Effectiveness of a Proposed System Design on Academic Management of Kampala International University: Design, Development and Implementation

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Abstract

This study aimed at answering questions concerning the significant effect of the proposed system design on the academic management of KIU in terms of supportability, reliability, maintainability and availability. Using a quasi-experimental design on a total sample of 750 respondents (i.e. the Users, Academic Staff and Students) and t-sample test, the study revealed that there was a significant effect by the proposed design on the academic management system. The study thus recommends that all stakeholders should be trained to interact and use it which will save a lot of time for the students, academic staff and university branches in processing academic data.

Key Words*: Proposed Academic management System, Supportability, Reliability, availability, Maintainability

1. Introduction

Universities world over aim at providing quality academic services by teaching and researching pertinent with the immediate world of graduates (i.e. work environment). Universities are a setting where graduates from their respective disciplines apply knowledge and skills gained prior to the world situations to realize pay offs in regard to solving problems or contributing to the existing knowledge bases. To effectively achieve this, universities aim at emphasizing that their cardinal role of optimal academic growth is well catered for with regard to effective teaching, assessment and cultivation of research skills among graduates. These ultimately require a system that will effectively manage them.   The liberalization policy of the government of Uganda permits that universities both public and private like Kampala International University (KIU) design and run various courses which qualify their autonomy. To effectively and efficiently achieve this noble cause, universities should ensure that student records are well managed.

KIU has its vision as becoming the premier in providing quality education in the great lakes region. It is upon this vision that KIU targets students from local and international scenes; currently Kenya taking a lion's share of the student population followed by Uganda, Sudan, Tanzania, Congo, Somali, Nigeria, Rwanda, Ethiopia among others (5th graduation ceremony, 2010). Due to such influx of foreign students, KIU thought of establishing branches in some neighboring countries in Dar-Es-Salaam, Tanzania and Nairobi, Kenya. Besides these branches, there is Western Campus in Uganda which dominantly a medical school with a workforce from Uganda, Kenya, Nigeria, Philippines, India and Korea among others. Such a big population (1890) needs a reliable academic management system to achieve the targeted dream.

The prevailing issues with reference to the need of a university academic management system were as follows: i) duplication in recording of the students. For example there is recording at admission, in the Faculty, and in Finance where different registers are kept; ii) Problem of storage and update of these registers and forms which are produced at different levels; iii) information retrieval from these sources seems not to be easy and reliable because changes are not well tracked down; iv) some registration sheets can get lost or be misplaced or even misinterpreted; v) students wait for a long time as various administrators are looking for their records in admissions, finance, faculty and academics;   and vi) the examination department relies on the HODs' signature no matter the number of time one signs. Such issues may affect the performance of the academic system because data will exist in many areas; wasting space and affecting the processor speed in searching and processing queries. The researcher intended to establish the effectiveness of a proposed system design on the academic

management of Kampala International University; specifically to distinguish if there are significant differences in the following aspects: i) level of assessment of the PAMS between male and female users; and ii) level of assessment of the academic management system before and after the implementation of the proposed academic system (measure of effectiveness of the PAMS). The study insinuated that there are no significant differences by gender. The variables in this study included design, development and implementation of an academic management system for KIU reflecting the following constructs: supportability, reliability, availability and maintainability.

2. Methodology

The study employed the quasi-experimental method specifically after design or post test design. The quasi-experimental method has three distinct characteristics namely, manipulation, randomization and single test group (experimental group) or area hence no control group is needed (Kothari, 2004). It was also a field experiment using KIU as the research environment therefore added features of an experimental design in its normal or natural setting. The manipulation in this study was the proposed system design for KIU. The actual participants were the users who were selected through purposive sampling using a set of inclusion criteria after which the qualified participants were randomly selected and assigned as the experimental group who received and used the proposed academic system. After training and hands-on in the use of the proposed academic system a post test through post implementation assessment of the PAMS was conducted by the researcher using a questionnaire. The study target population involved the 208 academic staff, 10 staff users from the Directorate of Academic Affairs and 26 Heads of Departments (HODs) and 900 students (Human Resource-KIU, 2010). The minimum sample Length was computed using the Sloven's formula below.

$$n = \frac{N}{1 + N(e^2)}$$

Purposive sampling was used on: (1) staff of academics department, faculties/school who had worked in KIU for at least one year; HODs who had held the office for at least one academic year (i.e. two semesters); and students in year three. Two sets of non standardized research tools were used in this study namely: Face Sheet and questionnaire to determine the level of assessment of the proposed academic system by the users after implementation. The options in the questionnaire were derived from the related literature. The researcher ensured construct validity and factor analysis of the research tools. A content validity index of at least 0.7 (Amin, 2003) rendered the researcher devised tool to be declared reasonably construct valid. Reliability of the instruments was tested using the Cronbach Alpha Method of at least 0.7 (Amin, 2005) for the questionnaire to be declared reasonably reliable or consistent.

Before the administration of the questionnaires: i) the researcher requested for an introduction letter from the School of Postgraduate Studies and Research addressed to the Vice Chancellor of KIU for permission to conduct the study at the main campus; ii) after approval, the researcher drafted a list of all the qualified respondents from where he employed the simple random sampling to select the respondents and inform them about the study to solicit their cooperation; iii) the researcher utilized the table on respondents (Table 2) as reference for the minimum sample Length. During the administration of the questionnaires, specifically, the researcher requested the respondents the following: (1) to sign the informed consent; (2) to answer all questions hence should not leave any item unanswered; (3) to be objective in answering the questionnaires. After the administration of the questionnaires, the data collected were organized, collated, summarized, statistically treated and drafted in tables using the Statistical Package for Social Sciences (SPSS). To ensure confidentiality of the information provided by the respondents and to ascertain the practice of ethics in this study, the following activities were implemented by the researcher: i) the respondents and faculties were coded instead of reflecting the names; ii) solicited permission through a written request to the concerned officials of the faculties/schools included in the study; iii) requested the respondents to sign in the Informed Consent Form; iv) acknowledged the authors quoted in this study through citations and referencing; and v) presented the findings in a generalized manner.

The researcher claimed an acceptable 5% margin of error at 0.05 level of significance in view of the following threats to validity. Measures to minimize these threats to the validity of the findings of the study were also reflected.

1. Extraneous variables which were beyond the researcher's control such as respondents' honesty, personal biases and uncontrolled setting of the study. The respondents were requested to be as objective as possible in answering the questionnaires.

2. Instrumentation: The research instruments on design, development and implementation of academic

management system were not standardized. Therefore a validity and reliability test were done to produce a credible measurement of the research variables.

3. Attrition: Not all questionnaires would be retrieved nor completely filled out due to reasons from the respondents' end and which were beyond the researcher's control. The researcher distributed questionnaires exceeding the minimum sample Length in view of this threat and requested the respondents to fill out the questionnaires completely and were collected by the researcher in due time.

3.   Findings and Discussion

Table 1

Differences in Level of Assessment of the Proposed Academic Management System (PAMS) Between Male and Female Users

Category	t-value	Sig.	Interpretation	Decision on Ho
Level of Assessment of PAMS; Male vs. Female Users	12.34	0.07	No significant difference	Accepted

Table 1 indicates that there was no significant difference in levels of assessment of the proposed academic management system between male and female users. This insignificant difference was brought by the fact that the new system created separate views where every user was defined under certain groups like administrators, faculties and schools and support users. Each view had its privileges and restrictions defined unlike the previous system which had a simple password when once entered permitted a user to access the system. In support of this position Carro *et al.,* (1999) assert that when a designer creates a Web based application one defines the group of tasks and rules that constitute the structure or different possible structures of the Web site and associates these tasks with the hypermedia information elements. However, the findings seem to contradict Pressman, (2001) proposition on requirement elicitation where they are gathered despite one's gender orientation with expectation to realize a payoff uniformly.

Users were each allotted a faculty to work on; meaning the reliability of the system was at stake. Since the new system required one to enter records afresh, some users might have been reluctant in accepting the new system, raising concerns of time waste and perhaps losing their jobs, as it is a common practice. This argument was supported by Jones (2002) who advises managers to critically manage change because people naturally tend to fear it; sighting sabotage, discomfort, loss of job, exposure of points of weakness one could have been benefiting from among others. More so, Bertolino (2007) asserts that service providers usually introduce changes in the behavior of their services such as deploying a new version of the service or modifying computational resources dedicated to the execution of services. Therefore clients tend to find out whether there are misbehaviors in their service compositions due to changes in the behavior of the composed services. Evident in table 1 is that the computed t-value was 12.34 which was insignificant at 0.07. This implied that since the sig. value was above 0.05, then the computed t-value was insignificant, and so the null hypothesis was accepted to the effect that male and female level of assessment of the proposed academic management system did not significant differ.

Table 2

Significant Difference in Level of Assessment of the Proposed Academic Management System Before and After Implementation By Users

Category	t-value	Sig.	Interpretation	Decision on Ho
Level of Assessment of PAMS Before vs. After	11.23	0.45	No significant difference	Accepted

Table 2 shows a significant difference in the Level of Assessment of the Proposed Academic Management System before and after the implementation of the system by the users because the former system was erroneous, slow and difficult to share outside the exam room to heads of departments (HoD), academic staff and students instantly. The proposed system introduced separated views for different user groups, reduced congestion of HoDs in the exam room; instead corrections were made on-line and instantly fed into the central database. It also had user friendly interfaces with easily accessible navigation and select lists which made entries faster than before. Their opinions did not vary so much implying that all users were equally satisfied with the improvement made to the existing system.

Such an assessment is inevitable as supported by Omran & Elmagarmid (1996) and Namanja (2009) that once the user's eyes and mind are at peace, one often wants to continue interacting with the system provided it does not

change the other aspects of work like loss of job and reduction in piece rate. In addition the performance of a large distributed system, like the proposed academic management system for Kampala International University, depends not only on the performance of its components but also on the way that these components interact with each other. This is further supported by a proposition that in the case of the web, where the designer has little or no control over most of the components of the solution, applications have to provide tools to manage the performance of the solution (Becker and Geihs, 1999).

Furthermore, the creation and maintenance procedure cannot be improvised, since they seek to provide the users with a great quantity of information that, if it is not organized orderly, can lead to the degradation of the quality and integrity of the long term data. To avoid this, it is becoming increasingly evident that for the development of Web based applications of a certain importance, more formal methods or specific computer tools should be used. Jennett (2000) advises that the new techniques should certainly address the key required characteristics of these application types, in particular the necessity for rapid update of the available information, not only relative to a single item, but to the insertion of new sections and modification of existing sections.   In Support, Valentín, Juan, León, José and Antmael (2001) advise that to improve Tele-diagnosis, one should construct an Information System for automatic three dimensional reconstruction of radiological images. This system improved the way in which one could visualize and examine these radiological images.

In the overall, the study found out that there was significant effect of the proposed design on the academic management system. The study further showed that the level of assessment by the users of the proposed academic management system (PAMS) after implementation revealed that there was a tremendous effect (very satisfactory). The study also found that there was significant difference in level of assessment of the PAMS between male and female users and the level of assessment of the academic management system before (existing academic system) and after the implementation of the PAMS.

4.   Conclusion

In conclusion, the study drastically improved on the system by eliminating duplication of student records, speed, convenience on both students and academic staff, sharing of data and security in regards to user groups and their pertinent privileges.

5.   Recommendations

The researcher recommends that on the significant difference in level of assessment of the proposed academic management system between male and female users, all stakeholders should be well prepared to receive change else stiff resistance may hinder development. People fear change sighting job loss, separation of companionship and pay deduction. There was relatively high resistance to the dry run of the proposed system because users thought it was the final system to be used. The resistance was significant because the researcher tried the dry run on all users. Future researchers may use a few of the users whose resistance can easily be tamed so that they act as ambassadors to their colleagues if the new system is to be accepted.

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