Use of Management Information System for Operation and Control in Educational Management.

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Abstract: *This study investigated management information system useful to operation and control in educational management in Federal University of Oye-Ekiti. It revealed that there exist a significant relationship between the use of management information system and dissemination of information to support decision making in Federal University of Oye-Ekiti, Nigeria. Further studies affirm that management information system has capacity to enhance educational planning in Federal University of Oye-Ekiti. However, it should be noted, that there is need for the university to trained staff in the ICT department on sufficient knowledge on cyber fraud that would help to address server protection, server hacking, server confidentiality, e-payment transaction failures and complicated online application portal difficulties. The use of management information system in educational management has rapidly increased due to its efficiency and effectiveness. School managers who used to spend large amount of time in solving complex allocation problems (e.g., staff allocation, resource allocation, timetabling) and monitoring the school operations have now better options due to enhanced technology. Information technologies facilitate the decentralization of work tasks and their coordination in an interactive network of communication in real time. They allow for greater flexibility and networking that emphasizes interdependence, interaction, and constant adaptation to an ever-changing environment.*

Keywords: Management Information System (MIS), Information System, operation, control, educational management, Federal University of Oye-Ekiti.

1.0 Introduction

Every aspect of management in the modern age relies heavily on information to thrive. Nothing moves without information and it is generally believed that information is power and that he who has it has power. It is an important resource needed to develop other resources. Changing circumstances and environments have necessitated the need for the proper dissemination of information at various levels of management. The development and use of management information systems (MIS) is a modern phenomenon concerned with the use of appropriate information that will lead to better planning, better decision making and better results.

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. A management information system is generally thought of as an integrated, user-machine system providing information to support operations, management control and decision-making functions in an organization

Management Information System (MIS) is a computer based system used by educational managers for planning, organizing, executing, decision making, monitoring, control and evaluation of their operations efficiently. MIS Facilitates effective communication. MIS refers to a system that uses the information required by the organization's management

at every level in making operational, tactical, and strategic decisions. Its main objective is to design and implement procedures, processes, and routines that provide suitably detailed reports in an accurate, consistent, and timely manner.

A Management Information System (MIS) is a subset of the overall internal control of a business covering the application of people, documents, technologies, and procedures by management accountants to solve business problems such as costing a product, service or a business-wide strategy. Management Information Systems are distinct from regular information systems in that they are used to analyze other information systems applied in operational activities in the organization.

Management information systems (MIS) are information systems which are interconnected mechanisms or apparatuses that are used to gather, process, analyse, accumulate and readily distribute information that is vital for management functions, processes and decision-making. In the context of management, these processes will include planning, organising and controlling computer software that is used to retrieve data as well as store it in a conveniently accessible form.

Introduction of management information systems (MIS) to schools have caused significant changes in roles and working styles of managers (Telem, 2009). School management information systems have changed school management in the areas of leadership, decision making, workload, human resource management, communication, responsibility and

planning (Gurr, 2010). Strategically school management information systems help the manager in determining the aims of the school, making long term plans, distributing resources, and forming educational methods of future, determining performances of lecturers, teachers and success of the school (Telem & Buvitski, 2015). In this way, school management information systems can also be used as a tool to initiate and use educational leadership of the manager (Telem, 2009).

School managers can make more efficient decisions when they get correct and up-to-date information by school management information systems (Christopher, 2013). Decision making is the heart of educational management. Daily, problematic conditions that require decision making are based on the complicated and unexpected nature of school environment. For this reason, as a problem solver, the educational manager has to gather and analyze information continuously (Perez &Uline, 2013). In addition, managers have been required to make more decisions in short times because of the increasing expectations from the educational system (Christopher, 2013).

Moreover, decision making has been faster, more frequent and more complicated in schools of today. In order to make decisions under these conditions, gathering data that is continuous, up-to-date and that can be accessed ontime and analyzing and using this data is an obligation (Gentry, 2015). Success of school development studies are mostly based on data based decision making. However school managers are not able to use the data efficiently in this aspect (Gentry, 2015).

School management information systems provide information and various reports from the database in order to make decisions in line with the aims of the school and facilitate controlling of the activities to achieve the aims (Christopher, 2013). Information technology helps the manager to access, manage and report the information quickly and easily. While telecommunication nets provide the manager with wide resources of information that can be used in problem solving, written communication has been grown richer by means of word processors and e-mails (Perez & Uline, 2013).

MIS is perceived as a subset of the overall planning and control activity covering the application of human, technologies and producers of the organization. As organization grows, MIS allow information to move between functional area and department instantly, reducing need for face to face communication among employee thus increasing the responsiveness of the organization. Information system form an integral part of modern organization and business and are designed to support management activities, in particular better decision making by using intellectual

process strategy generation through MIS designing and through analytical usability of information in organization.

Management Information System are utilised by universities in numerous processes such as student registration, grading of results, printing facilities, as well as administrative functions such as internal material procurement or checking in of staff members and students at points of entry. Information systems, in turn, can be understood as a group of interrelated components that collect, process, store and disseminate information to support decision making and managerial control (De Oliveira, de Vasconcelos, Queiroz, Queiroz, &Hékis, 2011). This paper analyzed the use of management information system (MIS) for operation and control in educational management in Nigeria. This paper is divided into six sections, the first section is the introduction, the second section is the review of related literature, the third section is management information system and operation and control in educational management, the fourth section is management information system and decision making in educational management, the fifth section is management information system and planning in educational management and the sixth and last section is conclusion and recommendations.

2.0 Review of Related Literature

Researches in various countries confirm that school management information systems increase organizational and managerial effectiveness. Other studies done with American school managers, Hedberg, Harper, Bloch and College (2012) stated that efficiency has increased in decision making at schools where school management information systems are used. In his study where Gurr (2010) examined effects of school management information systems on working of primary school managers in Australia, managers stated that use of school management information systems has introduced them information technologies and the facilities, lessened their workload and made management process more efficient, helped them use time more efficiently, made teachers feel themselves more important, made them and the teachers wish to improve themselves more, made important changes in education and teaching, and increased the quality of in-school communication. In their study with school managers, Telem and Buvitski (2015) found that school managers believed that school management information systems lead to important changes at school. According to school managers, this application has increased school standards, helped decisions on the level of control and strategy, increased the quality of teaching programs, facilitated student-teacher interaction, increased the coordination between teachers, facilitated systematic and continuous information transfer to parents, and increased communication with other institutions and the central organization. In his study where Gurr (2010) examined effects of information systems on school managers

of local schools, he determined that information systems have largely changed roles of school managers. Managers stated that a manager who does not use the information systems is not able to achieve his duties sufficiently anymore. Lastly, Anderson and Dexter (2015) in their studies determined that technology leadership of school managers is more important than their background in the efficient use of technology at schools.

Universities around the world are facing the need to adapt to a rapidly changing educational and social landscape, in which technology is both the main cause of change and a tool for dealing with the change (Shoham & Perry, 2009). Management information systems are basically an integrated user machine system for input and output of data, processing of information and support for operations. The major purpose of an information system is to convert data into information. The system utilises computer hardware and software, manual procedures, models or analysis, planning, control and decision making and database (Ramachandra & Srinivas, 2012). Information is a crucial resource that is pivotal to the wellbeing and functioning of organisations. Information is defined as data that has been processed or has gone through a process of value addition from its raw state.

Management uses different kinds of information in all kinds of planning. However, it uses the information in the implementation of decisions, rationalizing the guidance process, identifying the problems of an organization, and drawing remedies for the organization. In addition, management uses information to measure performance in various activities of the organization. Therefore, this contributes to an increase in its ability to predict the movements of its competitors and draw plans in solving and overcoming them. From this point, management is associated with information systems management (MIS) in the decision making process of educational institutions such as schools, universities, and colleges. These institutions were able to perform both educational and technical operations in an easy and accessible manner. MIS can also assist workers in the field of education at all levels in contributing to the development of educational structures. A typical management information system for educational management support planning, control, analysis, operation and decision making (see Figure 1.0)

Figure 1.0: Pyramid Structure of MIS in Educational Management

Frenzel & Frenzel (2014), believed management information systems provide a focused view of information flow as it develops during the course of business activities. Information dissemination throughout an organisation is critical for the completion of tasks, activities and for providing means or a basis for formulating decisions. Labour reporting programs, inventory transaction reports, sales analyses, and purchase order systems are some of the many MIS systems (Clark, Jones & Armstrong, 2007). MIS's are utilised by universities in numerous processes such as student registration, grading of results, printing facilities, as well as administrative functions such as internal material procurement or checking in of staff members and students at points of entry. Information systems, in turn, can be understood as a group of interrelated components that collect, process, store and disseminate information to support decision making and managerial control (De Oliveira, de Vasconcelos, Queiroz, Queiroz, &Hékis, 2011). Shoham & Perry (2009) articulate that the role of technology in the organizations is complex and significant both as a creator of change and as a tool for dealing with change, sometimes simultaneously. The use of MIS allows for simpler processes, and as de Oliveira *et al.* (2011) notes, institutions are resorting to technology to enhance and simplify information management. Based on their study on information systems and supply chain management in hotels, Kaya & Azaltun (2012) found that communication and information sharing among members of the supply chain provides for more effective decisions. By ensuring more effective communication and assimilation of information in an organisation, managers can make more accurate and well informed decisions for their respective departments. According to Ramachandra & Srinivas (2012), MIS plays a vital role in the management, administration and operations of an organization suggesting that the benefits of using MIS in an organisation include, improving organisational effectiveness, ensuring efficient and effective use of resources, promoting proactive business management, and the development of a learning organisation.

Johnson & Johnson (2013) in their study of a Sri Lankan open university, suggest that MIS should improve university communication with applicants, students, and alumni, which would also make documentation and database maintenance more efficient. In a study on the impact of MIS in the Department of Engineering in a college, Ramachandra & Srinivas (2012) established the following as reasons for applying MIS in the college:
• The maintaining of attendance of all the students of the department
• Calculation of average internal assessment marks of all the students of the department.
• Calculation of percentage of attendance of all the students of the department.
• To sort out the students names who have shortage of attendance.
• To obtain details of the entire faculty in the department handling various subjects for different sections in Undergraduate and Postgraduate courses.
• Calculation of average internal assessment marks of all the students of the department

Nigerian Universities has experienced a significant increase in student enrolment in its tertiary institutions since the advent of internet technology, leading to universities decision to incorporate MIS to accommodate the implications of such growth. A key part of and MIS strategy is to leverage information systems to automate and improve operations, to strengthen management controls, and to enable significant growth (Kesner & Russell, 2004). The use of management information system encourage decentralisation, thereby strengthening management controls. The use of MIS also means cost benefits, time-saving and data can easily be accessed and analysed without time consuming manipulation and processing (Pathak, 2011). To this end this study aimed to establish the operational impact of MIS, as well as its perceived benefits and challenges educational management in Nigeria.

3.0 The use of management information system for operation and control in educational management

Zain, Atan, and Idrus (2014) investigated the impact of ICT on management practices in smart schools in Malaysia. Their analysis revealed some positive changes including the enrichment of ICT culture in schools, better accessibility to information, more efficient administration, and a higher utilization of school resources. The challenges encountered by the participant schools were time constraints, higher administrative costs, negative acceptance/support from untrained staff, abuse of the ICT facilities, and problems related to the imposed rigid procedural requirements.

Reduction in workload, beneficial impact on time management, and improvement in the quality of reports have been highlighted as major impact of MIS on school administration and management. Some studies show that, as staff in schools have acquired and developed ICT skills and confidence in using the technologies; they have experienced a reduction in some aspects of their workload (Castro and Alemin, 2011).

Negla (2014) claimed that ICT use was valued by senior management in developing school systems for administration and easing management tasks. Gilbert, (2017) found that staff of his selected schools believed that use of technologies had made administrative work easier with regard to accounts, attendance data, and the sharing of confidential information. In other words, school management information systems increase effectiveness and efficiency by saving time and facilitating development of alternative solutions for sophisticated problems.

Nisar, Munir and Shad (2011) established that, ICT did help address workload issues for some staff members, particularly those who were confident in its use. The staff perceived benefits in managing, storing, and maintaining information and other work such as preparing reports. However, some staff reported that it took longer to complete some of their administrative tasks. At the personal level, a lack of confidence or skills hindered progress, while at the school level, the absence of an ICT strategy that addressed workload explicitly and ineffective networks were significant negative factors. Positive factors in addressing workload issues were identified as good leadership, appropriate training, technical support, and effective networks.

Demir (2016) surveyed 98 elementary school principals in Turkey to explore their perceptions about MIS and their use in primary schools' management. The study indicated that although technologic infrastructures of elementary schools were insufficient, MIS had an important contribution to school management. Demir (2016) suggested that school managers should be encouraged to use information systems and they must believe that data are valuable sources for decision making and that the MIS back up the implementation of educational reforms.

4.0 The Use of management information system for decision making in educational management

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 (Ajayi, Omiran and Fadekemi, 2007).

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 organizations. Thus, the success of decision-making, 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 where. 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.

Decision Support Systems are Information system that assist managers to perform decision-making activities. It is a software-based system designed to help decision makers

with providing easy data flow and useful information from raw data, documents, personal knowledge, and/or business models to identify and solve problems and make decisions.

Integrated management Information System (MIS) supports the process of providing information to handle managerial operations and decision-making process in an organization (Ajayi and Omirin, 2007). The continuous demand of organizations for MIS, including universities, has led organizations to pay much attention in the characteristics of good quality software. MIS functions care in the process of collecting, processing, storing and producing relevant information to support the managerial operations in any organizations (Laudon and Laudon, 2009). Therefore, the process of decision-making extremely based on timeliness, relevant, accurate and accessible information. Researchers depicted the importance of MIS in decision-making as the concrete step for better decision-making (Ajayi and Omirin ,2007).

According to Obi (2003), MIS 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 nonprogrammed 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.

5.0 The Use of management information system for planning in educational management

Management Information Systems is a system that converts data into information, communicated in an appropriate form to managers at levels of an organization. The information can contribute to effective decision making or planning to be carried out (Patterson, 2005). MIS basically involves the process of collecting, processing, storing, retrieving and communicating the relevant information for the purpose of efficient management operations and for planning in any organizations.

Planning is the formal process of making decisions for the future of individuals and organizations. Planning involves dealing on aims and objectives, selecting to correct strategies

and program to achieve the aims, determining and allocating the resources required and ensuring that plans are communicated to all concerned. Plans are statement of things to be done and the sequence and timing in which they should be done in order to achieve a given end.

According to Ololube (2009), educational planning in its broadest generic sense is the application of rational, systematic analysis to the process of educational development with the aim of making education more effective and efficient in responding to the needs and goals of its students and society. The principal focus of educational planning in this definition is to make education more result-oriented for the development of the individual and the larger society.

The organisational structures and cultures of academic institutions are different from that of companies, business organizations and non-profit organizations with academic institutions, such as universities, being heavily reliant on MIS systems for activities such as student registration, the allocation of resources, library services, online learning and intranet services. Critically, MIS's are an integral part for the administrative management of universities. MIS also include elements of Enterprise Resource Planning (ERP), which is an organization wide
information system that integrates and controls all the business processes in the entire organization (Al-Fawaz, Al-Salti & Eldabi, 2008).

It is a specialized form of goal setting which entails a set of purposeful and conscious activities believed to be vital for the educational system and involves a controlled sequence of events relating lo growth in the form of increases in quantity and size and development in the form of quality and value of the educational enterprise. Educational planning involves taking of decisions for future action with the view to achieving predetermined objectives through optimum use of scarce resources".

Information has become an essential cornerstone for planning in educational management. It is used at the macro level to formulate the development policies, and at the micro level to draw organizational strategies. Until organizations provide information, they are keen to collect, classify, and process data. The achievement of the objective for which they are established may become a mirage.

Management uses different kinds of information in all kinds of planning. However, it uses the information in the implementation of decisions, rationalizing the guidance process, identifying the problems of an organization, and drawing remedies for the organization. In addition, management uses information to measure performance in various activities of the organization. Therefore, this

contributes to an increase in its ability to predict the movements of its competitors and draw plans in solving and overcoming them (Gharab and Hijazi, 2010). From this point, management is associated with information systems management (MIS) in the decision making process of educational institutions such as schools, universities, and colleges. These institutions were able to perform both educational and technical operations in an easy and accessible manner. MIS can also assist workers in the field of education at all levels in contributing to the development of educational structures (Pathak, 2011).

6.0 Conclusion and Recommendations

Findings from this study revealed that management information system is useful to operation and control in educational management in Federal University of Oye-Ekiti. It also shows that there exist a significant relationship between the use of management information system and dissemination of information to support decision making in Federal University of Oye-Ekiti, Nigeria. Further studies affirm that management information system has capacity to enhance educational planning in Federal University of Oye-Ekiti.
There is need for the university to trained staff in the ICT department on sufficient knowledge on cyber fraud that would help to address server protection, server hacking, server confidentiality, e-payment transaction failures and complicated online application portal difficulties.
The use of management information system in educational management has rapidly increased due to its efficiency and effectiveness. School managers who used to spend large amount of time in solving complex allocation problems (e.g., staff allocation, resource allocation, timetabling) and monitoring the school operations have now better options due to enhanced technology. Information technologies facilitate the decentralization of work tasks and their coordination in an interactive network of communication in real time. They allow for greater flexibility and networking that emphasizes interdependence, interaction, and constant adaptation to an ever-changing environment.

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