Information Management in Tertiary Institutions in Nigeria: Imperative of a Statistical System in University of Lagos

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Abstract

As the University of Lagos celebrates its fiftieth anniversary as an institution there is need to have in place among several strategic plans, a fully integrated statistical and information system that consolidates the achievement of its present information and data management mechanism. The data generated by the university are one of its corporate assets which need to be properly protected and utilized. This article develops an integrated statistical system as part of a broader strategy of information management by the University of Lagos as an agenda beyond its 50th anniversary. A statistical system provides relevant, reliable, and accurate information. Data integration allows an organization to consolidate its present and historical data contained in the production system. The proposed model incorporates various national and international initiatives for having reliable, up-to-date, timely, efficient data dissemination and effective statistical information system. The policy implications of the proposed method are discussed.

Keywords: University of Lagos, Statistical System, Data Integration, Data Capturing, CITS.

Introduction

The goal of the University of Lagos (UNILAG for short) is to become a top-class institution for the pursuit of excellence in knowledge through learning and research as well as in character and service to humanity by providing an environment conducive to teaching, learning, research and development, where staff and students can interact and compete effectively with their counterparts both nationally and internationally in terms of intellectual competence. To achieve this goal, there is urgent need for the university to develop a fully integrated statistical and information system through which it can analyze, evaluate and monitor performance for running its operations more effectively and efficiently (UNILAG Calendar, 2010). Recent trends in the administration and management of universities in Nigeria have informed a significant need for university management to establish clear policies regarding the collection,

storage, dissemination, and use of statistical information as part of a broader strategy of information policy and management decision making process. Information policy and management includes the management of the hardware (for example, computers and terminals), software (Database and others packages), communications, information (data), personnel, and fiscal resources used to handle information. Statistical policy as one constituent of information policy centered on approaches for the effective use of statistical information, including its collection, summarization, estimation, analysis, storage, and distribution (Hamadu and Okafor (2010), Adeleke and Mesike (2012), Holt (2003), Fellegi (1996), Jabine and Scheuren (1985), Lehnen (1988), Bonnen (1983), Malkiel (1978), Sundgren (1996)). Useful statistical information is important to management of universities in meeting the demands of the National Universities Commission (NUC) for academic resource planning, accreditation, budgeting, and research and development. This information about programmes/courses and regulations guiding the running of the university is also vital for prospective candidates within and outside the country and other stakeholders.

This article developed an integrated statistical policy as part of a broader strategy of information management by the University of Lagos as an agenda beyond its 50th anniversary. The proposed model incorporates various national and international initiatives for having in place reliable, up-to-date, timely, efficient data dissemination and effective statistical system such as the Marrakech Action Plan for Statistics (MAPS), General Data Dissemination System (GDDS), Partnerships in Statistics for Development in the 21st Century (PARIS21), the Reference Regional Strategic Framework for Statistical Capacity Building in Africa (RRSF), National Strategies for the Development of Statistics (NSDS) and AFRISAT (Kiregyera, 2008; Hamadu and Okafor, 2010). This has the potential to improve the existing data capturing system for programmes and resources planning and development, monitoring and evaluation, which present the university the opportunity for making more efficient use of information.

Achievement of the University in the Areas of Information Technology and Data Capturing

To take advantage of the effectiveness and efficiency of Information Technology (IT), the University as a matter of policy has created an IT-culture by using IT to define new relationships among staff, students, faculties and all other stakeholders. This it achieved with the provision of IT facilities and the infusion of IT into administrative, academic and social processes which characterise the University of Lagos (UNILAG Academic Brief, 2005). The vision of the IT policy of the University is to put in place a Centre for Information Technology and Systems through which the University of Lagos would be transformed to an IT-driven system and thereby facilitate the development of an IT-based relationship among stakeholders of the university. The mission of the Centre is to provide functional adequate and state-of-the-art infrastructure and facilities for Intranet, Internet, Virtual learning and special laboratories for services to students, staff and the society at large.

The broad objectives of the University IT is to ensure that every student has access to a computer system and internet connectivity when required to enhance learning; also, to provide computer facilities and internet connectivity to every academic staff as and when required to facilitate and support teaching and research; to provide computer facilities and internet access to administrative

and technical staff as and when required to support teaching, learning, research and administrative activities; to ensure that information technology infrastructure is very reliable, accessible and responsive; to ensure that management information systems are fully integrated, user-friendly, timely and accurate to support informed decision-making; to ensure that graduates of the university are recognized as having acquired IT skills sufficient enough to function effectively on the job or other postgraduate assignments; and to increase student enrollment and access to higher education through the use of electronic/virtual learning technologies (University of Lagos Calendar, 2010; UNILAG Academic Brief, 2005).

To consolidate the achievement of CITS in the use and deployment of IT, there is need for the University to move from the present data Capturing System to a Statistical Information and Integration System (SIIS). A Statistical system provides relevant, comprehensive, accurate and objective statistical information (Hamadu and Okafor, 2010). Data integration allows an organization to consolidate the current data in its disparate production systems and combine it with historical values (Adeleke and Mesike (2012), Holt (2003) and Fellegi (1996). Thus, the benefits of SIIS include monitoring of the evolution of the university academic and research conditions, the planning and evaluation of programmes and investments, policy formulation and advocacy, and the creation and maintenance of an informed public.

The Role of Data in Effective University Management

It is a trite that useful and reliable data are central to a fully functioning system such as a university. The decision process involves the gathering, storage, retrieval, analysis, and communication of large quantities of information. The statistics derived from such data are essential to effective management, efficient information dissemination and an informed decision making process by the institution. For example, data inputs are required to evaluate, assess and monitor the condition and performance of students and staff of the university, develop performance objectives and measurement, identify exceptional students who need to be encouraged and weak students that should be counseled, and conduct annual appraisal of staff. Information is also required to monitor the effectiveness of policies, university resource planning, budgeting and development. In order to create that data integration process, sources of available data are considered in the context of likely needs of users. Applications are constructed to help “translate” the data into useable forms and formats, allowing for migration of the information into new channels that meet those needs. The data generated by the university is one of its corporate assets which need to be properly protected and utilized.

Components of Statistical Policy and Data Integration

At present, data and statistics collected by the university are by-products of continuing administrative processes at the registry, faculties, colleges, departments and units that generate record files. Academic and administrative records come from many different processes, such as students’ enrollment and registration, staff employment system, budget and expenditure data tallied and reported to auditing units, or from other administrative actions which often produce "paper trails" of activities. Mostly, this information is partially or wholly computerized. The advancement in information technology has produced rich data collection resources that drive process and technical improvements of all sorts (US Department of Transportation, 2010). Thus in this context, the

suggested data integration system will improve management and development of the University System. This integration is a method by which multiple data sets from a variety of sources can be combined or linked to provide a more unified picture of what the data represent and how they can be applied to solve problems and make informed decisions that relate to the effective running of the institution.

Data Inventory

Often, the data and information available at various units are not standardized in their collection, presentation and storage. This costly and ineffective method of information gathering and dissemination may lead to information duplication by various units. A first step towards establishing a statistical information policy and subsequent integration is an inventory of data held by units of the university. At a minimum, such an inventory should determine all serial data and statistical deliverables of various units as well as their statistical needs (Lehnan, 1988). Serial data such as students' enrollment are collected in a similar format on two or more occasions. For example, the admissions office, faculties, colleges, departments and libraries record such serial items. Most times people inside a unit are aware of these data but others outside it might not be. An inventory of data generated by each unit and department of the university is a requisite in achieving data integration and establishing a comprehensive statistical policy. The incentives for data integration are readily apparent to organizations that collect, store, and manage disparate databases (US Department of Transportation, 2010).

Data Documentation

Proper documentation in standardized forms is an essential and integral part of SIIS. As such, the need for establishing a standard storage of statistical information in the University of Lagos is vital. Each university unit should also create a minimum set of common documentation standards that describe the information available for distribution. In addition, an effort should be made to facilitate the storage of information in computerized formats (such as external drive, flash drive, laser disks and CD-ROMs). The university should establish a common standard for storing information on these media in order to encourage information distribution and integration. Where automation of data is not practical, a manual system of storage and retrieval should be available. Also, a technical document that describes the content of each data series available for distribution should be available and accessible on request. The document should describe the data elements and provide operational definitions of all indicators. The method of data collection should be explicitly explained and the data collection instruments such as administrative forms, questionnaires, or protocols should be included as part of the documentation. Finally, a series of uniform codes should be established to record information common to more than one unit or department. This would substantially enhance the utility of information.

Distribution of Statistical Information

The distribution policy must be integration-oriented to ensure timely access to information by university administrators, units and departments. In the information age, the basic benefits of information sharing are easy to imagine. Such benefits include: integrated decision making, compliance analysis, accessibility, timeliness, accuracy and integrity of data as well as consistency, clarity and completeness of information. In general, there should be access to the

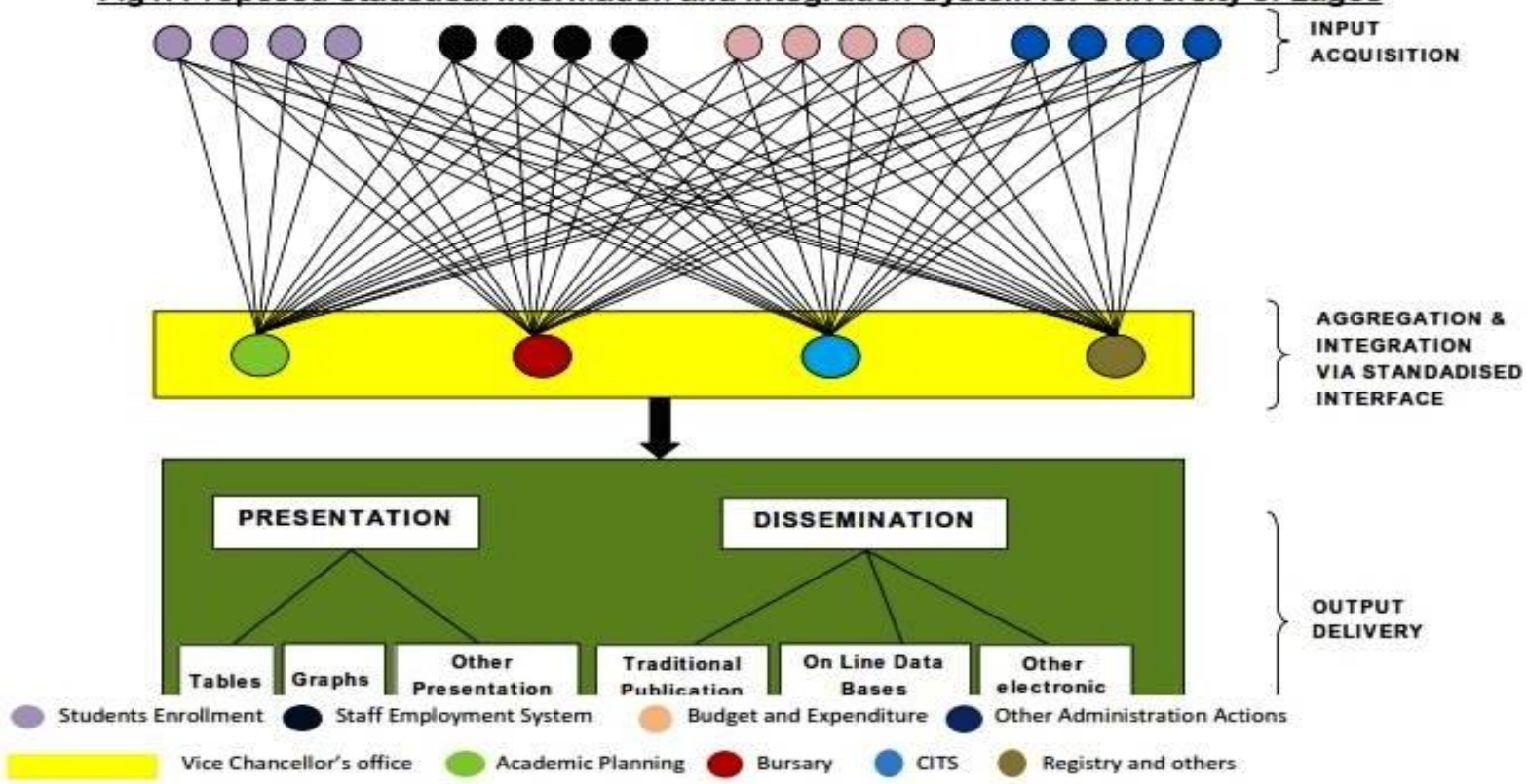
database of records used to create policy and make administrative decisions, subject to the restrictions concerning confidentiality and privacy.

Statistical Integration

To make informed and sound decisions, an organization must establish an efficient, reliable, quality and robust database. This database must combine both present and historical data in order to decipher trends and predict future outcomes. Data integration technology is key to pooling sectoral data and providing the infrastructure required for information delivery that will meet strategic policy initiatives. This infrastructure would consist of data warehouses, data marts, and operational data stores. It will also allow an organization to consolidate the current data contained in its many production systems and combine it with historical values. Without a holistic picture of the organization, it is difficult to make sound and dependable decisions, as good decision making requires a complete and accurate view of overall data. Sharing and integrating all data sources is the start to getting the complete picture and the key for not compromising the decision-making process. Some of the benefits of statistical integration within an organization are: integration of current and historical data values, combination of data from disparate sources, creation of a platform for analytical purposes, creation of statistical standards for generating statistical summaries and charts, establishment of statistical consistency throughout the organization, facilitation of the adoption of corporate data standards without having to modify existing operational systems, providing historical breadth and enabling trend analysis.

Consider the university environment where measurement values are constantly changing say, semester by semester, as records of students, staff and other activities need to be updated. There is nothing more frustrating than performing an analysis against a backdrop of information only to find out later that as a result of new developments and activities yet to be updated, you now get different statistical results. This problem can be avoided by having a data warehouse and a functional statistical system. This will ensure the validity of period-to-period comparisons. Figure 1 below shows the proposed data sharing and statistical integration system amongst various units of the University of Lagos. It illustrates the process of data input and acquisition, aggregation and integration of data from disparate sources via a standardized interface (this interface contains the infrastructure for data integration). The final stage is the information output delivery system, which consists of methodology for data analysis, presentation and dissemination of results.

Fig1: Proposed Statistical Information and Integration System for University of Lagos



Integrity and Confidentiality

Hamadu and Okafor (2010) have made a strong case for the integrity of organizations (such as the University of Lagos) producing institutional statistics. Paraphrasing elements of the authors' advocacy for integrity, we maintain that policy makers in the university and other stakeholders must have a high level of trust in institutional statistics as forming the factual basis for policy formulation and implementation. For this reason, the SIIS must be impartial in its work and perceived by the students, staff, and the general public to have integrity, neutrality, and a very high level of confidentiality.

The university statistical data should be made available to only the university's clients and other authorized users within the limitations of certain specified confidentiality restrictions. The essence of these controls of information release is to preserve the integrity and ensure that data provided will be used strictly for the specified purposes. The most fundamental purpose of these restrictions is to assure the data provider that statistical outputs will not directly or indirectly enable a statistics user to associate sensitive information with the data provider or anyone whom the data provider would like to protect.

Conclusion and Policy Implication

Reliable data is the basis for sound decision making and data integration is key to information accountability for an organization like the University of Lagos. Owing to various national and international initiatives for having in place a reliable, up-to-date, timely, efficient data dissemination and effective statistical system, we propose an integrated statistical system as part of a broader strategy of information management by the University of Lagos as an agenda beyond its 50^{th} anniversary. The proposal illustrates the process of data input and acquisition, aggregation and integration from disparate sources via a standardized interface and information output delivery system which consists of methodology for data analysis, presentation and dissemination of results.

However, the challenge could be in the implementation of the data sharing and integration structures proposed in this article, but it is a wake-up call on the university management, statisticians, computer scientists and other stakeholders within the university of Lagos community to put in place statistical integration and information system solutions. The benefits of this include: faster processing and turnaround time, lower data acquisition and storage cost, informed and defensible decisions, enhanced programme development, quality assurance and greater accountability.

For all these to be achieved, there is need for coordination between the Statistics Unit of the Department of Mathematics, the Department of Computer Sciences and the Center for Information Technology and System (CITS). Among other activities they should promote awareness of the need for the university to coordinate its data gathering systems and integrate them; organize panels, workshops and programmes on university statistical policies through regularly scheduled forums (possibly annual meetings); provide technical assistance wherever possible; and prepare technical reports. Finally, we suggest that the university should constitute a Task Force on the university information and statistical system with the aim of coming up with a policy that guides the process of information gathering, storage, integration and dissemination.

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