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A Literature Review of Factors Influencing Implementation of Management Information Systems in Organizations

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Abstract

A proper implementation of Management Information Systems (MIS) can improve an organization's performance, productivity, and work efficiently. Three factors are vital in the successful implementation of MIS. These are organization factors, technology factors and management factors. There are several other factors but these three are the most important ones according to observation. All other factors can be incorporated into these three factors. These three main factors work in an integrated and coordinated way. There are several other important sub-factors in each of these three areas. These are also discussed in this paper. Management Information Systems (MIS) play a vital role in decision-making process. Managers can improve their decision-making process with the successful execution of Information Systems. Our main goal in this paper is to determine the factors and make discussions on them. How they affect in the successful implementation of MIS is also discussed here.

Keywords: Management Information Systems, organization factors, technology factors, management factors

1. Introduction

In modern days, a large number of organizations cannot operate successfully without the proper implementation of MIS. With the help of MIS, organizations can get the right information to improve the cooperation and intercommunication between institutions' people (Mamary, Shamsuddin, & Aziati, 2014). MIS enables information to flow between departments immediately, shortening the requirement for direct intercommunications between members, thus incrementing the performance and effectiveness of the organization (Nath, & Badgujar, 2013). MIS is certainly a major tool in each organization, which intends to bring dependable, thorough, available, and accurate data to system's user on time. MIS facilitate tasks mechanization. Mechanization significantly improves organizational workflow (Mamary, Shamsuddin, & Aziati, 2014).

MIS has three dimensions- organization, management, and information technology (Laudon, 2016). Successful implementation of a Management Information Systems primarily depends on organizational factors, Management factors, and Technological factors. These three main dimensions also interact with each other's, and they cannot operate independently without the help of another dimension.

The main motivation for this paper is based on the fact that many organizations are trying to adopt Management Information Systems to increase their efficiency and improve their decision making. Three factors named organization, management, and technological factors affect the successful execution of MIS. This paper aims to make discussion on these factors, and it demonstrates how they are interrelated with each other.

The primary goal of this paper is to determine the most important factors which affect the fruitful execution of Management Information Systems in organizations. It also aims to find the factors identified by previous researchers on this topic and why some researcher's factors are more important than other researcher's factors.

2. Methodology

Here in this paper, it is the primary goal to find the most important and relevant factors which affect the successful implementation of MIS in organizations. This paper is based on several other secondary resources-mainly from other published papers in high quality journals like MIS Quarterly, Journal of Knowledge

Management, Journal of Management Information Systems, Decision Sciences etc. and several other books. It can be said that this research is the integration of previous research works on this topic. An effort has been made to construct a table that clearly shows the factors identified by previous researcher on this topic and proper reference has been included. An analysis is given on why some factors are important and why some are not.

3. Literature Review

3.1 How MIS can Improve Decision-Making

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

In any business process, decision making plays a vital part. Since information plays a very critical role in decision making, Organization must assure that they have a proper and fruitful MIS (Jahangir, 2005). A successful MIS leads to improved decision making and likewise poorly designed MIS leads to bad result. Basically, before making a decision on which Management Information System strategy to use, it must be harmonious with the current system. It will not only help in avoiding inconsistent choices, but it will also save time and money, which would have been otherwise wasted by that person (Jahangir, 2005& Rhodes, 2010).

In other words, there should be a link between the decision to be made and the Management Info System to be used by individual or corporate business owners (Jarboe, 2005). Typically, without an established system, it would be highly difficult for the organizations to make correct decisions. By real-time, scholars refer to instant updates of occurrences in a system. It strengthens progress and improvement in company operations through timely decision-making. It is important for businesses in the modern-day generation where any slight lapse in decision making can lead to a huge loss (Allen, Heurtebise & Turnbull (2010). By routinely programming an MIS, the company or business is obliged to make progress since resources and time can be easily directed into legitimate business paths (Davenport& Short 1990).

Jahangir mentioned that a few Management Info Systems enable most users to reach the same content all at the same time. (Jahangir, 2005). As a matter of fact, most companies suffer due to a weak accountability.

The Management Information System provides immediate access to the information.

3.2 MIS Implementation

In order to implement an information system, several activities are required to be performed (O'Brien, 2010 p. 506). This includes the following in the diagram:

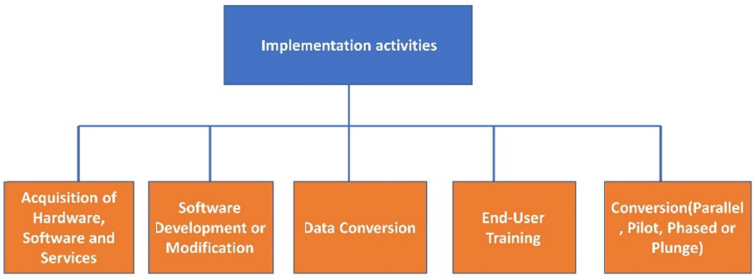

Figure 1. Implementation activities of an information system (O'Brien, 2010 p. 506)

It is very important to acquire hardware and software to execute an information system which is appropriate for a particular organization. An organization must analyze very carefully how the software and hardware will meet the goal of MIS implementation. Several months to years may be needed to execute a new system (O'Brien, 2010). If an organization can perform these above activities successfully, then it can be said that their information system implementation is a robust system (Davies, 2009). Specifying the principal steps of the implementation process is essential. In 2009, Davies presented the implementation stages of the information system, which concerned with some primary activities. This concept of the application process is similar to O'Brien (2004) who explained a process consisting of five different steps called the information systems development cycle. It includes: (1) investigation; (2) analysis; (3) design; (4) implementation; and (5) maintenance (O'Brien, 2004; Davies, 2009).

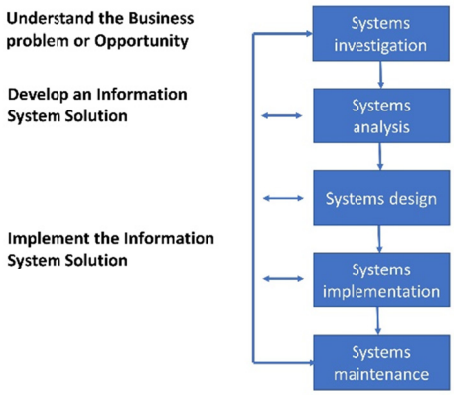

Figure 2. Information System Development Cycles

Source: O'Brien, 2004, p. 345.

3.3 Factors

3.4 Organizational Factors

Figure 3. Organizational Factors

Source: Hage & Aiken, 1969, Ahlan, 2005, Ein-Dor& Segev, 1978, Bechina & Ndlela, 2007.

3.4.1 Decision-Making Structure

Organization member need to participate actively in organizational decision-making process when there is a

Need to make decision on Information systems (Hage & Aiken, 1969). Several other studies have already demonstrated that when there is a central plan for the whole organization then the end user will get better result (Brown& Bostrom, 1994). It will also lead to create good and fruitful strategic information system applications (King, Sabherwal, 1992).

3.4.2 Goal Alignment

An organization's Information system goal and business goals must need to be worked together so that

the overall business plan for the organization will become successful (Saunders & Jones,1992). There is a strong need for researchers and practitioners to give focus on both public and private sectors (Ahlan, 2005).

3.4.3 Resources Allocation

According to Ein-Dor & Segev, there are three categories of resources: money, people, and time. They have found an important connection between IT project implementation and resources. They observed that having adequate funds, dedicated people and sufficient time have had a tangible effect on a project's outcome. This study also suggests that resources allocated to IT projects may have substantial impacts on Information Systems success (Ein-Dor& Segev, 1978).

3.4.4 User Training

Training is nurturing the skills that required to use Information Systems. Training is required for the adoption of information systems. Most often top management or IT department are asking an employee to use specific software, but they do not provide enough training. Hence, sometimes the systems implementation is proved to be a failure because people do not have the right skills (Bechina& Ndlela, 2007).

3.5 Technological Factors

There are several technological aspects which play a significant role in information system implementation in an organization.

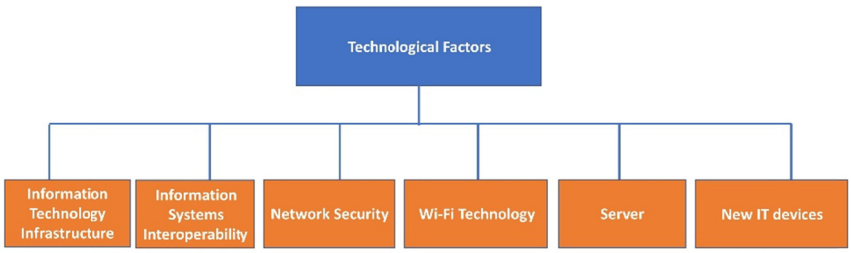

Figure 4. Technological factors

Source: Xianfeng, 2008, Ram, 1991, Daya, 2013, Mohapatra, Choudhury & Das 2014, Baker & Savino, 1997, Broadbent, Weill, and St. Clair, 1999.

3.5.1 Information Technology Infrastructure

The principal element of the IT investment, the construction of an efficient IT infrastructure is placed among the highest attentions of IT management. Organizations pay a significant amount of time & money & to develop IT infrastructure. However, a substantial number of companies have not gained their anticipated results from their IT investment; they appear to dive into "IT black hole." The definitive cause is that these enterprises have not efficiently joined IT infrastructure with their business resources to form "IT capability" (Xianfeng, 2008).

3.5.2 Information Systems Interoperability

In a broad sense, Information Systems Interoperability points to the use of computer-based tools that promote coordination of work & data flow across organizational boundaries, focusing mainly on inter-enterprise distributed business processes & flows. It emerged principally from the need to harmonize the operational heterogeneous networked environment, real information sharing, & the necessity to improve task coordination (Chituc, 2008). According to (Ram, 1991), Information Systems interoperability depicts the ability of two or more systems or components to transfer information, and to use it. While Stegwee & Rukanova (2003) expanded this technical description to an organizational meaning & suggest that Information Systems interoperability remains at the interplay of human systems, business processes, & enabling technologies.

3.5.3 Network Security

System and network technology are a key technology for a wide variety of applications. Security is crucial to systems and networks. Though network security is an essential element in growing networks, there is a notable absence of security methods that can be simply executed (Daya, 2013):

3.5.4 Wi-Fi Technology

Today's Wi-Fi systems provide us to stay connected to persons in thousands of places all over the world through a network system of various Wi-Fi enabled equipment.

The three most significant advantages of Wi-Fi system are (Mohapatra, Choudhury & Das 2014):

Global Accessibility: Wi-Fi enables users to stay united in many various places such as office, home or hotel on another part of the country. Most of the electronic gadgets sold today are Wi-Fi enabled, and the biggest part is that Wi-Fi system has a global standard. Unlike cell phones, we can join to a network everywhere in the world with a Wi-Fi enabled equipment, supporting for extensive coverage.

Efficient Communication: Not only is Wi-Fi is accessible and convenient but with the fame of public wireless

networks and wireless devices that provide roaming, Wi-Fi provides users to remain united every time. Companies can keep a constant flow of conversation in the office with modern Wi-Fi system, enabling employees to stay joined on an almost constant basis. All of these Wi-Fi properties increase efficiency in the office, as well as improve the capacity of a company to operate at the best possible level.

Cost Effective: The expense of wireless network hardware is inexpensive, particularly in comparison to lined cables that are hard to establish and maintain. Wi-Fi enables businesses to connect the technology instantly anyplace in their facility and establish a stable network that can support all of their workers. Wi-Fi is simple to develop and can take on supplementary users with existing devices, unlike wired cables which need extra wiring and installation.

3.5.5 Server

A Server is a reliable computer machine that carries data to be distributed across a network system. The Server replies to requests for data from other computers machines – it "serves" data, files, fax, print, sources and more to multiple computers on the same network. Now, Server-based network systems can be seen in many small companies – some with less than ten PCs. If slow PCs and files stored on disks are slowing business down, a Server network system could be the answer. A Server defends business data and information by providing a more stable and security-enhanced system. It consists built-in firewall security protection to prevent unapproved users from getting into user's network. A Server helps to ensure network system health by keeping PCs and servers up to date with the latest updates. A Server counters data loss with automated data backups and allows to recover accidentally efficiently removed files and recover previous versions. A Server gives one central place to store company information, meaning anyone can better maintain business-critical information. It's easier for workers to obtain, access, and distribute information and schedules (Baker & Savino, 1997).

3.5.6 New IT Devices

Technology is regularly emerging, and businesses are becoming more and more reliant on technology to run their businesses efficiently. Purchasing new IT devices can significantly help businesses to achieve better productivity, improved performance, and results. But it is extremely important to decide carefully which device an organization should purchase and whether it can help them to achieve their business goal or not. A new device may bring a significant update over the old technology, and it may fix previous critical errors. So a company may purchase new device after considering all the relevant factors. Buying new devices may help them to save significant costs in the future time (Broadbent, Weill and St. Clair, 1999).

3.6 Management Factors

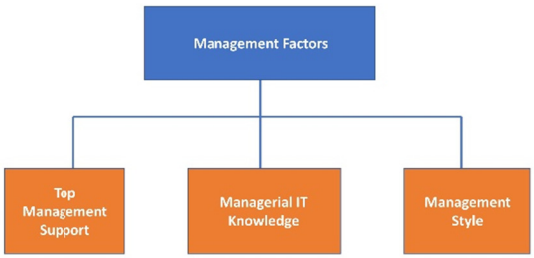

Figure 5. Management Factors

Source: Jarvenpa & Ives 1991, Boynton & Zmud1994, Aldag 1991.

3.6.1 Top Management Support

Top management's involvement plays a very big role in Information System activities (Jarvenpa & Ives 1991). Top management supports considered as one of the most important organization factors (Grover, 1993). Igbaria found that there is an effect of organizational support on many of the factors examined such as system usage, perceived usefulness, social pressure, perceived complexity (Igbaria & Parasuraman 1996).

3.6.2 Managerial IT Knowledge

Senior management needs to have a strong knowledge and experience regarding information systems and

technology. It has been found previously that manager's background, awareness and knowledge can be linked with good strategical planning of information systems. (Boynton & Zmud1994). Other researchers have found that managers and other executive members who has right skill, experience and background are more successful, more positive and proactive in Information system project implementation (Jarvenpa& Ives 1991).

3.6.3 Management Style

Management need to motivate, influence and cooperate and lead people's activities when people work in team and group in an organization. (Aldag 1991) Management is mainly involved with people related tasks and activities. (Lu & Wang 1997) Managers who focus on people are responsible for building trust, respect and cooperation among people but task centric managers focus more on job duties, responsibilities and organization tasks.

4. Result and Analysis

Here is a table which clearly shows the factors identified by previous researcher on this topic. Proper reference is also given in the table below:

Table 1. MIS factors identified by various researchers

Factors	Researchers	Year
Humanistic factors, Organizational factors, Environmental factors	Mehdi Babaei, Jafar Beikzad	2013
Technological Factors, Organizational Factors, People Factors	Yaser Hasan Al-Mamary, Alina Shamsuddin and Nor Aziati	2015
Organizational factors, Management factors	R. Sepahvand, M. Arefnezhad	2013
Cost factors, Environmental factors, People factors	Irene W. Munene, Namusonge G. S. and Mike Iravo	2014
Technological factors, Organization factors, Group factors, Cultural factors, Change factors	Naser Azad, Tahereh Zamani and Seyed Foad Zarifi	2013
Organization factors, Technological factors, Management factors	Kenneth C. Laudon, Jane P. Laudon	2016

Among all the factors from these above researchers, there is a clear reason why the technological factors, organization factors and management factors have been chosen. This is mainly because that all the other factors like people factors, environment factors, cost factors, cultural factors can be integrated into the three factors mentioned by Kenneth C. Laudon and Jane P. Laudon. Also, they have identified these key factors based on the three main dimensions of Management Information Systems called organization, management and technology. Obviously other researcher's work is also excellent and they have also performed excellent work on this topic but Laudon's work is widely regarded as a masterpiece and widely acceptable.

So according to this paper, there are three factors which influence in successful implementation of Management Information Systems (MIS) in organizations and these are:

1. Organization Factors.

2. Technological Factors.

3. Management Factors.

In the organization factors, the other factors are Decision-Making structure, Goal alignment, Resources Allocation and User Training. These organization factors play a critical role in successful MIS implementation, and proper MIS implementation is significantly dependent on them.

In the Technological Factors, the factors are Information Technology Infrastructure, Information Systems Interoperability, Network Security, Wi-Fi Technology, Server and new IT devices. If these above factors are properly implemented in an organization, then the designed MIS system will be a good one, and it will play a significant role in overall organizational success.

In the Management Factors, the factors are Top management support, Managerial IT knowledge, and Management style. Since managers take the important role of decision making, any good management who wants to implement a robust MIS in their organization must acknowledge these factors when they implement MIS.

5. Discussion and Conclusions

Three factors play a major role when an organization wants to implement MIS in their organization. These factors are organization factors, technological factors, and management factors. These factors are interrelated, and they work in an integrated way. When an organization decides to implement MIS in their organization, they need to look carefully whether their MIS implementation goal is aligned with their organization goal or not. Their top management must support the project plan, and they also equip themselves with the required IT knowledge. They must acknowledge that a properly designed MIS can help them significantly in their decision-making process. They can achieve their overall organization goal and they also can manage their people with the support of Management Information Systems. They allocated the necessary resources for the MIS implementation. Also, they train their users with the necessary knowledge so that their organization efficiency will improve significantly. In concluding, these three factors jointly play a vital role in MIS implementation, and an organization will achieve numerous benefits with it. Our paper will help future researchers to investigate more thoroughly on the mentioned factors discussed in this paper and they can make further contribution on this topic. Our work will provide a good baseline for them.

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