IOSR Journal of Business and Management (IOSR-JBM)
e-ISSN: 2278-487X, p-ISSN: 2319-7668. Volume 19, Issue 12 .Ver. V (December. 2017), PP 01-06
www.iosrjournals.org

The Influence Of Workflow Management On Adoption Of New Technologies At Kenya Power And Lighting Company, Kenya

Methodius Njoroge Kiarie[1] & Prof. Harriet Kidombo[2]
[2] Associate Professor, University of Nairobi
University of Nairobi, Nakuru Extra Mural Centre P.O.Box 83732 -20100, Nakuru
[1]Corresponding Author: Methodius Njoroge Kiarie[1]

Abstract : *The adoption of new technologies is of integral importance to KPLC in the operations and performance of the company. In this context, the company's Five Year Corporate Strategic Plan 2016/17-2020/21 notes that; "Introduction of new technologies provides many potential benefits to the company. Typical objectives that will be served by new technologies will include reducing power losses, operational cost savings, lowered peak demand, new or increased revenue streams, improved long-term growth prospects and improved customer satisfaction.. The adoption of new technologies is also critical in ensuring that KPLC reduces losses associated with distribution of electricity. These losses are characterized as technical and system electricity losses that occur when the electricity is dissipated by the equipment and conductors in the distribution lines. The target population is the 274 Kenya Power and Lighting Company staff in Nakuru. The sample size of 73 for the study was calculated using the Nassiuma's formula. The stratified random sampling was used as the sampling procedure. The study found that cross functional competencies (mean of 3.72), peer's competencies (mean of 3.42), support system (mean of 3.90), policies (mean of 3.80), and management (mean of 4.00) had on average the respondents agreeing that those metrics had a positive influence on the adoption of new technologies. The standard deviations on cross functional competencies and policies were widely distributed around the mean due to standard deviations of 1.01 and 1.02 respectively. This implied that there was no consensus ($\sigma X \geq 1$) on whether they had been instrumental in adoption of new technologies. Peer's competencies, support system, and management had standard deviations moderately distributed around the mean due to standard deviations of 0.93, 0.98, and 0.91 respectively. This implied moderate consensus among the respondents on the individual metric influence on adoption of new technologies due standard deviation of ($0.5<\sigma X<1$).The hypothesis testing was undertaken using simple linear regression.The p value for one way ANOVA for workflow management was 0.000 which led to rejection of the null hypothesis. Therefore, the null hypothesis (H0) that work flow management has no significant influence on adoption of new technologies at Kenya Power and Lighting Company, Kenya was rejected since $p=0.005<0.05$. Thus, the alternate hypothesis that the workflow management has significant influence on adoption of new technologies at Kenya Power and Lighting Company, Kenya was accepted.An examination of the indicators on work flow management revealed that the support system and management support were the items with high means and low standard deviation. This study therefore, makes a recommendation that KPLC should ensure that its employees gets adequate support system and management support in order for them to improve on the adoption of new technologies at the institution.The study recommended for further studies an examination of the role of cross functional competencies and Kenya Power policies on the adoption of new technologies. This was due to a high standard deviation above one that implied a lack of consensus with the metric.*

Key Words: *Work Flow Management, Adoption of New Technologies,*

Date of Submission: 05-12-2017 Date of acceptance: 22-12-2017

I. Introduction

The adoption of new technologies is of integral importance to KPLC in the operations and performance of the company. In this context, the company's Five Year Corporate Strategic Plan 2016/17-2020/21 notes that; "Introduction of new technologies provides many potential benefits to the company. Typical objectives that will be served by new technologies will include reducing power losses, operational cost savings, lowered peak demand, new or increased revenue streams, improved long-term growth prospects and improved customer satisfaction"(Kenya Power and Lighting Company., 2015a p.21). The adoption of new technologies is also critical in ensuring that KPLC reduces losses associated with distribution of electricity. These losses are characterized as technical and system electricity losses that occur when the electricity is dissipated by the equipment and conductors in the distribution lines.

Despite, the potential benefits of new technologies usage within KPLC, there is evidence showing low adoption levels of diverse introduced technologies at KPLC. For example, the 2014/2015 KPLC training calendar indicates low adoption levels in relations to live line handling technology, as well as cable joining and termination technology amongst others. This study therefore seeks to examine influence of workflow

management on adoption of new technologies at Kenya Power and Lighting Company in Nakuru. The study also sought to fill in gaps in the literature review. Amongst the studies that have examined adoption of new technologies include Al-Smadi (2012) study on factors of adoption of electronic banking while Baariu (2015) examined factors affecting adoption mobile payments, and Krysa (2010) on factors leading to adoption of computers in schools. These studies don't focus on utility firms which is the focus of this study.

II. Literature Review

Workflow Management and Adoption of New Technologies

The management of an institution plays a significant and critical role in their employees' adoption of new technologies through the support they offer such as resources, training aspects, and supervision amongst others. In this context, Alzighaibi et al., (2016) in the examination of adoption of Geographical Information System (GIS) in Saudi Arabia found that managerial support had an impact on the relationship with employees' perceptions of GIS.

The presence of a support system is a critical component in the adoption of new technologies in a given firm. Krysa (2010) noted that having a support system especially in the technical aspects of the new technology is a significant factor in the adoption of new technologies. The presence of the support system enables end users to get technical help whenever there are challenges in the usage of the technology as well giving of tips that makes working with the new technology easy.

The competence of peers in the use of new technology aids in the learning on the usage of new technology. This is because peers create a pool of a group of people that an individual user consults in times of difficulties in use of new technology (Olouch, Abaja, Mwangi, & Githeko, 2015). This enables social learning aspects. In the absence of competence amongst peers then individual users may face more challenges in learning and adoption of new technologies.

Finally, the cross functional competencies implies that workers are versatile in their skills matrix leading to scenario where individual users may have skills with similar family of technologies or a supportive skill to running the technology (Hamid, 2013). These skills may involve Information and Technology Skills, and trouble shooting skills amongst others (Bultum, 2014). In instances where the user has knowledge or experience in another related family of technologies then the user may apply those skills in this particular new technology.

III. Objective of the Study

To establish the influence of workflow management on adoption of new technologies at Kenya Power and Lighting Company, Kenya

IV. Research Hypothesis

H_0: The workflow management has no significant influence on adoption of new technologies at Kenya Power and Lighting Company, Kenya

H_A: The workflow management has significant influence on adoption of new technologies at Kenya Power and Lighting Company, Kenya

V. Methodology

The descriptive survey research design was used for the study. The descriptive survey research describes the characteristics of the research phenomenon as it is on the ground without any manipulation of the variables. The descriptive survey research design was most suitable for this study in the context that the research is interested in the examination of the factors affecting the end user adoption of new technologies at KPLC. The study described the factors as they are on the ground without any manipulation of variables. The target population for this study was 274 employees of Kenya Power and Lighting Company staff in Nakuru across various departments, that is, regional management, design and construction, finance, supply chain, transport, technical services, security, information and communications technology, customer service, and human resources and administration. A sample size of 73 respondents was utilized for the study which was calculated using Nassiuma's (2009) formula, therefore 73 questionnaires were issued to the potential respondents with distribution per department shown in Table 1. Out of the questionnaires distributed, 70 questionnaires were returned with 3 questionnaires not being returned. One respondent who whose questionnaire was not returned opted not to participate in the study despite assurance that the responses will be kept strictly confidential and that the purpose of the study was academic only. The other 2 questionnaires that were not returned was because they had not been filled due to lack of time on the part of the respondents despite the questionnaires having been left with the respondents to be collected at a pre agreed time. During data cleaning 1 questionnaire was rejected because it was incomplete which left 69 questionnaires whose data was entered into SPSS and analyzed. The

study results and findings were therefore based on 69 questionnaires. The return rate was 94.5% which was deemed sufficient for the studies as it was above the 80% that is recommended by Mugenda &Mugenda (1999).

Table 1: Return Rate by Department

Departments	Questionnaires Issued	Questionnaire Analysed	Response Rate
Regional Management	1	1	100%
Design and Construction	10	9	90%
Finance	11	10	91%
Supply Chain	6	5	83%
Transport	3	2	67%
Technical Services	9	9	100%
Security	1	1	100%
ICT	4	4	100%
Customer Service	24	24	100%
Human Resources and Administration	4	4	100%
Total	**73**	**69**	**94.5%**

VI. Findings And Discussions

The study sought to know whether the workflow management metrics, that is, cross functional competencies, peer's competencies, support system, policies, and management have been instrumental in adoption of new technologies. In the context of cross functional competencies, most of the respondents were of the opinion that they have been instrumental in adoption of new technologies with 39.1% responding with agree and 23.2% strongly agree. Those who were unsure whether cross functional competencies have been instrumental in adoption of new technologies were 29.0% while an equal number of respondents (4.3%) disagreed and strongly disagreed with the metric. The cross functional competencies implies that the end user is competent across many functions which expands their knowledge base. This is useful to the ability to trouble shoot the system.

Peer's competencies have been instrumental in adoption of new technologies as evidenced by 44.9% of the respondents who chose agree and 8.7% who chose strongly agree. An equal number of respondents (1.4%) strongly disagreed that both peer's competencies and support system have been instrumental in adoption of new technologies. The peer competencies are critical in the adoption of the new technologies as the individual end user has a support system in cases of challenges emerging in the adoption of new technologies. This is because there are other employees who are utilizing the system and are able to support the employees in gaining knowledge on the new system.

Table 2: Frequency Distribution of Work Flow Management

	SA Freq. (%)	A Freq. (%)	U Freq. (%)	D Freq. (%)	SD Freq. (%)
Cross functional competencies	16 23.2%	27 39.1%	20 29.0%	3 4.3%	3 4.3%
Peer's Competencies	6 8.7%	31 44.9%	19 27.5%	12 17.4%	1 1.4%
Support System	18 26.1%	35 50.7%	8 11.6%	7 10.1%	1 1.4%
Policies	17 24.6%	33 47.8%	8 11.6%	10 14.5%	17 24.6%
Management	16 23.2%	44 63.8%	2 2.9%	5 7.2%	2 2.9%

There were 50.7%of the respondents who affirmed (chose agree) that support system has been instrumental in adoption of new technologies, further supported by 24.6% who chose strongly agree. Policies have been instrumental in adoption of new technologies with 47.8% responding with agree while 11.6% were uncertain. However, an equivalent number of respondents (24.6%) chose strongly agree and strongly disagree which was a contradiction on the metric. The policies are critical in the adoption of new technologies. Where policy

directives direct that new technologies must be used for a given function without the old technologies being utilized then it quickens the adoption rate. Management has been very instrumental in adoption of new technologies with 63.8% of the respondents choosing agree and 23.2% choosing strongly agree. The management assist in terms of allocation of budget and time off for the purposes of new technologies adoption training aspects.

Means of Work Flow Management

The study sought to find out whether on average work flow management had been instrumental in adoption of new technologies. The work flow management aspects that were examined included cross functional competencies, peer's competencies, support system, policies, and management. The results of the means indicated that the mean scores for cross functional competencies was 3.72, peer's competencies (3.42), support system (3.90), policies (3.80), and management (4.00). On average, the respondents tended to agree that work flow management has been instrumental in adoption of new technologies with the aggregate mean being 3.7623.

The individual mean scores for the metrics were all in the interval ($3.5< \mu < 4.5$) implying that on average the respondents tended to agree that each metric had been instrumental in adoption of new technologies except in relations to the influence of peers' competencies. The mean score for the peers' competencies impact on the adoption of new technologies was 3.42 implying that the respondents tended to be uncertain as to whether the competencies impacted on the adoption of new technology. This is in contrast with the results for Oluoch *et al* (2015). Oluoch et al (2015) noted that competence of peers create a pool of a group of people that an individual user consults in times of difficulties in use of new technology. This enables social learning aspects. In the absence of competence amongst peers then individual users may face more challenges in learning and adoption of new technologies.

The results that the cross functional competencies indicated that the respondents tended to agree (mean of 3.72) that it impacted on the adoption of new technologies. These results are similar to Hamid (2013) and Bultum (2014) results. Hamid (2013) notes that cross functional competencies implies that workers are versatile in their skills matrix leading to scenario where individual users may have skills with similar family of technologies or a supportive skill to running the technology. These skills may involve Information and Technology Skills, and trouble shooting skills amongst others (Bultum, 2014). In instances where the user has knowledge or experience in another related family of technologies then the user may apply those skills in this particular new technology.

The management was seen with a mean of 4.00 to impact on the adoption of new technologies. In this context, Alzighaibi et al., (2016) notes that management role in the adoption of new technologies lies with the support they offer their employees through issuance of resources, training aspects, and supervision amongst others. On the other hand, the respondents were in agreement (mean of 3.90) that the support system was critical in the adoption of new technologies. This is in tandem with the Krysa (2010) findings. Krysa (2010) noted that having a support system especially in the technical aspects of the new technology is a significant factor in the adoption of new technologies. The presence of the support system enables end users to get technical help whenever there are challenges in the usage of the technology as well giving of tips that makes working with the new technology easy.

To better understand which metric among the five used to examine work flow management was perceived as more instrumental in the adoption of the new technologies the means were ranked on a scale of 1 to 5. The ranking was based on the indicator with the highest mean being ranked 1 and the lowest ranked 5. Management scored the highest mean of 4.00 implying that on average, the respondents tended to agree that management has been more instrumental in adoption of new technologies of the metrics on work flow management. To get the perception of the respondents in general on whether workflow management had been instrumental in adoption of new technologies, an average of the individual mean scores of the metrics was done to get the aggregate mean. The aggregate mean was 3.77 which meant the respondents on average tended to agree ($3.5< \mu < 4.5$) that in general workflow management had been instrumental in adoption of new technologies.

Table 3: Means of Work Flow Management

	N	Min.	Max.	Mean	Respondents on average tended to;	Rank
Cross functional competencies	69	1	5	3.72	Agree	4
Peer's Competencies	69	1	5	3.42	Uncertain	5
Support System	69	1	5	3.90	Agree	2

Policies	69	1	5	3.80	Agree	3
Management	69	1	5	4.00	Agree	1
Aggregate mean				**3.77**		

Standard Deviations of Work Flow Management

The study sought to find out the distribution of the responses around the mean and see if there was consensus on a given metric. The metrics whose standard deviations were used were cross functional competencies, peer's competencies, support system, policies, and management. The standard deviations on cross functional competencies and policies were widely distributed around the mean due to standard deviations of 1.01 and 1.02 respectively. This implied that there was no consensus ($\sigma_X \geq 1$) on whether they had beeninstrumental in adoption of new technologies. Peer's competencies, support system, and management had standard deviations moderately distributed around the mean due to standard deviations of 0.93, 0.98, and 0.91 respectively. This implied moderate consensus among the respondents on the individual metric influence on adoption of new technologies due standard deviation of ($0.5<\sigma X<1$).

Ranks on a scale of 1 to 5 were assigned to the standard deviations from the highest standard deviation (1) to the lowest standard deviation (5). The lowest standard deviation was that of management (standard deviation of 0.91) which implied that there was a comparatively higher level of consensus that it had been instrumental in adoption of new technologies among the metrics on work flow management. The aggregate standard deviation in respect to work flow management was 0.97 which was an average of the individual standard deviations of work flow management metrics. This implied that the respondents had moderate consensus that it has been instrumental in adoption of new technologies due to standard deviations of between $0.5<\sigma_X<1$.

Table 4: Standard Deviations of Work Flow Management

	N	Std. Deviation	Responses distribution around the mean;	Rank
Cross functional competencies	69	1.01	Widely	2
Peer's Competencies	69	0.93	Moderately	4
Support System	69	0.96	Moderately	3
Policies	69	1.02	Widely	1
Management	69	0.91	Moderately	5
Aggregate		**0.97**		

Hypothesis Testing

For the purposes of hypothesis testing, this study used the hypothesis testing steps that were enumerated by Kothari in the book *Research Methodology; Methods and Techniques*. According to Kothari (2004), a research hypothesis is a predictive statement that relates an independent variable to a dependent variable. The research hypothesis was also defined as a proposition or a set of proposition set forth as an explanation for the occurrence of some specified group of phenomena either asserted merely as a provisional conjecture to guide some investigation or accepted as highly probable in the light of established facts. According to Kothari (2004), there are six steps that should be used in hypothesis testing; (i) making a formal statement, (ii) Selecting a significance level, (iii) Deciding on the distribution to use, (iv) selecting a random sample and computing an appropriate value, (v) Calculation of the variable, and (vi) comparing the probability.

In respect to the first step of making a formal statement, this step relates to formally stating the null hypothesis (*H*0) and also of the alternative hypothesis (*Ha*).The second step of hypothesis testing involves the selection of the significance levels. The significance level (usually stated as a percentage) refers to the percentage of risk that the researcher is willing to take of rejecting the null hypothesis when the null hypothesis is in fact true(Kothari, 2004). The significance level is therefore the maximum value of rejecting null hypothesis when it is true. This is also referred as the probability of making Type I error that is the probability of rejecting H_0 when H_0 is true. The level of significance of this study was set at 5% (Kothari, 2004).

The third and fourth and step that is selection of a random sample and computation of its appropriate value was undertaken through the use of SPSS software. In this context, the individual metrics of the independent variables were regressed against a composite variable of the independent variable for the purposes of getting the p-value. The p-value statistic was then examined for the viability of each regression model. The indicators for the variables were five indicators for End User Skills Matrix, end user demographic characteristics, and workflow

management while the indicators for end user attitudes were six in number. The last step of the hypothesis testing involved the comparison of the calculated p value with the set significance level.

In order to test the hypothesis in respect to work flow management influence on adoption of new technologies at Kenya Power and Lighting Company, Kenya, the following null (**H_0)** and alternate hypothesis (**H_a)** were used;

> **H_0:** The workflow management has no significant influence on adoption of new technologies at Kenya Power and Lighting Company, Kenya
> **H_a:** The workflow management has significant influence on adoption of new technologies at Kenya Power and Lighting Company, Kenya

The p value for one way ANOVA for end user attitude was 0.000 which led to rejection of the null hypothesis. Therefore, the null hypothesis (H0) that work flow management has no significant influence on adoption of new technologies at Kenya Power and Lighting Company, Kenya was rejected since $p=0.005<0.05$. Thus, the alternate hypothesis that the workflow management has significant influence on adoption of new technologies at Kenya Power and Lighting Company, Kenya was accepted.

VII. Conclusion of the Study

The study found that cross functional competencies (mean of 3.72), peer's competencies (mean of 3.42), support system (mean of 3.90), policies (mean of 3.80), and management (mean of 4.00) had on average the respondents agreeing that those metrics had a positive influence on the adoption of new technologies. The standard deviations on cross functional competencies and policies were widely distributed around the mean due to standard deviations of 1.01 and 1.02 respectively. This implied that there was no consensus ($\sigma_X \geq 1$) on whether they had beeninstrumental in adoption of new technologies. Peer's competencies, support system, and management had standard deviations moderately distributed around the mean due to standard deviations of 0.93, 0.98, and 0.91 respectively. This implied moderate consensus among the respondents on the individual metric influence on adoption of new technologies due standard deviation of ($0.5<\sigma X<1$).

VIII. Recommendations

An examination of the indicators on work flow management revealed that the support system and management support were the items with high means and low standard deviation. This study therefore, makes a recommendation that KPLC should ensure that its employees gets adequate support system and management support in order for them to improve on the adoption of new technologies at the institution.

IX. Suggestions for Further Studies

The study recommended for further studies an examination of the role of cross functional competencies and Kenya Power policies on the adoption of new technologies. This was due to a high standard deviation above one that implied a lack of consensus with the metric.

References

[1]. Alzighaibi, A., Mohammadian, M., & Talukder, M. (2016). Factors Affecting the Adoption of GIS Systems in the Public Sector in Saudi Arabia and Their Impact on Organizational Performance. *Journal of Geographic Information System*, *2*(3), 396–411.
[2]. Bultum, A. G. (2014). Factors Affecting Adoption of Electronic Banking System in Ethiopian Banking Industry. *Journal of Management Information System and E-Commerce*, *1*(1), 1–17.
[3]. Hamid, N. H. A. (2013). Acceptance of Electronic Tax Filing: A Study of Malaysian Taxpayers Adoption Intentions. *International Journal of Research in Management , Economics and Commerce*, *2*(2), 29–33.
[4]. Kenya Power and Lighting Company. (2015). Five Year Corporate Strategic Plan 2016/17-2020/21. *Journal of Strategic Business Planning*, *5*(2), 3–12.
[5]. Kothari, C. R. (2004). *Research Methodology: Methods and Techniques*. New Age International.
[6]. Krysa, R. (2010). Factors Affecting the Adoption and Use of Computer Technology in Schools. *Graduate Program on Educational Communication and Technology*, *2*(3), 54–60.
[7]. Olouch, R. A., Abaja, P. O., Mwangi, J. W., & Githeko, J. (2015). Factors Affecting Adoption of Mobile Banking Technology in Kenya: A Case of Bank Customers within Nakuru Municipality. *Asian Journal of Business and Management Sciences*, *2*(11), 1–13.

Methodius Njoroge Kiarie. "The Influence Of Workflow Management On Adoption Of New Technologies At Kenya Power And Lighting Company, Kenya." IOSR Journal of Business and Management (IOSR-JBM) , vol. 06, no. 12, 2017, pp. 01-06.