



THE EFFECTIVENESS OF MANAGEMENT INFORMATION SYSTEM IN DECISION-MAKING

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Abstract

Management Information System (MIS) is the use of information technology, people, and business processes to record, store and process data to produce data-driven information that helps managers to derive decisions for the organizations. The decision is consciously taken from a variety of alternatives and the consent of many is based on the goal of achieving the desired outcome. MIS can be defined as a collection of systems, hardware, procedures, and people that all work together to process, store, and produce information that is useful to the organization. It is an important system for every organization that needs to have to ensure they remain competitive in the market. However, not all MIS fulfil the requirements from stakeholders. Some have failed to do so due to several factors such as poor requirement design or improper training to the users. Therefore, in this study, the paper focus to identify the key criteria that contribute to effectiveness in developing the “fit” MIS based on previous studies. The criteria discussed in detail by hoping this find out will become major guidelines to create a good MIS.

Keywords : Management Information System (MIS), Information Systems, Middle Management, Enterprise Systems, Decision-Making.

I. Introduction

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MIS stands for Management Information System. In short, management information systems are a collection of systems, tools, procedures, and people that all work together to process, store and produce useful information for every organization.

Management information systems are created as a facility for the use of information technology, people, and business processes for recording, storing and processing data that aims to produce information that can be used by decision-makers to make day-to-day decisions.

When defined separately for each purpose of the management information system, management is the process of addressing the things that control people. In the meantime, the information system is an organized system for the collection, organization storage and communication of information.

More specifically, it is the study of complementary networks used by people and organizations to collect, filter, process, create and distribute data. Then, in conclusion, management information systems are computerized information processing systems designed to support corporate or organizational management activities. The main concern in the field of information systems is the impact of the management information system on the extent to which the management information system is used in decision making (Hakimpoor, H., & Khairabadi, M. 2018).

MIS is the second level of information hierarchy where managers (e.g: supervisor, branch managers) use MIS for tactical decisions in organizations. This means the company makes decisions that will contribute to the longevity, profitability, and continued improvement of all areas of operation.

There are several processes or procedures used in the management of information systems to help make decisions for short-term or tactical planning according to inquiry response, management information system for operational planning to make decision making, management information system for tactical planning (by middle management) and then combine it or relate it with the decision made by top management in strategic and policy planning for the best and perfect way.

Rather, decision-makers need the right tools or ways to help make informed decisions. Below the following is a list of why the need for MIS in assisting the process for an effective decision-making department:

- i. Every decision-maker needs complete information or data for the decision to be made following the desired and effective format. then, with MIS it can help the process run smoothly.
- ii. The MIS system also facilitates communication within and outside the organization so that employees within each organization can access the information needed for daily operations. Simple as Services
- iii. Besides, Short Messaging (SMS) & Email allows employees to communicate with customers and suppliers from within the MIS system used by the organization.

- iv. Process of record-keeping - through the management information system it also records all the business transactions of an organization while providing guidance and reference for the transaction.

The role of MIS not only advised decision-makers to make strategic decisions but also to provide several other analyses as shown in the diagram below. It is including to provide risk and market analysis, cost and budget analysis, feedback and others, see figure 1.

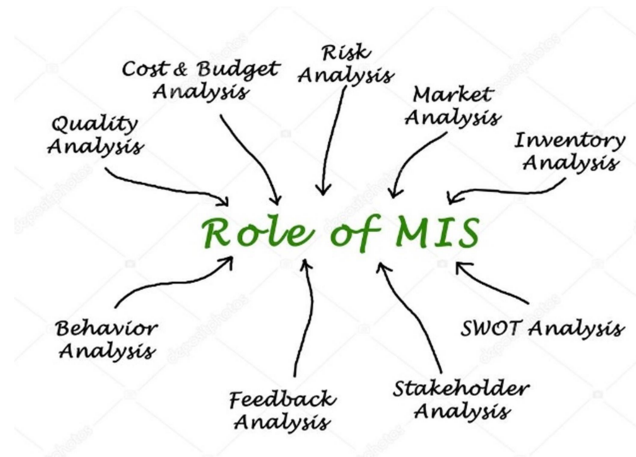


Fig. 1: Role of MIS

Therefore, MIS plays a crucial role to make the companies remain competitive in the market. In this paper, we investigate a keys factor that influences the effectiveness of MIS based on previous literature. The paper also presented the challenges that an organization needs to overcome to make a good MIS.

II. Literature Review

II.i. Component of Management Information System (MIS)

Five components that are the people/users, data or information, business or organizational procedures, hardware, software are the major key components of management information systems that complement each other to ensure that the MIS process works properly, effectively, and also to create a complete system, see figure 2 (El-Ebiary, Y.; Najam, I.; Abu-Ulbeh, W., 2018).

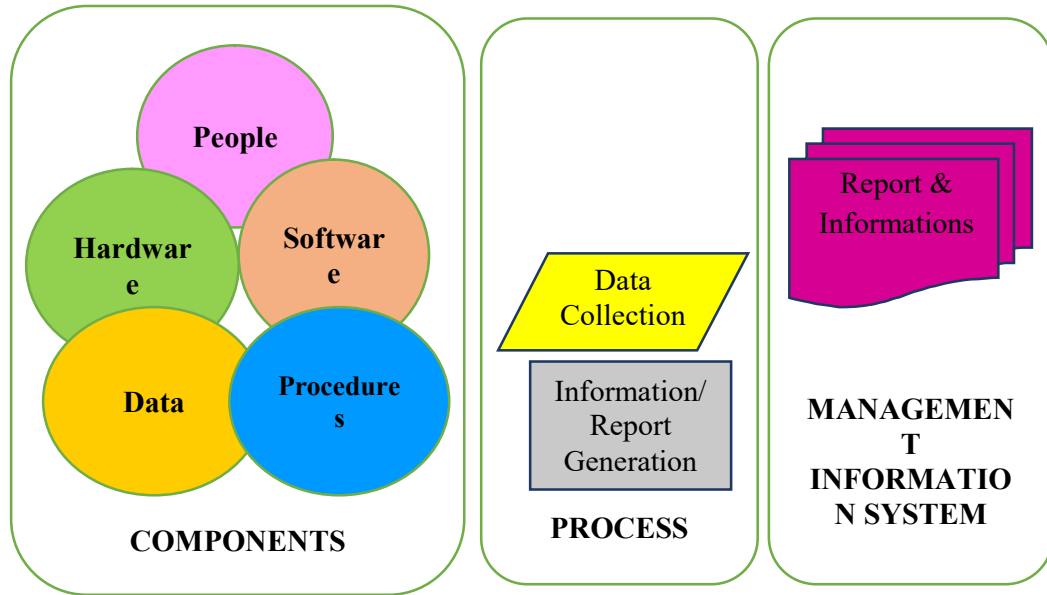


Fig. 2: Component of MIS

The components can be described in more detail as below:

- i. **People** - are individuals or users, Information support, technologist who use and manage the management information system
- ii. **Data/information** - all relevant data/information such as facts or figures, entered and recorded by the information system into computers
- iii. **Hardware** - The hardware in question is servers, workstations, network equipment, printers, laptops, PDAs, desktops and more.
- iv. **Software** - is a program used to handle data such as operating systems, spread sheet programs, Microsoft offices, database software, and other applications programs, etc.
- v. **Business Procedures** - refers to the procedures or business affairs including organizations implemented to record, store and analyse data. It also describes how the other four components are used.

II.ii. The Types of Management Information Systems

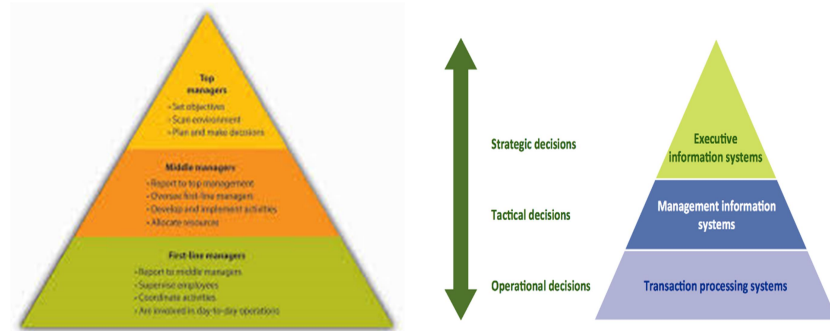


Fig. 3.0: Management Level & MIS

Management Information System consists of several types namely

i. Transaction Processing System (TPS)

It processes a large number of regular and recurring transactions. Repeatedly refers to the frequency with which the TPS system is used. It is a transaction process transfer system used to record daily transactions of various types of businesses. Examples of transaction systems used are the Cimb Clicks, Payroll System, Point of Sale (POS) system, which is the POS system used to record daily sales.

ii. Management Information System (MIS)

Management information system or operating information systems is the system that collects comprehensive data, organizes it and summarizes it in useful formats for managers such as helping middle management make semi-structured or tactical decisions. Typically, decisions about long-term planning are made by top-level and short-term management by middle management whereas the output from the transaction processing system is used as input to the MIS system (El-Ebiary, Y. A. B., Al-Sammarraie, N. A. & Saany, S. I. A., 2019).

iii. Decision Support System/Enterprise System/Enterprise Information System (DSS/ES/EIS)

This system helps entrepreneurs with the data/information needs needed to make smart decisions. Through the decision support system too, it is also used by top managers to make half-structured decisions. The output from the Management Information System is used as an input to the decision support system. DSS also obtains input data from external sources such as current market strength, competition, and so on.

iv. Expert Systems

They are intended to mimic or share human ideas in making decisions in a particular field.

II.iii. Output of Management Information Systems

Regularly generated reports or on a regular (daily, weekly, monthly) basis such as Asset Management Reports

Key indicators that summarize the previous day's critical activity are also available at the beginning of each day. Such as daily activity reports, annual performance evaluation reports

Request reports that provide specific information on manager requests such as accounting reports, transaction reports

Exclusion reports that are automatically generated when circumstances are unusual or require management action report visitor's feedback, website statistics reports and so on.

II.iv. Criteria for Effective Management Information Systems

Previous researcher emphasizes specific key indicators for MIS effectiveness. The study conducted by Ijoema (2018) study aimed to examine how management of information system has assisted in service delivery in Nigeria universities; examine how management information system has assisted in reducing paperwork in the universities. The author using quantitative approaches by disseminating 300 questionnaires to the staff to examine how MIS has assisted in reducing paper works in universities and the success of MIS implementation at universities.

The study concludes that poor management information system design has been identified as a bottleneck in the successful management of universities in Nigeria. As a result, one of the key effectiveness suggest by the author is by suggesting that proper orientation should be given to managers at all levels as well as in-service training for secretaries to ensure proper and adequate use of MIS facilities in generating and disseminating information for better decisions in the universities.

Based on the literature review in using MIS to Boost Corporate Performance by Mohammed (2015), previous studies have been reviewed to support theories that explain how management information systems (MIS) influence corporate performance. Management information systems (MIS) provide information related to possible future events, efficiencies, and outputs. Higher management information system capabilities lead to higher strategic performance. These and many other factors are suggested to be important features of MIS that have a direct impact on the company's financial and strategic performance.

According to Bendre et. al (2017) too, the success and smoothness of an organization are guaranteed when the planning and decisions of the top management of the organization are achieved and widely agreed including taking into account the short-term (tactical) decisions made by the middle managers.

One of the key elements of MIS is the credibility information provided by the system stated Abu Naser & Al Shobaki (2016), MIS's effectiveness can be summed up in the following features including data and information provided according to the needs of the users and management information system they wish to use.

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Examples like the Human Resources Management Information System (HRMIS). System administrators need complete data to fill in the information through HRMIS. Information such as personal information, work history, leave history should be thorough and complete to ensure that the system is not compromised when top management evaluates staff performance.

Nevertheless, the management information system is very useful in decision making as it can monitor the system's disruptions, and can determine and take action to gain control of the system. Sometimes, in an organization, whether in government departments, private or educational institutions such as universities, information not available when needed due to the failure of gathering the right requirement. As a result, it is difficult or impossible to make the right decision and time for long and short-term planning.

Another aspect that needs to studies is whether the MIS is going to serve private or public sectors. Although the primary mission of public and private sectors are not conflicted, however, they do reflect differences in business goal and value (Babaei & Beikzad, 2013). Government deal with not only general issues of implementing MIS but also multiple sources cost and special challenges. The biggest is collecting data (not only come from multiple channels such as social networks, web, and crowdsourcing but difference agencies (countries, institutions, universities, departments) (Kim, Trimi & Chung, 2014). The MIS system for the government also needs to comply with government rules & regulations (Perera and Fernando, 2006).

In Sudan, the survey by Elhadi and Mohamed (2013) reveal the top 3 main obstacles to implement MIS in public sectors are:

- i. Lack of system application software (91.9%)
- ii. Lack of well-trained employees to deal with new technologies (91%)
- iii. Lack of planning and activities related to the use of information (81.4%)

Public sectors having different goals values in terms of implementing MIS in their organization. While most business entities (private) main goals are to earn profits and remain competitive, the public sector has different ideas. Public provide services to the community and relies on the government budget, therefore, to implement MIS solution are challenging task. One of the main problems is decision making usually takes a much longer time due to a large number of actors including officials, interest group and ordinary citizens. Therefore, in designing effective MIS, the environment and customer also play a big role in system development.

III. Methodology

Decision-making within an organization is an important process for an organization to ensure that planning is fulfilled and agreed upon for mutual success and satisfaction. To complete the review paper, several steps have been taken in Figure 4.0 and can be explained as followed:

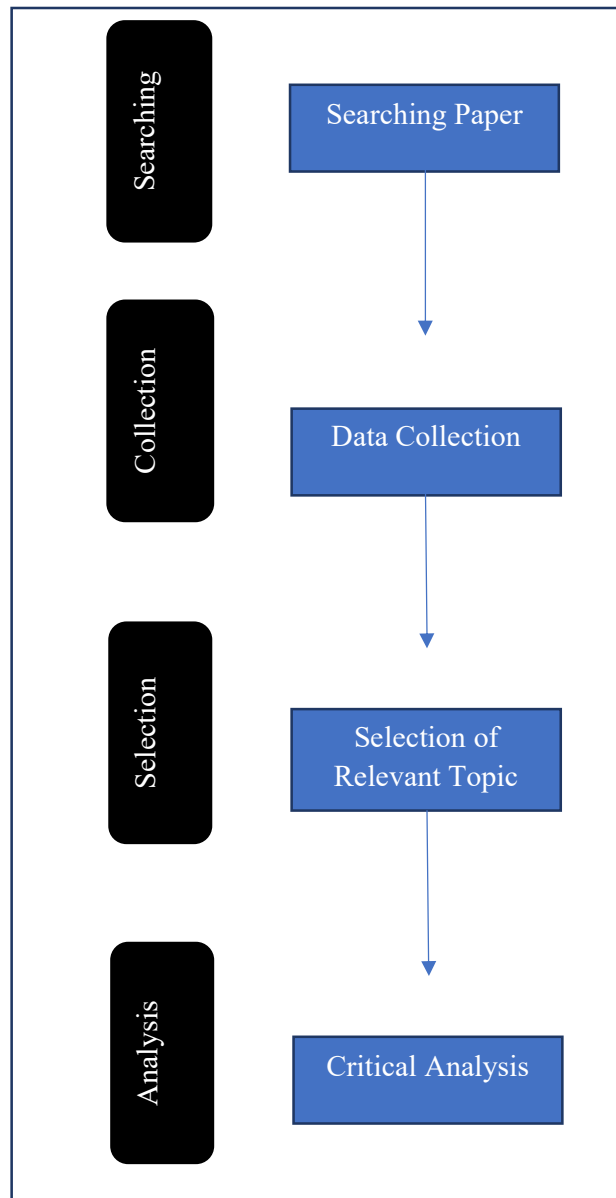


Fig. 4.0: Methodology Flowchart

i. Data Collection

This is the process where papers are extracted from electronic academic databases. The selection based on several keyword searches (e.g.: MIS,

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decision making). All these papers will put in several folders for further analysis.

ii. Selection of Relevant Topic

The next process involved selecting papers relevant to the topic discussion. The selected papers are put into one folder with further reading and understanding of the methods are conducted. This to ensure only crucial papers related to the objective in this project are selected.

iii. Critical Analysis (Obtaining Research Gap)

In the process, the information supply from papers is evaluated in detail. Each information is digested to obtain the strength and weaknesses of the papers.

IV. Discussion

The information provides by MIS need to be accurate and available when needed. It includes the reliability of the information supply to stakeholders. It is vital because each important decision from management may come from the information generated from MIS. Therefore, the credibility of data is essential to create a good MIS system.

Referring to the introduction, apart from people, data, business procedures, software, hardware are among the most important components of a management information system because tools like the MIS process computers can work well and effectively. It indirectly facilitates the work of analysing, storing and accessing operations as used in Asset Management Systems or SPAs. The SPA system covers all aspects of asset management and inventory based on the Asset Management Procedure Government (Treasury Circular No. 5 of 2007), Treasury Instructions and Circulars relating to the management of movable assets. The SPA system will assist users and system administrators to analyse asset acquisition through data, which includes detailed information on departmental assets such as registration numbers, purchase dates, asset names and so on and is entered into the system before all data is printed. typically, the resulting reports are based on monthly, quarterly or yearly earnings. The overall results can help management effectively communicate information and meet the target for the organization through meetings between divisions.

Each system acquired by the organization is usually managed by a team of executives comprising executives, system administrators, programmers, and other users. There is a need for a dedicated management information system team to ensure that the information management system operates effectively and at a reasonable cost and the team will act as a system consultant for the executive and staff line. The system team will work together to monitor and ensure that the management information system is working well for good decision making.

All the system provides information on the past, present, and project future and on related developments inside and outside the organization and then all information is

analysed for formulation as reports and can be presented by management with timely and appropriate information for decision making.

Every organization needs to know that if improper use of MIS in decision-making by many departments or universities will often result in academic program failures, ineffective budgeting, wasting resources, unsustainable workforce planning, poor staff motivation, and resource allocation.

The MIS process involving the process of collecting, processing, storing and transmitting relevant information to support management operations in any organization. Therefore, if management objectives having an unclear direction, due to insufficient data or information, it is not possible to produce the desired result that puts the companies in a good position.

Therefore, to address this problem, the management information system team should be well-funded to manage it properly and to ensure adequate MIS information. Also, proper training or training workshops should be provided to managers including secretaries at all levels to ensure appropriate and adequate MIS facilities in producing and disseminating information for better results in each organization and university.

Another key area needs to be observed to develop the effectiveness of MIS is the information quality area. To avoid "Garbage In Garbage Out (GIGO)," each dimension of information quality such as consistency and completeness is an essential process for efficient decision making. It is also important to be familiar with the model systems in use, cost, long-term savings, implementation time, required training, maintenance cost and a host of factors that will impact your ability to implement a new system if necessary. It will also provide the manager with a vantage point regarding the feasibility of bringing a new system online or whether an upgrade to the current system is the solution

V. Conclusion

The paper discussed key criteria for an effective MIS system. Several factors influence to produce effective MIS such as design process, customers and capturing business requirements. The studies also show the importance of staff knowledge in the MIS system to ensure the success of MIS implementation. On the other hand, difference challenges exist between private and public sectors. Although sharing the same goal, the nature of business and the stakeholders involved presented another level of challenges for the public. Therefore, understanding who will use the MIS system and environment to the system including process and people is another key element to design a good MIS. The proper study organization process in a particular sector is crucial before the implementation of MIS. The stakeholders (decision-makers) in numbers lead to a difficult decision need to be made such as important features that can put in the system. Lack of skills in IT may lead to the failure of implementing the MIS system although the system is great.

In conclusion, the use of management information systems can be practiced to organizations depending on the method of delivery used such as systematic and proper orientation recommendations. It is to ensure the management information

systems facilities used are appropriate and sufficient in producing and communicating information such as activity reports are monitored, monitored, handled and the information can be distributed to management, supervisors, employees, and clients for better decision-making and approval in each organization.

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