

IMPACT OF ICT ON EDUCATIONAL INFORMATION MANAGEMENT: THE EDUCATION MANAGEMENT INFORMATION SYSTEM (EMIS) IN ENUGU STATE

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Abstract

A few decades ago, both teachers and learners had limited access to educational information and consequently fell victims of information deficiency. Consequently, information users suffered from insufficient materials and limited sources of other information. With the spate of Information Communication Technology (ICT), a later generation of learners is experiencing unbridled access to information of various kinds. Today, the problem is how to effectively manage the quantum of information available for use. Hence a paperless society has emerged, where every step to access a unit of information could become almost entirely digitalized. This paper studied the positive impact of Information Communication Technology (ICT) on the management of information in the education sub-sector, globally and at local level. Specifically, the researcher studied the Enugu State Education Management Information System (EMIS) and its positive impact on educational development in the state. Major sources of data for this study came from the publications of Enugu State Ministry of Education with the support of Education Sector Support Programme in Nigeria (ESSPIN) and personal opinions of civil servants in the State. A structured questionnaire was used to collect primary data. Some conclusions and recommendations were made including the adoption of EMIS to all levels of education in Enugu State.

Keywords: Information and Communication Technology (ICT), Education Management Information System (EMIS), Paperless society, Computer-Based Test (CBT), Information Technology Infrastructure (IT)

Introduction

Background of the Study

As educational development advances in Nigeria, new ways of managing academic records at all levels of education must evolve correspondingly. Acceptable global standards of record-keeping pose a big challenge. Nigeria, as the giant of Africa, should take the lead in adopting new methods of educational records management. The challenges arising from the complexities associated with analog educational records create a loophole for sharp practices on the part of personnel. Mutilation of academic records is a major form of examination-related malpractices which consequently result in half-baked graduates who can hardly defend their certificates. Since it was easy for several people to lay hands on hard copies of records and mutilate them, it became a matter of concern for organizations to evolve more secure strategies to curb the menace.

Today, employing organizations and academic institutions have heartily embraced online registration, online application, online examinations and computer-based tests (CBT), not only to check examination malpractice but to also curb the incidence of carrying volumes of papers around with the attendant possibilities of shortages. Until examinations and academic records become technology-driven, examination budgeting will always reflect logistics and transportation occupying high percentage of the budgets. Reported cases of accidents, attacks and late arrivals of question papers and answer scripts largely accounted for the failures of examination planning and administration, as reported in the past.

Given the foregoing, our educational institutions should enjoy huge information technology support; hence, a study on effective educational information management strategies becomes inevitable. It is also expected that organizations weigh the benefits of information technology against the challenges posed by bulky paper records that soon outgrow their dedicated shelves, files and folders, issuing quit notices to the human occupants of office.

Statement of the Problem

An academic institution at any level is a citadel of learning where records are accurately kept throughout the life span of such institution. Personnel, students, examinations, and inventory records are kept according to preferred categorization. In the education sector in Enugu State, to get some simple educational information requires application and approval. Processing the application usually involves passing through several tables and stages: processes that most times outlive the usefulness of the very application. Government business, especially in communication and feedback, sacrifices the use of communication technology at the altar of bureaucracy. The poor state of Education Management Information System in Enugu State seems to account largely for the poor management of educational information in the state. The need to review this trend and adopt best practices of technology-aided system, channels of communication, data processing and reporting informed the writing of this paper. It has become necessary for institutions to explore possibilities of publishing students' results on the web portal, sending applications and approvals via e-mails and publishing education data on the web for easy access to stakeholders. It is overstating the obvious that EMIS has the potentials for the development of the educational system in Enugu State.

Objectives of the Study

The general objective of this study is to explore the potentials of Education Management Information System (EMIS) to the overall development of education in Enugu State. To achieve this main objective, the following specific objectives have been formulated:

- i. To identify the various ways EMIS can be adopted for the management of educational information in Enugu State.
- ii. To determine the impact of EMIS in the development of education in Enugu State.
- iii. To ascertain the educational levels where EMIS can be applied in Enugu State.
- iv. To recommend strategies for the adoption of EMIS at all levels of education in Enugu State.

Research Questions

In the light of the above, the following questions were formulated:

- i. What are the various ways EMIS can be adopted for the management of educational information in Enugu State?
- ii. What could be the impact of EMIS in the development of education in Enugu State?
- iii. What are the the educational levels where EMIS can be applied in Enugu State?
- iv. What are the strategies for the adoption of EMIS at all levels of education in Enugu State?

Significance and Scope of the Study

Enugu State, under Governor Chimaroke Nnamani, built a state website to publish the State government programmes and achievements to the rest of the world. Although modified, this was sustained by his successor, Governor Sullivan Chime, and the present Governor, Rt. Hon. Ifeanyi Ugwuanyi, has a mega picture of packaging Enugu State better to the world electronically. In line with government vision, most public institutions under the state have hosted functional websites through which they have gained so much visibility worldwide. A paperless environment, driven by technology has saved organizations a lot of space, gained more visibility, reduced the number of visitors and pressure and, most importantly, secured important documents, electronically.

Review of Literature: Explanation of Key Concepts

Paperless Society

A paperless society is one in which paper communication (written documents, mail, letters, etc.) is replaced by electronic communication and storage. The concept originated from Fredrick Wilfrid Lancaster in 1978. Under this concept, libraries would no longer be needed to handle printed documents. According to Lancaster and Smith (1980), "Librarians will, in time, become information specialists in a deinstitutionalized setting". For Kempner (2014), converting from paper-based to paperless can be intimidating but with a plan and properly trained staff, the concerns and fears about paperless can easily be overcome. Kempner went further to breakdown the benefits that come with paperless as follows:

(a) Return on Investment

Most times, people fear that switching from paper-based to paperless will be more expensive in terms of training, hardware and software. Although expenses abound, the return on investment is enormous. Experiences have shown that the switch to paperless can fund itself in a very short period of time.

(b) It saves time and labour

Working with paper can be time-consuming and sometimes boring too. For a letter, report or proposal that must be typed, the employee spends more time writing the manuscript and another time typing it. A common practice in this part of the world is that we write and give to another person to type. A whole deal of time is spent developing the manuscript. Almost the same time is spent by another sluggish or careless typist, typing it. The author still spends time proofreading/editing that which was typed and sometimes end up retyping. So, on the average, a minimum of three hours is spent producing a simple one-page document and many more

hours, if the document is a bit complex. Most times, we run into crisis and quarrels when documents are urgently needed.

(c) Printing and photocopier Costs

Paper-based documentation requires printing, paper, and toner/ink for hard copies to be produced. Sometimes, in the process of looking for where to print or photocopy we expose classified documents and divulge official secrets. Meanwhile, these are documents that can simply be sent through e-mail or shared to target audience in a network.

(d) Lost & Misfiled Documents

A secure and backed up paperless environment greatly minimizes the risk of losing or misplacing a digital document. And if a disaster should occur, digital documents can often be recovered, whereas paper documents could be lost permanently.

(e) Email Management

Electronic mailing system has remained one of the most conventional, reliable, time and cost-saving tool for communication in a paperless environment. It seems the most convenient as the staff does not need to print or work around to discuss issues that can simply be handled by e-mail. It reduces loitering in an office. Electronic mails can also be categorized conveniently like normal filing and folder system.

(f) Document security and storage costs

Filing of hard copies can be tedious, occupy space and cause discomforts to occupants of an environment; the shelves, the cabinets, the boxes, etcetera, occupy more spaces and can make an office untidy. Much more energy is spent sorting, filing and packing those documents in shelves and boxes and, sometimes, one can run into crisis of scattering the entire arrangement in search of a document that may have been misfiled. Millions of documents can be stored in a hard drive and each takes a few simple steps to retrieve. Furthermore, electronic documents can be secured through passwords and give details of date and time when they was last opened.

(g) Improved Customer Service

Searching for files while a customer waits on the phone is not an efficient process. When digital documents can be found instantaneously by keyword search, customer service can greatly improve.

(h) Disaster Recovery Strategy

When an organization keeps all its information on paper, it runs the risk of losing everything where there is fire outbreak, theft, water or other damages. Electronic documents create opportunity for back up in several forms, e.g. external hard disk, flash/memory sticks, CDs, etc. This can be reproduced and kept in different locations giving room for quick recovery in times of disaster.

Education Management Information System (EMIS)

Education Management Information System (EMIS) is a Management Information System designed to manage information about education system. An EMIS is a platform for data collection, processing, analyzing and reporting of educational information including schools, students, teachers, staff and facilities. EMIS information is used by Ministries of Education, Non-Governmental Organizations, researchers, donors and other education stakeholders for research; policy and planning; monitoring and evaluation; and decision making. EMIS information is used to create indicators that monitor the performance of an education system and to manage the distribution and allocation of educational resources and services. Education Management Information System is an information system with the main purpose of providing information which is used for improving the management of education at all levels.

According to Laudon and Laudon (1998) an information system is a set of procedures that collects (or retrieves), processes, stores, and disseminates information to support decision making and control. It is important to note that information systems, mostly, are formal and computer-based and undertakes the integration of other sub-systems in an organization.

Findlay (2010) sees EMIS as much more than just school census. According to him, EMIS is the collection of linked data covering key areas of education used for monitoring and planning in the Education sector and production of Key Performance Indicators. These indicators include: Data on Students, Data on Teachers, Data on Infrastructure, Data on Finance, Data on Location, Data on Training and Quality Assurance, Data on Interventions and Support.

The Potentials of Education Management Information System (EMIS)

It is an effort in futility to attempt to strengthen governance and management of state level education without data or benchmark to plan with. Planning cannot function effectively without EMIS. The Education Management Information System data is required for the following reasons:

- a. Monitoring and evaluation of what is done in the education sector.
- b. Basis for policy decisions. Support resource allocation and funding.
- c. Needed to develop sector plans.
- d. Form the basis for statistical sampling.

Overview of the Education Management Information System in Enugu State

Prior to 2010, the money budgeted for the education sector was spent with little or no impact. This is because there was no baseline data to plan with. Planning and development of the sector was based on assumptions. Huge allocations were made to areas where government felt there was need to support. Enugu State through the support of DFID Education Sector Support Programme in Nigeria (ESSPIN) conducted school census during the 2009/2010 academic year. The report brought to the planning table – baseline data – was to guide in planning for the development of the sector. The report became necessary because government needed to know how many pupils were in schools and how many teachers were teaching them. Actually, other quality indicators like classrooms, toilets, water, etc, were captured. Since 2010 till date, Enugu State has been regular in the conduct of Annual School Census.

This is an indication that the published report of the census has been equally useful to the state. Between 2010 and 2013, it was clear that policy decisions and budgets were guided by revelations from the school census report. With the functionality of EMIS in the state, the Monitoring and Evaluation Unit has started planning table Quarterly Monitoring Report (QMR) and Annual Education Sector Performance Report (AESPR). Presently, EMIS has been introduced at the local government level and a pilot programme takes place at five Local Government Areas of the Enugu State. These Local Governments include Enugu East, Igbo-eze North, Nkanu East, Oji-River and Udeniu. In the report, needs of schools can be ranked, to enable governments prioritize based on the rankings and indicators.

Key Features of EMIS in Enugu State

- a. Data collection instruments for capturing students, teachers, facilities, etc.
- b. Report manager module for printing all reports
- c. Data manager module for data collection and management
- d. Executive dashboards for monitoring and evaluating education in a zone or region
- e. EMIS schools online module for schools to Access the EMIS data of their schools and other downloads
- f. Data posting and publishing module for posting data to the EMIS online solutions

Research Methodology and Design

The survey design was considered the most appropriate and used for this study because it limits itself to a given sample of the population from where the findings could be generalized.

Sample Size and Technique

The population of this study includes employees in the Departments, Agencies, and Office of the Ministry of Education, Enugu State, numbering about 3,000. These include those in the Ministry of Education Headquarters, Enugu State Universal Basic Education Board Headquarters, Post-Primary Schools Management Board Headquarters, Science, Technical and Vocational Schools Management Board Headquarters, and Local Government Education Authorities, all in Enugu. Due to paucity of funds, samples were taken from each in the following order: 150, 140, 140, 50 and 50, respectively. A total of 530 respondents were used. In each MDA, respondents were randomly selected from among schedule officers. A structured questionnaire was used to collect the responses. 530 questionnaires were distributed but only 500 copies (94.3%) were returned.

Data Presentation

Following our research questions as earlier mentioned, data was collected from Enugu State employees in the public institutions, Annual Education Sector Performance Report (AESPR) and responses from our respondents. The data is presented in tabular form using percentages as parameter.

Question 1: What are the various ways EMIS can be adopted for the management of educational information in Enugu State? *(Please tick all that apply)*

Table 1: Various ways EMIS can be adopted for management of educational information in Enugu State

RESPONSES in %				
Formulate enabling policy	Provide relevant IT infrastructure	Set up a core implementation team	Train relevant personnel	Total %

Question 2: What could be the impact of EMIS in the development of education in Enugu State?

Table 2: Impact of EMIS in the development of education in Enugu State

RESPONSES in %		
School level information with key indicators and general information on education are available, accessible and used for planning.	Only limited information are accessible	No significant impact
87%	11%	2%

Question 3: What are the educational levels where EMIS can be applied in Enugu State? (*Please tick all that apply*)

Table 3: Different levels where EMIS can be applied for management of educational information in Enugu State

RESPONSES in %				
State	Ministries, Departments and Agencies (MDGs)	Governments Education Authorities (LGEAs)	Schools	Total %
50%	15%	30%	5%	100

Question 4: What are the strategies for the adoption of EMIS at all levels of education in Enugu State?

Table 4: Strategies for the adoption of EMIS at all levels of education in Enugu State

RESPONSES in %				
Develop strong political will	Include and sustain budgetary allocations	EMIS information should feed planning	Provide necessary IT infrastructure	No need for adoption
30%	40%	10%	18%	2%

Data Analysis/ Findings

From Table 1 above, respondents agreed that some of the ways EMIS can be adopted for the management of educational information are through formulation of enabling policy, provision of necessary IT infrastructure, setting up a core implementation team and training of relevant personnel. Table 2 indicates that 87% of respondents agreed that EMIS has made serious

impact in educational development in Enugu State through School level information with key indicators and general information on education made available, accessible and used for planning. In Table 3, respondents said EMIS can be adopted at various levels as follows: State, 50%; Local Government Education Authorities, 30%; Ministries, Departments and Agencies, 15%; while school level is 5%. In Table 4, respondents agreed that the following strategies are required for the adoption of EMIS at various levels in Enugu State: Develop strong political will, 30%; Include and sustain budgetary allocations, 40%; Provide necessary IT infrastructure, 18%; and EMIS information should feed planning, 10%. However, 2% said there was no need for adoption.

Summary, Conclusion and Recommendation

Following our findings in this study, this paper can be summarized thus: Amidst the obvious challenges, Education Management Information System (EMIS) has truly made serious impact in the educational development of Enugu State. Respondents have strong view that EMIS should be decentralized from the state level to MDAs and indeed to Local Government Education Authorities in the State. For this to be achieved there is need to formulate enabling policies, provide information technology infrastructure and train relevant personnel.

In conclusion, a functional EMIS will ensure that all educational information are made available and accessible to planners, policy makers, researchers and other stakeholders in correct format and at real time. It will surely improve the quantity and quality of service delivered to the various publics of Enugu State education sector.

This paper, therefore, recommends that, following the inherent benefits of EMIS in the education service delivery, Enugu State should quickly adopt and implement by formulating enabling policy, make budgetary provisions, set up a robust IT infrastructure and train the core team through strong political will. Education Management Information System (EMIS) should be introduced and made functional at all levels of institutions under the sector to ensure timely and credible data for planning.

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