

# **THE ROLE OF MANAGEMENT INFORMATION SYSTEMS IN DECISION MAKING PROCESS IN NIGERIAN UNIVERSITIES**

**By**

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## **Abstract**

***This study investigated the role of Management Information Systems (MIS) in decision-making in Nigerian Universities. In this study, it is expected that Management Information Systems will assist the universities in decision making process on various issues in their management operations. To this end, it is optimistic that efforts will be made by the universities in the areas of the acquisition and use of computers in information processing, computer literacy, establishment of computer services units among others. It is also recommended that the management information system units should be adequately financed and maintained to ensure a free flow of information and adequate use of management information system in decision-making on short-term and long-term planning as well as budgeting. Finally, 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,***

***Keywords: The Role, Management Information Systems (MIS), Decision Making Process, Nigerian Universities***

## **Introduction**

Information has always played a very important part in human life. However, in the mid-20 century, the role of information increased immeasurably as a result of social progress and the vigorous development in science and technology. Thus, the pace of change brought by new technologies has had a significant effect on the way people live, work, and play worldwide.

New and emerging technologies challenge the traditional process of teaching and learning, and the way education is managed. Information technology, while an important area of study in its own right, is having a major impact across all curriculum areas. Easy worldwide communication provides access to a vast array of data, challenging assimilation and assessment skills. Accordingly, the stored information must then be recalled and distributed for the use of an organization leadership and top management as well as mid-level managers to take effective long term (strategic) and short term (Tactical)

decision-making. MIS is deemed to be a system which provides organizations top management and, even lower level management, with appropriate information based on data from both internal and external sources, to allow them to make effective and timely decisions that best achieve their organization goals and satisfy stakeholder requirements (Argyris, 1971),

Currently, organizations and institutions of learning are in the race for enhancing their capability in order to survive in the competitions of the new century global market and advancement in learning. Therefore, organizations are attempting to advance their agility level by improving the decision making process to be more efficient and highly effective to meet the successive fluctuations of the market and demands in education. In an effort to achieve this, many modern organizations and institutions of learning, either mid or large sized, have concerned with a cycle of progressive investments in and adopted new management information systems components. During last decade, a high percentage of financial organizations frequently used Management Information Systems to facilitate the provision of services; and that the speed of the adoption is expected to grow further as the technology expands. Whitten et al. (2004), stated that "information is an arrangement of people, data, process, and information technology that interact to collect, process, store and provide as output the information needed to support an organization," which indicates that information system is an arrangement of groups, data, processes and technology that act together to accumulate, process, store and provide information output needed to enhance and speed up the process of decision making.

However, the role of information in decision making cannot be overemphasized. Effective decision making demands accurate, timely and relevant information. According to Aminu (1986), information resource is one of the major issues and indices of university planning. Where the relevant information required for planning are not available at the appropriate time, there is bound to be poor planning, inappropriate decision making, poor priority of needs, defective programming or scheduling of activities. Hence, the university system will not be efficient and effective in its operation. Poor management information system has been identified as a bottleneck in the successful management of universities in Nigeria (NUC, 1987).

Invariably, the information needed for effective decision making in universities cannot be provided from people's often-deficient memories. Moreover, it is impossible to plan activities over a long period of time effectively without effective information. Information is supposed to be created through the discipline of enquiry and research with peer moderation to ensure validity and societal influence. The knowledge to be created or established must be stored to ensure continuity of reason, and adaptive academic pursuit. The stored information must then be recalled at will and be disseminated for use in taking decisions, which are in the interest of the society at large. According to Knight

(2005), there are mechanisms that drive continuous investment in bricks and mortar education, and deny the expenditures that 'would establish virtual universities by means of telecommunication networks. Even if they wanted to, administrators are restricted in their freedom to move in this direction by traditional funding formulae. Promotion and tenure procedures are seen as barriers in the universities. In many institutions, the primary requirements for promotion and for tenure procedures are publications in traditional journals and teaching in traditional classrooms.

A major federal government contribution is its booster plan to computerized information in the unity schools (Ekwere, 1990). With these improvements, the information resource still presents a major issue in educational management in the country. Particularly with the universities, one wonders the essence of their acquiring communication gadgets and the scope of their applications, Studies have revealed that in most sophisticated organization both manual and computer-based systems are used; in fact, both are held to be complementary in information handling procedures (Sanders, 1983). Obi (2003), Fabunmi (2003) and Adebayo (2007) had stressed the need for Management Information Systems in making effective decisions in educational institutions. In recognition of the important role of information to the survival of the university system, the NUC introduced the computerized management information system to the Nigerian universities. The MIS idea was conceived during a conference jointly organized by NUC and the British Council in Kaduna in 1987. In conjunction with Overseas Development Administration (ODA), the project took off in 1989 in four pilot universities, namely Federal University of Technology, Minna, University of Ilorin, University of Lagos, and University of Nigeria, Nsukka.

The importance of MIS in decision making can be realized from its aims and objectives. The aim of MIS is to develop a viable system to maximize the effective use of modern data approach to management practices. It is also aimed at assisting managers and operating personnel, to produce timely and accurate information not only to decide present and future operations, but also to pinpoint potential problems that need to be rectified. According to NUC (1987), the objectives of MIS project in the universities are:

- a. To standardize the system of obtaining reports and statistical information from the various universities on: students, staff, financial matters, and library.
- b. To record such information on diskettes or tapes at the universities and send to NUC for budgeting, information storage, analysis and retrieval purposes.
- c. To ensure that such information are accurate and timely.
- d. To organize information for planning, budgeting and decision making.
- e. To help the universities put in place effective management system and improve utilization of resources.

Basically, with these objectives, it is expected that management information system will assist the Nigerian universities in decision making on various issues in their operations. To this end, efforts are made by the universities in the areas of the acquisition and use of computers in information processing, computer literacy, establishment of computer services units among others. Experience has shown that where MIS facilities are readily available in Nigerian universities, they are not effectively used to take decisions on long and short term planning issues. In a university organization where information cannot be stored or retrieved as at when needed, it becomes difficult or impossible to take accurate and timely decisions on long and short term planning such as: expenditure estimates, revenue estimate, cost of each programme of the universities and the like.

More so, ineffective use of management information system in decision making by some of the universities usually result in failure of academic programmes, ineffective budgeting, wastage of resources, inaccurate projection of students' enrolment and manpower needs, poor motivation of staff, poor resource allocation among others. It appears the Federal universities use management information system to take decisions on short-term planning, long-term planning and budgeting more than State universities. It also appears that there is undue concentration on low data processing application particularly in the accounting area. This seems to slow down activities and make decision outcome longer than necessary.

### **Relevance of Management Information System to Management**

Management Information System (MIS) is generally thought of as an integrated user-machine providing information to support operations, management and decision making to effectively function in an institution of learning and organization. It is indeed a conveyor belt for appropriate high quality information from its generation to its users. Every organization's management makes decision, prepare, plans, and controls activities by using information which is obtained from two major sources namely: formal and informal sources such as face-to-face conversations e.g. telephone calls, social contacts and so on. Planning and decision making have primarily been management tasks that occur at every level of management. Although, the type of planning and decision making differs, it cut across all levels. The emergence of MIS has led to new vistas in organizations especially for their information management needs. The fulcrum upon which an effective MIS oscillates is a carefully conceived, designed, and executed database. This is the heart of every MIS in any organization's environment. Some of the characteristics of MIS will include:

- an information focus, designed for managers in an organization;
- structured information flow;
- an integration of data processing; and
- an inquiry and report generation.

The relevance of MIS becomes rewarding when viewed against the backdrop of the accelerated rate of change in customer demands and relationships as well as the complex working environment in most organizations, whether big or small.

### **MIS and Decision-Making Process**

Management Information System (MIS) is basically concerned with the process of collecting, processing, storing and transmitting relevant information to support the management operations in any organization. Thus, the success of decision-making process, which is the heart of administrative process, is highly dependent partly on available information, and partly on the functions that are the components of the process. For example, if managerial objectives are absent or unclear, probably due to inadequate information, there is no basis for a search. Without information obtained through a search, there are no alternatives to compare, and without a comparison of alternatives the choice of a particular course of action is unlikely to yield the desired result. According to Alabi (1997) the search could be through'.

- i. Undirected viewing—this involves a general exposure to information. The search could be that the viewer has no specific purpose in mind.
- ii. Conditioned viewing—the directed exposure does not involve active search to a more or less clearly identified area or type of information.
- iii. Informal search—this is a relatively limited and unstructured effort to obtain specific information for a specific purpose. The information wanted is actively sought.
- iv. Formal search—this is a deliberate effort, usually following a pre-established plan, procedure or methodology to secure specific information relating to a specific issue.

It is pertinent to note that the existence of alternatives, based on relevant information, is a necessary condition for making a decision. This view was buttressed by Ogunsaju (1990), when he pointed out that education decision must be based upon sound and well informed evidence that are highly intelligent, rather than those that are weak and baseless. For effective decisions to evolve in any organization, therefore, receiving information from, and supplying information to, people within the system are a necessity. The information so communicated must be accurate and up-to-date to cope with uncertainty. Uncertainty is the condition in which the manager has little information relevant to a decision and there is no way to predict the outcome of the decision.

In corroborating the important role of information in decision-making, Sisodia (1992) advanced the notion of decision-making as a total process involving discernible and separate activities. The first of such activities is information gathering, which is followed by evaluation of alternatives and finally a choice. The first task of the manager is to design and manage the flow of information in an organization, in ways that would improve productivity and decision-

making. Information must be collected, stored, and synthesized in such a way that it will answer important operating and strategic questions. Adesina (1988) corroborated this by elucidating that the amount of information available to a decision-making group affects the product of that group. Hence, an administrator must be concerned with facilitating the free flow of information upward, downward and laterally within the organization. To do this successfully, the decisions should be based on accurate information obtainable with the operation of an effective management information system.

According to Obi (2003), management information system is useful in the area of decision making as it can monitor by itself disturbances in a system, determine a course of action and take action to get the system in control. It is also relevant in non-programmed decisions as it provides support by supplying information for the search, the analysis, the evaluation and the choice and implementation process of decision making. Fabunmi (2003) also maintains that MIS is useful in making decisions to solve many of the problems facing educational institutions. Such problems include poor programme scheduling, poor estimate of staff requirements, lack of accurate information on students, personnel and facilities, piling-up of administrative matters, wastage of spaces, lack of feasible budget estimates among others, Adebayo (2007) stressed the need for MIS in decision making as it provides information that is needed for better decision making on the issues affecting the organization regarding human and material resources.

### **Management Information Systems**

One approach by which institutions of higher learning or organizations can utilize computing capability is through the development of management information system. There is no universally accepted definition of MIS and those that exist reflect the emphasis and perhaps prejudices of their authors. However, the term "management information system" can be seen as a database management system tailored to the needs of managers or decision makers in an organization. Management information system is a system using formalized procedures to provide management at all levels in all functions with appropriate information based on data from both internal and external sources, to enable them to make timely and effective decisions for planning, directing and controlling the activities for which they are responsible (Argyris, 1991).

It will be noted from the above definition that the emphasis is on the uses to which the information is put. Planning, directing and controlling are the essential ingredients for "management". In essence, the processing of data into information and communicating the resulting information to the user is the key function of MIS. It should, therefore, be noted that MIS exist in organizations in order to help them achieve objectives, to plan and control their processes and operations, to help deal with uncertainty, and to help in adapting to change or, indeed, initiating change. The question one may then ask is: What are the management functions that management information

system facilitates and what are the various decision levels at which management information can be put into use? It is through a thorough answer to this question that the importance of MIS in management can be realized. However, before we can examine management functions, it is essential we discuss organization processes and structures.

### **The Information Management Concept**

Information management has been defined as the organization-wide capability of creating, maintaining, retrieving and making immediately available the right information, in the right place, at the right time, in hands of the right people, at the lowest cost, in the best media, for use in decision making (Langemo, 1980). In the same vein, Best (1988) defines information management as the economic, efficient and effective co-ordination of the production, control, storage and retrieval and dissemination of information from external and internal sources, in order to improve the performance of the organization. This definition is narrow in perspective in that it does not take care of managing the characteristics of information itself (content, ownership, representation and equality), irrespective of the storage medium, equipment that processes it and the system that employs it. In summary, therefore, the key issue involved in information management is managing information in an institution of learning and organization using modern information technologies.

### **The Information Systems Concept**

The rapid evolution of computer technology is expanding man's desire to obtain computer assistance in solving more and more complex problems: problems which were considered solely in the domain of man's intuitive and judgmental processes, particularly in organizations, a few years ago. Information systems are becoming of ever greater interest in progressive and dynamic organizations. The need to obtain access conveniently, quickly and economically makes it imperative to devise procedures for the creation, management and utilization of databases in organizations. Management information and information systems, in particular those related to effective decision-making processes in an organization, i.e. MIS, are regarded as valuable organizational resources. Simply put, an information system is a system for accepting data/information as a raw material and through one or more transmutation processes, generating information as a product. It comprises the following functional elements which relate to the organization and its environments:

- Perception - initial entry of data whether captured or generated, into the organization;
- Recording - physical capture of data;
- Processing - transformation according to the "specific" needs of the organization;
- Transmission - the flows which occur in an information system;

- Storage - presupposes some expected future use;
- Retrieval - search for recorded data;
- Presentation - reporting, communication; and
- Decision making - a controversial inclusion, except to the extent that the information system engages in decision making that concerns itself.

Although critics may be right to object to the inclusion of the last item, it has to be noted that relationships between the processes of the information system and decision making are close enough to raise the question of including decision making as part of the information function elements specifically designed for an organization. Whatever way one looks at an information system, it is generally expected to provide not only a confrontation between the user and information, but also, the interaction required for relevant and timely decision making. Its main purpose is to satisfy users' information needs. Approaching information systems in an organizational content shows that it is a subsystem within an organizational system which is a "living and open" system. Academics interested in information works and information practitioners alike have defined information systems in various ways but with basic ideas of people, information technology and procedures which enable the facilitation of the .generation, use and transfer of information.

### **Information Explosion and its Management**

Information explosion is a term that describes the rapidly increasing amount of published information and the effects of this abundance of data (Wikipedia, 2005). As the amount of available data grows, the problem of managing the information becomes more difficult, which can lead to information overload. The idea of "Information Overload" has been discussed for decades, but never before has it seemed so relevant. According to market research firm IDC, by 2011 the digital universe will be 10 times the size it was in 2006. IDC forecasted that the amount of digital information we generate will exceed our ability to store it this year. This situation is despite amazing improvements (greater than 100% per year currently) in disk density and capacity over the last 50 years.

Over the last 50 years, the computer and communications revolution has changed radically the way many organizations do their business. According to Charles (2000), we are now living in a wired world. Information is growing exponentially. For instance let us take the examples of "Chemical Abstracts" and "Mathematical Reviews". During 1995, 562,355 Papers and 3,620 Books were abstracted which were published in total 155,910 pages in Chemical abstracts. But, during 2007, it increased to 816,778 Papers and 4,526 Books abstracts published in total 391,079 pages. Digital futures are considered to be the new answer for the information age. Computers and access to the internet and local resources, together with generic computing applications, have enabled the user to access information from anywhere in the world.

The management of information in the 21st century is beyond the capacity of a single individual. The amount of information that we have around is



overwhelming. The management of information therefore must move out of the realm of the individual and shift into the realm of networked groups. The world is moving towards internet applications. Internet applications require advanced networks. That is, these applications will not run across commercial Internet connections. Internet applications require enhanced networking functionality, such as high bandwidth, low latency (delay), or multicast not available on our commercial Internet connections. Internet is about everything we do in higher education (Olorunsola, 1997).

### **The Nature of Planning and Decision Making Process and the Available Techniques**

Planning and decision making process have rightly been called the primary management tasks and these tasks occur at every level of management in Nigerian universities, although naturally the type of planning and decision making process will vary between the levels. Planning is the process of deciding in advance what is to be done and how it is to be done. The planning process results in plans which are predetermined courses of action that reflect organizational objectives and these plans are implemented by decisions and actions. Thus, effective planning and decision making are inextricably linked, for without decisions and actions, the planning process is a sterile exercise. In order to provide appropriate information, management information system designers must be aware of the types of decisions at the various levels of the organization. A useful classification is that given by H.A. Simon who classified decision making into programmed and non-programmed. Programmed decisions are those that are routine and repetitive and where decision rules are known.

Conversely, non-programmed decisions are novel and unstructured and the nature of the problem and decision rules are complex and little understood. It follows from these brief descriptions that radically different information and procedures are required for the different decision types, which have obvious implication for MIS design. To create value from information, changes in decision behavior must result and consequently there must be a decision focus to the MIS. This means that MIS must be designed with due regard to the types of decisions, how decisions are taken, how the decision makers relate to the organization, the nature of the organization, its environment and so on. Acceptance and understanding of this emphasis by both managers and information professionals is the primary requisite to effective management information system design.

### **The Importance of Management Information System to management**

In all but the smallest organizations management rarely observe operations directly. They attempt to make decisions, prepare plans and control activities by using information which they obtain from formal sources - for example, the university's MIS -and also by informal means such as face-to-face conversations, telephone calls, through social contacts and so on. A

management information system is generally thought of as an integrated, user-machine system providing information to support operations, management and decision-making functions in an organization. As a matter of fact, an MIS is a special-purpose system useful for management in an organization. MIS is an accessible and rapid conveyor belt for appropriate high quality information from its generation to its users. The heart of an effective MIS, therefore, is a carefully conceived, designed and executed database. Its level corresponds to adaptive decisions. The characteristics of MIS in practice include:

- An information focus, designed for managers in an organization;
- Structured information flow;
- An integration of data processing jobs by business function, such as production of MIS, personnel MIS and so on; and
- Inquiry and report generation, usually with a database.

The MIS era has eventually contributed a new level of needed management information. The increasing interest in MIS had led to much activity in developing techniques and software for data management. However, it should be noted that the new thrust in MIS is on the uses to which the information is put and not how it is processed. The emphasis is on managing the information as a resource, which is important, and not on the intermediate processing stage. Managements are faced with an accelerating rate of change and an ever more complex environment.

### **Problems with Management Information System**

There is abundant evidence from numerous surveys conducted in developed countries, particularly in the UK and USA, that existing MIS, often using advanced computer equipment, have had relatively little success in providing management with the information it needs. Reasons discovered include the following:

- Lack of management involvement with the design of the MIS;
- Narrow or inappropriate emphasis of the computer system;
- Undue concentration on low-level data processing applications particularly in the accounting area;
- Poor appreciation by information specialists of management's true information requirements and of organizational problems; and
- Lack of top management support.

To be successful, an MIS must be designed and operated with due regard to institutions, organizational and behavioral principles as well as technical factors. Management must be informed enough to make an effective contribution to system design, and information specialists (including systems analysts, accountants and operations researchers) must become more aware of managerial functions and needs so that, jointly, more effective MIS are developed. Management do not always know what information they need and information professionals often do not know enough about management in order to produce relevant information for the managers they serve. There is no

doubt that better communication between management and information professionals and a wider knowledge by both groups of MIS principles would greatly facilitate the task of developing relevant and appropriate information systems. It should be noted, however, that there is no simple checklist of essential features which, if followed, will automatically produce the perfect MIS. What is required is an awareness and understanding of key principles and functions so that the design, implementation and operation of the MIS is the result of informed decisions and judgment rather than haphazard development without regard to real institutional and organizational requirements.

## **Conclusion**

Basically from the finding of this study, in conclusion it is glaring that management information system is the lifeblood of any organization. Both public and private sectors must be committed to seeking formal or organized information before taking decisions. Management problems should therefore be provided with specific answers through computer simulations and gaming techniques in the university setting. Also with the current trend in the Nigerian university those in the helm of affairs must be careful, as they can become inundated with only marginally relevant facts rather than be presented with concrete and absolutely useful information. This situation can be avoided where a systematic and functional management information system unit is put in place for effective decision making process.

Furthermore, 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.

## **Recommendations**

In the light of the study; the following recommendations are considered as follows:

- i. Management information system should be considered possible but only with dedicated staff resources.
- ii. The management information system units should be adequately financed and maintained to ensure a free flow of information and adequate use of management information system in decision-making on short-term and long-term planning as well as budgeting.
- iii. Management information system enables executive support.
- iv. Education and effective training of university's staff should be considered very vital.
- v. Openness and mutual trust should be built appropriately for effective feedback and continuous improvement.
- vi. A strong collaboration should be maintained between system staff and other stakeholders,
- vii. Information flow should be considered very essential in the university environment,

- viii. Management information system in the university setting should consider planning, decision making process and service standards very important for any progress in the Nigerian universities.

Finally, adequate information technology must be properly spelt out so that adequate attention can be given to all stakeholders to understand the relevance of information systems in aiding effective and efficient decision making in the organization.

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