

# Management information system, challenges and solutions

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## Abstract

Today, increasing the growth of IT and its considerable effect on increasing productivity of public and private organizations at the world and global movement to using different types of information systems namely Management Information System (MIS) caused that Iran also moves toward this trend. This trend was encountered with successes, failures and challenges. The review of the problems of design process, establishment, operation and development of management information systems in a country can be of great importance in the decision making of the public and private sector organizations. The wise application of new IT namely MIS in Iran can pave the way for the development and increases its efficiency and effectiveness. The present study explained the position, aim, role, definition, concept, dimensions, benefits and classification of management information systems and reviewed the problems and barriers of the organizations. Finally, some solutions and propositions were presented to cope with the challenges of management information systems.

**Keywords:** Information, Challenges, Management information systems, IT

## Introduction

The current era is called information and communication era as many studies are conducted regarding the collection, processing and transferring information (Bahman, 1991). Planning and control are not separable. To fulfill the planning and control process in each organization, various data should be collected from inside and outside of the organization and be transferred to the system doing information processing via the communication channel. The information processing should be as the system can present the necessary, time-

ly and adequate information for decision making and present to the decision makers. As having unnecessary information leads into the immersing of the manager in information and his confusion and continuance of the activities of some of the activities disturbs the organization. Incomplete information disturbs the planning, control and decision making and makes it ineffective as scientifically and practically. The current management in encountering the complexities of the decisions found that the manual irrelevant systems based on the importance given to the above information cannot provide the required data and present them at appropriate time. Most of the managers are faced with data or a lot of information experiences without any effect for them in decision making, planning, organizing and correct control in the organization. The gap between the fixed information systems and varied organizational structures namely in dynamic organizations are another fundamental problem leading into the information weakness. As any change in organization structure created some changes in the jobs, responsibilities, power, management hierarchy, etc and the changes created the new information or needs as the existing information fixed systems don't have the required information and the required changes should be made for them. The dependent factors cause that the organizations are faced with problems of the information crisis but sometimes they don't know anything about this problem. The elimination of the mentioned problems and providing the management access to the required, complete, flexible information depends upon providing a complete set of the systems and mechanisms and the system is called the management information (Gordon & Olson, 1985).

### *The concept of management information systems*

Based on the wide scope of the concepts of information systems, the present study attempted to consider only the issues of MIS being applied in various levels of managers in the organizations and the main

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discussion is focused on these systems. It can be said that in Iran namely in governmental organizations, management information systems with the common concept of MIS in the developed countries are less used and in some organizations any information system, even the other kinds as: Transaction Processing Systems (TPS) presenting some reports for the managers of the organizations are called MIS. Although these systems don't have all the features of a real MIS, MIS is less observed in its real meaning and many information systems are organized in the organizations in Iran. The present study attempted to use mostly the governmental organizations as study population.

All the management information system being established in these systems and being applied by their managers are considered MIS with a little negligence and they are called MIS in the present study.

The management information systems increased the managers' information and even the experts of various levels of the organization and by raising new concepts not only extended their knowledge scope about what they can do and what is their decision and helped them in doing their activities and responsibilities (Jams&Kent,2003).Based on the important feature of management information system, the managers of these systems are of great importance. These people income in USA is annually 100000 to 300000 dollars (Momeni, 1993).

### *The definition of management information systems*

Various definitions of management information systems are presented and some of them are as:

"MIS is a comprehensive human-machine system providing the supporting information of decision and operation in a social formation and organization (Schoderbeck, Kefalas & Charles, 1975).

"MIS" is the comprehensive structure of database and information flow in all the organization levels that by collection, exchange and presentation of information, the organization needs are met as well(long , 1989 ).

"MIS" is a computer system presenting the information to the users(Mcleoo, 1998).

"MIS" is a combination of human attempts by computer to collect, store, recover information by using communication systems for good management of organization activities (Kelly, 1984).

"MIS" is the formal methods of providing exact and timely information to facilitate the decision making process of the managers during the planning, control and taking effective and optimum decisions of the organization (Momeni, 1993).

The management information system is an integrated, computerized and machine user system providing the required information to support the operation and decision making. The main elements of this system are:

1- An integrated system to give service to many users, 2-The computer system linking some of information software via a database.3- User-machine interface responding to the temporary and immediate searches. 4- Presenting the information to all management level, 5- Supporting the operation and decision making(Awad, 1988).

### *The introduction of different kinds of information systems*

As it was mentioned, the information systems are one of the suitable tools of the organizations and by these tools to achieve the goals and increasing the efficiency, they are used. There are different kinds of information systems and they are used in various positions in the organization. There are various attitudes in determining different information systems and their classification but in most of the classifications, the followings are observed:

The Management Information System (MIS)  
Executive information system (E.I.S)  
Decision Support System (D.S.S)  
Expert Systems (E.S)  
Work Group Support System (W.G.S.S)  
Transaction Processing Support (T.P.S)  
Office Automation Systems (O.A.S) [11], [12], [13], [14].

Information Systems can be conceptualized in terms of three types of systems: Transactional Processing Systems (TPS), Management Information Systems (MIS), and Expert Systems. MIS has several subsets such as Decision Support Systems and Executive Information Systems. The role of MIS in decision support is best discussed in the context of the subset referred to as Decision Support System (DSS). A DSS is a computer based system (an application program) capable of analyzing an organizational (or business) data and then presents it in a way that helps the user to make business decisions more efficiently and effectively. It is basically an informational application which depends on the information already input while answering to a given query. For example, a decision support system could provide:

- Comparative sales figures for one week/month and the next
- Projected revenue figures based on new product sales assumptions

- Consequences of different decision alternatives, given past experience

Sometimes there is an overlap between the broad categories of IS and a DSS could be capable of presenting information graphically through an expert system or artificial intelligence (AI). Usually the DSS is used by all levels of people within a business organization. Top level management uses DSS for strategic decisions, middle management uses for tactical decision while first line supervisors use deploy it for day-to-day operational decisions. Therefore, the process of decision-making in any business is an inherently vital aspect not just for organizations but also for individuals who greatly rely on these decisions for their survival in the highly competitive arena of entrepreneurship (Al-Zhrani, 2010).

### *The Role of Management Information Systems*

Two main roles are played by the decision making of the managers. First it helps the managers to take decision based on the information being prepared. Second when the decision making and decisions are fixed and only the input data change, it is as a suitable repeating to support different types of managers decisions. It means that MIS is the tool that as the organizational information source provides the required information of the managers and makes them prepared for their decision making. The managers use MIS as a tool to define the problems being faced. As MIS helps the managers to understand the problems and find the solutions (Shafie, 2005; Mcleoo, 1998).

### *Role of MIS in Improving decision making*

Preliminarily, it is inherent to state that decision making is an integral part of any business (The maniac, n.d.). This is because a majority of operations in an organization revolve around decisions made by the management and other key stakeholders in the organization. And in order for decision to be made adequately, it is vital for there to be a good information system since decisions are based on information available.

In relations to this Jahangir (2005) states that based on the significant role that information plays in choice of decision to be made, organizations must ensure that they have a good management information system. As a notable general observation, a good MIS ensures good decision making just in the same way bad MIS propel the making of bad decisions. UStudy.in (2010) supports the above observation by saying that "The quality of managerial decision-making depends directly on the quality of available information" and the managers should therefore

cultivate an environment that encourages the growth and viable sprouting of quality information.

Essentially, before deciding on which MIS strategy to use, it is vital to ensure that the choice made is fully compatible with your current system. This will not only help in avoiding erratic choices but it will also save you the time and money that would have been otherwise wasted by that person (Jahangir, 2005& Rhodes, 2010). In addition to that, it is noteworthy for the MIS strategy or tool used to be in line with the decisions that are to be made. In other words, there should be a connecting point between the decision to be made and the MIS to be used by individual or corporate business owners (Jarboe, 2005).As a key consideration, Management Information Systems is a highly complex and delicate arena that calls for a lot of caution to be taken by its managers. It is for this reason that it is recommendable for organizations to ensure that they carefully select the individuals who are placed to control the systems. The more cautious and professional a person is, the better the person gets an assurance of positive prospects of in MIS with regards to decision making and other related areas of business (Lingham, 2006).

To begin with, MIS provides a fitting platform for good decision making (Kumar, 2006).

Essentially, without the established systems of getting information in MIS, it would be extremely difficult for organizations to make their decisions. This is because they would be forced to making baseless information due to the lack of confirmed information. Moreover, MIS normally lays a firm foundation for the establishment of concrete decisions through its systematic tools, timely information and adequate managerial policies and regulations. Furthermore, Management information Systems' statutes regarding businesses act as guidelines to business owners when making critical decisions about their businesses. As a result, managers and key decision makers are bridled from overstepping their boundaries or exceeding their business mandate. This is very crucial as it helps in keeping businesses checked and balanced thus ensuring that only proven decisions are considered while the untried ones are thwarted. More importantly, the capacity to guide decision-making facilitates progress and improvement of the operations in a company(Lingham, 2006). In addition, most MIS programs are endowed with the capacity to give real-time updates of the occurrences in company or system. By real-time, scholars simply refer to immediate updates of occurrences in a system. These immediate updates help managers to take necessary actions as soon as is deemed appropriate especially during the discovery and management of crises. This augments prog-

ress and improvement in company operations through timely decisionmaking. This is important for companies in the modern-day generation where any slight lapse in decision making can lead to very huge losses. Allen, Heurtebise & Turnbull (2010). Still, Management information systems are very elemental improving company securities .For example, in many instances, most management information systems can be easily programmed by the owner to conduct certain actions at certain times. In effect, managers can program the system to perform certain routine checks which can help in improving efficiency of a company through easy discovery of bugs or problems. Furthermore, the programmability of most MIS saves a lot of priceless time and resources for owners. In other words, through programmability, business managers can program the systems to automatically discover certain deficiencies and even solve them. Consequently, the manager or system operator can use the time and resources he/she would have used in monitoring or fixing problems for other key uses. By routinely programming a Management Information System, the business is bound to make positive progress since time and resources can be easily channeled into rightful business paths .Davenport& Short (1990).

As a fundamental point, a good number of MIS used today can perform multiple tasks all at the same time. This potential to multitask increases efficiency in a company since several business operations can be conducted simultaneously. With special regards to decision making, the capacity to multitask ensures that decisions are made speedily when compared to those systems which can only handle one task at a time.

Closely related to the above point, Jahangir says that some MIS allow multiple users to access the same content all at the same time without any discrepancies. This potentiality boosts accountability from the business operators since multiple people can access a particular content and verify whether they are consistent or whether they are not. As a matter of fact, most organizations tend to suffer due to poor accountability from those charged with the mandate to manage certain details. This safeguard action of some MIS is what macroeconomists refer to as the “gate-keeping” role of MIS in decision making and overall well-being of the organization. On another level, a good number of MIS play the role of record keeping or institutionalization of data bases that can easily keep confidential or invaluable information. In essence, decision making often calls for the reading of certain past work (Jahangir, 2005). This is where record-keeping comes in handy. On the flipside, databases normally function

towards providing future places of information retrieval. Principally, the record keeping and data-basing tool of MIS definitely ensures that decisions are made viably while businesses run smoothly.

In contributing to the arguments regarding role of MIS in improving decision making, Rhodes also adds that: Management information systems give managers quick access to information. This can include interaction with other decision support systems, information inquiries, crossreferencing of external information and potential data mining techniques. These systems can also compare strategic goals with practical decisions, giving managers a sense of how their decisions fit organizational strategy. In summary, Rhodes simply believes that management information systems are a huge contributing factor in the getting of viable information from organizations. Sadly, very few organizations have been able to ardently take up on this role and even lead other organization in the society in doing the same. It is for this reason that there has been a limited improvement in decision making based on the tailoring of viable information. A candid way of solving this challenge is given later in this paper under recommendations. (Rhodes, 2010).

Over the recent years, there has also been an increased usage of automated Management Information Systems. To a large extent, these automated systems have hugely revolutionized the decision-making process in a positive way .UStudy.in. (2010). For instance, by using automated MIS, companies no longer have to rely on 24-hour services from workers. Instead, the machines are able to be programmed to do things on our behalf (Jarboe, 2005). Of course this offers a huge plus in decision-making since managers are relieved of making some decisions—especially the technical ones which can be best interpreted and solved by the automated system. As a cautionary point, organizations should not entirely rely on automated systems-- especially when the decisions to be made have adverse implications to the organization. This is based on the alleged observation that auto systems may sometimes be faulty and thus require frequent periodic monitoring (Demetrius, 1996)So in order not to fall a victim of over-relying on automated systems, Jahangir advices managers and company owners to ensure that they find a balance in utilizing the human element in operating while assigning some duties to the automate system. By blending the duties of these two extremes, Jahangir states that, this will ensure that both ends of the organization continue to actualize together while maximizing the potential for each side through check and balances of operations done by the manage-

ment. Again, MIS is renowned for vesting its operations on systematic methods of operations (Jahangir, 2005).

Crucially, this ensures that decisions made in a business are orderly and well-planned which, in effect, encourages objectivity during decision making. As a result, businesses and the decisionmaking process are improved through its systematic and orderly formula of operating (Jawadkar, 2006).

### *The benefits of management information systems*

Due to the benefits of MIS, because of the close relation, exact control and reliable data collection and rapid data processing and converting them to information, the managers use the management information systems in planning, organizing, leadership and motivation, reporting and control and the management is done by high accuracy and efficiency within short time in the organization. To do the management activities, a mediator as the manager of management information system is necessary to give the services better for the management. The management information system helps by two major ways in problem solving: An information source is provided in organization area and helps the identification of the problem. The benefit of management information system with this aim is to state the problem possibility for the managers. The major drawback of the management information system is that it cannot meet the special demands of each person. Mostly, the management information system doesn't provide exact information and the concept of decision support system was created in response to such need (McLoyd, 1999).

### *The challenges and problems of management information systems*

If all the existing barriers are divided into humanistic, organizational and environmental factors, the major drawbacks and the reasons of failure and using MIS in public organizations are as following:

#### *Humanistic factors*

- The lack of information of the managers and users as they don't know exactly what they want and what their information needs are.
- The lack of understanding of the needs of the users by designers (the lack of correct definition of the needs and their analysis)
- The lack of information of the managers and users about the collaboration method with the designer team.
- The lack of participation of the managers and users in system design.

- The lack of understanding of the managers of software and information systems.
- The lack of information of most of the analysts and programmers (designers) with new system work environment.
- The lack of acceptance of the system executors and resistance against the change.
- The lack of accuracy in the data collected

#### *Organizational factors*

- The lack of good conditions for participation and collaboration of the managers, users and system directors
- The lack of consistency and complexity of the existing manual systems.
- The lack of existing systems and methods analysis before the system design
- The lack of evaluation of the existing power
- Bad condition of educating the specialized forces
- The lack of human resources with management and computer fields and other required specializations (the problems of absorbing human resources)
- Inadequate education of the users
- Inadequate and incomplete documentation
- Unsuitable implementation of the system

#### *Environmental factors*

- The lack of quality criterion of the existing information systems in Iran
- The lack of suitable consultants for designing the system and software
- The lack of procedures and methodology and stages of creating the system
- The lack of evaluation of environmental aspects in management information systems
- The lack of suitable use of mass media to develop the culture of using computer and information systems.
- The lack of holding suitable MA training courses in the universities and the lack of suitable education of human resources in this regard.
- The lack of ratification of the suitable rules in Islamic council parliament and government board and the considerable problem in this regard.
- The lack of serious consideration and adequate investment in this regard.

#### *Conclusions & Implication*

The development of information systems causes that the bureaucratic nature of administrative management is reduced. Some of the theorists believe that by IT decision, the democracy basics in admin-

istrative management are weakened because IT nature is mostly technocratic rather than democratic. Some people believe that by IT, the democratic values as pluralism, freedom of speech, etc are improved. In communication world, direct control was replaced with indirect tools as standardization and education. Information is the basis of power and exclusion of power has negative outcomes in long-term and damages the society and makes problem for all the government (Zahedi, 2001).

MIS in Iran namely in public organizations is applied rarely in Iran and it was mostly used after the Islamic Revolution of Iran and 70s, 80s. This is for the reason that the experience of using MIS in the organizations namely Iran organizations and namely the public organizations was not a successful experience and the reasons were mentioned before. To eliminate these problems, it is presented to the managers (namely the managers of administrative organizations), designers and directors to be considered by the executive managers of Iran in public or private sector (GhazizadeFard, 1996).

Finally, Management Information systems play the crucial role of providing a wide range of streamlined options from which decision-makers are able to make their preferred choices Vittal & Shivraj(2008). Vitially, this ensures that whatever choices are made by decision makers, the outcome, more often than not, becomes positive. This, as a matter of fact, is the reason why many decision makers tend to prefer using MIS tools when making tough business choices. And as renowned concept, having good decision choices guarantees viable decisions in our businesses. Vittal&Shivraj (2008), Jawadekar (2006).

There would be some suggestions and recommendation as follows:

1- The designing and determining a suitable policy to develop MIS in Iran namely public organizations. To do this, the organizations in Iran (e.g. management and planning organization, communication information technology ministry, and Informatics high council in Iran) should take the required measurements.

2- The public organizations generally and management and planning organization specifically defined more study plans to identify the existing barriers in these organizations to use MIS better and get help from the academic centers to execute them and define some projects in the form of their thesis for MA and PhD students.

3- The development of the culture of using computer and information systems is necessary in Iran

namely in public organizations. Thus, the managers of these organizations should apply the required solutions to hold good training courses and participation of the managers and employees of the organization in these periods and other short-term courses or academic year in the educational institutions and universities.

4- Holding the suitable conferences at national and international level to develop the information system culture in Iran.

5- The formation of the information services institutions in all the important administrative organizations and determining the institutions as the supporters (MIS) of the organizations.

6- As the managers have important role in MIS in the organizations compared to the designers and directors. The change of their attitude to computer, information systems namely MIS is recommended. To do this, the public organizations managers and government by predicting required solutions should create the attitude change within a short time among the managers.

7- During the design, establishment and application process (MIS) in the organization, the managers should consider the behavioral aspects of the employees of the organization namely system directors and participate them in system creation process.

8- As the foundation of MIS is based on active computer and Transaction Processing Systems (TPS) in the organization, before or at the same time with the design and application of MIS, TPS should be used in various organization sectors.

9- Providing a comprehensive plan is necessary for using information systems in the organizations before using MIS.

10- Absorbing the efficient and skillful employees and creating suitable motivations for the stability of the existing employees.

11- The consideration of the government to the private consulting companies (or public consulting companies) and not using their employees in design and establishment of information systems to reduce privatization policy and elimination of the problems of the companies.

12- Forming MIS council or MIS directing committee from the initial stages of MIS project in the organization.

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