INFLUENCE OF ORGANISATIONAL STAFF CAPACITY ON THE IMPLEMENTATION OF ELECTRONIC PROJECT MONITORING INFORMATION SYSTEM IN PUBLIC TERTIARY INSTITUTIONS IN KENYA

Kirema Nkanata Mburugu
Embu University College
Dr. Angeline Sabina Mulwa
Dr. Dorothy Ndunge. Kyalo
University Of Nairobi, School Of Continuing And Distance Education

Abstract

This article highlights on the urgent need for staff training on new technologies, provision of adequate ICT infrastructure and staff attitudinal change trainings for effective implementation of new electronic based systems. The article is based on an empirical study carried out in Public Tertiary Institutions in Kenya to the extent of the implementation of Electronic Project Monitoring Information System (e-ProMIS) in the institution. The objective of the study was to establish the organizational internal context on the implementation of e-ProMIS, focusing on influence of staff capacity. The study adopted pragmatic paradigm using mixed mode approach and cross sectional research design with a target population of 460 members of staff from 35 public tertiary institutions in Kenya. A sample of 210 staff was selected using stratified and simple random sampling techniques. Data was collected using questionnaire with both open and structured items with Likert-type interval scale anchored on a five point scale. Descriptive statistics were computed for all variables using arithmetic mean and standard deviation. Statistical tools used for inferential statistic were Pearson's Product Moment Correlation (r), simple regression, multiple regression and stepwise regression (R^2). F-tests were used to test hypotheses in the study. The results revealed that staff capacity had a statistically significant influence on implementation of e-ProMIS. The study confirmed the relevance of Diffusion of Innovation Theory, Theory of Structuration and Technology Acceptance Model in studying implementation of electronic based systems. The study highlights the need for staff training on new technologies, provision of adequate ICT infrastructure and staff attitudinal

change trainings for effective implementation of new electronic based systems. The study offers direction to policy makers and practitioners. The study recommends further research to be conducted to establish the influence of monitoring and evaluation on implementation of e-government systems. Other e-government systems like e-procurement and e-tax also need to be studied.

Keywords: Organizational internal context, Staff training, *Implementation, e-ProMIS, Tertiary institutions*

Introduction

The development of essential ICT skills is necessary for implementation of electronic based technologies in organizations. This is because without such skills, the technologies can neither be maintained nor adapted to local use. As far as implementation of Web-based project management information system is concerned, the importance of requisite ICT skills is widely acknowledged.Training is vital for every IT project, especially when most users are novices. The extent of training given to users is generally recognized as influencing the productive use of an IT project and has been found to have a great impact on implementation success (Nitithamyong and Skibniewski, 2010). For WPMSs, Hjelt and Bjo'rk (2007) postulated that formal training and guidelines explaining the folder structure and document management practices used in the project at hand are necessary. Self-learning or learning from peers is insufficient and sometimes impossible in implementation of web based technologies in organisations. The case studies by Nitithamyong and Skibniewski (2010) support this view and suggest that users must be formally trained on how the system works or relates to the team's business processes early in its implementation. They suggest that training should be conducted with users sitting at terminals and approaching situation issues to ensure that appropriate knowledge is retained. In addition, continuing training opportunities must be provided to enhance the changing needs as well as to support team members joining later on in the project. It was therefore necessary to investigate the extent to which staff ICT skills and e-ProMIS training influence the implementation of e-ProMIS in organisations.

Statement of the Problem

Project Monitoring is one of the key stages in project management as it contributes significantly to the success of projects. This is because monitoring focuses on the implementation process and progress towards the achievement of project objectives. Considering that large amounts of time and resources are dedicated to selecting and designing projects, it remains of

paramount importance that projects be adequately managed in organizations if they are to achieve their performance objectives. In this regard there has arisen the need to develop a more efficient and effective monitoring system to ensure projects are completed on schedule and do not overrun the anticipated budgets. This has come inform of Web-Based Project Management Information System (WPMIS). The emergence of WPMIS) has gained considerable attention in the world since the concept was introduced in the mid-1990s with many professionals expecting it to transform how projects are implemented (Nitithamyong and Skibniewski, 2011).

To address challenges of management and monitoring of government projects in Kenya, the government adopted a WPMIS known as Electronic Project Monitoring Information System (e-ProMIS) in 2009.This is an automated information management system designed to improve efficiency and transparency of national development planning and coordination of reconstruction activities within the country. Its objective is to serve as a reliable and credible source of information to support the government in effectively managing development assistance and promoting the accountable and transparent use of resources. e-ProMIS was developed by Synergy International Systems Inc. and completed in December 2009.In 2010 government officers were trained to spearhead implementation in the Ministries and other government institutions. However, the backend reports from e-ProMIS platform have shown that most institutions have not been updating information on their project regularly. This has caused concern in Treasury as to why institutions are not uploading project data into the monitoring system (MOEST circular, 20th March 2013 &7th April 2014). Retraining of staff on e-ProMIS conducted in February 2013 and April 2014 still does not seem to change the situation. It is therefore, became necessary to carry out a study on why institutions were finding it difficult to implement the electronic based monitoring system. It was probable that staff capacity has been influencing the implementation process. It is therefore, against this background that this study sought to establish the influence of staff capacity on the implementation of e-ProMIS in public tertiary institutions in Kenya.

Objectives of the Study

The paper aimed at establishing the extent to which organisational staff capacity influences the implementation of Electronic Project Monitoring Information System in Public Tertiary Institutions in Kenya.

In the study one hypothesis was tested;

H_1Organisational staff capacity has a significant influence on the implementation of Electronic Project Monitoring Information System in Public Tertiary Institutions in Kenya

Literature Review

Globalization and the internationalization of markets have not only increased competitive pressures on business enterprises but also management of public institutions. This has led organizations to engage in projects that are critical to their performance, if not their survival. While large amounts of time and resources are dedicated to selecting and designing projects, it remains of paramount importance that projects be adequately managed in organizations if they are to achieve their performance objectives. In this regard there has arisen the need to develop a more efficient and effective monitoring system to ensure projects are completed on schedule and do not overrun the anticipated budgets. This has come inform of Project Management Information System (PMIS). PMIS are an integral part of the overall management system in a purposeful organization and form parts of tools such as enterprise resource planning and overall information systems (Sorensen et al., 2010). The management systems support management activities on all levels as well as provide for the identification of key performance indicators (KPI's) (Folinas, 2007). PMIS differs from regular information systems because the primary objectives of these systems are to analyze other systems dealing with the operational activities in the organization (Sorensen et al., 2010). PMIS is a subject of the overall planning and control activities covering the application of humans, technologies and procedures of the organization. In the information technology industry, Gartner Research estimates that 75% of large IT projects managed with the support of a project management information system will succeed while 75% of projects without such support will fails (Light, Rosser & Hayward, 2005). Using PMIS to manage projects, while not sufficient to ensure success, has thus become a necessity.

The goal of PMIS is to boost efficiency by making the development cycle more visible as long as all users are able to track specific tasks and can have a better understanding of how the project is going on (Braglia & Frosoline, 2013).The PMIS industry is dominated by a number of leading software representatives such as Microsoft, Oracle and Metier Management System (a former Lockheed company) and a number of small independent companies.

Demand has remained steady for years but, as organizations are increasingly turning to enhanced technical solutions, it is supposed to grow up significantly in the near future. In particular, PMIS are believed to evolve towards a more integrated project lifecycle management and the extensive adoption of web-based or cloud computing tools (McCullen, 2009; Tarantilis et. al., 2008). There are several benefits derived from the adoption and the correct use of PMIS: Projects can be managed from within integrated and coherent applications; tasks and task assignments can be created, updated

and tracked in real time; involved actors have direct and real time access to all documents regarding the project; documents are updated and only last approved releases are made available to them; tasks and timely updates when modifications to the current scheduling are needed and all actors are immediately informed when this occurs; real time completion control gives a justification for the eventual rescheduling of the project itself and finally individuals are allowed to communicate with one another in real-time. All communication can be logged and tracked from within the software (Braglia and Frosolini, 2013).

Empirical studies on PMIS have been mostly limited to describing the demographics of project management software usage (Laberattore& Pollack-Johnson, 2003) and to evaluating specific applications of these systems and software modules to support project management tasks such as planning (Amami et al., 1993); Scheduling (Herroelen, 2005); estimating cost (Love &Irani, 2005) and managing documents (Amami&Beghini, 2000). Others have mainly concentrated on impact of PMIS on project managers and project success (Raymond &Bergenon, 2007; Braglia and Frosolini, 2013). From the above observations, PMIS has become an important component of project management and especially monitoring and evaluation. It is in this regard that the government requires public institutions to embrace this technology in management and monitoring of projects.

However, it is worth noting that the above referred studies have been conducted in developed economies and hence can only be replicated in the developing world with a lot caution. They have also mostly targeted private companies and failed to indicate how governments have used the same to monitoring its funded projects. Organizational internal contextual factors influencing the implementation process of this new and important technology in project management remained a gap that needed to be filled. This study aimed at filling this gap.

Implementation of Electronic Project Monitoring Information System

Information system implementation research has evolved as successive generations of researchers and practitioners have observed and commented on the issue surrounding the process (Anumba, Daity, Ison, & Sergeant, 2007). Implementation has been defined as the whole process of introducing a system into an organization from conception of an idea, through the analysis, design, installation and operation of the developed system (Anumba et al., 2007). Other conceptions of implementation have viewed it as a process of influence (Gibson and Smilor, 1991), as an interaction system between designer and user, and as a problem solving exercise. In breaking down the implementation process into discreet steps,

Walton and McKersie (1991) see three broad sub-tasks involved in the implementation. These are designing the IT system, developing enabling human resource policies to support the end user and managing the implementation process. This represents a socio-technical approach in that both the requirements of technology and the requirements of the organization are taken into account simultaneously (Anumba et. al., 2007). Stewart et al., (2000) had earlier suggested that implementation should be seen as technology diffusion through a social system. These social-technical factors are what make organizational internal contextual factors that this study investigated so as to establish how they influence the implementation process of e-ProMIS.

Staff Capacity and Implementation of e-ProMIS

Awareness about the importance of ICT skills is growing. Unfortunately Africa ranks lowest with respect to human capital as far as ICT skills development is concerned among counterparts in the world (Mutula and Brakel, 2007). Existing research on IT transfer to developing countries has recognized the need to develop a skilled workforce. A study by Haug et al., (2011) on IT readiness in small and medium-sized enterprises, reported that limited knowledge of by staff may be a barrier to IT implementation. These IT skills can be related to software technical skills or simply referred to user perspective. IT skills of employees are related to their IT acquaintance which has positive impact in relation to IT implementation. They have argued that employees are likely to accept and support IT projects if they are confident that they can use the IT.

For ICT to be effectively deployed as engines of economic development, existing IT skills gap must be addressed. Human resources development should be emphasized through systematic training and education if countries have to reap digital dividends. Furthermore, pervasive use of ICT depends on well trained human resources for developing relevant applications, supporting and maintaining systems. Moreover, investment in human capital, research and development is becoming increasingly recognized as a critical factor in preparing employees and citizens to participate in the digital age. ICT skills are necessary because without such skills the technologies can neither be maintained nor adapted to local use. Eze et al., (2012) in a study on determinant factors of ICT adoption by government- owned universities in Nigeria observed that ICT infrastructures provide platform upon which on-line communities interact real-time; internet skills offer the technical know-how provides business and management skills to effectively apply the facilities. Therefore, technology competence transcends physical assets and includes intangible resources. They reported that successful ICT adoption depends largely on relevance of the internal

technology resources, infrastructures, technical skills and user time. Institutions with higher competence and technology readiness are more disposed to adopt ICT (Eze et al 2012). When technology is introduced the users should be trained on how to use the resource appropriately. Bayler and Ritchie (2002) observed that regardless of the amount of technology and its sophistication, technology will not be used unless members have skills, knowledge and attitude necessary to use it. In Kenya, TIVET ICT baseline survey of 2011showed human resource capacity as the second major challenge in ICT. However, this study focused on ICT integration in teaching hence focusing mainly on skill among lecturers. The administrative staff and project staff in particular were left out in the study. Considering that ICT and project staffs are the ones to use e-ProMIS it was necessary to find out their level of ICT skills and how this influenced implementation of e-ProMIS.

Research Methodology

Pragmatism which is the main philosophical underpinning of this study derives from the work of Peirce, James, Mead and Davey (Creswell, 2013). The pragmatic rule or maxims states that the current meaning or instrumental or provisional truth value of an expression is to be determined by the experiences or practical consequences of belief in or use of the expression in the world (Johnson and Onwuegbuzia, 2004). This study therefore employed pragmatism paradigm to guide its mixed mode approach. Pragmatism allowed the use of mixed mode approaches in analyzing both quantitative and qualitative data as was the case in this study. This is in line with the positivist approach of developing knowledge. Application of cross-sectional survey means information was collected from a predetermined population at just one point in time (Fraenkel & Wallen, 2008). Kothari (2004) argues that surveys are only concerned with conditions or relationships that exist, opinions that are held, processes that are going on, effects that are evident or trends that are developing.

The study targeted public tertiary institutions implementing e-ProMIS which included Technical Training Institutes, Institutes of Technology and National Polytechnics in Kenya. Information from the Ministry of Education, Science and Technology showed that there were thirty five (35) tertiary institutions implementing e-ProMIS. Three members of staff from each tertiary institution who had been trained and given passwords by the Ministry of Education, Science and Technology so as to access and upload data into the e-ProMIS system formed part of the target for this study. The study also targeted Deputy Principals, Registrars and Heads of Department. Principals were left out of the study to avoid biased information as the study touched on their leadership styles, organizational strategy, and organizational culture among other variables. Information from

the Ministry of Education, Science and Technology indicated that there were 355 deputy principals, registrars and heads of department. The total target population was 460.

A census of all 35 tertiary institutions implementing e-ProMIS was taken in this study because their number is small. The sample size of respondents from the tertiary institutions was calculated using the formula suggested by Krejcie and Morgan (1970), as indicated below;

$$s = x^2NP(1-P) \div d^2\,(N-1) + x^2P(1-P).$$

Where:

s=required sample size

x^2 =the table value of chi-square for 1 degree of freedom at the desired confidence level (3.841)

N= the population size

P= the population proportion (assumed to be 0.50 since it would provide the maximum sample size).

d= the degree of accuracy expressed as a proportion (0.05)

Therefore, $s=3.841(460)(.50)(1-.50) \div 0.05^2\,(460-1) + 3.841(.50)(1-.50) = 209.5671$ approximately 210 respondents. This sample size corresponds with sample size given by the Krejcie and Morgan (1970) Table.

Sampling Procedure

The study employed a combination of stratified and simple random sampling techniques. All the three members of staff trained on e-ProMIS were sampled in the study because of their knowledge on implementation of e-ProMIS in the institutions. Considering that the tertiary institutions have almost the same number of deputy principals, registrars and heads of departments, three were sampled from each of the thirty five institutions.

A questionnaire was used as a research instrument.

InstrumentsValidity and Reliability

Validity refers to the appropriateness, meaningfulness, correctness and usefulness of the inferences a researcher makes; while reliability refers to the consistency of scores or answers from one administration of an instrument to another and from one set of items to another (Fraenkel and Wallen, 2008). Mugenda (2008) observes that reliability in research is influenced by random error. As random error in the data increases, reliability of the data decreases. Random error is the deviation from a true measurement due to factors that have not effectively been addressed by the researcher. On validity, Mugenda (2008) argues that it is not possible to estimate validity from the instrument but from the data that is collected using

the instrument. Techniques to ensure validity and reliability of instruments are described below.

To ensure validity, a pilot study was conducted in three University Colleges because they were not part of the study. The data collected was processed, analyzed and interpreted. Based on the comments from experts and piloting results the items were refined and the final questionnaire developed.

For reliability of the instrument, internal consistencies were computed during the pilot study using Cronbach's Alpha co-efficient. This technique requires only a single administration and provides a unique, quantitative estimate of the internal consistency of a scale. This generated an inter-item correlation matrix first and then sum up all the correlation to estimate the mean correlation. A high coefficient implies that items in the scale correlates highly among themselves and consistently measure the construct of interest. Munyoki (2007); Mulwa (2012); Nganga (2014) and Ibua (2014) have used the same tool successfully to assess reliability of their research instruments. The results of the Cronbach reliability coefficients for the study variables are presented in Table 1.

Table 1 Reliability Coefficients

Section of Questionnaire	Variable	Number of Items	Cronbach Reliability Coefficients
Section A	Implementation of e-ProMIS	9	0.764
Section B	Staff capacity	8	0.760
Composite Cranach's Alpha Reliability Coefficient			**0.762**

The results in Table 1 show that the Cronbach's Alpha coefficient for implementation of e-ProMIS was 0.764 and that of staff capacity was0.760. According to the rule of the thumb provided by George and Mallery (2003) coefficients greater than $\alpha > 0.7$ are acceptable.

Data Analysis and Discussion of the findings

This section presents data analysis and findings on the variables comprising of frequencies, percentages, means and standard deviations. Different set of questions measured on a five point Likert type scale ranging from 1 to 5 were used. The aggregated score are computed as the simple average of the mean score of the five dimensions. Standard deviation was also computed. Standard deviation is a measure of variation from the mean. A small standard deviation implies that most of the sample means will be near the centre (mean) and a good estimator of the population mean. On the other hand a large standard deviation illustrates that the given sample mean will be a poor estimator of the population mean for the data point are spread out over a large rate of values (Harper, 1991).

Implementation of e-ProMIS was identified in this study as the dependent variable. Institutional registration on the e-ProMIS platform, uploading of projects into the e-ProMIS, frequency of uploading data into e-ProMIS, sensitization of members of staff, monitoring of implementation and internal use of e-ProMIS to generate project data were identified as indicators of implementation of e-ProMIS. Respondents were given seven items rated on a five point Likert scale ranging from: To a very great extent; to a great extent; to a moderate extent; to a little extent and to a very little extent from which to choose. The findings are presented in Table 2.

Table 2. Implementation of e-ProMIS in Public Tertiary Institutions in Kenya

Statement	N	Min	Max	Mean	SD
Our institution is registered into the e-ProMIS platform	162	1.00	5.00	4.85	0.76
Projects constructed in our institution since 2010 have been uploaded into e-ProMIS	162	1.00	3.00	2.17	0.46
We frequently upload our projects into e-ProMIS	162	1.00	3.00	2.18	0.47
Members of staff have been sensitized on use of e-ProMIS	162	1.00	4.00	2.28	0.64
Members of staff are involved in uploading data into e-ProMIS	162	1.00	4.00	2.41	0.75
We monitor implementation of e-ProMIS in our institution	162	1.00	4.00	2.23	0.65
In our institution e-ProMIS is used to generate project reports	162	1.00	3.00	2.19	0.64
Composite implementation mean	**162**	**1.00**	**3.29**	**2.61**	**0.37**

The research findings in Table 2 show that the mean score for the seven statements used to measure implementation of e-ProMIS was 2.61 and standard deviation of 0.37. This shows that to a moderate extent public tertiary institutions have implemented e-ProMIS in the institutions. To a very great extent (M=4.85, SD=0.75) tertiary institution are registered into the e-ProMIS platform but to a very little extent (M=2.17, SD=0.46) projects constructed in the institution since 2010 have been uploaded into e-ProMIS. The findings also indicated that frequency of uploading projects into e-ProMIS was to a little extent (M=2.18, SD=0.47), sensitization of members of staff on use of e-ProMIS was done to a little extent while involvement of members of staff in uploading data into e-ProMIS was also to a little extent (M=2.41, SD=0.75). Further monitoring implementation of e-ProMIS in the institution was done to a little extent (M=2.23, SD=0.65) and internal use of e-ProMIS to generate project reports was to a little extent (M=2.19, SD=0.63). The results imply that whereas most of the public tertiary institutions are registered on the e-ProMIS platform, other indicators of implementation such as uploading data into the system, frequency of uploading and internal utilisation of e-ProMIS are indicative of low level of implementation.

Analysis of Staff Capacity

The study investigated staff capacity as an independent variable. Indicators selected for staff capacity were ICT skills and training in the use of e-ProMIS. To measure the influence of staff capacity on implementation of e-ProMIS, respondents were requested to answer six items in the research instrument indicating the extent to which their skills in ICT and e-ProMIS training were relevant to implementation of e-ProMIS. The items were measured on a five point Likert scale ranging from: To a very great extent; to a great extent; to a moderate extent; to a little extent and to a very little extent. The findings are presented in Table 3.

Table 3: Means and Standard Deviations of staff capacity

	N	Min	Max	M	SD
Word processing	162	1.00	5.00	2.68	0.85
Spread sheet (Excel)	162	1.00	5.00	2.51	0.76
Presentation software	162	1.00	5.00	2.53	0.81
Data base	162	1.00	4.00	2.52	0.64
Use of internet	162	1.00	4.00	2.57	0.76
Skills got from e-ProMIS training	162	1.00	5.00	3.49	0.97
Staff capacity	**162**	**1.00**	**3.50**	**2.67**	**0.44**

The research findings in Table 3 indicate that respondents were neutral (M=2.68, SD=0.85) on the relevance of skills in word processing (Ms Word), Spread sheet (Excel) to a little extent (M=2.51, SD=0.76), Presentation software (power point) to a little extent (M=2.53 SD=0.81), Data base (access) to a little extent (M=2.52, SD=0.64) and Use of internet to a little extent (M=2.57, SD=0.76). They were however felt that skills got from e-ProMIS were relevant to a great extent (M=3.49, SD=0.97). This implies that the respondents considered training on the use of e-ProMIS as the most important skill needed. On the overall they were neutral on the relevance of staff capacity to implementation of e-ProMIS.

Organisational Staff capacity was an independent variable in the study and had two indicators namely level of ICT skills and e-ProMIS training. Data was collected using 7 items, each consisting of a statement that was measured on a five point Likert-type scale. Composite index for the two indicators was computed and used in testing the hypothesis. To satisfy the fifth objective, the following hypothesis was tested using simple linear regression model.

H_0: Organisational Staff Capacity has no significant influence on the implementation of Electronic Project Monitoring Information System in Public Tertiary Institutions in Kenya.

H_1: Organisational Staff Capacity has a significant influence on the implementation of Electronic Project Monitoring Information System in Public Tertiary Institutions in Kenya.

The hypothesis was tested using the following linear regression model: $y= a + \beta x_1 + e$

Where ;

y = Implementation of E-ProMIS

a= Constant

β_{X1} Organizational staff capacity

e = error term

The results are presented in Table 4. and 5. Presents the model summary showing the correlation (r) and the coefficient of determination (R-square)

Table 4: Regression results of influence of staff capacity on implementation of e-ProMIS

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	F	Sig	Durbin-Watson
1	.655	.429	.425	.28108	120.161	.000	1.645
a. Predictors: (Constant), ICT skills, e-ProMIS training							
b. Dependent Variable: Implementation of e-ProMIS							

Table 4. Indicates that r is equal to 0.655, meaning that staff capacity has a strong influence on implementation of e-ProMIS. The value of R squared is 0.425, indicating that staff capacity explains 42.5% of the variation in the implementation of electronic project monitoring information system in public tertiary institutions in Kenya. The Durbin Watson statistic was found to be 1.645 which was less than 2 indicating absence of autocorrelation. The F –statistic was 120.161 with $p=0.000<0.05$ suggesting that there was a statistically significant relationship between staff capacity and implementation of electronic project monitoring information system in public tertiary institutions in Kenya. This study therefore rejects the null hypothesis that organisational staff capacity has no significant influence on the implementation of Electronic Project Monitoring Information System in Public Tertiary Institutions in Kenya. Table 5 presents the estimates for coefficients of the model.

Table 5 Estimates for coefficients of the model for the relationship between staff capacity and implementation of e-ProMIS

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	1.140	.136		8.356	.000		
Staff capacity	.553	.050	.655	10.962	.000	1.000	1.000
a. **Dependent Variable: Implementation of e-ProMIS**							

Table 5 shows that the β coefficient of staff capacity is 0.655. These results show that staff capacity had strong influence on implementation of e-ProMIS (β=0.655, t=10.962, p=0.000<0.05). The results imply that one unit change in the implementation of e-ProMIS is explained by 65.5% changes in staff capacity. The values of VIF are less than 10.0, indicating absence of multicollinearity among the variables.

Using the statistical findings the regression model can be substituted as follows;

y= 1.140+0.655S

Where y=Implementation of e-ProMIS

B= Staff capacity

The study sought to establish the influence of staff capacity on implementation of Electronic Project Monitoring Information System. The research hypothesis tested was that staff capacity has a significant influence on the implementation of Electronic Project Monitoring Information System in Public Tertiary Institutions in Kenya. Regression results (F–120.161, p=0.000<0.05) suggested that there was a statistically significant relationship between staff capacity and implementation of electronic project monitoring information system in public tertiary institutions in Kenya. The results further indicated that staff capacity explains 42.5% (R^2=0.425) of the variation in the implementation of electronic project monitoring information system in public tertiary institutions in Kenya.

The findings are consistent with those of previous studies that indicated positive and significant relationship between staff ICT capacity and implementation of electronic based technologies (Mutula & Brakel,(2007); Haug et al., (2011); Eze et al., (2012). Findings from Mutula & Brakel (2007) confirm that staff capacity on ICT skills was found to be antecedent of implementation of informational technology. The authors further allude to the fact effective training on the use of IT based technology has a strong direct effect on the implementation of information based technology. ICT skills and knowledge possessed by staff account for a significant variance in the implementation of e-ProMIS. Haug et al (2011) in their study reported a significant relationship between knowledge of staff and IT implementation. They further noted that ICT skills of employees are related to the ICT acquaintance and positively impact IT implementation. Technology competency and implementation of IT was reported to be positively related by Eze et al.,(2012) in their study of Universities in Nigeria. Findings from a study by Mulwa (2012) reported that human resource capacity had little influence on the readiness to adopt e-learning by secondary schools. However, the author noted that readiness to adopt e-learning based on the availability of adequate electronic equipment was positively influenced by teachers' training in ICT and ability to operate computers but influenced

negatively by teachers' limited access to computers. This is taken to mean that ICT skills of the teachers were significant to readiness to adopt e-learning only that access to computers was limited.

Conclusion

Based on the findings of the study, it was concluded that although possession of adequate ICT skills is important, specific e-ProMIS training is vital in improving the implementation of e-ProMIS. Results from inferential statistics indicated that staff capacity had a strong statistically significant influence on implementation of e-ProMIS. It can therefore be concluded that provision of ICT skills and e-ProMIS training to staff would greatly improve implementation of e-ProMIS.

Recommendation

Results on staff capacity showed a statistically significant influence on implementation of e-ProMIS. This implies that policy makers need to design a training curriculum that would equip the implementers with the necessary knowledge and skills to implement the new systems. Clear understanding of the new technology is imperative for implementation to be effective. Public and private organisations need to invest on capacity building that will equip their members of staff with knowledge and skills on implementation of the new IT systems in order to bridge the digital divide**.**

References:

Amami, M., Beghini, G., & La Manna, M. (1993). Use of project management information system for planning information systems development projects. *International Journal of Project Management* 11 (1) 21-28.

Anumba, C.E.H., Dainty, A., Ison, S. & Sergeant, A. (2007), "Understanding structural and cultural impediments to ICT systems integration: A GIS based case study", *Engineering, Construction and Architectural Management*, Vol. 13 No. 6, p. 2006

Braglia, M., & Frosolini, M. (2012), An integrated approach to implement Project Management Information Systems within the Extended Enterprise. *International Journal of Project Management* Vol. 29 pp. 220-245.

Creswell, J. W. (2013), *Research design: Qualitative, quantitative, and mixed methods approaches.* Sage Publications, Incorporated.

Eze, S.C., Awa, H. O., Okeye, J. C., Emecheta, B. C., &Anszodo, R. O. (2013), Determinant factors of information communication technology (ICT) adoption by government-owned universities in Nigeria; A qualitative approach. *Journal of Enterprise Information Management* Vol. 26 No. 4, pp. 427-443

Fraenkel, J.R., &Wallen, N.E. (2008), *How to design and evaluate research in Education.Seventh Edition*. Boston. McGraw-Hill.

Gakuu, C.M. (2006), *Analysis of the factors and attitudes that influence lecturers' readiness to adopt Distance Education and the use of ICT in teaching: The case of the University of Nairobi*. An unpublished PhD thesis of the University of Nairobi.

Gakuu, C.M., &Kidombo, H.J., (2010), Pedagogical integration of ICT in selected Kenyan secondary schools. *Journal of Continuing, Open and Distance Education.University of Nairobi.*Vol.1 pp. 73-95.

George, D., &Mallery, P., (2003), *SPSS for Windows Step by Step: A Simple Guide and Reference 11.0 Update (4th Ed.).*Boston; Allyn& Bacon.

Gibson, D.V. and Smilor, R.W. (1991), "Key variables in technology transfer: a field-study based empirical analysis". *Journal of Engineering and Technology Managemen*t, Vol. 8 Nos 3/4, pp. 287-312.

Herroelen, W. (2005), Project scheduling-theory and practice. *Production operation Management* 14 (4): 413-432.

Ibua, M.P (2014), *The influence of institutional factors on the relationship between employee characteristics and employee outcomes in public corporations in Kenya.*(Unpublished doctoral thesis). University of Nairobi

Kandie, P. Y. (2009), *The influence of organisational strategy, institutional factors and performance of Small and Medium Enterprises (SMEs) in Kenya*. Unpublished PhD thesis, School of Business, University of Nairobi.

Keiyoro, P.N. (2010), *Factors influencing the effective use of ICT in teaching and learning Science curriculum in Kenyan secondary schools: The case of Cyber and NEPAD e-schools*. An unpublished PhD thesis of the University of Nairobi.

Kothari, C. K. (2004), *Research Methodology Methods and Techniques, Second Revised Edition*. New Delhi. New Age International (P) Limited Publishers.

Krejcie, R. V., & Morgan, D. W. (1970), Determining Sample Size for Research Activities.

Educational and Psychological Measurement. Vol. 30, pp 607-610.

Laberattore, M.J., & Pollack-Johnson, B. (2003), Factors influencing the usage and selection of project management software.*IEEE Trans Eng Manage* 50 (2): 164-74.

Light, M., Rosser, B., & Hayward, S. (2005), Realizing the benefits of projects and portfolio management.*Gartner Research ID.*1-31.

Love, PED, &Irani, Z. (2005), A project management quality cost information system for the construction industry. *Information Management* 40: 649-61.

Mbwesa, J. K. (2010). Faculty perception on the effectiveness of Wedusoft as a learning management system.*Journal of Continuing, Open and Distance Education.University of Nairobi*.Vol.1 pp. 25-42.

McCullen, M. (2009),The evolution of project management software.*Project Manager Today* 21 (10) 32-39.

Mugenda, A.G. (2008), *Social Science research: Theory and principles.* Nairobi. Kijabe printing press.

Mulwa, A. S. (2012), *The influence of institutional and human factors on readiness to adopt. E-Learning in Kenya: The case of secondary schools in Kitui district*. An unpublished PhD thesis of the University of Nairobi.

Munyoki, J. M. (2007), *The effects of technology transfer on organisational performance: A Study of medium and large private manufacturing firms in Keny*a. Unpublished PhD thesis, School of Business, University of Nairobi.

Mutula, S. M., &Brakel, P. V. (2007), ICT skills readiness for the emerging global digital economy among small businesses in developing countries Case study of Botswana. *Library Hi Tech* Vol. 25 No. 2, 2007 pp. 231-245

Nganga K.J. (2014), *Influence of contextual and cognitive factors on the relationship between performance contracting system and organizational performance in government ministries in Keya*. An unpublished PhD thesis of the University of Nairobi.

Nitithamyong, P., &Skibniewski, M. J. (2011), Success factors for the implementation of web based construction project management systems; A cross-case analysis. *Construction Innovation* Vol. 11 No. 1, pp. 14-42

Onwuegbuzie, A. J., & Leech, N. L. (2006), Linking research questions to mixed methods data analysis procedures. *The Qualitative Report*, 11(3), 474–498.

Raymond, L., & Bergeron, F. (2008), Project management information systems: An empirical study of their impact on project managers and project success. *International Journal of Project Management* 26. 213–220

Tarantilis, C.D., Kiranoudis, C.T., Theodorakopoulos, N.d., (2008), A web-based ERP system for business services and supply chain management application to real-world process scheduling. *European Journal of Operational Research* 187, 1310-1326.

Walton, R.E. and McKersie, R.B. (1991), *A Behavioural theory of Labour Negotiations: An Analysis of a Social Interactive System*, ILR Press, New York, NY.