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Research Paper

REVIEW ON MANAGEMENT INFORMATION SYSTEMS (MIS) AND ITS ROLE IN DECISION MAKING

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ABSTRACT **This paper focuses on understanding the concept of MIS, the need for MIS, the advantages of MIS in an organization, the MIS model, decisions and the decision making system and majorly the role of MIS in decision making. It talks about MIS in brief considering the concept of MIS, the MIS model that is used by organizations, how MIS is beneficial, why is there a need of MIS in an organization. It then gives an overview of decisions and the decision making system which is necessary to understand the decision making process. Finally, the major focus of this paper is the role of MIS in decision making of an organization. How decisions are made in an organization using MIS, what challenges are faced by the organization in this process and a few recommendations to curb these challenges. It provides a brief understanding of why MIS improves decision making.**

KEYWORDS :Benefits of MIS, Decision making, MIS, MIS model, MIS concept, Need

INTRODUCTION

Management information systems(MIS) is an organized, diverse and automated information system that is concerned with the process of gathering ,storing and transferring relevant information to support the management operations in an organization. The data is distributed among the various departments in an organization. The processing of data takes place in various forms such as graphs, diagrams, charts, reports to generate accurate and relevant information for the management. MIS provides central storage of all the business information. MIS is used across all levels in an organization. There are different types of management information systems. This paper focuses on decision making information system.MIS plays a vital role in not only collecting and man-aging information, but also representing it in various formats useful for the management to make important organizational decisions.

MIS provides faster access to the required information which helps the organization to make effective and timely decisions regarding every aspect such as investments, employments, products, etc depending upon the organization. Decision making basically refers to choosing a certain line of action from among several alternatives. It is integral management that occurs in every level of management and in every function. The effectiveness of the organization depends upon the quality of decisions that informs its operation. Decision making is a major metric to determine the organizations success or failure. This paper focuses on understanding the need, benefits, types of MIS, the MIS model, decision making system and majorly the role of MIS in decision making of the organization.

II. NEED FOR MIS

Organizations found it difficult to manage the information as a whole, before computer technology bloomed. Developments in computer technology made it possible for the managers to easily gather, integrate, store and manage the information in the form they require depending upon their needs and timing. Information is used simultaneously by many people. The information needs to be current, accurate, concise, timely, complete, well presented and storable[1]. For organizational productivity, solely depending on personal computers is not reliable until it is used efficiently and effectively. Also, advanced technological systems for integrating and sorting the data can be costly unless the senior management provisions it to the staff. Thus, information systems came into picture.

Information system is a mechanism that ensures information is available to the managers as per their need and time. It provides relevant information for decision making. Management information is an important input at every level in the organization for decision making, planning, organizing,implementing, and monitoring and controlling[5].

Managers have to assimilate masses of data, convert that data into information, form conclusions about that information and make decisions leading to the achievement of business objectives. For an organization, information is as important resource as money, machinery and manpower. It is essential for the survival of the enterprise. Hence management information system plays a major role in managing information and making it easy for the managers to collect, integrate and assign the information and ensures effective and efficient decision making.

III. CONCEPT OF MIS

Information is a set of classified and interpreted data used in decision making and it has also been defined as “some tangible or intangible entity which serves to reduce uncertainty about future state or events” [5]. There are different levels of decision making, for which information can be described as:

1) source

2) data

3) inferences and predictions drawn from data

4) value and choices

5) action which involves course of action.[5]

Management information system has a purpose to meet the general information needs of all the managers in an organization or in some subunits of the organization. A subunit can be based on functional areas or can be viewed at management levels.

Considering the definition for MIS, one of the popular definition describes management information system (MIS) as "an organizational method of providing past, present and projected information related to internal operations and external intelligence. It supports the planning, control and operation functions of an organization by furnishing uniform information in the proper time frame to assist the decision makers" [5]. The information in MIS describes the firm or one of its major systems in terms of what has happened in the past, what is happening now and what is likely to happen in the future. The information is provided in the form of reports and outputs of mathematical simulations. There are two types of reports namely, periodic and special report. All managers use the information output as they make decisions to solve the firm’s

problems.

A management information system has also been defined as "an integrated user machine system for providing information to support operations, management and decision making functions in an organization. The system utilizes computers, manual procedures, models for analysis, planning, control and decision making, and a database" [5]. All these definitions give a concise understanding of MIS as a whole.

IV. BENEFITS OF MIS

MIS makes a major difference for the business organizations. It provides several benefits such as :

1) effective and efficient coordination between Departments

2) quick and reliable referencing

3) access to relevant data and documents

4) use of less labor

5) improvement in organizational and departmental techniques

6) management of day-to-day activities

7) day-to-day assistance in a Department and closer contact with the rest of the world.

8) provides a valuable time-saving benefit to the workforce

For an organization the most important factor is to efficient and effective work in minimum amount of time. MIS supports this aspect of gaining profit and ensures that employees do not have to collect data manually for filing and analysis. Instead, that information can be entered quickly and easily into a computer program. As the data is growing, it is becoming difficult for business analysts to analyze the data, hence MIS provides a platform for building programs to access the data in response to the queries by management. With faster access to needed information, managers can make better decisions about procedures, future directions, and developments by competitors, and make them more quickly.

V. THE MIS MODEL

This section describes how does a MIS model actually look like. The components of the MIS model consist of :

1) Database

2) Organizational decision maker

3) Report writing software

4) Mathematical model

The working of the MIS model starts with data and information coming from different sources. The data provided by accounting information system is stored in the database. The data and the information are entered from the environment. Data based information is sent to the report writing software for generating periodic and special reports , as well as to the mathematical model for simulation of the various aspects of the organization's operations. The output from the report writing software and the mathematical model is then sent to the people who are responsible for solving the problems. To solve the problem, effective decision making is required for productivity. There are decision makers which may or may not exist in the firm's environment. The environment might consist of other organizations to which the firm has collaborated such as suppliers, to from an Inter Organizational Information System(IOS). In such case, MIS supplies information to the other member of the IOS [5].

VI. DECISIONS AND THE DECISION MAKING SYSTEMS

Decision making systems :

This section talks about the decision making systems and its classification, and the types and nature of decisions. Decision making systems are based on the decision maker's or the manager's knowledge about the environment. They can be classified into two types :

1) Closed Decision Making Systems If the decision maker operates in a known environment then it is called as closed decision making. The conditions for the same are as follows :

a) The manager has a known set of decision alternatives with their outcomes fully in terms of values if implemente

b) The manager has a model, a method, rules where the decision alternatives can be generated, tested and ranke

c) The manager can choose one of the alternatives based on the goals and objectives. Example: Examination system to declare a pass and fail[4].

2) Open Decision Making Systems If the manager operates in an unknown environment then the decision-making is called as open decision making. The conditions for the same are as follows :

a) The decision maker dosen't know all the decision alternatives.

b) The outcome of the decision is also not known fully e. the knowledge of the outcome may be probabilistic one.

c) No method, rule or model is available to study and finalize one decision among the set of decision alternative.

d) It is difficult to decide objectives and goals. There- fore the decision maker reports to that decision where aspirations and desires meet. Example: Pricing a new product[4].

Decisions :

According to Haynes and Massie, a decision is a course of action which is consciously chosen for achieving a desired result.[4]. According to Trewatha and Newport, Decision making involves the selection of course of action from among two of more possible alternatives in order to arrive at a solution for a given problem.[4]. Considering the classification of decisions, there are classification based on the situation and their nature.

The types of decision on the basis of situation are based on the knowledge about the outcomes that are yet to take place. For a successful decision, the decision maker should be aware of the outcome that will take place once that decision is taken. In addition to that, if the decision maker has the full knowledge of the system then it is a situation of certainty. Contrastingly, if the decision maker has

partial or incomplete knowledge of the system, then its a risk situation. Lastly, if the decision maker has no knowledge of the system then it is a situation under uncertainty.

On the basis of nature, decisions can be classified as programmed decisions and non-programmed decisions.

1) Programmed decision: - If a decision is based on rules, methods or some guidelines then it is called as programmed decision. The programmed decision making can be delegated to a lower level in the management. Eg: If a stock level of an item is 200 number then a decision to raise purchase requisition for extra items in few numbers[4].

2) Non- programmed decision: - A decision which cannot be made using a rule or method is called as non programmed decisions. This decision making is non-deterministic and is handled by top management Eg. Stock level is 200[4].

VI. ROLE OF MIS IN DECISION MAKING

Decision - making is the process by which organizational members choose specific course of action out of several alternatives in response to opportunities and threats . The outcome of the decision making process either results in a good or a bad decision. A Good decision results in successful productivity of the organization and in the courses of actions that help an individual, group or organization to be effective, while a bad decision results in ineffective and inefficient choice of course of action thereby leading to poor or no productivity and overall loss of time, effort, finance and labour. Every organization grows, prospers or fails as a result of decisions made by its members. The success of decision-making is highly dependent partly on available information, and partly on the components of the process which are known as functions. For example, if managerial objectives are absent or unclear, probably due to inadequate information, there is no basis for a search[1]. Without the information, the search has no meaning because there will be no alternatives to compare search results, which will thereby yield an undesired result due to random choice of a particular course of action. According to Alabi the search could be through[1] :

1) Undirected viewing : There is a general exposure to information where the viewer has no specific purpose in mind and is randomly searching for information from the entire information pool.

2) Conditioned viewing : There is a directed exposure to information. Yet it does not involve active search to a more or less clearly identified area or type of information.

3) Informal search : This is a relatively limited and unstructured effort to obtain specific information for a specific purpose. The information wanted is actively sought.

4) Formal search : This is a deliberate effort, usually following a preestablished plan, procedure or methodology to secure specific information relating to a specific issue.

Simon (1984), a leading authority in management decision- making considers that decision making comprises four principal phases[2] :

1) Intelligence- searching the environment for conditions that calls for decision making.

2) Design- inventing, developing and analyzing possible courses of actions. This involves processes to understand the problem, to generate solutions and testing of solutions for feasibility.

3) Choice- selecting an alternative or course of action from those variables.

4) Review- assessing and analyzing all the past choices

MIS can be viewed in another way wherein it acts a means for transformation of data, which in the decision making process is used as information. The data is flooded in the MIS process which comes out in the form of information and this information is an input to the user processes. The data is processed into information for a specific purpose and it provides several alternatives of course of action for decision making, out of which one course of action is selected which is nothing but the decision taken.

For improvement in decision making using MIS, a relevant MIS strategy should be chosen and it should be ensured that the choice made is fully compatible with the system. Thus, time and money will be saved and the probability of selecting a wrong choice will decrease. Also, the selected MIS strategy should be compatible with the decisions made. That means there should be a common point between the decisions and the MIS strategy to be used by the organization.

According to Obi (2003) [5], MIS can monitor any disturbances in the system and hence it is useful for decision making. MIS gets the system in control by taking a particular course of action. It is also relevant in nonprogrammer decisions as it provides support by supplying information for the search, the analysis, the evaluation and the choice and implementation process of decision making[5].

Considering the various aspects of how MIS helps in decision making, another key factor here is selecting the individuals for decision making. MIS is a highly complex process which requires lot of caution. Thus, organizations should carefully select the individuals who will be controlling the systems. The more professional a person, the better it can handle decision making which thereby increases the probability of correct decisions and positive outcomes for the organization.

On another level, decision making also depends on the past work or historic information. This is where record keeping comes into picture. MIS plays a major role in record keeping of databases that can easily keep confidential and invaluable information. Security of information in the databases is ensured by the managers of the organization. In addition to that, databases provide a platform from where information can be retrieved. Hence, record keeping and database tools of MIS ensures that the decisions are taken viably and at the same time the businesses run smoothly without any interruption.

From the operations perspective, the operations of MIS heavily rely on systematic methods. This indicates that the decisions made by the organization are preplanned and in order which thus encourages objectivity during decision making[3]. Thus the systematic and orderly formula of operating is crucial and game changing for good decision making.

Jahangir [3] adds that the principles, strategies and modes of operation in MIS can be intelligently used by macroeconomists to draw a line between good and bad decisions. Once the line is drawn, good decisions are encouraged while the bad ones are sidelined and almost discarded. As a result, this ensures positivity in terms of decisions made by organizations which consequentially improves the decision making process.

From the fundamental perspective, a good number of MIS can

perform multiple tasks simultaneously. Multitasking is directly proportional to efficiency since several operations are performed simultaneously thereby increasing the efficiency. In context of decision making, it is seen that multitasking ensures that decisions are made more speedily as compared to those systems that handle one task at a time.

Despite the various advantages of MIS in decision making , there are a few challenges which need to be curbed. MIS has a dynamic nature resulting in difficulty for some organizations to keep up with the principles, strategies or even ideas. Also, MIS is non adaptable, calling for different decisions in different situations which is challenging. MIS requires expertise and is costly for some organizations. Lastly, MIS is a more of a science-oriented field while business is art-oriented. Hence for some organizations it becomes difficult for collaborating and finding a middle ground for the two. Although these challenges are not common for all organizations, there is a need to curb the challenges mentioned above.

To overcome these challenges, one of the things that an organization can adapt is a well defined decision making system which will provide a viable environment for MIS. Considering the cost, the higher management of the organization should come up with plans to manage the cost of MIS. Good decision makers should be chosen that can handle diverse decisions and can think differently and intellectually. The organizations should arrange seminars and teach the diverse and dynamic nature f MIS for better understanding, thereby helping their employees to improve their performance.

CONCLUSION

Management Information Systems provides accurate, timely, relevant and complete information necessary to facilitate decision making in an organization. It helps in planning, control and operational functions to be carried out effectively and efficiently. It provides a wide range of decision alternatives for the decision makers, enabling them to make their choice depending on the system and the situation. It ensures that the choice results in more often, a positive outcome. These are the major reasons why MIS is chosen by renowned organizations for decision making and for management of information.

MIS with all of its advantages has a few challenges that needs to be overcomed. Organizations should ensure top level management involvement for smooth functioning of the organization when it comes to MIS. Decision making inn such organizations would be faster and in line with the modern and efficient business practices. Business owners must learn to cope up with the ever changing trends in MIS and decision making, without which it will be very challenging to make positive progress in decision making. Finally, it is vital to remember that improvement in decision making is fundamentally meant to ensure customer satisfaction while businesses continue to flourish in success [3]. The MIS strategies should be adopted as per the requirement and should aim to achieve the business goals.

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