



Management information systems data dissemination methods for decision-making for administrators of south-east Nigeria universities

Ugwude, Anthony Chudi, Oparaji, Israel Chijiuka, AGU, Anthonia Ngozi

Ph.D, Department of Educational Management and Policy, Nnamdi Azikiwe University, Awka, Nigeria

Abstract

The design of the study was a survey research. The specific design was a panel study used to determine the Management Information Systems (MIS) Data Dissemination Methods for university administrators decision-making process in South East Nigeria universities. This study was conducted in the ten public universities in South-East, Nigeria. One research question and one hypothesis guided the study. The population of the study was made up of 589 university personnel consisting of Heads of Department, Deputy Registrars and Directors of Management Information Systems (MIS) / Information and Communication Technology (ICT) Units in the universities. The sample of the study was made up of 30 experts selected from the ten public universities in South-East Nigeria. Data were collected using a 10-item questionnaire developed by the researchers and titled: MIS Decision-Making Questionnaire (MISDMQ). Three experts from University of Nigeria, Nsukka validated the instrument. The reliability of the instrument was determined using Cronbach Alpha Formula. A reliability coefficient of 0.84 was obtained for the entire instrument. The experts' panel was made up of 30 experts consisting of 10 directors of Management Information Systems/Information Communication Technology, 10 academic staff and 10 administrative staff purposively selected from the 10 public universities in South-East Nigeria. During the round one survey, the 10-item questionnaire was administered to the respondents. 10 items reached the panelists consensus based on a mean cut-off point of 3.00 and standard deviation of less than 1.00. In the round two survey, the 10 items were re-administered to the respondents, 9 items that reached the panelist consensus in the round two survey were retained for data analysis while the one item on which consensus was not reached was discarded. The mean score was used to answer the research question. t-test was used to test the hypotheses. The following were the major results of the study. 9 MIS Data Dissemination Methods were accepted for university administrators decision-making process in South East Nigeria universities. There were no significant differences between the mean responses of administrators and MIS experts regarding the Data Dissemination Methods. Based on the findings of the study, one major educational implication was that the MIS has a high potential for making relevant information available for decision making process.

Keywords: management information systems (MIS), decision-making process

Introduction

Modern university education and administration now depend on robust programmes of Management Information Systems (MIS) to support and facilitate teaching, learning, research and management. MIS involves the collection, processing, analyzing and dissemination of educational data and information and making them available to educational administrators on a timely, routine, reliable and predictable basis for decision-making. MIS, according to Lucey (1989)^[11], is a system using formalized procedures to provide the management at all levels in all functions with appropriate information, based on data from both internal and external sources to enable them to make timely and effective decisions for planning, directing and controlling the activities for which they are responsible. Similarly, Boorne (2002)^[5] defined MIS as a structured, interacting complex of persons, machines and procedures designed to generate an orderly flow of information for use as the basis for decision-making in an organization. MIS, therefore, is a system that collects, processes, analyses, stores and disseminates information for educational planning and decision-making in the universities.

The growth of information systems services in Nigerian universities began about 1990 with the World Bank intervention to improve the institutional capacities of

Nigerian universities (National Universities Commission (NUC), 1991)^[14]. The specific focus of the intervention was on Management Information Systems (MIS), specially designed to meet the information needs of the managerial staff as they make a variety of decisions for the effective administration of the universities. In Nigerian universities, MIS is designed to achieve the following objectives : to standardize the system of obtaining reports and statistical information, ensure that such information are accurate and timely, and organize such information for planning and decision-making in order to improve utilization of resources (Fademi & Ajayi (2007)^[8]. According to Seidel (2019)^[18], MIS is a decision-making instrument used by top management comprising of a set of controls. Effective decisions are decisions based on data and information analysis to eliminate the root cause of problems, so that quality problems can be resolved effectively and efficiently (Roesminingsih & Winarko, 2019).

The National Universities Management Information Systems (NUMIS) developed by the National Universities Commission (NUC) focused only on three major areas namely, student records, staff records and financial records (NUC, 1991)^[14]. NUMIS was originally implemented using Dbase as a single package running on one system. The NUMIS main structure consists of five (5) phases; Data

entry, Data update, Query, Reports and File maintenance. These phases are linked up with modules like staff and students' entities, finance, reference tables, students and staff lists, student and staff information. Despite the implementation of NUMIS in the universities, it has not been adequately utilized in decision-making process in Nigerian universities (Ajayi, & Omirin, 2007) ^[1]. NUMIS has not been adequately utilized in decision-making in universities in South-East, Nigeria. According to Oranu (2008) ^[16], no MIS unit in the universities that use NUMIS has been able to complete the creation of staff and students' records and produce reports as required due to inadequacies of the NUMIS data management component. The major problem is on the data component of the NUMIS. This shows that the universities do not effectively use the MIS for decision-making. Evidence points to the fact that Management

Information Systems (MIS) in some universities in Nigeria are not efficient (Momoh & Abdulsalam, 2014) ^[13].

Information for decision-making in the universities cannot be provided from people's often deficient memories. According to Aminu (1996) ^[2], information resources are one of the major issues for and indices of planning and administration of universities. Information is the additional knowledge the users desire about the functions under their responsibilities to enhance planning, programming, monitoring, evaluation and decision making in the universities. Information for decision-making is dynamic and needs to be constantly updated (Heise, 2006) ^[9]. Information is the chain of understanding that binds all organizations including universities from top to bottom and from side to side. To stay well informed, and build-up their knowledge base, a university needs to feed on a balanced diet of high quality information supplied through a varied menu of information products and services (Choo, 1995) ^[7]. In this study, information is data that has been put into the forms that are useful to the university administrators for decision-making. Information is usually available or disseminated through various information systems.

Statement of the Problem

A well packaged MIS in South-East Nigerian universities will assist the university administrators in solving some of the administrative problems arising due to absence of accurate, reliable and timely information for decision-making. MIS could be utilized to improve decisions and thus enhance effective administration in the universities in such areas as, planning lecture and examination timetables electronically to avoid clashes, providing the needed information relating to students, staff and the university activities, managing university equipment and resources, recruitment and promotion of staff, appointment of Vice Chancellors, Deputy Vice Chancellors, Deans and other principals' officers of the university, taking decisions on students' enrolments, hostels/offices/staff quarters allocations. Financial and accounting decisions could also be effectively taken through the utilization of MIS and thus ensuring accountability in the universities.

This inefficiency of the MIS in the universities is mainly due to inadequacies of the NUMIS data management component. Nigeria university administrators are often concerned about the alarming rate of misplacement or loss of vital data and the slow speed at which needed data are retrieved from storage. Similarly, Atulomah (2011) ^[3]

observed that universities in Nigeria generate large quantity and quality data in their day-to day activities; but a lot of files are duplicated in numbers within and across units without control over their creations, causing data redundancy and wasteful spending due largely to the inefficiency of the Management Information Systems in these universities. Therefore, the collection, processing, organization and reporting of data are a major issue of the NUMIS. These facts amongst others show the inability of most universities in Nigeria to put up sound Management Information Systems infrastructure to guide the generation, processing, storage and retrieval of information for decision-making process. There seems to be no specific and appropriate MIS Model with proper data management component to provide the relevant information to guide and assist university administrators in South-East, Nigeria in decision-makings.

Purpose of the study

The purpose of this study was to determine the data dissemination methods of the Management Information Systems (MIS) for decision-making by administrators of universities in South-East Nigeria. Specifically, the study intended to determine; the various data dissemination methods for Management Information Systems (MIS) by administrators of South-East Nigeria universities.

Research Question

The following Research Question guided the study:

What data dissemination methods are appropriate for MIS for decision-making by administrators of South-East Nigerian universities?

Hypothesis

The following null hypothesis were formulated to guide the study and was tested at 0.05 level of significance. There is no significant difference between the mean responses of administrators and MIS experts on the data dissemination methods for MIS by administrators of South-East Nigerian universities.

Method

Design of the Study

The design of the study was a survey research. The specific design was a panel study. The Delphi technique was used in data collection. This technique permits experts' opinion to be pooled on a series of questions. A Delphi study is a virtual panel of experts gathered to arrive at an answer to a question, and therefore a form of panel survey.

Area of the Study

This study was conducted in the ten public universities in South-East, Nigeria. The choice of South – East for this study was based on certain observations and personal interviews by the researchers with the staff, students and other stakeholders in the universities in this zone.

Population of the Study

The population of the study was made up of 589 university personnel consisting of Heads of Department, Deputy Registrars and Directors of Management Information Systems (MIS) / Information and Communication Technology (ICT) Units in the universities.

Sample and Sampling Technique

The sample of the study was made up of 30 experts selected from the ten public universities in South-East Nigeria. According to Clayton (1997), sample size in a Delphi study ranges from 15 to 30 people in a homogeneous group. A purposive sampling technique was used to select 10 Heads of Departments out of 499 Heads of Departments and 10 Deputy Registrars out of 80 Deputy Registrars from the ten public universities. Random sampling was used to select one Head of Department and one Deputy Registrar from each of the ten public universities in South-East, Nigeria. The 10 Directors of MIS/ICT Units in the ten public universities in South-East, Nigeria were selected. Heads of Department and the Deputy.

Instrument for Data Collection

The instrument developed by the researchers for the collection of the data is MIS Decision-Making Model Questionnaire (MISDMQ). The instrument was 10-item questionnaire and were attached with a 4-point rating scale of; Very Appropriate = 4, Appropriate = 3, Inappropriate = 2, Very Inappropriate =1, which was used to elicit responses from the respondents for data analysis.

Validation of the Instrument

The face validation of the instrument (MISDMQ) was achieved through three experts: one each from Educational Administration and Planning, Measurement and Evaluation, and a Director of MIS Unit from a public University in Nigeria.

Reliability of the Instrument

The reliability of the instrument was determined through trial-testing of the questionnaire on 17 respondents, made up of seven senior academic staff including Heads of Department, nine senior administrative staff and the Director, Digital Centre at Kogi State University, Anyigba, Kogi State, which is outside South-East, Nigeria. The resulting scores were collated and the data were utilized to compute the reliability estimate using Cronbach alpha method. The result of the analysis showed reliability coefficient of 0.84 for the whole instrument.

Method of Data Collection

The researchers trained the two research assistants on questionnaire administration using the Delphi technique. The researchers made use of the two research assistants in the distribution and collection of the questionnaire from the respondents. The copies of the questionnaires were administered directly to the respondents by the trained research assistants and the researchers.

Method of Data Analysis

During the round one survey, 30 copies of the questionnaire were distributed to the respondents. All the 30 copies of the questionnaire were returned completed. During the second round survey, 30 copies of the questionnaire were distributed to the respondents. All the 30 copies of the

questionnaire were returned completed by the respondents. The responses were transformed into scale values. The data were analyzed using Statistical Package for Social Sciences (SPSS). The mean and standard deviation scores of the items were used to answer the seven research questions. Panelists' consensuses were achieved through the mean and standard deviation of the questionnaire items. A mean score of greater than or equal to 3.00 (Appropriate) with standard deviation of less than 1.00 indicated agreement among the panelists in the study.

Results

Research Question 1: What data dissemination methods are appropriate for MIS decision-making for administrators of South-East Nigerian universities?

Table 1: Mean responses on the data dissemination methods for Decision-making (N=30).

S/N	Data Dissemination Methods	X	SD	Decision	Rank
1	CD- ROMS	3.93	.25	AP	1
2	e-mails	3.83	.38	AP	2
3	Internet	3.63	.62	AP	3
4	different administrative/academic units in the University	3.53	.57	AP	4
5	workshops, meetings & seminars	3.40	.50	AP	5
6	Departments in the university	3.30	.60	AP	6
7	Print media	3.20	.66	AP	8
8	Government & non-government Agencies	3.13	.86	AP	8
9	Various faculties in the university.	3.10	.66	AP	9q
	Cluster	3.45	.18	AP	

AP = Appropriate

Data on Table 1 indicates that all the 9 items on data dissemination methods reached the experts' consensus. Each of these mean scores is greater than the criterion mean of 3.00. These show that the items reached the experts' consensus and are appropriate for inclusion in the MIS Model for decision-making. The cluster mean for all the items in the data dissemination methods is 3.45 which is above the criterion mean of 3.00, showing an overall appropriateness of the items. The standard deviation values of .25 and .38 for items 1 and 2 respectively indicate the closeness of the opinions of the respondents in relation to the mean, on the highly rated items 1 and 2. The standard deviation for the cluster is .18, indicating the closeness of the responses to the cluster mean. The dissemination methods ranked highly include; through CD-ROMS (X = 3.93, SD = .25, Rank =1), through e-mails (X = 3.83, SD = .38, Rank =2), through internet (X = 3.63, SD=.61, Rank=3), to different administrative/academic Units in the university (X = 3.53, SD = .57, Rank =4).

Hypothesis: There is no significant difference between the mean responses of the administrators and MIS experts on the appropriate data dissemination methods for decision-making for administrators of South-East Nigerian universities.

Table 2: Results of t-test of the mean responses of administrators and MIS experts on data dissemination methods for Decision-making.

S/N	Item	Administrators (N ₁)			MIS Experts(N ₂)		
		X1	SD1	X2	SD2	T	P
1	CD-ROMS	3.90	.31	4.00	0.00	-1.45	.163NS
2	e- mails	3.85	.37	3.90	.32	-.368	.716NS
3	workshops, meetings & seminars	3.25	.44	3.60	.52	-1.928	.064NS
4	Departments in the university	3.30	.66	3.40	.52	-.420	.678NS
5	various faculties in the University	3.25	.64	2.90	.57	1.465	.154 NS
6	Different administrative/academic units in the university	3.50	.51	3.70	.48	-1.025	.314 NS
7	government & non-government Agencies	3.05	.94	3.40	.70	-1.035	.310NS
8	Internet	3.65	.59	3.60	.70	.206	.838NS
9	Through print media	3.30	.66	3.20	.63	.398	.694NS
	Cluster	3.45	.15	3.52	.13	-1.366	.186NS

NS = Not Significant
 N1 = administrators = 20,
 N2 = MIS experts = 10

Data on Table 10 shows the result of independent t-test conducted to compare administrators and MIS experts' responses on the data dissemination methods of the MIS Model for decision-making. Items 10, 11, 12, 13, 14, 15, 16, 17 and 18 have 't' values of; -1.453, -.368, -1.928, -.420, 1.465, -1.025, -1.035, .206, .398 respectively. The cluster has 't' value of -1.366. These values are not significant at p < 0.05. There is no significant difference in the mean scores of administrators and MIS experts on each of the items and the cluster. The hypothesis of no significant difference between the mean scores of administrators and MIS experts regarding the data dissemination methods of the MIS Model is not rejected. Therefore, the opinions of the administrators and the MIS experts regarding the data dissemination methods of the MIS Model are not different.

Discussion

The study identified nine data dissemination methods for MIS decision-making for administrators of South-East Nigerian universities. The accepted data dissemination methods include; CD-ROMS, e-mails, internet, different administrative/academic Units in the university, in workshops, meetings and seminars, departments in the university, through print media, government and non-government Agencies and to various Facilities in the university. The ISD (Jurison, 1999) [10] stipulates that data generated from MIS operations should be distributed to the target users. Data distribution considers the target users, needs of the group, data to be distributed to specific groups, how the data could be used and what forms of data to be distributed to the target users. The findings of the study are in line with the findings of Opeke & Madukoma (2013) [15] that information sources used by Senior non-academic staff in Nigerian universities were mostly online (internet, e-mails, CD-ROMS etc), print materials, Policy papers and Subordinates in the office. MIS outputs are distributed through e-mail, CD-ROMS, printed media and pamphlets to Departments, Faculties and other Units of the universities. There is no significant difference between the mean opinions of administrators and MIS experts on the data dissemination methods of the MIS for decision-making for administrators of South-East Nigerian universities. These could be due to the respondents understanding of the working environment and how information could be made available in the most effective manner. The rapid development of computer usage also assisted the respondents in the understanding of the various

dissemination methods.

Recommendation

It is recommended that the identified data dissemination methods should be used in distributing the MIS activities to the target users of MIS outcomes.

References

1. Ajayi IA, Omirin FF. The use of management information systems (MIS) in decision-making in the South West Nigerian Universities. *Educational Research and Review*, 2007;2(5):109 -110.
2. Aminu JM. *Quality and stress in Nigerian education*. Maiduguri: Northern Nigerian Publishing Company, 1996.
3. Atulomah BC. Perceived Record Management Practice and Decision-making Among University Administrators in Nigerian. *Library and Practice*,2011:1(1):7-13.
4. Auster E, Choo CW. *Managing information for the competitive edge*. New York: Neal Schuman, 1995.
5. Boorne LE. *Fundamental of management principles*. New York: Wine Publishers, 2002.
6. Clayton MJ. A Delphi: A technique to harness expert opinion for critical decision making tasks in education. *Educational Pshcology*,1997:17(4):373-384.
7. Choo CW. *Information management for intelligent organization: The art of environmental scanning*. Medford: NJ: Basic Books, 1995.
8. Fadekemi FO, Ajayi IA. Problems of management information systems in the South-West Nigerian Universities: *Asian Journal of Information Technology*,2007:6(6):692-695.
9. Heise D. *Data warehousing and decision-making in Higher Education in the United States*, PhD Thesis, Andrews University, Michigan, USA, 2006.
10. Jurison J. *Software Project Management: A Managers View*. Communications of AIS, 1999, 2(17).
11. Lucey T. *Management information systems*. London: DP Publications, 1989.
12. Madu C, Kei C, Madu A. "Setting priorities for IT industries, 1991.
13. Momoh M, Abdulsalam DO. *Management Efficiency in Universities in Northern Nigeria: An Analysis*. *World Journal of Social Sciences*,2014:4(1):107-116.
14. National Universities Commission (NUC). *System design Report on the computerization of MIS for*

- Nigerian universities. Abuja: National Universities Commission, 1991.
15. Opeke RO, Madukoma E. Information Use and Job Performance of Senior Non-Administrative Staff in Nigerian Universities. *Library of Philosophy and Practice (e-journal)*, 2013, 973.
 16. Oranu PC. Enhanced information system for the self – sustenance activities of Tertiary Institutions, Unpublished M.Sc Thesis, University of Nigeria, Nsukka, 2008.
 17. Roesminingsih E, Warko E. Examination of Higher education management systems in the Digital Era ;*Journal of Physics ;Conference Series* 2019. Retrieved on 10/03/2021
 18. Seidel M. The Role of Management Information Systems In Decision -Making. Retrieved 1019. from www.bizfluent.com on 10/03/2021.