# Influence of Application End-User Satisfaction and Appropriateness of Information Generated by Management Information Systems on Decisions-Making in Universities in Southwestern Nigeria

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*Abstract*

*This study investigated the influence of Application End-user Satisfaction (AES) about Management Information Systems (MIS) and Appropriateness of Information Generated (AIG) by MIS on Tactical Decision-Making (TDM) and Strategic Decision-Making (SDM) in universities in Southwestern Nigeria. Bertalanffy's systems theory provided the framework, while survey design of the correlation type was adopted. Three federal and three private universities were selected. Proportionate random technique was used to select 1204 students, 359 lecturers and 91 management staff respectively. Scales, questionnaires, key informant interviews were the data collection instruments. Quantitative data were analysed using Pearson Product Moment Correlation and Multiple Regression at 0.05 level of significance while qualitative data were content analysed. There were significant correlation between AES (r = 0.09) and AIG (r = 0.37) on TDM; AES (r = 0.18) and AIG (r = 0.58) on SDM; AES and AIG had significant joint influence on TDM ($R^2 = 0.12$, $F_{(2, 108) =}$ 8.71) and SDM ($R^2 = 0.33$, $F_{(2, 108) =}$ 27.43). ($R^2 = 0.46$, $F_{(2, 108) =}$ 48.29) thereby contributing 12.0% and 33.0% to their variances respectively. The AIG had significant relative contribution to TDM (ß = 0.37, t = 4.04) and SDM (ß = 0.57, t = 7.05). Appropriateness of information generated by MIS and Application End-user Satisfaction about MIS influenced tactical and strategic decisions-making among universities in Southwestern Nigeria. Universities authorities should ensure high quality structure of management information systems so as to be in tune with the best global practice in institutional management.*

*Keywords:* *Management Information Systems, Appropriateness of Information Generated, Applications End-user Satisfaction, Strategic Decision-Making, Tactical Decision-Making*

## Introduction

The universities contribute meaningfully to the social and economic development of the nation. Universities also strive to seek the truth through the search for development of knowledge. In the course of meeting these mandates, universities in Nigeria tend to face increasing organisational challenges in decision-making. The agitations for improvement in facilities and working conditions among the various interest groups in Nigerian tertiary institutions, displeasure about the quality of graduates among employers of labour and the poor ranking of Nigerian universities as well as the state of and the place of higher education among national priorities show that perhaps decisions were poorly made by Nigerian university managements as regards achieving

goals of teaching, research, disseminating of existing and new information as well as services to the community. Amidst all these challenges, Nigerian universities may desire to reorganise their fundamental roles in producing the human resources necessary for societal development. They may also help in solving social and cultural problems as well as recognising the universal value for the development of mankind, science, art and culture. Nigerian universities managements may aspire to make rational decisions.

Decision-making is the act of sufficiently reducing uncertainty and doubt about alternatives to allow for a logical choice to be made among competing options. Decision-making is also the process of making choices by setting goals, gathering information and assessing alternative options. Nwankwo (2014) asserted that every management action whether it concerns inputs (funds, staff, students, facilities or policy guidelines), the process (programmes and services, the methodologies or overall pedagogy), nature of the outputs (the expected results and quality standards) requires making choices among alternative courses of action. Gaurav (2011) opined that managerial decision-making helps to utilise the available resources (the available resources are the 6Ms- men, money, materials, machines, methods and markets) for achieving the objectives of the organisation. Finally, decision-making is necessary in planning, organising, directing, controlling and staffing.

The levels of management decision-making supported by Management Information Systems (MIS) in any progressive organisation (universities inclusive) can be classified into three: strategic, tactical and operational. Tactics are the substance of strategy, while the terms tactical and strategic are fundamental to an understanding of the different responsibilities attached to management and governance of an organisation. Strategic decision-making (long-time) is macro-oriented with an emphasis on long term goals and objectives, usually in 3 to 5 year increments. Tactical decision-making (short-time) is micro-oriented which usually has 1 to 18 months' time frame. The operational level requires information and instructions from the tactical level. The operational level is primarily concerned with the day-to-day performance of tasks and most of the information is obtained from internal sources.

Information Systems (IS) support different types of decisions at different levels of the organisational hierarchy. MIS are types of IS that take internal data from the systems and summarise them into useful forms as management reports for use in decision-making. MIS can be viewed as a concept, a process or a facility in an organisation. As a concept, Ranisavljević, Spasić & Mladenović-Ranisavljević (2012) defined it as organised, automated, and diverse information system that gathers, stores, processes and distributes data associated with different departments to support the management operations in an organisation. As a process, Linton (2014) defined MIS as combination of hardware, software and network products in an integrated solution that provides managers with data in a format suitable for analysis, monitoring, decision-making and reporting. As a facility, MIS help managers make effective decisions to support ongoing operations within an organisation (Zandbergen, 2014). MIS refer to computer-based systems that provide managers with the tools to organise, evaluate and efficiently manage departments within an organisation (Beal, 2014). Structurally, MIS are classified into three main groups. Decision Support Systems (DSS), Executive Information Systems (EIS) or Executive Support Systems (ESS) and Specialised Processing Systems (SPS). In practice, all these different

types and roles of IS are combined into integrated or cross-functional business information systems that provide a variety of functions. MIS basically provides four different types of information: descriptive, diagnostic, predictive and prescriptive (Hamlett, 2014).

MIS in Nigerian universities are essential facilities for generating and disseminating information and an operational unit. They optimise the collection, transfer and presentation of information through an integrated structure of database and information flow. MIS inform decision-makers about the pedagogical operation, performance, shortcomings and needs because they are the bases of the management, planning and evaluation of education systems. It is expected that MIS would provide university decision-makers with timely and accurate data to allow making and implementing the necessary decisions to effectively reach the universities' predetermined goals. With the adoption and deployment of MIS, Nigerian universities may succeed in coping with copious digital information, much of which may obscure the specific information being sought. Notably, applications end-user of MIS in these universities often find it difficult to quickly locate content and assume that such information are not available. In universities, where there is lack of timely, reliable and relevant data and information required for planning, they may not be adequately informed in their strategic and tactical decisions.

Application End-user Satisfaction is a critical determinant of the success of MIS. Just as Sharabati, Sulaiman & Salleh (2015) and Cai, Jun & Pham (ND) opined that any IS could only be considered successful if the applications end-user were satisfied. Applications End-user satisfaction also played an increasingly important role in assisting managers make crucial decisions efficiently and effectively. In this study Applications end-user satisfaction refers (student, staff and management) judgment of the overall excellence of MIS. Applications end-user satisfaction with information utilisation is related to organisation, taxonomy, navigation, writing and editing, meeting need as well as ease of retrieval.

A decision is as credible and reliable as the quality of the information on which it is based. Decision-making demands accurate, timely and relevant information. In tertiary institution, where appropriate information required for planning were not available at the appropriate time, there may be poor planning, poor priority of needs and defective programming or scheduling of activities thus leading to inappropriate decision-making. Appropriate Information is needed in all spheres of life to facilitate decision-making and engender progress. Appropriate Information generated by MIS play indispensable roles in achieving organisational goals. Appropriateness of information generated by MIS in this study refers to the extent of completeness of information. MIS should provide information to facilitate applications end-user's understanding and decision-making. In this context appropriateness of information generated by MIS is connected to relevancy, accuracy, presentation, comprehensiveness, content usefulness and confidentiality. Accordingly, the broad objective of this study was the examination of the influence of Appropriateness of Information Generated (AIG) by MIS and Applications End-user Satisfaction (AES) about MIS on Tactical Decision-Making (TDM) and Strategic Decision-Making (SDM) in universities in Southwestern Nigeria. The following research questions were raised and answered in this study.

   i)   What is the level of Applications End-user Satisfaction (AES) about MIS in universities

in Southwestern Nigeria?

ii) To what extent does Appropriateness of Information Generated (AIG) by MIS facilitate tactical decision-making in universities in Southwestern Nigeria?

iii) To what extent does Appropriateness of Information Generated (AIG) by MIS facilitate strategic decision-making in universities in Southwestern Nigeria?

This study tested the following hypotheses at 0.05 level of significance.

$H_{O1}$: The Applications End-user Satisfaction (AES) about MIS and Appropriateness of Information Generated (AIG) by MIS had no significant influence on Tactical Decision-Making (TDM) in universities in Southwestern Nigeria.

$H_{O2}$: The Application End-user Satisfaction (AES) about MIS and Appropriateness of Information Generated (AIG) by MIS had no significant influence on Strategic Decision-Making (SDM) in universities in Southwestern Nigeria.

**Conceptual Framework for this Study**

Figure 1 describes the Conceptual Framework for this Study. It is the researcher's own position, that shows the relationships between the different constructs investigated and gave direction to this study. The arrows in the framework are uni-directional and the justification for this is that the framework attempts to present an ideal situation, where the strategic and tactical information needs get to the university managements for the accomplishment of the university mandates.
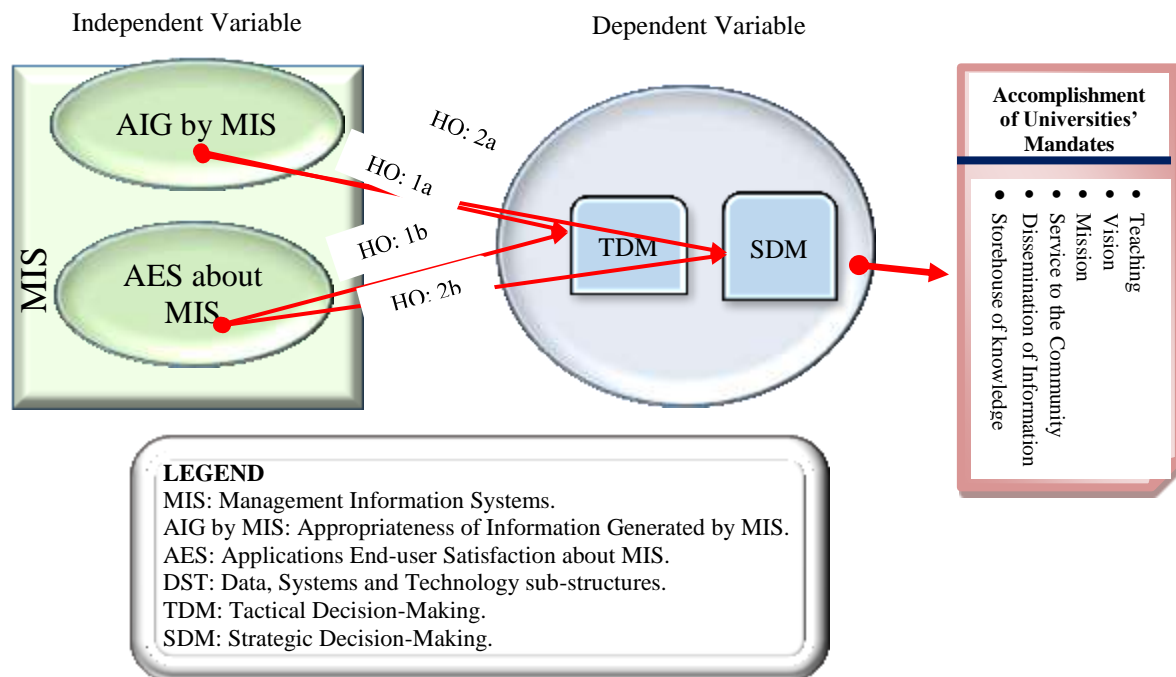


**Figure 1. The Research Framework for this Study**

In this study the following simplified assumptions were made.

- What constitutes good MIS vary between stakeholders, perspectives and system purposes. There are no MIS which are good in an absolute sense.

- Owing to the assumption of relativity, it is necessary to choose a perspective from which to conduct the discussion. In this study, a managerial perspective is chosen.
- It is assumed that healthy MIS will require that all stakeholders are reasonably satisfied. Even with a managerial perspective, it is pertinent to look at what is good for the participants in MIS.
- Good MIS lead to good decision-making in organisations, just the same way poor management leads to poor decision-making.

**Methodology**

This study adopted the descriptive survey design of the correlation type. The population of this study comprised all the thirty five (35) universities in Southwestern Nigeria. The population for the study were defined at three levels. i) Chairmen/Directors of MIS/ICT units. ii) Top management (strategic), mid-level management (tactical). iii) Applications end-user in all the 35 universities in Southwestern Nigeria. A sample of six universities located in Southwestern Nigeria were selected to take part in the study, they were as follows. i) University of Ibadan, Ibadan. ii) Obafemi Awolowo University, Ile-Ife. iii) Federal University of Technology, Akure. iv) Lead City University Ibadan.  v) Adeleke University, Ede. vi) Joseph Ayo Babalola University, Ikeji-Arakeji.

A purposive sampling procedure was employed to select sample from each of these subsets. i) The director/chairman of MIS/ICT units. ii) Principal Officer: vice chancellor, deputy vice-chancellor, registrar, bursar and librarian. iii) The management: deans, directors and heads of departments/units. iv) Applications end-user: student, staff, management staff, principal officer and director/chairman of MIS/ICT units in all the six selected universities. In addition to scales and checklist, interviews were conducted by the researcher with other key personnel in MIS unit in each of the sampled universities. Observations were also made by the researcher about MIS. A total of 1681 respondents were selected. The analysis of the data involved descriptive statistics such as simple frequency counts, measures of central tendency such as the mean rating and cross-tabulations.  Inferential statistic such as Pearson Product Moment Correlation (PPMC) was used to determine whether Appropriateness of Information Generated (AIG) by MIS and Application End-user Satisfaction (AES) about MIS were correlated with Tactical Decision-Making (TDM) and Strategic Decision-Making (SDM).  While, Analysis of Variance (ANOVA) was used to determine the extent to which AIG and AES influenced TDM and SDM respectively.

**Findings**

*Research Question 1. What is the level of applications end-user satisfaction about MIS in universities in Southwestern Nigeria?*

To answer this research question, the response format of Applications End-user (student, staff and management) with about MIS in terms of the following indicators were rated on 4 a point scale. The six indicators were as follows. i) Organisation: how content is grouped or clustered. ii) Taxonomy: how content is referred to. iii) Navigation: how to move between content groups (functional flow and linking). iv) Writing and editing: message and meaning; readability,

accuracy and style. v) Meeting needs: effectiveness and efficiency of system to serve the needs of the applications end-user. vi) Ease of retrieval: the ability to locate content for use.

**Table 1. Level of Applications End-user Satisfaction about MIS in universities in Southwestern Nigeria**

| Indicators | OAU | UI | FUTA | LCU | AU | JABU |
|------------|-----|-----|------|-----|-----|------|
| **Organisation** | 2.19 | 2.18 | 2.29 | 1.94 | 2.62 | 1.99 |
| **Taxonomy** | 2.28 | 2.09 | 2.47 | 2.05 | 2.56 | 2.15 |
| **Navigation** | 2.39 | 2.27 | 2.46 | 1.97 | 2.54 | 2.24 |
| **Writing & Editing** | 2.28 | 2.18 | 2.23 | 2.27 | 2.34 | 2.16 |
| **Meeting needs** | 2.35 | 2.18 | 2.40 | 2.36 | 2.65 | 2.21 |
| **Ease of Retrieval** | 2.43 | 2.27 | 2.59 | 2.05 | 2.97 | 2.69 |
| **Mean** | **2.32** | **2.96** | **2.40** | **2.10** | **2.60** | **2.24** |

***Decision Rule:*** *1.0 - 2.0 = Not Satisfied     2.1 - 3.0 = Satisfied    > 3.0 = Very satisfied*

Table 1, showed the overall level of applications end-user satisfaction about MIS in universities in Southwestern Nigeria. The overall mean ranged between 2.10 and 2.96. This result indicated that within and across these universities, the end-users were satisfied with MIS in terms of organisation, taxonomy, navigation, writing and editing, meeting needs and ease of retrieval.

***Research Question 2.*** *To what extent does* Appropriateness of Information Generated by *MIS facilitate tactical decision-making in universities in Southwestern Nigeria?*

**Table 2. Extent to which Appropriateness of Information Generated by MIS Facilitated Tactical Decision-making in Universities in Southwestern Nigeria**

| | *Items* | OAU | UI | FUTA | AU | JABU | LCU |
|---|---|---|---|---|---|---|---|
| *Tactical decision-making indicators* | X1 | 1.44 | 1.50 | 1.50 | 1.50 | 1.40 | 1.40 |
| | X2 | 1.63 | 1.75 | 2.00 | 2.25 | 1.40 | 1.70 |
| | X3 | 2.00 | 1.88 | 2.50 | 2.75 | 1.80 | 2.00 |
| | X4 | 2.25 | 1.88 | 1.50 | 2.25 | 2.20 | 2.20 |
| | X5 | 1.88 | 2.00 | 1.75 | 1.75 | 1.20 | 2.00 |
| | X6 | 1.63 | 2.00 | 2.00 | 2.25 | 1.40 | 1.50 |
| | X7 | 1.81 | 1.88 | 1.75 | 2.50 | 2.00 | 1.60 |
| | X8 | 1.69 | 2.00 | 2.25 | 2.00 | 1.60 | 1.50 |
| | X9 | 1.88 | 2.00 | 2.25 | 2.50 | 1.40 | 2.00 |
| | X10 | 2.00 | 2.00 | 2.50 | 2.25 | 1.60 | 2.10 |
| | X11 | 2.81 | 2.13 | 2.00 | 2.50 | 1.20 | 1.50 |
| | X12 | 1.75 | 2.13 | 2.50 | 2.25 | 1.40 | 1.90 |
| | X13 | 2.00 | 2.25 | 3.00 | 2.75 | 1.60 | 2.10 |
| | X14 | 1.50 | 2.25 | 2.00 | 2.25 | 1.40 | 1.40 |
| | X15 | 1.50 | 2.25 | 2.25 | 1.50 | 1.40 | 1.60 |
| | X16 | 1.94 | 2.50 | 2.25 | 2.50 | 1.40 | 2.00 |
| | X17 | 1.88 | 2.13 | 2.25 | 2.00 | 1.60 | 2.00 |
| | X18 | 2.19 | 2.25 | 2.50 | 2.00 | 1.80 | 2.30 |
| | X19 | 2.13 | 3.00 | 2.75 | 2.25 | 1.60 | 2.20 |
| | X20 | 2.56 | 2.50 | 4.50 | 2.50 | 1.40 | 2.20 |
| **Overall Mean** | | **1.92** | **2.11** | **2.3** | **2.22** | **1.54** | **1.86** |

*X1 = Student course registration, X2 = Student identification X3= Student lecture attendance X4 = Student course grade*

*X5 = Mobilization of NYSC       X6=Student passage          X7=Allocation of student hall of residence*

*X8 = Allocation of student car packing space   X9 = Allocation of lecture room/theatres   X10= Staff recruitment process*

*X11 = Allocation of lecture room/theatres     X12 = Staff recruitment process          X13 = Promotion of staff*

*X14 = Staff training and development       X15 = Appointment of Dean/HOD/Director X16 = Allocation of staff offices*

*X17 = Allocation of staff car parking space  X18 = Allocation of residential quarters     X19 = Lecturer performance*

*X20 = Staff passage.*

***Decision Rule:*** *0-1.0 = Often,       1.1- 2.0 = Rarely,     2.1-3.0 = Regularly*

Table 2 revealed the difference in tactical decision-making across the sampled universities in Southwestern Nigeria in relation to appropriateness of information generated by MIS in terms of the following indicators: student course registration, student identification, student lecture

attendance, student course grade, mobilisation of NYSC, student passage, allocation of student hall of residence, allocation of student car packing space and allocation of lecture room/theatres. Other indicators include staff recruitment process, allocation of lecture room/theatres, staff recruitment process, promotion of staff, staff training and development, appointment of Dean/HOD/Director, allocation of offices to staff, allocation of staff car parking space, allocation of residential quarters, lecturer performance and staff passage. From the Table 3 it can be observed that in terms of how AIG by MIS facilitated tactical decision-making in Nigeria universities through these indicators, the FUTA with the overall mean of 2.3 had the highest capability to facilitate tactical decision-making with reference to information generated by MIS. In order of magnitude, the AU followed with mean of 2.22, the UI (2.11), the OAU (1.92), the LCU (1.86) and the JABU (1.54). This implies that the FUTA took the led when it comes to facilitating tactical decision-making through appropriateness of information by MIS.

**Research Question 3.** *To what extent does Appropriateness of Information Generated by MIS facilitate strategic decision-making in universities in Southwestern Nigeria?*

**Table 3. The Extent to which Appropriateness of Information Generated by MIS Facilitated Strategic Decision-making in Universities in Southwestern Nigeria**

| ITEMS | OAU | UI | FUTA | AU | JABU | LCU |
|---|---|---|---|---|---|---|
| X1 | 1.56 | 1.50 | 1.25 | 1.50 | 1.20 | 1.50 |
| X2 | 1.88 | 1.63 | 1.75 | 2.25 | 1.80 | 1.70 |
| X3 | 2.13 | 1.38 | 1.50 | 2.25 | 2.40 | 2.00 |
| X4 | 2.25 | 1.63 | 1.50 | 1.75 | 1.80 | 2.30 |
| X5 | 3.13 | 1.50 | 1.75 | 1.25 | 1.60 | 1.90 |
| X6 | 2.00 | 1.50 | 1.25 | 1.75 | 2.00 | 1.90 |
| X7 | 6.56 | 1.88 | 1.50 | 2.00 | 1.80 | 2.10 |
| X8 | 1.69 | 1.63 | 2.00 | 2.00 | 1.60 | 1.60 |
| Overall Mean | 2.65 | 1.58 | 1.56 | 1.84 | 1.77 | 1.87 |

*X1 = Student Admission;        X2 = Student Academic Record;     X3 = Manpower (staff)
        Projection;*
*X4 = Staff recruitment exercise;    X5 = Staff Promotion;    X6    =    Establishing    faculty
        /department;*
*X7 = University Academic Programme;   X8 = Stocking Library with books and Journals.*
**Decision Rule:**  *0-1.0 = Often,        1.1- 2.0 = Rarely,      2.1-3.0 = Regularly*

Table 3 revealed differences in strategic decision-making in universities in Southwestern Nigeria in relation to information generated by MIS in terms of: student admission, student academic record, manpower (staff) projection, staff recruitment exercise, staff promotion and establishing new faculty/department. Other indicators include university academic programme, stocking library with books and journals. It should be noted MIS facilitated strategic decision-making in the universities in Southwestern Nigeria through these indicators. The OAU with overall mean of 2.65 had the highest capability in facilitating strategic decision-

making through information generated by MIS. In order of magnitude the overall mean of other universities were: the LCU (1.87), the AU (1.84), the JABU (1.77), the UI (1.58) and the FUTA (1.56). This implies that the OAU led other universities in terms of facilitating strategic decision-making through appropriateness of information generated by MIS.

**H$_{O1}$**: *The Applications End-user Satisfaction about MIS (AES) and Appropriateness of Information Generated (AIG) by MIS had no significant influence on Tactical Decision-Making (TDM) in universities in Southwestern Nigeria.*

**Table 4. Correlation of AIG and AES with TDM**

|  | TDM | AES | AIG |
|---|---|---|---|
|  |  | r |  |
| TDM | 1.00 | .09 | .37 |
| Pearson Correlation   AES | .093 | 1.00 | .22 |
| AIG | .37 | .22 | 1.00 |
| TDM | . | .16 | .00 |
| Sig. (1-tailed)   AES | .16 | . | .01 |
| AIG | .00 | .01 | . |
| TDM | 111 | 111 | 111 |
| N   AES | 111 | 111 | 111 |
| AIG | 111 | 111 | 111 |

Pearson Product Moment Correlation was calculated in order to establish whether Applications End-user Satisfaction (AES) about MIS and Appropriateness of Information Generated (AIG) by MIS positively correlated with Tactical Decision-Making (TDM) in universities in Southwestern Nigeria. As presented in Table 4 the results showed that AES (r = 0.09) and AIG (r = 0.37) were positively correlated with TDM. Further, Table 5, presented the test for the influence of AES and AIG on TDM in universities in Southwestern Nigeria.

**Table 5. Influence of AES and AIG on TDM in universities in Southwestern Nigeria**

| Model | | Sum of squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 5.32 | 2 | 2.66 | 8.7 | .000 b |
| | Residual | 13.01 | 108 | .31 | 1 | |
| | Total | 38.33 | 110 | | | |
| **Model Summary** | | | | | | |
| Model | | 1 | | | | |
| R | | .37 | | | | |
| R Square | | .14 | | | | |
| Adjusted R Square | | .12 | | | | |
| Std. Error of the Estimate | | .55 | | | | |

Dependent Variable: TDM b. Predictors: (Constant), AIG and AES
Predictors: (Constant), AIG and AES

In Table 5, the multiple correlation (R), the multiple correlation squared ($R^2$) and adjusted squared multiple correlation ($AdjR^2$) which revealed how well AIG and AES allow reliable prediction of the Tactical Decision-Making (TDM). The model had a positive but low correlation (R= .37). The $R^2$ (.14) and the $AdjR^2$ which estimated the variance accounted for by independent variables was .12. From the model we could deduce that 12% of the total variance in TDM (the independent variable), leaving the remaining 88% to chance and residual. Table 5 equally showed that the combination of all independent variables also allowed reliable prediction of TDM ($F_{(2,108)} = 8.71$). Therefore, AES and AIG had significant influence on TDM in universities in Southwestern Nigeria. Further, Table 5 presented the test for relative influence of AES and AIG on TDM in universities in Southwestern Nigeria.

**Table 6. Relative Influence of AES and AIG on TDM in universities in Southwestern Nigeria**

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig | Correlations | | |
|---|---|---|---|---|---|---|---|---|
| | B | Std. Error | Beta | | | Zero-order | Partial | Part |
| (Constant) | 1.55 | .166 | | 9.35 | .00 | | | |
| 1 AES | .006 | .05 | .01 | .13 | .90 | .09 | .01 | .01 |
| AIG | .194 | .05 | .37 | 4.04 | .00 | .37 | .36 | .36 |

   a. Dependent Variable: TDM

Table 6 reported the Unstandardized Coefficients (ß) and Standardized Coefficient (beta weight), t, p values. Standard multiple regression was conducted to determine the accuracy of the two dependent variables (AES and AIG) in predicting TDM. The beta weights in Table 6 specified that 'AIG'; was influential in predicting TDM. AIG (ß = .37, t = 4.04) and significantly contributed to the model. Thus, there was significant relative influence of AIG on TDM. Whereas the relative influence of AES on TDM was not significant.

**H$_{O2}$:** *The Applications End-user Satisfaction about (AES) and Appropriateness of Information Generated (AIG) by MIS and had no significant influence on Strategic Decision-Making (SDM) in universities in Southwestern Nigeria.*

**Table 7. Correlation of AES and AIG with SDM**

|  | SDM | AES | AIG |
|---|---|---|---|
|  | r | | |
| SDM | 1.00 | .18 | .58 |
| Pearson Correlation AES | .18 | 1.00 | .22 |
| AIG | .58 | .22 | 1.00 |
| SDM | . | .031 | .00 |
| Sig. (1-tailed) AES | .03 | . | .01 |
| AIG | .00 | .01 | . |
| SDM | 111 | 111 | 111 |
| N AES | 111 | 111 | 111 |
| AIG | 111 | 111 | 111 |

Pearson Product Moment Correlation was calculated in order to establish whether Application End-user Satisfaction (AES) and Appropriateness of Information Generated (AIG) by MIS were positively correlated with Strategic Decision-Making (SDM) in universities in Southwestern Nigeria. As presented in Table 7, the results showed that AES (r = 0.18) and AIG (r = 0.58) were positively correlated with SDM. In addition, Table 8 presented the test for the influence of AES and AIG on SDM in universities in Southwestern Nigeria.

**Table 8. Influence of AES and AIG on SDM in universities in Southwestern Nigeria**

| Model | | Sum of squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 49.23 | 2 | 24.62 .89 | 27.43 | .000 b |
| | Residual | 96.91 | 108 | | | |
| | Total | 146.14 | 110 | | | |
| **Model Summary** | | | | | | |
| Model | | 1 | | | | |
| R | | .58 | | | | |
| R Square | | .34 | | | | |
| Adjusted R Square | | .33 | | | | |
| Std. Error of the Estimate | | .95 | | | | |

Dependent Variable: SDM b. Predictors: (Constant), AIG and AES
Predictors: (Constant), AIG and AES

Table 8 presented the multiple correlation (R), the multiple correlation squared ($R^2$) and adjusted squared multiple correlation ($AdjR^2$) which revealed how well AIG and AES allow reliable prediction of the Strategic Decision-Making (SDM). The model had a positive but low correlation (R= .58). The $R^2$ (.34) and the $AdjR^2$ which estimated the variance accounted for by independent variables was .33. From the model we could deduce that about 33% of the total variance in TDM (the independent variable), leaving the remaining 67% to chance and residual. Table 7, equally showed that the combination of all independent variables also allowed reliable prediction of SDM ($F_{(2,108)}$ = 27.43). Therefore, AES and AIG had significant influence on SDM in universities in Southwestern Nigeria. Further, Table 9 presented test for relative influence of AES and AIG on SDM in universities in Southwestern Nigeria.

**Table 9. Relative Influence of AES and AIG on SDM in universities in Southwestern Nigeria**.

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig | Correlations | | |
|---|---|---|---|---|---|---|---|---|
| | B | Std. Error | Beta | | | Zero-order | Partial | Part |
| (Constant) | .59 | .285 | | 2.08 | .04 | | | |
| 1   AES | | | .054 | | | .18 | .07 | .05 |
|   | .05 | .078 | .566 | .68 | .50 | .58 | .56 | .55 |
|   AIG | .58 | .082 | | 7.05 | .00 | | | |

a. Dependent Variable: SDM

Table 9 reported the Unstandardized Coefficients (ß) and Standardized Coefficient (beta weight),

t, p values. Standard multiple regression was conducted to determine the accuracy of the two dependent variables (AES and AIG) in predicting SDM. The beta weights in Table 9 specified that AIG by MIS was influential in predicting SDM. AIG (ß = .57, t = 7.05) significantly contributed to the model. Thus, there was significant relative influence of AIG by MIS on SDM. Whereas the relative influence of AES about MIS on SDM was not significant.

**Discussion of Major Findings**
In the final analysis, this result indicated that within and across these universities, the Application End-users were satisfied about MIS in terms of organisation, taxonomy, navigation, writing and editing, meeting needs and ease of retrieval. While, the Appropriateness of Information Generated by Management Information Systems influenced tactical decision-making (as regards Student Admissions, Student Academic Record; Manpower (staff) Projection; Staff recruitment exercise; Staff Promotion; Establishing faculty/department; University Academic Programme and Stocking Library with books and Journals) and strategic decision-making (Student course registration, Student identification, Student lecture attendance**,** Student course grade, Mobilization of NYSC, Student passage, Allocation of student hall of residence, Allocation of student car packing space, Allocation of lecture room/theatres, Staff recruitment process, Allocation of lecture room/theatres, Staff recruitment process, Promotion of staff , Staff training and development, Appointment of Dean/HOD/Director, Allocation of staff offices, Allocation of staff car parking space, Allocation of residential quarters and Lecturer performance) among universities in Southwestern Nigeria.

This study added to the discussion on measuring the applications end-user satisfaction about MIS. It went ahead and synchronised applications end-user satisfaction about MIS as regards: i) organisation: how content is grouped or clustered; ii) taxonomy: how content is referred to; iii) navigation: how to move between content groups (functional flow and linking); iv) writing and editing: message and meaning; readability; accuracy and style; v) meeting needs, effectiveness and efficiency of system to serve the needs of the applications end-user; and vi) ease of retrieval: the ability to locate content for use. To a large extent, this finding supported DeLone & McLean (2003) Information Systems Success Model. This finding was also in tandem with Dastgir & Mortezaie (2012), whose finding indicated that, the information content, ease of using accounting information system, accuracy and correctness of information, format of the reports and timeliness of information impact on the applications end-user computing satisfaction.

**Recommendations**
It is hoped that if the following recommendations were pursued with the right policies, the decision-making in universities in Southwestern Nigeria will be greatly improved. Consequently, these universities in Southwestern Nigeria will attain their tripartite roles of teaching, research and community services and their ranking globally will considerably improve.

▪ Appropriateness of information generated influenced tactical decision-making and strategic decisions-making and among universities in Southwestern Nigeria. Accordingly, universities authorities should ensure and put in place high quality Management Information Systems so as to be in tune with best global practice in institutional management. Governments, donor agencies, spirited individuals could assist in this

regard.
- Applications End-users especially managements in Universities in Southwestern Nigeria should be provided with necessary equipment, in a way, this will ensure their satisfaction about MIS. Training programmes should also be organised to ensure proper use of MIS components in generating and disseminating information for better tactical and strategic decisions-making.

**Conclusion**

Ordinarily, MIS should provide universities in Southwestern Nigeria with timely and accurate data to allow making and implementing the necessary tactical and strategic decisions in order to effectively reach their predetermined institutional goals. In universities where decisions were made without appropriate information generated by MIS there will be poor decision-making. In a similar vein, Applications end-user satisfaction is particularly critical to the success of MIS. In reality "good" MIS that is perceived by its end-user as "poor" systems are indeed poor systems. Unwillingness to use available systems and considerable alienation or dissatisfaction of applications end-user often turns technically successful MIS into failures. If application end-users are satisfied with MIS, they use it. Conversely, when not satisfied they may not go back it, they are unlikely to use it. Therefore, to improve MIS architecture, the opinion of the end-users about it matters. Where inappropriate information generated by MIS were used and applications end-users were not satisfied about MIS there may be poor organisation planning, poor prioritisation of needs and defective programming or scheduling of activities, since, data and information required for planning may not be timely, reliable and relevant. This probably explain why no university in Nigeria was ranked among the best 500 in the world. Nigerian universities should be well informed as regards strategic decision and tactical decision in order to accomplish their tripartite roles of teaching, research and community services.

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