low-level is considered. As mentioned lower-level managers monitoring the the daily activities and data related to personnel work, work schedule, work units and office forms are examples of these data. Middle-level managers need to a combination of downstream and upstream data. These usually need current data related to performance of units which they are responsible for as well as past performance data in order to compare and evaluate the performance of the units. These administrators provide predictions for the future that is required by high-level managers. Information of top managers about internal information is beyond and its scope of the data is extend to parent organization and the external environment. Such data helps them to develop and control strategic plans and long-term goals and objectives (Vaez Zadeh et al., 1388)

Decision-making

The essence of all management activities is decision-making. The decision making is regarded as integral components of management and is expressed in every management task. In determining the organization's policies, the formulation of objectives, organization design, selection, evaluation, and in all actions decision-making management is basic elements. Managers constantly faced with situations that demand

decision from him and it is the quality of the decision that determines the success and achievement of organizational goals(Safarzadeh , 2009).

In this regard, Kuntz believes there plan , program and policy is subject to the existence of decision-making. He also believed that adminstrators usually know decision making as their its original task because he/she should always be thinking what way to select, what to do,how divide tasks among people and do what task when,where and how(Roshan Ghias-2010). Given the above, the decision means select a way through various ways which exist to undertake. Decision-making, forms the principal task of administrators , because they must be constantly make decisions about what needs to be done, who must work to accomplish it, work time, place of performance and even on how to do it. Thus, it is observed that the decision constitutes an important part of the activities of directors. In fact, it is essence of management(Parvizi, 1390). Decision-making is difficult and sensitive task and this is due to the complex nature of decision-making. Ever since the issue of decision-making has been as an integral part of the management in management literature.

This approach to decision-making as a process summarize in six steps:
-Define the problem
- Collect the data describing the problem
- Define different solutions
- Evaluate solutions
- Select the best solutions
- Apply solution

The importance and role of decision making

The role of decision-making in preventing problems, solve problems and transfer appropriate solutions is one of the important functions of management. Given that the basic tasks of planning, leading , organizing and controlling requires decisions, administrators in all levels especially in educational system who deal with human resources decide to act and solve problems, So we can see that decision-making is a sensitive and important activity and a significant part of administrators time will be assigned to solve problems and make decisions(Parvizi,2012).

Interpersonal role	**Information role**	**Role in decision-making**
• **How a manager interacts with others -Ceremonial head** - Leader - Connector	• **How a adminstrator exchange information and processes** -Supervisor -Spreader -Speaker	• **How a administratormake use information in decision-making** -Entrepreneur -Settlement of disputes -allocator of resources -negotiator

Table 1 Mintzberg's ten managerial roles (Irannejad Parizi , 1390)

Features of decision making

Features of a good and proper decision include:

-Correctness: degree of data displayed and stored adjustment with correct values.

- Timeliness: Timeliness of information means receiving information when you need to get information.

- Accuracy: means that the information is clear and accurately reflect the meaning of the data that are based on it.

- Being economical: cost effectiveness in terms of the results of the analysis of benefits and costs. In other words, a set of measures also applies to combine data expenditure of a program and information about its achievements, including cost-benefit (Roushan et al., 2014).

Types of decision making

According to different conditions and factors affecting d organizational decisions, it takes many forms, Organizational decisions with respect to the different levels is divided into three categories: strategic management and operational .

- strategic decisions is based on futurism and is long-term and a comprehensive approach is required.

- Management decisions is problem-based, short-term and sectional.

- Operational decisions is based on technical and operational daily activities and tasks. (Karizi Arabshahi et al., 2012)

The role of information systems and management decision-making

Simon consider decision making as one of the most important management tasks and even calls it the heart of the organization and introduced it as synonyms of management. Organizations are centers of decision-making in solving the problems of society. Among the various organizations of the country, educational system has a special place, because educational system should take the right decision in how to transform human resources into human capital, about providing physical and mental health, teaching problem-solving skills, creative thinking, critical thinking, communication, self-awareness, sympathy and empathy and emotions. Thus, the Director of Education should recognize that their most important decisions is about education issues(Aghaei.)

As the managers use information to solve the current problems daily and continuing, the most obvious problem is the lack of performance. This condition occurs when the actual performance is less than optimal performance. The challenge is dealing with a lack of problem solving performance, means process of determining the difference between actual performance and optimal performance and then

proceed to how to eliminate the difference or advantage of performance opportunities. In today's organizations that are rich in information technology, management information system help to collect, transform data into information and using the information to make decision individually or collectively(Irannejad Parizi, 2012).

The role of information in different stages of decision-making:

Decision-making process include the following:

- setting goals and standards

- provide the necessary programs to implement the decision

- criteria relating to goals, plans and standards

- providing oversight and performance monitoring systems

- compare actual performance with the projected performance

- controlling measures to evaluate possible deviations from projected performance. (Sarafi Zadeh, 2005)

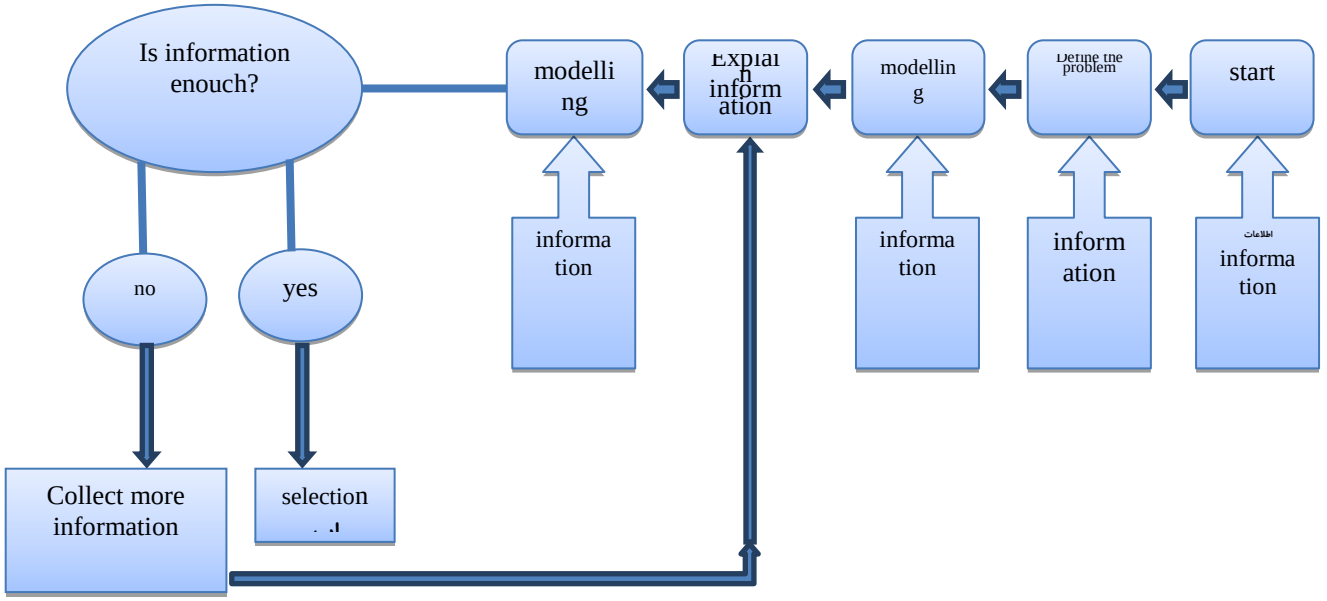


Figure 1: the different stages of decision-making and the role of information.

Types of information systems

Information systems are appropriate tools that are available to organizations and with this tool, organizations can use them to increase efficiency and productivity and achieve their goals. Information systems have different types and in different positions organization are taking advantage of them. In determining the types of information systems and classifying them there are different attitudes. But in most categories we see titles such as:

-Management Information System (M.I.S)

- Senior management information system (E.I.S)

-decision support information system (D.S.S)

- expert or specialist system (E.S)

- Information Systems Transaction Processing (T.P.S)

-Office Automation Systems(O.A.S)

Table 2 a variety And features of information systems

Users	Output of data	processings	Input of data	Types of information systems	
Senior management	Predictions and answer questions of managers	Graphical charts and interactive simulations	Data integration within,between and outside of the organization	**ESS**	**Senior management information system**
Managers and Experts	Special Reports deciding to answer questions	Analysis and analytical and simulations	Communicate with multiple databases for analysis and preparation of analytical models and other data analysis tools	**DSS**	**Decision support system**
Operations managers and middle managers	Management reports	Uniform reporting of low levels data analysis	Mass input data, operating system abstracts, patterns and output profiles	**MIS**	**Management Information System**
Experts and administrative staff	Schedules and postal links	Manage office documents, schedules and communication	Office documents, preparing schedules	**OAS**	**Office Automation Systems**

Supervisors and operational staff	Specialized reports provide Summary reports	Isolation and preparation integration and updates list	Transactional and operational information.	**TPS**	**Transaction Processing Information Systems**

Focus on researchs of information systems such as management information systems and decision support systems in the field of education have started since the early 70's(Breiter and Light, 2006). Considering the extent of concepts related to information systems, this article examines only issues related to management information systems (MIS) and decision support information system (D.S.S) which is used in various levels of directors in educational system and focus on these special topics(Ghazi Zadeh Fard,)

Management Information System (M.I.S)

Information systems as an integrated system of humans and machines has been formed to provide information in the support of the operations in the support of the operations, management and decision-making functions in the organization(Ada and Ghaffarzadeh ,2015). This system provides data and management information and makes them available. Management information system determines what information, at what time and in what place and conditions shall be given to director, so he spent the least cost and facilities and having the opportunity to attempt to take the most appropriate decision **(**Tabarsa and Gilani, 2012).

Different definitions have been conducted about management information system and in following a number of these definitions are mentioned.

Management information system means collecting, processing, storage and transmission of information in their support of management operations of any organization(Reddy et al, 2009).

Management information system is the use of management techniques to gather information, communicate within and outside the organization and provision of information related to organizational processes in order to empower managers to make better and faster decisions (Rezai et al.).

Decision Support Information System (D.S.S)

Decision support information systems play an important role in the support decision of managers; These computer-based system has been applied to all organizational levels in order to decision making and solving semi-structured problems. Decision support information system help directors in the all phases of management decisions and even has important role in identify and evaluate alternative solutions and select the most important of them. Thus, while reducing the time to make decisions and take appropriate decisions has key role in Modeling and simulation in the decision-making processes. (Samadi Myarkalaei,). Usually decision support information system is used at all levels of the organization. Top management use it to strategic decisions, middle management to make tactical decision and operations managers deploy it for their daily operational decisions. Thus, the process of decision-making is

important to the educational system and managers who are greatly involved in these decisions in critical aspects (2011 Nowduri). Gregory and Scott Morton, have defined decision support systems as a system capable of exchanging data with computer systems which can be used to resolve the issue with the specific structure and somewhat unknown. In general, a decision support system is a decision-making system based on human computer action that has the following features:

- Supports the decision maker and is not substitute for decision-maker.

-Uses data and models.

- Solves issues with various degrees of orientated structure.

- Instead of efficiency, focuses on the effectiveness of the decision. (Mo'tamedi et al.)

.difference in MIS Management Information System with decision support system DSS.

differences in Management Information System with decision support systems can be explained in this way:

Decision support systems is more targeted than information systems management . Information systems just gives specified and current information to directors but decision support systems is seeking special decision making or group of decisions such as routing , evaluation , etc. Decision support systems insures the capacity of direcrors's decision making, while information systems rely on structured information and leading them to users espcially to middle directors. Finally , decision support systems provides a unified language model. Decision support system provides the tools needed to decision-making process but information system recognize management information needs. In the top of the organization, senior managers may need to have a decision support system, because these systems make managers able to access to information and decision-making models and support structured and semi-structured functions. Decision support systems may be processed data and input information needed by managers, along with a few unique and special model. Decision support systems also can be questions - answers models, operations research and simulation models.

Decision support system output will be a special report which according to management questions privides solutions and specific recommendations for solving difficult problems. At middle management level, management information systems is a series of organized methods to prepare and provide information to middle managers to support their functions and support operations and decision-making in the organization(Yazdan Panah,2015)

Table 4: differences in management information systems and decision support systems. (O'Brien)

DSS	**MIS**	**Title**

Information for decision support techniques to analyze the specific problems and provides opportunities	Provided information about the performance of the organization	**Provide Decision support**
active queries and Answers	Exceptional periodic reports and responses, requests and progress	**Shape and frequency of information**
Random , flexible and versatile Formatting ,	Fixed Formatting , predetermined	**Formatting information.**
The information generated through modeling of business data	The information generated through data mining and set up business data	**Data processing methodology**

At this level, input data of management information system takes both processed data and raw data and sometimes there are certain management data and also several planned models. Management information system consist of information management that is used for generating report, also there are several simple models and statical methods.output of management information system is restricted and controled management reports that is used for making semi-normal decisions and answer simple questions about the management.

Table 5: Comparison MIS management information system and decision support system DSS. (MacLeod,)

DSS	**MIS**	**index**
individual	organization	The focus of support Center
Direct	indirect	Kind of focus
All	Identify the problem , understand the problem and follow up	Support problem-solving steps
Semi-structure	all	A variety of supported issues
Decision-makings	Information	Emphasis

Conclusion

Todays, by advances in technology and knowledge, more than ever managers need access to data, information and knowledge about the inner workings of the organization and status of activities. Information and knowledge that make better decision making opportunities to directors and also is used as decision making support. As the results of research Atashpour and Samsamshariat (2010) showed that main indicators of successful and effective decision making in the organization by directors are: Knowledge, belief in the ability to overcome the problem, consultations , recognized guidelines, setting activities, balance and progress and impowerment **(**Atashpour and Samsamshariat, 2010). In fact, the existence of information systems in educational organizations in terms of type of activity, procedures and its complex objectives, requires management to make effective decisions.

Importance of management role in furthering the objectives of the organization's management has always been of interest to scholars of education; because the lack the right decisions in directing existed talent has adverse effects on educational system because of aimlessness and confusion. Thus the need for information systems in the process of improving the quality of management decisions to guide the organization and the importance of proper and good leadership in the success of educational organizations in order to achieve the goals can not be undeniable. Existence of optimal information and good quality only take shape in the shadow of powerful information system, so that research results Peter and mac Lane (2009), Huang et al. (2008), Park et al (2011) Balaban et al. (2013), Auerbach et al (2010) Peter and Forling (2011) Shows the influence of decision-makers in effective decision making(Al-Mamary et al,2013). Rahimi Zand in a research of IT application in management decision making concluded that IT application in management decision making is yet away from its optimal rate and manager capture their needed decision making by other methods(Zand Rahimi,2007). The result of Olomi(2013) research “the impact of information systems in management decisions in the insurance sector of Nigeria” showed that information system has vital role in directors decision makings in particular relevant, timely and accurate decision-making is provided for managers (Olumoye, 2013).

Belaghat (2008) did a study about educational needs of secondary school principals in Hormozgan Province in the field of technical skills, human and conceptual skills, based on the results which show that highest rate of requirements in the field of technical skills of managers relates to acquaintance with databases. This choise is perhaps because when directors get familiar to databases and gain knowledge in this field, calling for more interaction with other managers to make use of the experience and new scientific findings.(Belaghat,2008)

The results of Hassan Zadeh (2015) study about barriers to implementing management information systems showed that managers engagement in analysis and design of information systems is essential.

and this both in terms of system design based on their needs and preventing the accumulationand and ultimately maintain data quality play an important role. On the other hand , knowledge of managers about information systems and awareness of the possibilities and characteristics increase needs to provide

information to directors. It should also produce comprehensive, concise, clear and organized management information so that enable managers to use the information in the shortest possible time and this requires a decision support system for directors(Hassan Zadeh et al., 2015). Education organizations can pay attention applying new technologies and tools to departments and features of these technologies such as information systems and particularly decision support systems which promote the empowerment of management decisions. In fact, this system has helped them improve management decisions and using organizational data facilitate the achievement of objectives. Given the powerful role of information systems in decision making, participation and use them in the educational system is necessary. The result of this research show that although attitudes and deeply beliefs have been shaped after the Islamic revolution in technology development in various cultural domains, especially education system, but should this approach be considered that using mechanisms of new technologies in decision-making at different levels of management should be operational. This attitude must be applied universally in the educational system and with technologies,experts and tools to use the technology in all parts of organizations improvement in decision making can be achieved.

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