



## **MANAGEMENT INFORMATION SYSTEMS AND THEIR IMPACT ON UNIVERSITY ADMINISTRATORS' DECISION-MAKING IN SOUTH EAST NIGERIA**

**Erik Johan Svensson**

Department of Education, Göteborg University, Box 300, SE 405 30, Göteborg, Sweden.

**David Oluwaseun Adeyemi**

Department of Educational Management, University of Ibadan, Ibadan, Nigeria Position: Professor of Educational Policy and Administration

**Abstract:** The specific design was a panel study used to determine the Management Information Systems (MIS) data collection 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 design of the study was a survey research. 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 respondents that constituted the experts' panel and were selected from the ten public universities in South-East Nigeria. 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. 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 final draft of the instrument had a 4-point scale of Very Appropriate, Appropriate, Inappropriate, and Very Inappropriate. The instrument was pre-tested on 17 respondents from a public university in Kogi State, Nigeria. The reliability of the instrument was determined using Cronbach Alpha Formula. A reliability coefficient of 0.88 was obtained for the entire instrument. During the round one survey, the 10item questionnaire was administered to the respondents. 8 items reached the panelists consensus while 2 items could not reach the 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 8 items were re-administered to the respondents, while 1 item were discarded. 7 items that reached the panelist consensus in the round two surveys 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. Among others it was found that 7 data collecting procedures were accepted and included in the MIS data collection methods 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 data collection procedures. 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. It was recommended that universities in 13 South-East, Nigeria should adopt the MIS data collection procedures to provide relevant information for effective and efficient management of the institutions. MIS units should organize workshops and seminars for the university administrators on how to collect relevant data/information for MIS decision-making process in the university.

**Keywords:** Management Information Systems (MIS), Decision-Making Process, National Universities Management Information Systems (NUMIS), Information, Information System.

### **Introduction**

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). 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. Boorne (2002) 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. According to Moorthy (2019), MIS is a decision-making instrument used by top management comprising of a set of controls. MIS, therefore, is a system that collects, processes, analyses, stores and disseminates information for educational planning and decision-making in 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 (Fadekemi & Ajayi, 2007).

University administrators need continuous flow of information in order to make appropriate decisions. Effective decisionmaking in the universities depends to a large extent, on accurate, timely and relevant information available to the administrators. Relevant information for decision making emerge from proper data collection process which is the systemic approach to gathering and measuring information from a variety of sources to get a complete and accurate picture of an area of interest (Rouse, 2016). University administrators make varies decisions on their day to day activities. Decision-making is the backbone of administrative functions (Fabunmi, 2003). This is because decisions direct management actions. Good and effective decisions can only be made when the right information is made available at the right time to the right officer. According to Turban, Aronson and Liang (2004), decision-making is a process of choosing among alternative courses of action for the purpose of attaining a goal or goals. Decision-making consists of a number of steps or stages, such as recognition of a problem, formation and generation of alternatives, information search, selection of best alternatives and action (Turban, Aronson & Liang (2004), In this study, decision-making is the process leading to the selection of a course of action among alternatives by the university administration based on the available information.

Information for decision-making in the universities cannot be provided from people's often deficient memories. According to Aminu (1996), 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 decisionmaking is dynamic and needs to be constantly updated (Heise, 2006). 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). 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. Bourgeois (2019), defines information system (IS) as the study of complimentary networks of hardware and software that people and organization use to collect, create and distribute data.

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). 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). NUMIS has not been adequately utilized in decision- making in universities in South-East, Nigeria. According to Oranu (2008), 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 decisionmaking. Evidence points to the fact that Management Information Systems (MIS) in some universities in Nigeria are not efficient (Momoh & Abdulsalam, 2014).

However, despite the laudable initiative of the NUC, experience has shown that information on students, staff and university programmes are not readily available in most public universities in South-East, Nigeria. It has been observed that most public universities in South-East Nigeria hardly utilize the NUMIS for the provision of accurate, timely and reliable information for decision-making. This is partly due to the inadequacies of the data management component of the NUMIS in the provision of information for decision-making. The

NUMIS lacked data management component which should prescribe what data to collect, how these data should be processed, organized, stored and communicated for decision-making. 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) 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 decision making process. Against this background therefore, the researchers decided to determine the Management Information Systems (MIS) data collection methods for university administrators' decision-making process in South East Nigeria universities.

Observations and personal interviews made by the researchers with the staff, students and other stakeholders in the universities in this zone. Among these observations made include the followings: Universities in this zone have poor record keeping of its activities, as well as records on staff and students. It may be very difficult to obtain data in these universities as most data are usually not easily available. Data are usually contained in files, which sometimes may be difficult to access. The search for these files may be laborious and takes valuable time, thus data based decisions are difficult to be made. MIS infrastructure seems to be hardly properly utilized towards the effective provision of information for decisionmaking. This may be partly due to the nonfunctioning of the MIS Application, poor attitude of university administrators towards MIS activities and undefined MIS policy by university administrations. The administrators and the MIS experts may seem to disagree on what data to collect, how to process and disseminate data and areas for which the data are to be used for decision-making in the universities.

### **Research Question**

The following research question guided the study:

1. What data collection procedures are appropriate for MIS data collection methods for decision-making by administrators of South-East Nigerian universities?

### **Hypothesis**

One null hypothesis was formulated to guide the study and was tested at 0.05 level of significance.

1. There is no significant difference between the mean responses of administrators and MIS experts on the data collection procedures for decisionmaking by administrators of South-East Nigerian universities.

### **Method**

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 collection 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). 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. 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. 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. **Presentation of Results**

The reliability of the instrument was determined using Cronbach Alpha Formula. A reliability coefficient of 0.88 was obtained for the entire instrument. The questionnaire was administered on two round surveys. During the round one survey, the 10-item questionnaire was administered to the respondent. 8 items reached the panelists consensus while 2 items could not reach the consensus based on a mean cut-off point of

3.00 and standard deviation of less than 1.00. The questionnaire for round two surveys was developed based on the outcome of the responses of the respondents during the first round survey. In this study, a consensus mean cut-off value of 3.00 (Appropriate) or above, and standard deviation of less than 1.00 for each item was used to determine items that reached the panels' consensus. In the round two survey, the 8 items were re-administered to the respondents, while 1 item was discarded. 7 items that reached the panelist consensus in the round two surveys were retained for data analysis while the one item on which consensus was not reached was discarded. 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.

**Research Question 1:** What data collection procedures are appropriate for MIS data collection methods for decision-making by administrators of South-East Nigerian universities? **Table 1:** Mean responses on the data collection procedures of the MIS (N = 30).

| S/N | Data Collection Procedure include                                | X    | SD  | Decision | Rank |
|-----|------------------------------------------------------------------|------|-----|----------|------|
| 1.  | questionnaire                                                    | 3.97 | .18 | AP       | 1    |
| 2.  | Administrative document such as panel reports                    | 3.90 | .31 | AP       | 2    |
| 3.  | secondary sources such as Newspapers, journals and internet.     | 3.83 | .38 | AP       | 3    |
| 4.  | Achievement tests such as continuous assessment and examinations | 3.57 | .50 | AP       | 4    |

AP = Appropriate, NA = Not Appropriate Data on Table 1 indicates that consensus is reached on 7 items which have standard deviation scores and mean scores of 3.00 and less than 1.00 respectively. This shows that the items are considered appropriate for inclusion in the MIS data collection method for decision-making for South-East Nigerian universities. The cluster mean score for all the items of cluster is 3.52 which is above the criterion mean indicating a consensus on the inclusion of the cluster in the MIS data collection method. The standard deviations of items 1, 2, 3, and the cluster which are .18, .31, .38 and .15 respectively indicate that the opinions of the respondents are close to one another in relation to the mean. The standard deviations of items 4, 5, 6, and 7 which ranged from .50 to .83 show that the

Hypothesis 1 opinions of the respondents are not close to one another in relation to the mean. These relatively high standard deviations indicate the possibility of significant differences in the mean scores of the groups. No consensus is reached on aptitude tests as data collection instrument and the item was discarded. The items on which the respondents reached a very high consensus include, Data collection through questionnaire (X=3.97, SD= .18, Rank=1), panel reports (X=3.90, SD =.31, Rank =2), secondary sources such as Newspapers, journals and internet (X= 3.83, SD =.38, Rank=3), Achievement tests (X= 3.57, SD=.50 Rank=4), checklists (X =3.57), SD =.63, Rank=5), Sampling survey to provide data (X =3.53), SD .51, Rank=6).

There is no significant difference between the mean responses of the administrators and MIS experts on the data collection procedures for MIS data for decision-making for administrators of South-East Nigerian universities.

|                                                                       |             |            |           |   |
|-----------------------------------------------------------------------|-------------|------------|-----------|---|
| 5. Checklist                                                          | 3.57        | .63        | AP        | 5 |
| 6. Sampling survey                                                    | 3.53        | .51        | AP        | 6 |
| 7. Administrative documents such as queries to collect relevant data. | 3.07        | .83        | AP        | 7 |
| 8. Aptitude tests such as general ability and verbal ability tests.   | 2.73        |            | .83 NA    | 8 |
| <b>Cluster</b>                                                        | <b>3.52</b> | <b>.15</b> | <b>AP</b> |   |

Table 2: Results of t-test of the mean responses of administrators and MIS experts regarding the data collection instrument/procedures of the MIS Data Model.

Administrators MIS Experts

| S/N     | Item                                                             | X1   | SD1  | X2   | SD2  | t      | P              |
|---------|------------------------------------------------------------------|------|------|------|------|--------|----------------|
| 1.      | Questionnaire                                                    | 3.95 | .22  | 4.00 | 0.00 | -.70   | 1.489 NS       |
| 2.      | administrative document such as panel reports                    | 3.85 | .37  | 4.00 | 0.00 | -1.83  | 1.083 NS       |
| 3.      | Administrative documents such as queries.                        |      | 3.30 | .87  | 2.80 | .42    | 2.12 9.042 S   |
| 4.      | Sampling surveys                                                 |      | 3.45 | .51  | 3.80 | .42    | -1.994 .059 NS |
| 5.      | Checklists                                                       | 3.65 | .49  | 3.30 | .481 | .854   | .074 NS        |
| 6.      | Achievement Tests such as continuous assessment and examination. | 3.40 | .68  | 3.90 | .32  | -2.746 | .010 S         |
| 7.      | Aptitude Tests such as general ability verbal ability tests.     | 2.80 | .95  | 2.70 | .48  | .311   | .758 NS        |
| 8.      | Secondary sources such as Newspapers, journals and internet.     | 3.80 | .41  | 3.90 | .32  | -.675  | .505 NS        |
| Cluster |                                                                  | 3.53 | .18  | 3.55 | .09  | -.504  | .618 NS        |

NS = Not Significant, S = Significant, N1 = administrators = 20, N2 = MIS Experts = 10

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Data in Table 4 shows the independent sample t-test conducted to compare administrators and MIS experts' responses on the data collection instruments / procedures of the MIS Model of decision-making. Items 1, 2, 4, 5, 7 and 8 has 't' values of -.701, -1.831, -1.994, 1.85, .311 .675 respectively. The Cluster has 't' value of;.504. These values are not significant at  $p < 0.05$ . There is no significant difference in the mean scores of administrators and MIS experts on these items and the cluster. Therefore, the null hypothesis is not rejected in respect of these items and the cluster. This shows that there are no significant differences in the mean scores of administrators and MIS experts regarding the appropriateness of data collection instruments /procedures represented by these items of the MIS Model. However, the 't' values for items 3 and 6 are 2.129 and -2.746 respectively; and these values are significant at  $p < .05$ . Administrators rated the use of administrative documents such as queries more appropriate than the MIS experts, while the MIS experts rated the use of achievement tests such as continuous assessment and examinations more appropriate than the administrators.

### Discussion

The results of the study on data collection procedures of MIS for decisionmaking for administrators of South-East Nigerian universities identified a total of seven data collection procedures. The identified major data collection methods were; utilizing questionnaire ,use of administrative document such as panel reports, secondary sources such as Newspapers, journals and internet, tests such as continuous assessment and examinations, checklists and sampling surveys. The findings on data collection procedures support the Information System Development (ISD) method which stipulated that all necessary data for information systems(IS) are provided in a timely manner through an established and defined procedure for data collection from within and outside the environment for decision- making process (Jurison,1999) . The ISD emphasized that the data collection methods are imperative for any Information Systems (IS) such as MIS which should take into consideration the needs of the university administrators in making decisions in the universities. Robust data collection methods as identified by the experts in this study are necessary to provide accurate and comprehensive

data/information for decisionmaking in the universities. Such comprehensive data collection methods ensure that all relevant data, both within and outside the university environment, are captured to provide complete data for decision-making process. Utilizing the identified data collection procedures in this study will ensure the collection of relevant data needed for MIS activities in the universities for decision-making process.

There is no significant difference between the mean responses of administrators and MIS experts on the data collection procedures of the MIS for decision-making for administrators of South-East Nigerian universities. The finding of no significant difference between the mean responses of administrators and MIS experts is an indication that both groups of respondents do agree to <https://ajemates.org> these data collection procedures to generate data for MIS activities. However, there are significant differences on the mean responses of the groups on the use of administrative document such as queries as methods of data collection in favour of the administrators and the use of achievement tests such as continuous assessment and examinations in favour of the MIS experts. These differences indicated the relative emphasis given to the difference methods by the different groups of respondents which were influenced by their background. The findings of this study are in agreement with the findings of Momoh & Abdulsalam (2014), that on information management efficiency in the universities in Northern

### **Recommendations**

Based on the major findings of this study and the implications, the following recommendations were made:

1. The success of the MIS depends to a large extent on the availability of accurate, relevant and timely information for decisionmaking. It is recommended that the MIS personnel should use the identified data collection procedures in providing the relevant data for MIS activities in the universities.
2. MIS units should organize workshops and seminars for the university administrators on how to collect relevant data/information for MIS decision-making process in the university.

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