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The Importance of Management Information Systems in Educational Management in Ghana: Evidence from Koforidua Polytechnic

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Abstract: ***There is a clear synergy between the history of education policy and the development of educational management. Initial attempts at data collection helped support the formulation of the country's national education policy. In spite of all the success chalked in the development of educational management; most educational institutions are faced with numerous challenges especially in the area of Information and Communications Technology. A study into the importance of Management Information Systems in educational management was undertaken among others to examine the role of MIS in improving educational management, examine how MIS could improve capacities in data processing, storage, analysis and the timely supply of educational information to management and administrators to enhance quick and efficient decision making. Stratified and purposive sampling techniques were the main sampling techniques employed. Interviews and Questionnaires were employed to gather data. Statistical Package for Social Sciences (SPSS) and Microsoft Excel were used to analyze the data. The study revealed that cost, lack of competent Information Technology Staff to man the systems, lack of computer systems and accessories and the fear of the unknown were the major problems militating against the implementation of MIS in most institutions. Recommendation were made to aid in ameliorating the challenges discovered.Staff in the institution should be taken through in-service training on the use of computers.***

Keywords: ***Management Information Systems, Education Management, Information and Communication Technology.***

I. INTRODUCTION

The need for fast and efficient data procession has been the expectation of most educational institutions across many developing countries. This expectation has increased even the more in the new millennium with the introduction of Information, Communication and Technology (ICT), and the wide spread of internet applications. The correlation between efficient data processing and faster decision making has existed since time immemorial and with the introduction of information Technology, it has become obvious that the relationship should be strengthened and the benefits harnessed to ensure progress in all educational institutions.

The field of management information systems (MIS) has had a variegated development in its relatively short life span. It started as an offspring of operations research and decision sciences in the late 1950s. In a couple of decades, it declared its independence and became a separate field. In its phenomenal growth since the1970s, it has gone through a number of twists and turns that have taken it farther and farther away from systems thinking in some ways, while preserving the notion of systems at its core in other ways (Rahmatian, 1999). Educational administrators have been slow to implement computerized data processing (Bumsted, 1969).Perhaps they failed to understand information systems or possibly systems planning were neglected. More recently, attempts have been made to align the policy of decentralization with the collection and analysis of educational data at all levels of education. Within this process, Management Information Systems is being used to help construct the operational plans and develop budgets for implementation. By providing reliable and accurate data it is anticipated that the deployment of Management Information System in educational management will play an important role in the decentralization process by helping to ensure that education provision becomes more efficient and responsive to local needs.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 (O'Brien, 1999).

Management Information Systems is also supporting reforms that are occurring in other parts of the education system, especially in non-formal education and tertiary education. Non-formal education is one of the means by which Ghana can make progress towards achieving Millennium Development Goals. For these reasons the Non-formal Education Division (NFED) has carefully developed systems and procedures to help monitor progress towards predefined targets and also to reward providers who achieve such targets. The National Council for Tertiary Education (NCTE) also collects, collates and analyses data from universities and polytechnics, all of which is used to calculate funding levels for the sector (UNESCO, 2003).The purpose of this paper is to analyze the unique role management information system plays in Education management focusing mainly on tertiary institutions and the role they play in preparing students for the job market.

II. THEORETICAL FRAMEWORKS

The theoretical framework of a study is a structure that can hold or support a theory of a research work. It presents the theory which explains why the problem under study exists (R.E.Khan, 1999).Thus, the theoretical framework is but a theory that serves as a basis for conducting research.

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2.1 Task-Technology Theory

Task-technology fit (TTF) theory holds that information Technology (IT) is more likely to have a positive impact on individual performance and be used if the capabilities of the IT match the tasks that the user must perform (Goodhue and Thompson, 1995). Goodhue and Thompson (1995) developed a measure of task-technology fit that consists of 8 factors: quality, authorization, and compatibility, ease of use/training, production timeliness, systems reliability, and relationship with users. Each factor is measured using between two and ten questions with responses on a seven point scale ranging from strongly disagree to strongly agree. Goodhue and Thompson (1995) found the TTF measure, in conjunction with utilization, to be a significant predictor of user reports of improved job performance and effectiveness that was attributable to their use of the system under investigation.

2.2 Socio-Technical Theory

Socio-technical theory emphasizes the need for consistency among independent subsystems for the larger system to achieve optimal performance (Avgerou et al, 2004). The technical subsystem comprises the devices, tools and techniques needed to transform inputs into outputs in a way which enhances the economic performance of the organization. The social system comprises the employees (at all levels) and the knowledge, skills, attitudes, values and needs they bring to the work environment as well as the reward system and authority structures that exist in the organization. The cornerstone of the socio-technical approach was that, the fit was achieved by a design process aiming at the joint optimization of the subsystems: any organizational systems will maximize performance only if the interdependency of these subsystems is explicitly recognized. Hence any design or redesign must seek out the impact each subsystem has on the other and design must aim to achieve superior results by ensuring that all the subsystems are working in harmony. (Avgerou et al, 2004).

2.3 Cognitive Fit Theory

The theory proposes that the correspondence between task and information presentation format leads to superior task performance for individual user (Iris Vessey ,1991). According to Vessey (1991) "matching representation to tasks leads to the use of similar problem-solving processes, and hence the formulation of a consistent mental representation. There will be no need to transform the mental representation to extract information from the problem representation and to solve the problem. Hence, problem solving with cognitive fit leads to effective and efficient problem-solving performance."

2.4 Theory of Competitive Strategy

Michael Porter's (1979) framework uses concepts developed in micro-economics to derive 5 forces that determine the attractiveness of a market. They consist of those forces close to a company that affect its ability to serve its customers and make a profit. A change in any of the forces requires a company to re-assess its marketplace. The five forces are:

- The bargaining power of customers
- The bargaining power of suppliers
- The threat of new entrants
- The threat of substitute products
- The intensity of competitive rivalry

Therefore, an Educational Institution can achieve a higher level of efficiency in its processes and procedures and increase its profit margin where necessary if:

- It has the appropriate Management information systems that is aligned to the

Tasks performed by the employees

- Has trained ICT experts to sustain the Information systems
- The social and technical subsystems are properly align through regular on the job training
- The information technology available matches the tasks assigned the administrative staff
- The presentation format of tasks are not altered irregularly to ensure effective and efficient problem-solving performance

III. METHODOLOGY

The research adopted the quantitative approached in data collection because it presents the researchers with numerous advantages such as looking at the relationships between variables and establishing the cause and effect in highly controlled circumstances. Also this method often reduces and restructures a complex problem to a limited number of variables.

A. Methods

Two (2) main sampling techniques were employed; the stratified sampling and the purposive sampling. The stratified sampling was used to group the sample size into 2 main categories; namely: Administrative Staff and Management. These groupings will enable the data required from each stratum to be collected and analyzed. Purposive sampling was then employed to collect data from respondents from the institutions. The two sampling techniques were employed since they enabled the researcher to collect data relevant to the study and to reduce percentage errors during data analysis. A sample of 100 respondents were purposively chosen based on their constant access to data within the institution. A breakdown of the sample size is as follows; three (3) Heads of Department of Admissions, Student Records and Examinations with their respective sectional heads and administrative assistants were interviewed. Five (3) members of staff from the Central Accounts department, three (3) from the Audit Department, and three (3) from the students Accounts Department.The Heads of the Human Resource, General Administration, Planning and the Development Departments together with their sectional heads, the secretaries and clerks were selected. The total number of individuals chosen from the three (3) Faculties were 20; comprising Deans, School Administrative Officers, Accountants and Heads of Departments were chosen to answer the questionnaires. Four (4) management staff with their respective sectional heads and clerks was selected.

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Faculty and Departments Examinations Officers too were interviewed since they work on examination results.

B. Data Source

Primary data was collected from the population of the study .The population of the study comprise of the management and administrative staff of Koforidua Polytechnic. This comprises individuals who participate in the day - to – day running of the institution. Management staff includes the rector, vice- rector, registrar and the finance officer. The administrative staff includes the individuals whose activities ensure that there is a constant flow of data either from management to staff or from staff to management.

IV. DATA ANALYSIS AND RESULTS

Educational or Professional Qualification of Respondents

As regard to educational / professional qualification only one respondent has a qualification below the diploma level. Considering that undergraduates and postgraduates respondents alone constitute 64.1% of total respondents could mean a well-informed people making up the crux of the research.

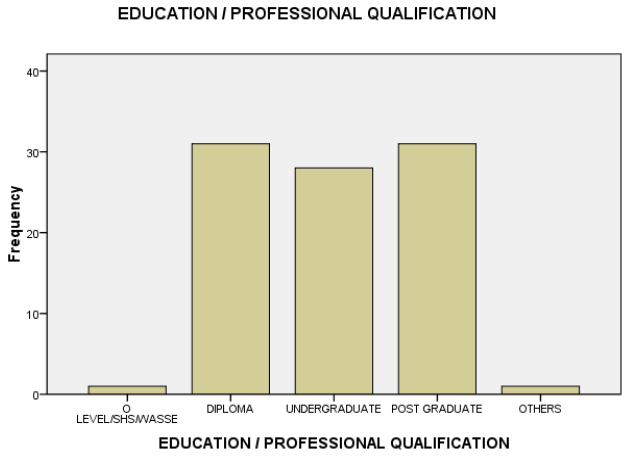

Figure 1: Education / Professional Qualification

Departments Covered by the Research

Considering the percentage of data collected from various departments, it is evident that individuals from the examinations, student records, central accounts and others, were really interested in the research with their cumulative percentages of 89.2%.The Others are mainly Staff from General Administration Department and Departments within the Various Schools in the Institutions who are constantly processing data. This means that larger portions of the administrative staff that constantly process data are fully represented in the conduct of the research.

Table 1: Departments covered by the research

	Frequency	PERCENT	Cumulative Percent
Admissions	3	3.3	3.3
Examinations	17	18.5	21.7
Students Records	4	4.3	26.1
Students Accounts	3	3.3	29.3
Central Accounts	11	12.0	41.3
Others	54	58.7	100.0
Total	92	100.0	

Source: Field data, March 2010

Length of Service with Polytechnic

A study of the length of Service of respondents within the Institution shows that a larger percentage of 66.2% of the respondents have worked within the institution for a period more than 2years.This means that, they are abreast with the procedures and processes within the institution and will be able to provide information about their work processes now, and what difference they envisage the MIS to bring.

Level of Computer Literacy

It is evident results obtain from the study that majority of the respondents are computer literate since their cumulative percentage is 90.1.This means that majority of the administrative staff in the institution are computer literate and can increase their productivity when given the opportunity.

SECTION B

V. MANUAL DATA PROCESSING

Results from the respondents shows clearly that manual processing of data within the institution takes a longer period of time and this is evident with a cumulative percentage of 75%.This means that in the absence of computers,75% of all processes will take a long time to be completed and this affects job performance and productivity. The pie chart of the distribution is shown in the figure below.

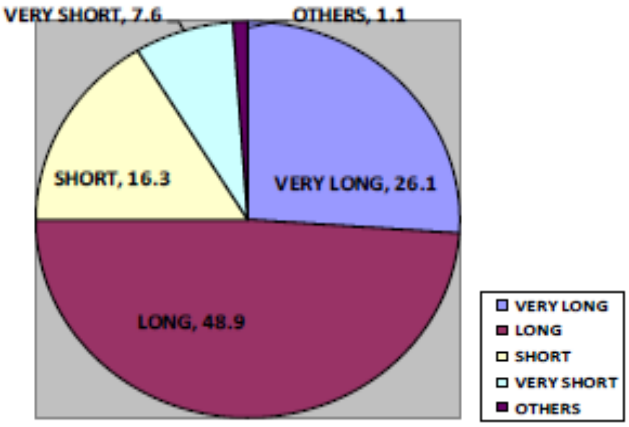

Figure 2 :Manual Data Processing

Knowledge of Management Information Systems

As regard to the level of knowledge of MIS, it is obvious from the above distributions that, majority of the administrative staff sampled have enough knowledge about the system. A cumulative percentage of 89.1% have average to much knowledge of Management Information Systems and its importance in educational management.

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Table 2: Level of Respondents' Knowledge of MIS

	Frequency	Percent	Cumulative Percent
Little Knowlwdge	10	10.9	10.9
Average	30	32.6	43.5
Above Average	31	33.7	77.2
Much Knowledge	21	22.8	100.0
Total	92	100.0	

Source: Field data, March 2010

4.1.3 Introduction of Mis In

EDUCATIONAL MANAGEMENT

A look at the level of level interest of the sampled respondents clearly shows that majority of the administrative staff with a cumulative percentage of 97.5% are really interested in the introduction of Management Information System to ensure safe, secure and reliable flow of data within the institution. This apparent enthusiasm by staff members could be a good omen for the success of the implementation of the MIS project in the institution.

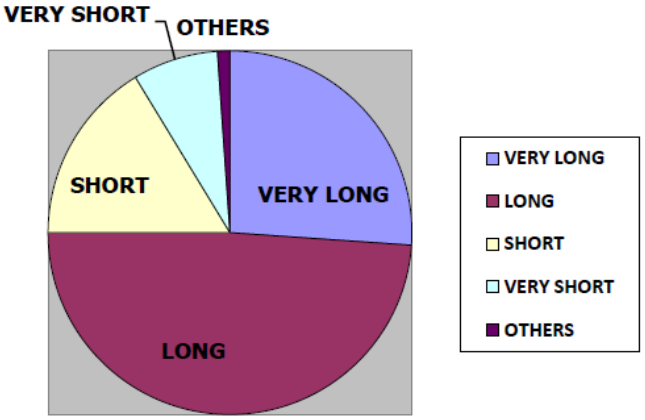

Figure 3: Introducing of MIS in Educational Management

VI. DISCUSSION

The role of MIS in improving educational management.

Management Information Systems play important roles in educational management especially in keeping students' personal data, assigning index numbers, programme allocation among others. It has been realized from the results that Management Information Systems contributes a lot to efficient educational management as 75% of respondents agreed that the introduction of MIS will have a high impact on effective decision within the Polytechnic. Once decisions can be made accurately and fast, it will ensure numerical and financial growth within the institution. It should be noted that because the introduction of MIS helps to streamline the flow of data within departments and between departments, it becomes easier for all individuals to easily access data for effective decision making.

MIS'role in improving capacities in data processing, storage, analysis and the timely supply of information to management and staff.

The implementation of MIS in education management is to aid data storage and processing. Manual data processing which has been with us for generations has contributed to the slow pace at which information is gathered and accessed in institutions.

The dissemination of data through the use of paper for memoranda and reports really slows down data transfer. It is therefore not surprising that over eighty (80%) percent of respondents agree that the introduction of MIS will ensure proper data storage. In addition, the majority of respondents (89.1%) further agree that MIS will quicken the implementation of decisions taken within a department. Again, when quizzed on departmental coordination, over ninety seven percent (97%)of respondents intimated that the implementation of MIS would improve departmental coordination and ensure efficiency in performance.

Impact of MIS in educational planning, coordination and implementation.

To ensure an effective facilitation of educational activities, it is important that the right management procedures are employed. The implementation of MIS in Koforidua Polytechnic, according to most respondents, has been expected for a very long time, to aid in educational planning and coordination. However, cost involved in the acquisition, implementation and managing the system has always served as a deterrent. Data gathered indicated that 46.2% of respondents believe it is the issue of cost that is delaying the implementation of the MIS project in the institution. A further 28.6% think the problem boils down to ignorance on the part of management who have failed to appreciate the important contribution of MIS in other educational set-ups. To some of the respondents (37%) however; the issue hindering the implementation of the system is inadequate competent staff to manage the system. Other views, expressed on this subject were based on inadequate computers and accessories, staff members apprehensive about change and computer illiterate staff.

MIS contribution in reducing / eliminating duplications and bridging information gaps.

It is important that information transfer within the institution is properly streamlined to ensure fast and effective decision making. From the results, it became obvious that data duplication is one of the major challenges that staff members face daily.82.6% of respondents agree that they duplicate data daily at work and this really increases amount of expenditure on stationery. Also 91.3% agree that there are lots of information gaps when data transfer is transferred manually since inaccuracies in data recording and editing affects the overall output. Some of the information are lost as some files can either not be located at all or not located on time for some important decisions. Since information collected from meetings are used in decision making and ultimately for educational planning, 93% of respondents agree that with the right system in place, important decisions could be taken quickly and certain plans made to ensure the progress of the institution.

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VII. CONCLUSION

The study of the importance of Management Information Systems in educational management is not usually considered in most tertiary institutions mainly because, it is assumed that with the right Information and Communication Technologies in place ,all the problems that come with information flow will the resolved. However, this study has shown that MIS is not just the installation of computer systems, its relevant computer softwares and accessories but the willingness of management to purchase the right systems and computer softwares, the acceptance of the administrators to use the system and the availability of competent ICT staff to support the system.

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