THE INFLUENCE OF TOP MANAGEMENT SUPPORT ON THE RELATIONSHIP BETWEEN PROJECT MANAGER LEADERSHIP COMPETENCIES AND ERP SYSTEM PROJECT PERFORMANCE: FINDINGS FROM KENYA ENERGY SECTOR

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ABSTRACT

Over time, Enterprise Applications adoption have been on the increase globally, with Enterprise Resource Planning (ERP) systems become the most important Information Systems (IS) solution for both private and public-sector organizations. Though ERP systems are designed to help organizations gain a competitive advantage through integrated business processes and resource optimization, available literature paints a negative image of institutions struggling with ERP systems performance and value realization. This has necessitated the need to investigate critical success factors (CSFs) as far as ERP systems implementation and adoption is concern. Despite the significance of top management support in ERP system project success having been recognized by various researchers, literature is yet to provide a clear and compelling understanding of the top management support concept, and more specifically in relation to project manager leadership competence and ERP systems project performance. Management support entails; appointing competent team, committing sufficient resources, creating conducive environment and encouraging positive attitudes towards the ERP system project. This study is based on a sample drawn from Energy Sector State Parastatals in Kenya that had implemented SAP ERP system as at end of 2016. Questionnaire were used to collect data from respondent in their respective organizations, with key informant interviews guide used to collect data from Heads of ICT in these organizations for purposes of triangulation. Mixed methods was applied, and correlational design used to determine the extent to which the variables related. Census was used, given the study sample size, with both descriptive and inferential analysis techniques being applied. The study results show a positive influence of top management support on the relationship between project manager leadership competence and ERP system projects performance, a position consistent with other authors' enquiries. The study is designed to make a contribution to organizations and project managers seeking to implement ERP systems, management science literature and future research.

Key Words: ERP system, critical success factors, top management support, project leadership competencies, project implementation

INTRODUCTION

Several studies have established that ERP systems project is likely to meet its objectives when top management commitment is visible thought the project phases. Some investigators even suggest that top management support is the most critical factor to systems execution accomplishment (Young & Jordan, 2008). Top management support includes, having the strategic leaders of the organization providing the much-needed support for projects that are closely aligned with larger organizational objectives. This involves being active participants of the steering committees and actively involved in all key project decisions. Khaled et al., (2008) research outlines the importance of top management support in the selection process and

successful implementation of ERP systems project. As far as ERP system projects are concerned, there is no single individual reason for failure or success, hence the need to focus on Critical Success Factors (CSF's) for ERP systems implementation, especially in the light of the third world countries such as Kenya.

In Kenya, the government has singled our Energy sector has as one of the key drivers in realization of Vision 2030 strategy and global millennium goals. To achieve this goal, technology is considered a key enabler in meeting organizational strategy and objectives. Though major organization in this sector have adopted the use of technology, more specifically Enterprise Resource Planning (ERP) system, the big question remains, whether these organizations have derived benefits associated with the ERP systems projects from their investment as expected . A according to Karim et al., (2007), information systems will only have positive impact on the organization only when they broadly support business processes and objectives. This study is therefore based on the Kenya Energy Sector parastatals that have implemented SAP ERP system projects.

LITERATURE REVIEW

Based on literature review, ERP Systems are transforming the way business is conducted globally, through business processes engineering. While the benefits associated with ERP systems are indisputable, in both developed and developing countries, research on ERP system project performance and CSF's shows that several ERP System project continue to experience challenges and fail to deliver on business promise and value. Studies have shown that an average of 60% of all worldwide ERP system implementations face challenges and fail to achieve their intended objectives. In 2003, KPMG reported that among 230 of the largest global companies they surveyed, 57% had written off at least one IT project in the previous 12 months, and of those experiencing a failure only 41% were able to determine how much the failure had cost their organization, with an average loss was $10.4 million. ERP systems failure rates suggest that thorough understanding and implementing ERP systems is a challenging task, Kumar et al., (2002) and Markus and Tanis (2000), submit that ERP project requires the coordination of many activities of an organization and a close cooperation of all key players.

ERP System Project Implementation

Measuring performance is a critical factor in optimizing accountability and sustainability as outlined by various literatures on ERP system project. Heeks (2002) divides information systems projects into one of three evaluated outcomes, namely; Total failure (an initiative never implemented or in which a new system was implemented but immediately abandoned), Partial failure (major goals are unattained or in which there are significant undesirable outcomes) and Success (where most stakeholder groups attain their major goals and do not experience significant undesirable outcomes). However, over time, many approaches and techniques have

been suggested to measure and evaluate the return on investment in information systems. Project management as a discipline focuses on three key result knowledge areas, namely; general management, project management and IT management, which complement each other.

According on research, there are several ways in which ERP system project would be measured. Based on Markus and Tanis (2000), optimal success refers "to the best outcomes the organization could possibly achieve with enterprise systems, given its business situation, measured against a portfolio of project, early operational, and longer term business results metrics". ERP System project performance depends on the point of view from which one measure it, while the appropriate set of measures depends on the organization's strategy on technology and industry competition. To determine how successful a project implementation has been completed, the degree of project success is often assessed in terms of time, cost, scope and quality. This study sort to measure ERP system project implementation performance used a combined model based on Project Triple Constrain and the DeLone and McLean (2003) theories.

Top Management Support

Top Management support refers to the organizational senior manager's favorable attitude and behavioral towards the ERP system project, and visible support during and after the implementation. Management support has been identified as a key factor influencing the implementation and effectiveness of IT projects in general. According to Sabherwal et al., (2006), management support is defined as the favorable attitude towards and explicit support for Information System. Organization top leadership should openly support and recognize the project as a top priority and of great importance (Wee, 2000). Senior management must be committed with its own involvement and willingness to allocate valuable resources to the implementation effort (Holland et al., 1999). It also includes their involvement setting up project review committee to evaluate projects activities and to identify opportunities and high potential risk. Top management should help to identify the right persons, free them from other responsibilities, organize them into an interdisciplinary team, and empower them for the responsibility of the project (Chen, 2001). A more recent research, however, found that top management support is equally effective in both high and low task interdependence groups (Hwang & Schmidt, 2011).

Project Manager Leadership Competence

Implementing ERP System projects successfully calls for strong leadership with appropriate knowledge, skills, experience and with the ability to focus on the relevant project critical success factors. Several theories have been developed to try and explain the various leadership traits, styles and competencies in relation to organizational management. Project leadership competence is an important element in the success of an ERP System project, personality of

leader can be the determinant of success of a project, Hogan (2005). Depending on the circumstances, leaders must apply the most appropriate leadership style to fit the given situation.

According to the research conducted by Gharehbaghi and McManus (2003) they concluded that, "effective leadership is essential for every project and leadership behavior is an important variable having a significant impact on the success of project management. Project leader must have sufficient level of authority over all stakeholders to ensure effective engagement and management of the project. According to Association for Project Management Body Of Knowledge (APMBOK) (2006): The role of leadership in a project is to promote the project objectives, encourage positive relationships, support effective teamwork, raise morale, empower and inspire individuals. Many authors claim that project leadership is one of the most important elements in the delivery of successful projects (Müller & Turner, 2010; Sarika, 2008). According to Dulewicz and Higgs (2003), there are three types of leadership competencies, namely; Intellectual (IQ), Managerial (MQ) and Emotional (EQ). Herkenhoff (2004) argues that in environments of strategic change, successful leaders require both the intellectual competence to meet cognitive challenges and the emotional capabilities to inspire and empathise with others.

THEORETICAL FRAMEWORK

Several IS, and by extension ERP System theories have been developed to measure or examine the relations shown amongst success factors and ERP System project accomplishment. Some of the fundamental theoretical foundations includes; competence maturity model (CMM), strategic choice theory, contingency theory, resource based view, knowledge based view and social capital theory. Other models for assessing IS success include; the DeLone and McLean (2002) and balanced scorecard method which highlights the four major perspectives of the organization, namely; financial, customer, internal processes and learning. Hong and Kim (2002), submits that when a project is completed on time and within the budget, various operational benefits occur that must be measured as part of ERP system performance or success, this benefits are well represented in the within the DeLone and McLean (2003) Updated IS Success Model.

The Project Triple Constraint model

According to Center for Business Practices, Value of Project Administration Research Report, 2000, the key measures to determine the value of project performance are; Financial measures, Customer measures and Project measures. Ideally, all projects are carried out under three important constraints, namely; cost, time, and scope. The reality is that only 34% of projects are delivered on time and on budget (Standish Group Chaos Report, 2006). For any ERP System execution to be described as successful, it must meet the following three interrelate key project success factors, namely; scope, time and cost (commonly referred as Project Triple Constraint), as illustrated in Figure 1.
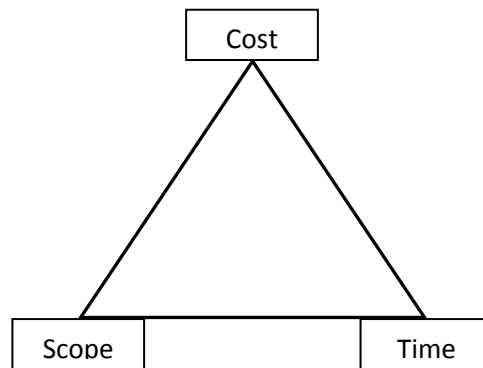
Figure 1: The Project Triple Constraint model

Project Manager's greatest challenge is to ensure delivery of project within the Triple Constraint of quality of scope (requirements), cost (budget) and schedule (time). These three elements of a project are known to work in tandem with one another and must be managed effectively for successful completion and closure of any ERP System project.

The DeLone and McLean model

DeLone and McLean Model is one of the most widely accepted and used model as afar as IS success measurement is concerned. DeLone and McLean (2003) propose variations to their original model in two ways, first, by join individual impact and organizational impact in one dimension called net benefits, and secondly, by add the dimension service quality to come up with the following four dimension; System Quality, Information Quality, Service Quality and Net Benefit as illustrated in Figure 2.
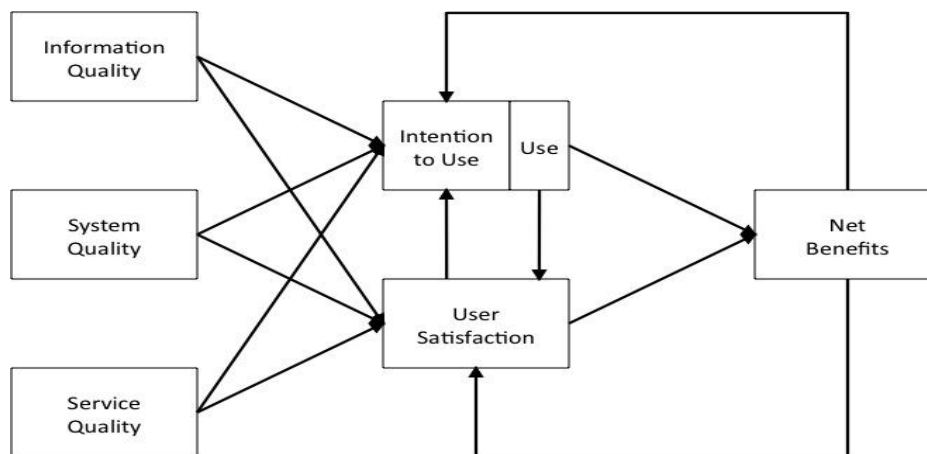

Figure 2: Updated IS Success Model (DeLone & McLean 2003)

The IS success model has been widely acknowledged among IS researchers, with many recent researches extending the IS success model to the study of different applications including ERP systems, (Rai, Lang & Welker, 2002; McGill & Hobbs, 2003; DeLone & McLean, 2004). However, based on the complexity of ERP System projects and this research objectives, the study sought to use multifaceted variable that integrated two theories, namely; The Triple Constraint Model and Updated IS Success Model (DeLone and McLean 2003) as illustrated in figure 3. According to (Annamalai and Ramayah, 2012; Singla, 2009), ERP System project success can be measured in a broad sense from the perceived deviation from projected objectives.
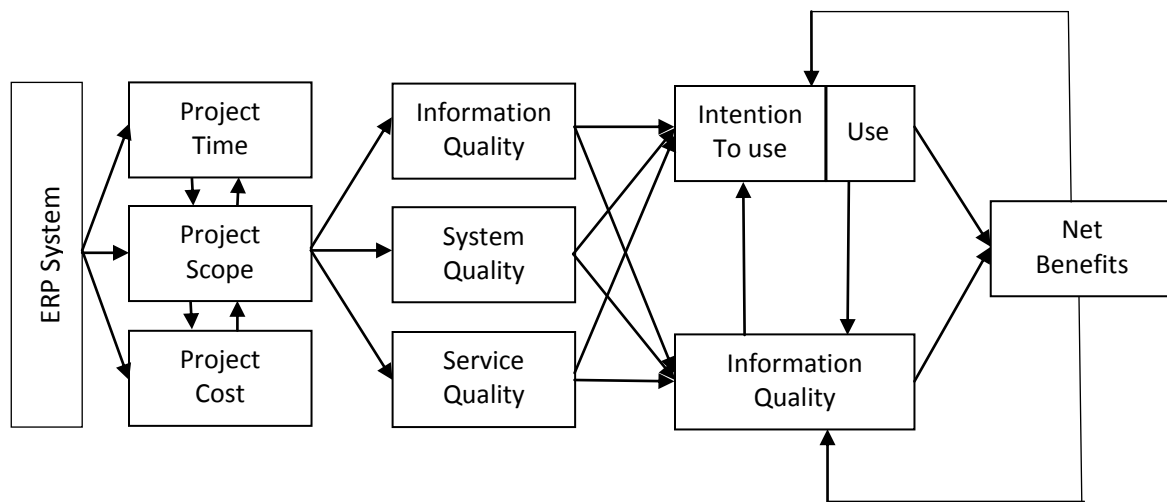
Figure 3: Integrated ERP System Implementation Success Model

By combining the two models, the study is able to measure ERP system project implementation performance from two demission, namely the project execution phase and the adoption phase since ERP system project implementation performance is intertwined in the two phases. This approach is in line with Axline (2001) argument that companies that adopted ERP systems needed to be concerned with the success not just at the point of adoption, but also further down the road.

METHODOLOGY

This study sought to determine the moderating role of top management support on the relationship between project manager leadership competence and ERP system project implementation. The research sought to answer the following questions;

1. To what extent do top management influence the relationship between project manager leadership competencies and ERP system project implementation in Energy Sector State Parastatals?

2. To what extent does project manager leadership competencies influence ERP system project implementation in Energy Sector State Parastatals?

The study utilizing mixed methods approach, with qualitative method being used to ensure an in-depth knowledge about the variables and quantitative approach to draw inferences regarding existing relationships among variables for a more comprehensive analysis of the findings. Quantitative data was collected using survey method and analyzed, while interviews were conducted with Heads of ICT in the selected institutions for in-depth analysis and triangulation. Data was collected from one hundred forty-four (144) respondents drawn from the five (5) Kenya energy sector parastatals. Collected data was captured, cleaned and analyzed using the Statistical Package for Social Scientists (SPSS) application, version 23. This study used both descriptive and inferential analysis techniques, with the assumption that the variables are normally distributed with linear relationship.

FINDINGS

Project Manager Leadership Competencies and ERP System Project Implementation

In order to understand the descriptive data set, the analysis begun by describing the project manager leadership competencies and ERP system project implementation using mean, mode, median and standard deviation as recorded in aggregates of individual responses across the various variables. From the findings, project leadership competence on ERP project system implementation was high as indicated by a mean of 4.0788 and a standard deviation on 0.7829. This finding is reflected by Hogan (2005) who asserted that project leadership competence is an important element in the success of an ERP System project, personality of leader can be the determinant of success of a project. The quantitative findings on project manager leadership competence can be corroborated by some of the related themes explored from the qualitative data set obtained from face to face interview with the Head of the ICT function in their respective organizations.

One participant had this to say:

> *The project manager was qualified enough and well experienced, he made timely decisions and ensured everyone played their roles as far as the project was concerned........ He had significant authority to influence all key stakeholders and was supported by the CEO…" (Participant, REA)*

Regression was used to determine the association between project manager leadership competencies and ERP system project implementation. Project manager leadership competencies was significantly related to ERP system project implementation with F $(1, 133) = 19.634$, $p < 0.05$. The study recorded a correlation coefficient of $r = 0.560$ as indicated in Table 1.

Table 1: Summary of the Model (project leadership competencies and ERP System project implementation)

Model	R	R Square	Adjusted R Square	Std. Error	B	Predictor variables
1	.560[a]	.313	.298	7.050	39.249	Constant term
				.094	.076	Intellectual competence
				.141	.541	Managerial competence
				.126	.318	Emotional competence

a. Predictors: (Constant), intellectual, Managerial and Emotional competences
b. Dependent Variable: System projects implementation
Model 1: F (1, 133) = 19.634; $p<.05$

The quantitative findings on project leadership competence can be corroborated by some of the related themes explored from the qualitative data set. The findings indicated that the project manager demonstrated intellectual, managerial and emotional competence in ERP project implementation to a certain extend. Project leadership competence is an important element in the success of an ERP System project, personality of leader can be the determinant of success of a project (Hogan, 2005).

A participant reflected this by saying:

> *"I my opinion, the project manager holds the key to the success of an ERP implementation, he/she must have lots of skills and competences to effectively manage and coordinate teams." (Participant, KPC)"*

The results are consistent with studies that suggest that project manager leadership competence might have a direct impact on system projects implementation. According to Welti (1999), the project executive is the general leader of the project: "their key risk is supervision, leading and training. Project leadership is about establishing direction, aligning strategies, and aligning tasks and activities while influencing a group of persons to achieve a joint goal. They make the execution as simple as possible and generate a pleasing atmosphere and environment for the project members to work in. Findings showed a positive effect of top management backing and execution strategy on ERP system execution as shown by an average of 3.7455 and a standard deviation of 0.5849.

The quantitative findings on Top management support were substantiated by qualitative data set that was collected through the interviews of the Head of the ICT functions. The resultant data was analyzed and summarized thematically. The respondents were guided to discuss various aspects of top management support where the role of senior management and CEO in establishing the project office, appointing the project team and providing support and required resources for the project was examined. The study also examined if there were project structures for effective communication.

The findings showed that the management ensured that there were distinction in the description of jobs for the project manager and team and to larger extent resources were provided, as stated by one of the participants below;

> *"Resources such as office space, furniture, human resourcing was made available by Management, this enabled project team to concentrate on project activities with minimum interruption from routine office work." (Participant, KETRACO)*

However, there were concerns in some organizations on the visibility, constancy and participation of the top management the ERP system project activities, as stated by one of the participants;

> *"Top management support was there, though limited in some cases and could hardly meet as schedule or attend trainings as required" (Participant, GDC)"*

According to Sabherwal et al., (2006), management support is defined as the favorable attitude towards and explicit support for IS project. Senior management backing has widely recognized, and singled out as a key an aspect influencing the effectiveness of IT System implementation in most IS literature (DeLone 1998; McFarlan 1981; Senn 1978). The team was also provided by the necessary support to enhance their performance.

Testing Research Hypothesis

The quantitative phase of the study was preoccupied with testing hypothesis in a bid to establish the relationship between the variables; the qualitative component was mainly for triangulation. Verbatim quotes were further used to capture the attitude and impression of the respondents to help in the interpretation. The study hypothesized an existence of a positive relationship between the independent variables and the dependent variable.

Pearson product-moment correlation coefficient, where $-1 =/< R >=+1$, based on SPSS statistics was used to a measure the strength and direction of association between the study variables, as shown in Table 2. The findings indicate that the correlation is significant at the 0.01 level for 2-tailed. The table further shows a positive and strong correlation of .857 between project leadership competencies and ERP system project implementation. At the same time, top management support and ERP system project implementation showed a positive correlation and a moderate strength of .482.

Table 2: Pearson correlations between ERP system project implementation, Project leadership competencies and Top management support

		ERP system project implementation	Project leadership competencies	Top management support
ERP system project implementation	Pearson correlation	1.000	.857[**]	.482[**]
	Sig. (2-tailed)	-	.000	.000
Project leadership competencies	Pearson Correlation	.857[**]	1.000	.703[**]
	Sig. (2-tailed)	.000	-	.000
ERP system Strategic	Pearson Correlation	.482[**]	.703[**]	1.000
	Sig. (2-tailed)	.000	.000	-
Factors	N	133	133	133

Regression analysis was used to analyze quantitative data given that the study involved both modeling and analysis of several variables which included the relationship between dependent variable and multiple independent variables. Both linear and multiple regression analysis were used to examine the relationship between variables and to test the hypothesis as follows:

Moderating effect of top management support on the relationship between project leadership competencies and ERP system project implementation

The moderating effect of top management support on the association between project leadership competencies and ERP system project execution was explored by computing the interaction between top management support and project leadership competencies.

Table 3: Summary of model (ERP System project implementation and Project manager leadership competencies with top management support as a moderator index)

Model	R	R Square	Adjusted R Square	Std. Error	F	B	Predictor variables
1	.522[a]	.273	.267	7.202	49.084	43.826	Constant term
						.302	Project leadership competence
2	.593[b]	.352	.342	6.825	35.260	35.880	Constant term
						.216	Project leadership competence
						.528	Top management support

a. Predictors: (Constant), Project leadership competence
b. Predictors: (Constant), Project Leadership competence, Top management support
1Model 1: $F (2, 133) = 49.084$; $p<.05$, Model 2: $F (3, 133) = 35.260$; $p<.05$

Multiple regression involving ERP system project implementation, project leadership competencies and interaction between top management support was then conducted to establish

the moderating effect of top management support on the relationship. This yielded two models, namely: model 1 (without the interaction term) and model 2 (with the interaction term) as shown in Table 3.

Both model 1 and 2 were significant with $F (2, 133) = 49.084$, $p<.05$, $F (3, 133) = 35.260$, and $p<.05$, respectively. Model 2 with the interaction between leadership competence and top management support accounted for significantly more variance than only leadership competence and ERP system project implementation. The regression model showing the moderating influence of top management support on the relationship between leadership competence and ERP system project implementation can therefore be presented as follows:

ERP system project implementation = $43.826 + 0.302 \times$ Project leadership competence + $0.528 \times$ Project leadership competence $\times$ Top management support + e

The study results from the multiple regression show that top management support significantly moderates the relationship between project manager leadership competences and ERP system project implementation s with R Square change of 0.079. This finding is supported by other studies which seem to find a moderating effect of top management support to be significant. Lucas (1981), Thong et al., (1996) in their study found that management support ensures a long-term commitment of the company to allocate sufficient resources for a target), such as intensive training for the employees to help them get familiar and learn how to use the new system, competent project leadership and external consultants to provide professional expertise and experiences. At the same time, one of the Head of ICT interviewed had this to say:

> *"It is important for the CEO to ensure that a person with project management experience and significant level of authority or influence within the organization is appointed to head the ERP project. (Participant, KPC)"*

DISCUSSION AND CONCLUSIONS

Though the study focused on the moderating role of top management support in the relationship between project manager leadership competence and ERP system implementation project, the study further sort to establish the influence of project manager leadership competence and ERP system implementation project. This was necessary in order to establish the moderating effect of top management on their relationship. Based on analysis of qualitative data on the role of top management support, the study found that the top management had played there role in establishing project structure and project as required. The project team had been given the necessary support and resources although in some companies the team complained on delayed response from the management in relation to their requests. This finding is reflected by Lucas (1981); Thong et al., (1996) who indicated that management support ensures a long-term commitment of the company to allocate sufficient resources for a target, such as intensive training for the employees to help them get familiar and learn how to use the new system, and

external consultants to provide professional expertise and experiences. One of the respondents indicated that:

> *"Project team was appointed by the CEO, and were given letters with specific terms of reference" (Participant, KenGen).*

The finding is in line with Khaled et al., (2008) who in their study they emphasized that executive support and assortment of the suitable ERP system key success factors for the execution of fruitful ERP systems. The study findings indicate that the relationship between top management support and ERP system project execution was significant.

The moderating role of ERP System strategic factors on the relationship between project manager leadership competencies and ERP system project implementation

The study hypothesized that top management support moderate the influence of project manager leadership competence on ERP system project implementation. This meant that top management support (moderator) would influence the strength of the association between the predictor variable and the dependable variable which is ERP system project implementation. The moderator effect was represented as an interaction between the central predictor variable and a moderating factor, top management support which includes; resource provision, executive involvement and oversight role.

A multiple regression analysis involving the project manager leadership competencies and each of the mediators; and their respective interaction terms were all found to be significant $p<.05$. The linear combination of project manager leadership competencies and top management support was significantly related to ERP system project implementation, $F (2, 131) = 49.084$; $p<0.05$. The multiple correlation coefficient was $r = 0.528$, showing that the combination of project manager leadership competencies and top management backing has a slight influence on ERP system project implementation than each of the variable independently. $R2$ at 0.352, shows that approximately 35.2% of the variance in ERP system implementation can be accounted for by the linear combination of project manager leadership competencies and top management support. This indicates that the combination of the two predictors increases the variation by 5%.

The study further showed that when the two variables are considered in combination, executive backing had a slight influence on ERP system project implementation. This confirms the proposition that relationship between project leadership competencies and ERP system project implementation depends on top management support is significant. These findings are consistent with many commentators who have argued that top management support moderate the ERP system project execution. For instance, Khaled et al., (2008) in their study, they emphasized that top most executive backing and the assortment of the suitable ERP system are main success factors for the execution of effective ERP systems.

RECOMMENDATIONS

The research findings and conclusions, recommendations are touching on future; ERP system project performance, Academic research and Organizational IT policy. According to Sabherwal et al., (2006), management support is defined as the favorable attitude towards and explicit support for Information System. This includes; having the strategic leaders of the organization providing the much-needed support for projects that are closely aligned with larger organizational objectives.

IMPLICATIONS OF THE RESULT ON POLICY AND PRACTICE

Organizational leadership are required to take-up their critical role in appointing competent and well skilled project manager to drive the ERP system implementation agenda in their institutions. Consequently, top management should develop effective project policy and governance framework to support project management and delivery. Their role in ERP system project includes effective decision-making, appointment of competent project team and provision of necessary resources among others. These recommendations are consistent with some investigators who have suggested that top management support is the most critical factor to systems execution accomplishment (Young and Jordan, 2008). One of the participants interviewed had this to say;

> *"It is important for the CEO to ensure that a person with project management experience and significant level of authority or influence within the organization is appointed to head the ERP project. (Participant, KPC)"*

CONTRIBUTION TO KNOWLEDGE

The findings will also provide significant and explicit contribution to highlight important critical success factors of ERP system project implementation in the Kenya Energy Sector parastatals. Academicians and practitioners such as project managers may find this research useful in enhancing their understanding of ERP System projects performance and hence optimize their ERP System research and implementations to ensure maximum returns on their ERP systems investment. These findings will contribute to hypothetical study by fabricating the experimental suggestion to back the theories framework of CSFs; (Koutsikouri, Austin and Dainty, 2008; Westerveld, 2003; Cooke-Davies, 2002; Belasi & Tukel, 2006; Spalek; 2005) especially in the light of leadership competencies theory to help project managers achieve success. In addition, future studies will draw reference from these findings for further research or to support their work.

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