

Effective Data Management and University Education Administration in Nigeria

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Abstract:

Data is an important aspect of the university administration. Data is the engine room of the university system because it coordinates almost all aspects of the university system. Data management ensures the effective use of data for planning and making decisions. Unfortunately, most university managers do not pay attention to data management and its application in university administrations. This has led to poor management of data in most university systems across the country. The paper critically examined the importance of data management for university administration in Nigeria. The paper employed secondary data. The secondary data were sourced from the print and online publications. The paper concluded that effective data management supports effective university planning, effective decision-making in the universities, effective resource allocation and effective university administration. Based on these discoveries, the paper hereby recommends that university managers and administrators should support data management development in their respective universities. Training and retraining should be provided for officers in the department of data management. More infrastructure facilities should be provided to support the development of data management in all the universities.

Keywords: *data management, university education management, tertiary education management and university education.*

Introduction

University education is the final stage of education. University education is the education after secondary school education. University education is the education for the transformation of the communities, states and nations. University education is the education that produces manpower of all

categories for social, and economic development and technological advancement. University education is an organized education and systematically leads to the award of certificates after graduation. University education is an educational system that is centred on teaching, researching and provision of community services (Ogunode, & Ayeni, 2023). The above is further corroborated by Ogunode and Ayeni (2024) when they argued that tertiary institutions are an organized fraction of the whole society designed for teaching, research and community service. Tertiary institutions which can also be called university education are by nature the largest educational system globally. Therefore setting of university education brings development to the people who reside close to the institution (Ayeni, & Ezirim, 2023). University education is host to many human and material resources. The university stakeholders include students, academic staff, non-academic staff, management, international institutions and parents. The above stakeholder in the university is because tertiary education is a post-basic and post-secondary school education that offers advanced teaching, research and community development (Ogunode, Ayeni, & Ogwuche, 2024).

The goals of university education include manpower development and training. According to the NPE (FRN, 2004), university education is expected to make an optimum contribution to national development through the intensification and diversification of its programs for the development of a high-level human resources base within the context of the needs of the nation; make professional course contents to reflect Nigeria's national requirements; make all students, part of the general program of all-round improvement and to offer general study courses such as history of ideas, philosophy of knowledge and nationalism. The above development is the rationale while it has been argued that a university without a standard library lacks integrity (Ayeni, 2018). Universities are expected to encourage and disseminate their research results to both government and industries. Universities are expected to inculcate community spirit in their students through projects and action research. They are expected to ensure that faculty in their professional fields have relevant industrial and specialized experience. However, the NPE states that a huge percentage of funding for university education shall be devoted to Science and Technology.

The objective of this study is to interrogate effective data management and university education administration in Nigeria.

A documentary research method is the research method employed for this study, where secondary sources of data like printed and online documents were consulted. Thus, content analysis is the method of data analysis used for this study.

Concept of Data

Advanced Learner Dictionary of Current English (2008) defined data as information, especially facts collected for examination and consideration made and then used to help in decision making. It could be information in an electronic form that can be stored and processed by a computer to provide meaningful information. Borisade (2002) viewed data as a set of raw or unrefined values collected for the response variables for which each of the elements belongs to the sample. Kolawole (2002) opined that numerical facts are called data and the study of data is called statistics. Statistics in this sense is defined as the science of collecting, classifying, analyzing, presenting and interpreting numerical data that is useful for human beings. In this study, data is seen as row figures that need to be subjected to other processes to give meaningful information. Data is the collection of values in the form of continuous or discrete that can give an event information. Data can be seen as factual

information used for discussion. Data is the collection of raw figures and values that can further give a piece of meaningful information.

Borisade (2012) observed that there are two major types of data. These are the primary data and the secondary data. Primary data are those data that are collected during experiments in experimental research, but in the case of descriptive type, we can obtain primary data either through observation or through direct communication with respondents in one form or through personal interviews. In other words, primary data can be collected using different methods. These include observation methods, interviews, and questionnaires through the schedule in some cases, warrant cards (postal card) pantry audits et cetera. On the other hand, secondary data are data that are already available. That is data that has already been collected and analyzed by someone else. This includes published data or unpublished data, such as newspapers, government books, magazines reports of various associations, and historical documents from archives or museums. Others may include diaries, letters, unpublished biographies and auto-biographies, and private/public individuals and organizations.

Concept of Data Management

Data management is the systematic way of data organization, collection, interpretation and presentation for institutions' usage, and decision-making and improving institutions' effectiveness. Data management is the coordination of data within the institutions for supporting institutional' plans, decision making and operations. Data management involves the practical arrangement of data in systematic ways to improve organizational planning, resource allocation and decision-making. Data management is the practical way of handling data to support institutions' growth and development in terms of planning and decision-making. Data management is the application of organized and coordinated data for institutions' decision-making and planning for the realization of institutions' goals.

Effective Data Management and Universities Management

Effective data management in the university system supports effective planning, decision-making, resource allocation and effective administration.

University Planning

University planning involves the identification of university goals, programmes and visions and systematically identifying means to realise these goals and programmes within a set time. Data is what is needed to plan the university system. Effective data management in the system will assist the university manager and administrators to plan the university system well. Ogunode and Ajape (2021) noted that data is very important to the realization of goals and programmes of higher institutions, especially universities. Data is needed to plan the universities. The Executive Secretary of the National Universities Commission said that for the Nigerian University System (NUS) to be respected globally, it must live above board by managing an effective and reliable information system that would guarantee accurate, reliable and timely data that could be used in advising the government on issues of national planning. He observed that without accurate data, effective and strategic planning would not only be difficult for the university but also the government. He said that as Ivory Towers, Universities were expected to have adequate and reliable information across all variables such as total number of students enrolment; total number of students by programme; faculty; gender; age; mode of entry into the university; Local Government of origin; State of origin; nationality; geo-political zone; distribution in term of PhD, Masters, PGD programmes and students (NUC, 2016). Effective data management is the only means to guarantee various accurate data for planning the universities.

Zafar, Mohammad & Yasir (2011) maintained that the availability of accurate, valid, reliable, and timely information is a pre-requisite for planning and management of education. Educational planning and management is no exception, it requires the availability and use of a diverse set of data for effective planning and successful management. To plan and manage in education sector, the following information should be available: demographic information, educational statistics, budget allocations for the education sector and Human resources in the education sector. Effective data management helps education planners and decision-makers to know the structure and distribution of the population of the university at a given time frame, as well as how it has changed in recent years. In other words, university planning and management cannot be divorced from considerations about the dynamics of the population (i.e., its growth and change), as it deals with a 'target population' which is constantly changing in number, age and sex composition, and geographic distribution (Zafar, Mohammad and Yasir (2011). Nayon (2017) and Ogunode (2021a) confirmed that effective management of data in the universities supports effective planning of the university system. Planning and management of any university education depends greatly on the quality of data collection, analysis and storage.

Decision making

Decision-making involves all actions taken to actualize institutional programmes. Decision-making is an important component of the university system. The decision-making of the university system comprises all policies and actions taken to allocate university resources and run the university effectively. QuartzAfrica (2020) noted that data is the first crucial step, and then you need smart objective analysis to make sense of the data and shape the narrative. Once the data supply side is up to date, the hope is that decision-makers at the school level will increasingly demand relevant information to lay the foundation for policymaking and budgeting. The success of any system of university education depends on proper decision-making through the use of data. The need for data-based policymaking in university management is more now than before particularly with the current revolution in information and communications technology which has made the world become a global village. The inconsistency in the universities' decision-making is a result of a lack of current data. Universities' data such as students' statistics, facilities statistics, and personnel statistics facilitate effective decision-making in the system. Ogunode, Gregory and Abubakar (2020) and Halal Ahmed, and Bhuiyan, (2021) established that data management assists university managers in making decision that affects the development of the entire university system.

Resource allocation

Data availability in the university system supports resource allocation. Hence resource allocation or funds is the life wire of every organisation (Ayeni, 2017). Data management is vital to effective resource distribution in the system just like funds are vital to every organisation. Martin (2021) maintained that universities and colleges have a lot of resources at their disposal. To ensure resources like libraries, classrooms, laboratories, and the workforce are put into use, an effective database management system is necessary. The software keeps up-to-date information on all the available resources and helps the school management ensure proper allocation. An effective system can assist the school management in tracking resource distribution. This makes it easier to identify shortages of essential resources in the school and prevent unnecessary expenditure. A reliable Database management system (DBMS) analyses the school infrastructure development and provides information on school location, toilets, classrooms, library, labs, et cetera. With all this information, the school management can plan for resource allocation and improve productivity.

Effective university administration

University administration refers to the application of the universities' resources to implement the programme of the universities to realize the objectives of the universities. University administration is the mobilization and arrangement of both human and material resources for the achievement of the university's goals (Ogunode, 2020). Data availability is the pillar of effective university administration. Effective data management in the universities has helped universities in planning and making crucial decisions. Data management has supported universities in resource allocation and personnel management. Nayan (2017) and Ogunode and Ahaotu (2020) opined that adequate data management in schools is highly dependent on the availability of data management tools and their effective utilization when available is of immense benefit to the actualization of school administrative objectives. Thompson and ObinnaNonso (2019) and Benwari and Dambo (2014) asserted that other students' information ranging from their admission status, personal records, parents, address, phone numbers and email, continuous assessment records can be recorded and updated electronically. When students are given assignments to take home, they download study packs and materials from the internet to enable them to have a wide spectrum of ideas and knowledge of the topic. Thompson and Obinna Nonso (2019) and Benwari and Dambo went further to note that the school management information system can be used for infrastructure and fee management, like hostel space allocation and management, and tracking students who have defaulted in payment of fees or other things. MIS is also used in storing and updating students' information electronically such as personal records, parents' addresses, phone numbers and email addresses, and continuous assessment data among others. Through the utilization of a management information system, school fee payments are easily made and tracked online by the school management and financial fraud or default in payment is averted, hence, promoting accountability and effective financial management in the school.

Importance of Data Management in the University System

- a. Assist university managers with information about the general performance of the university
- b. Assist the government in allocating resources to the universities,
- c. Assist university manager in making decisions to improve the university system
- d. Assist a new university management to know what was previously obtained in the university and to aid further university planning.

There are other benefits of data management to the university administration. Some of them according to Martin (2021) include:

It ensures data security

Effective data management supports data security in the university system and other educational institutions. Martin, (2021) opined that learning institutions record data on student attendance, teacher attendance, and grades every day. With a data management system, this information is safe online. Through data management, all information in the school is secured. Data management follows guidelines and outlines the necessary improvements to ensure data security. Data management systems only give access to authorized network users. Without a password to the systems, it is not possible to access school information. This way, confidential student information is kept safe and secure.

It helps with generating school calendars and events

University managers depend on effective data management to plan the university calendar and other universities' programmes and schedules. Martin, (2021) posited that universities institutions need a

flexible calendar to run smoothly. With a reliable data management system, the school administrator can modify the school calendar, keeping the school staff, parents, and students updated on the activities and events the school is planning to have. When parents and students are informed of tournaments and other school calendar activities, they can prepare in advance. Any slight change in the school calendar is reflected in the data management system, and parents and teachers can get a notification on their phones.

It automates timetable generation

Martin (2021) observed that when the school academic year begins, teachers have to draft a timetable manually. This is time-consuming at times. Using a database management system, teachers can generate an efficient timetable for the academic year. The automated timetable is error-free and ensures no lessons are conflicting. It also ensures that all school resources, like computer labs, classrooms, and libraries, are used efficiently. With an automated school timetable, teachers and students can always remain punctual in school. Teachers are also notified in case of any slight changes in the schedule.

It allows efficient management of assignments

Martin, (2021) asserted that distributing student homework and assignments is such a tedious task for teachers. Collecting, reviewing, and getting feedback from students is challenging. If you don't have data management systems in place, it's even worse. With a school database management system, teachers can assign homework and assignments to many students at a go. They can also check assignment deadlines and get real-time feedback from students. Handling assignments and projects is cumbersome for both teachers and students. DBMS makes it easier for students and teachers to handle projects anywhere. This way, they can improve their productivity. Students can log in to the database management system and find the projects assigned to them. It makes it easier for learners to find the best essay topic generators to handle their homework on time.

It helps you monitor student performance

Martin, (2021) concluded that educational institutions like universities can use an Education Management Information System (EMIS) to monitor student performance. EMIS is a software that collects and stores data to generate reports after analyzing it. Using this tool, teachers can track the day-to-day student progress. It records all information on student library details, exam records, and other personal data like class status and demographic data. This kind of data management system provides essential insights that teachers and school management can use to monitor students' performance.

Backup and recovery prevent data loss

Martin, (2021) submitted that educational institutions are more concerned about the confidentiality of student data stored in their EMIS. When data loss occurs in learning institutions, it can damage their reputation and cripple most activities. System administrators have to regularly back up files with regular file processing systems to ensure they are safe and accessible. This takes a lot of time if the school has thousands of large files in the system. If your organization has an efficient database management system, you don't have to back up and recover data regularly. An effective DBMS is designed with an automated backup and recovery process. This ensures the information stored in the system is readily available. The system backs up the files at regular intervals to prevent data loss. The above is expected to address governance challenges. This is because the core purpose of budget implementation is to solve governance problems (Ayeni, & Ezirim, 2023b). The government allocates

resources and funds to public organisations to solve societal and organisational problems. The above development is supposed to enhance human security since human security is the end product of effective and efficient budget implementation (Ayeni, Andeshi, & Uzoigwe, 2022). Additionally, one can still restore all the files stored in the database and pick them up from where you left them in case of data loss.

Data management ensures no data redundancy

Martin (2021) noted that schools and universities have different departments that operate under an umbrella system. These departments need to access relevant and consistent information for effective decision-making. With a DBMS, learning institutions ensure data consistency and no redundancy in data shared across different departments. Any slight changes in the school EMIS reflect on the databases, and all users can adjust to the changes. DBMS ensures all information on the school database remains consistent across all the network users. Implementing an effective data management system in a learning institution is one way of improving data access and quality. Learning institutions can enjoy seamless and remote operations with a DMS in place. On the other hand, the inability of any structure like universities to perform its function will cause the university system to malfunction (Ayeni, & Nwaorgu, 2018; Joseph, Cinjel, & Ayeni, 2017). The reason is that DBMS plays a significant role in the decision-making process.

Conclusion and Recommendations

The paper concluded that effective data management supports effective university planning, effective decision-making in the universities, effective resource allocation and effective university administration.

Based on these discoveries, the paper hereby recommends that university managers and administrators should support data management development in their respective universities. Training and retraining should be provided for officers in the department of data management. More infrastructure facilities should be provided to support the development of data management in all the universities.

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