Business Process: Design, Development and Implementation of an E-Procurement and Supply Management System at Kampala International University

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Abstract
The general objective of this study was to design, develop and implement Proposed E-Procurement and Supply Management System (PEPSMS) at Kampala international University. The specific objectives were to: (i) examine the level of assessment of the Existing Procurement and Supply Management System (EPSMS) by users in regard to business process. (ii) to determine the level of assessment by the "users" of the PEPSMS after implementation in terms of business process. (iii)) to establish whether there is a significant difference in the level of assessment between the existing procurement and supply management system and the PEPSMS in terms of business process. Quasi-experimental design (assessment of the EPSMS) - post test design (after the implementation of the PEPSMS) was used on a total sample of 29 respondents and t-sample test was used to test the null hypothesis. Findings show that, the level of assessment of the existing procurement and Supply Management System (EPSMS) by the respondents was fair in terms of business process. Further more there was a significant difference in level of assessment of the EPSMS and the PEPSMS before and after implementation. However, the researcher recommends that KIU provides opportunities to its staff members who had low ICT knowledge to go for further training as revealed by the study; and full support by management of KIU should be accorded to the PEPSMS because with out it, sustainability of the system will not be realized
Keywords: Existing procurement and Supply Management System (EPSMS),Proposed E-Procurement and Supply Management System (PEPSMS), Business Process.

Introduction
In today's dynamic global business competition scenario, web based technology is no longer an afterthought; rather it is a must (Upasana, and Vinit, 2005). Supply chain management (SCM) has emerged as an administration's major concern over years, since with the advent of Information & Communication Technologies (ICT), information systems and in particular of Internet, the potential to transform, streamline and enhance supply chain operations has flourished (Patterson, Grimm & Corsi, 2003; Cagliano, Caniato & Spina, 2003). Specifically, e-procurement has been identified as an important element of e-business operational excellence for large firms (Barua, Konana, Whinston and Yin, 2001). E-procurement is defined as any ICT designed to facilitate the acquisition of goods by a commercial or a governmental organization over the Internet (Davila, Gupta & Palmer, 2003). E-procurement ICT include e-procurement software, B2B auctions, B2B market exchanges and purchasing consortia that aim to automate workflows, consolidate and leverage organizational spending power and identify new sourcing opportunities online (Davila et al. 2003).
However, Kampala International University which was the context of this study also engages itself in procedures of procurement and supply management of assets and other scholastics materials like any other business organization which may altogether be prone to corruption, non transparency and loss of important records. Basing on the above observed facts this study aimed at full automation and streamline of the procurement and supply management process in order to: reduce the time and cost of doing business for both vendors and the University; realize better value for money spent through increased competition and the prevention of cartel formation; standardize the procurement processes; increase transparency and ultimately reduce corruption; reduction in transaction costs, more efficient negotiation with, and identification of suppliers, organizational spending control and leverage, improved process monitoring, coordination and control, information sharing, integration data security, poor information system retrieval (use of traditional file system), and poor data storage (Procurement Handbook,2011) through design, development and implementation of E-procurement and Supply Management Information system.

Review of Related Literature
E-Procurement
E-procurement is defined as any ICT designed to facilitate the acquisition of goods by a commercial or a governmental organization over the Internet (Davila, Gupta & Palmer, 2003). E-procurement ICT include e-procurement software, B2B auctions, B2B market exchanges and purchasing consortia that aim to automate workflows, consolidate and leverage organizational spending power and identify new sourcing opportunities

online.

 Upasana and Vinit (2005) whose study purpose was to understand the e-procurement process by focusing on benefits, risks, practices and strategies of e-procurement and its emerging usages in the current business to business (B2B) environment. With application of qualitative method by use of two companies each from India and Sweden which were studied and analyzed. Their results revealed that cost benefit was the main driver for companies to implement e-procurement. Other benefits included were transparency and visibility across process, better internal and external relations and streamlined buying process.

Business Process
Apart from the cost reductions arising from transactional and price benefits that directly impact ROI, e-Procurement can also contribute to efficient purchasing process in many other indirect ways. As the workflow automatically routes information through the purchasing process without the need for data re-keying, the user can complete a requisition very quickly, easily and with a minimal amount of data entry (OGC 2002). Reducing duplication reduces error rates and improves efficiency throughout the purchase to pay process. Streamlining of the internal processes enabled by e- Procurement results in improved delivery times, flexibility and reduction in process cycle times (NOIE 2000). Use of e-Procurement systems also offers increased ability to search for products and services, automated reordering systems, and access to a wider range of service providers (DPWS 2001).

Null Hypothesis
There is no significant difference in the level of assessment of business process before and after the implementation of the PEPSMS.

Methodology
The study followed quasi-experimental method specifically before and after design or pretest (assessment of the existing procurement system) - post test design (after the implementation of the proposed E-procurement and supply Management System). The quasi-experimental method had three distinct characteristics namely, manipulation, randomization and single test group (experimental group) or area hence no control group is needed. Furthermore, this study was a field experiment using Kampala International University main campus as the research environment therefore added features of an experimental design was its normal or natural setting. The manipulation (independent/cause variable) in this study was the PEPSMS design for Kampala International University which was implemented in the form of a trial run by the users of the procurement and supply management system. The actual participants were the users who were procurement staff and college/departments administrators (Human Resource, 2010) and were selected through purposive sampling. All participants qualified to be selected since the population was small which produced a sample size of 29 using sloven's formula and assigned as the experimental group who received and used the PEPSMS. The Cronbach's Alpha coefficient test (Amin.2005) indicated that the researcher devised questionnaires were acceptable at 0.9. The data were analyzed using summary statistics, such as means and ranks. The null hypothesis was tested using the t-test correlation coefficient

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Findings

Table 3B Assessment level of the Existing Procurement and Supply Management System (EPSMS) by the Users in terms of business process

Indicator	Mean	Interpretation	Rank
Business process			
The existing procurement and supply management system orders are created easily.	2.21	Fair	1
The existing procurement and supply management system allows easy searching of suppliers.	2.04	Fair	4
The existing procurement and supply management system Stores data and produces accurate reports on time.	1.79	Fair	5
The existing procurement and supply management system eliminates problems with paper documents.	2.04	Fair	3
Terms upon which the procurement process will be conducted in the existing procurement and supply management system and the criteria upon which any decisions are to be made are codified at any time.	2.04	Fair	2
Average	2.02	Fair	

Mean Range	Response	Interpretation
3.26-4.00	strongly Agree	Very Satisfactory
2.51-3.25	Agree	Satisfactory
1.76-2.50	Disagree	Fair
1.00-1.75	Strongly Disagree	Unsatisfactory

In Table 3B,The existing system business process was assessed as being fair all through but can be seen in terms of orders are created easily was ranked highest (2.21) and other items having the same mean index except 1.79 of the system that stores data and produces accurate reports on time was ranked in the last position, however, basing on this observation, if this system was not manually managed it could have the potential to provide better procurement information (DOCITA, 2000) by means of various customized reports ,allowing a complete visibility of the history of a transaction processes, automatic recording the 'who', 'when', 'what' and 'where' of every data entry on the system (OGC 2002) of all purchasing activity and could reveal issues such as duplicated contracts/bids hence improving the way of doing business in the organization.

In conclusion the overall assessment of the existing Procurement and Supply Management System at Kampala International University was fair (2.02) implying that the respondents disagreed that system was not well designed to achieve the intended purpose and possibly this was due to its less structural/automation nature , lack of enough ICT knowledge by the users or duplication and inefficiency throughout the procurement process including not well streamlining of the internal processes of the system (OGC 2002) and more so the system being assessed as fair may in reality be queried pitiable so a call to do something to improve on it and this is possible through electronic means (e-procurment) (Bartezaaghi & Ronchi, 2003).

Table 2B Assessment level of the Proposed E-Procurement and Supply Management System (PEPSMS) by the Users in terms of Business process (After implementation)

Indicator	Mean	Interpretation	Rank
Business process			
The proposed E-procurement and supply management system orders are created easily.	3.55	Very Satisfactory	4
The proposed E-procurement and supply management system allows easy searching of suppliers.	3.45	Very Satisfactory	5
The proposed E-procurement and supply management system Stores data and produces accurate reports on time.	4.00	Very Satisfactory	1
The proposed E-procurement and supply management system eliminates problems with paper documents.	3.59	Very Satisfactory	2
Terms upon which the procurement process will be conducted in the proposed E-procurement and supply management system and the criteria upon which any decisions are to be made are codified.	3.58	Very Satisfactory	3
Average	3.64	**Very Satisfactory**	

Mean Range	Response	Interpretation
3.26-4.00	Strongly Agree	Very Satisfactory
2.51-3.25	Agree	Satisfactory
1.76-2.50	Disagree	Fair
1.00-1.75	Strongly Disagree	Unsatisfactory

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Table 2B indicates that the proposed system development in terms of Business process lead to the improvement from being fair (2.02) to being very satisfactory (3.64) with the item that the system that stores data and produces accurate reports on time being ranked highest at (4.00) followed by that the system eliminates problems with paper documents at second position which is in support with Pressutti,(2003) that if evaluation information about providers is to be obtained manually this can turn out to be very expensive and time consuming something which can be obtained so easily with electronic-informing and Knudsen,(2003) also says that paper-based procurement process within an organization in itself can make procurement quite expensive and a long process. But with electronic system (like that of e-procurement) the process is streamlined and the entire process takes a shorter time. However the system allowing easy searching of suppliers (3.45) may be improved by having good customer relationships.

In conclusion, This positive response in the evaluation of procurement and supply management system at Kampala International University in terms of business process is indeed in agreement with (Knudsen, 2003 and Zahir ,2010) that if evaluation information about providers is to be obtained manually this can turn out to be very expensive and time consuming something which can be obtained so easily with e-informing. In addition, usage of the e-procurement system increases efficiency as the same number of people can access the same system on the same network at same time.

Table 3C Significant Difference in the Level of Assessment of the Proposed E- Procurement and Supply Management System (PEPSMS) System before and after the Implementation of the System by the Users in terms of business process .

Category	Period of assessment	mean	t-value	Sig value	Interpretation of Difference	Decision on Ho
Level of Assessment On EPSMS	Before	2.02	18.60	0.000	There is a significant difference	Rejected
	After	3.64				

Sig. ≤ 0.05 Significant difference Sig. > 0.05 No significant difference

Table 3C shows a significant difference in the Level of Assessment of the Proposed E-procurement and Supply Management System before and after the implementation of the system by the users in terms of business process and this is shown by computed t-value which was significant at a sig value less than the popular sig of 0.05, it was large enough to reject the null hypothesis to the effect that there was significant difference before and after implementation by users. It is also supported by the greater mean differences of before the assessment (2.02) and after (3.64). However, because the former procurement system was clear and visible system was not fully automated and well structured, involved a lot of paper documentation and slow, the new proposed system is fully well designed, automated. As is evident from the responses of users before and after, it is clear that the proposed system makes the whole process of procurement fully transparent. The whole supply chain is clear and visible. It is easy to review all processes, decision points, sending dates and order history. Since system is to be linked on the internet, it is easy to fully integrate it with other modules, such as financing, so data are automatically exchanged. Additionally, the system eliminates potential problems with suppliers as both parties have exactly the same documents Zahir (2010).

Conclusions

The study significantly was able to improve through design, development and implementation of a new E-procurement and Supply Management System changing from the former semi automated/non electronic system. The discussions from the findings affirm that the null hypothesis was rejected implying that the alterative was accepted which states that there is a significant difference in level of assessment of the existing Procurement and Supply Management System and the proposed E-Procurement and Supply Management System before and after implementation in terms of business process

Recommendations

By the observations made from the above findings and conclusions the researcher recommends that Kampala International University provides training opportunities to its staff members in ICT knowledge to improve from very low and low knowledge to higher levels. The researcher recommends that full support by management of KIU should be accorded to the proposed system because with out it sustainability of the system will not be realized.

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