



EFFECT OF PROJECT MANAGEMENT PRACTICES ON IMPLEMENTATION OF INFORMATION TECHNOLOGY PROJECTS IN STATE CORPORATIONS IN KENYA (CASE STUDY OF KENYA AIRPORTS AUTHORITY)

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ABSTRACT

This research studied the impact of project management practices on implementation of information technology projects in state corporations in Kenya. Kenya Airports Authority was selected for this research as a state corporation that had adopted project implementation practices and also due to the nature and number of projects it implemented biannually. The measurement of success in implementation of IT projects was done using four criteria; project risk management, stakeholder involvement, human resource management and monitoring and evaluation. The study focused on 129 staff working within the Nairobi offices of KAA. The study also used the experimental research design. Census survey was used, hence no sampling was done. Self-administered questionnaires were given to 129 respondents from the target population. The collected data was analysed using both descriptive and inferential statistics with the aid of SPSS. The key findings of the research study was that Monitoring and Evaluation had the strongest correlation at 0.824, while the combined alpha score was 0.736, followed by human resource management, risk management and finally stakeholder involvement, thus, indicating that all the research data whether considered separately or as a whole was reliable. The organisation had effectively implemented stakeholder involvement. Risk management practices at state corporations need to include improved risk planning. Whilst the organisation had prioritised monitoring and evaluation, it had neglected to invest in cloud-based technology. State corporations had also done exceptionally well in the implementation of human resource management. All the studied aspects of implementation of IT projects were properly addressed. The organisation should prioritise the use of effective stakeholder communication strategies and relationship software to manage stakeholder involvement. They should also get involved in risk planning as a means of improving its risk management by assessing the risks and implementing a plan to control risks. It should also conduct some research to determine the efficacy of using cloud-based technology to enhance M&E. The study finally provided recommendations for improvement in project management practices and in areas of further studies on adoption of project management practices.

Key Words: *Project Risk Management, Stakeholder Involvement, Human Resource Management and Monitoring and Evaluation*

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INTRODUCTION

Organizations typically seek to ensure the best possible outcomes from their business activities. This objective is made more difficult when activities are confined in project based environments. A project is a temporary undertaking that seeks to create a unique product, service or result (Project Management Institute (PMI), 2017). Information and communication technology (ICT) is a combination of computer technology with telecommunication technology and includes computer hardware, digital/analogue devices, and software applications (Wilson, Tete-Mensah & Boateng, 2014).

Africa's developing countries are undergoing through a transition of Project management implementation practices which has remained critical due to technology advancement, increased complexity of projects, and scarcity of human capital resource (Crawford *et al.*, 2006). There is an urgency to develop project management implementation practices in developing Africa due to the rapid technological advancements, relaxation of trade regulations and a highly competitive marketplace in the globe. (Birkhead, *et al.*, (2010).

Implementation of IT projects in Africa face numerous management challenges which have contributed enormously to projects stalling or failing at various phases of the project cycle. These problems that are encountered in project implementations in Africa may fall into four main criterions namely; one-size fits all technical trap, the lack of project management capacity trap, the accountability for results trap and the cultural trap (Stephen *et al.*, 2016). In Africa, the environment for projects is marked by resource scarcity and pre-existing rules for moderating the battles or competition for these resources. There is fast market growth in Africa and this comprises of majorly on upcoming organizations and urbanized middle class consumers. The market in Africa is expected to increase to 1.1 billion by the year 2060. All these coupled with the scramble for Africa's unexploited commodities, are trends that indicate

the need for better service delivery and infrastructure development in the continent. In order to achieve this, a project oriented mindset needs to be adopted to enable Africa to overcome the huddles to a new phase of development (Stephen *et al.*, 2016). Wachira, Brookes & Haines (2016), in a different study, discovered that limited access between rural and urban areas has constrained the expansion of business processes and IT-enabled services in Kenya.

Project management in Kenya began with formulation of vision 2030 and is expected that vision 2030 can transform the project management process in Kenya. Prior to vision 2030, projects in Kenya that had been initiated by the government did not seem to follow through the proper project management cycle and thus they collapsed most of the time (Mwaura *et al.*, 2014). For a project targeting an organization to be successful, the organization needs to come with a structure that is people centred (Cooke-Davies, 2010).

KAA has had to employ a number of strategies to survive in an increasingly tough competitive environment including project implementations. According to Africa Airlines Association (2013), one of the means through which KAA has undertaken to resolve some of its downfall in project implementation is to train and employ more skilled personnel who have technical knowhow on the best project practices to assist in coordinating and also involve in project implementation. Stakeholder involvement has been incorporated in day to day activities to enhance proper change management when it comes to projects implementation.

KAA implements between ten to twenty projects annually. With all these projects most of them have had to be cancelled due to one reason or the other. In fact, in July 2018, KAA advertised a tender for supply, delivery, implementation and support of Identity Management Solution in July 2018; this was later cancelled reasons only known to project administrators. The tender for installation, operation and maintenance of an automated car parking management system at JKIA, advertised in

the same month same year (July 2018) was also cancelled due to budget constraints and lack of stakeholder engagement, these are some of the issues faced by the organization just to mention a few.

Today, project management techniques are used as the principal means by which operational and strategic issues are managed in both for-profit and not-for-profit organizations. KAA has been implemented various projects since their ERP system inception in 2013 focused on capital project implementation through five year strategic plans cycle. Maintenance of its physical infrastructure across counties is crucial for sustained access to markets and easier communication (ROK, 2013). There is available evidence from literature on how to use projects for the management of organizational process so as to prepare the organization for its competitive future and survival (Cleland & Ireland, 2017). The timely completion of projects is usually a critical factor and measure of project success. In recent years, there has been an increased interest in the use of projects as building blocks in the strategic management of organizations (Weiss & Potts, 2012).

Statement of the Problem

Implementation of development projects being the most crucial stage within project management is influenced by certain factors to include: wrong priority; shortfalls in resource availability, inadequate assessment of targets, wrong scheduling of time for project completion, inadequate project identification, formulation and design and faulty conceptualization of policy (World Bank, 2010). A study by the World Bank (2013) shows that KAA is among the state corporations that seemed to have not delivered major development projects to their members up to the tune of 47% due to the fact that many projects have been stalled as a result of embattled battles in court. Most of the projects implemented in other organizations have failed due to prevailing factors like wrong prioritization of development projects, lack of financial resources, political influence,

corruption, low levels of technology, poor infrastructure, lack of community involvement and poor management support (Robina et al, 2014). Poor project implementation leads to loss of organisation's resources (time, cost, and even quality of work done).

Monitoring and evaluation are among the key practices of project management, which become increasingly significant as projects grow bigger and more complex. However, many organizations do not see monitoring and evaluation as a key management tool, rather as a requirement from a third party for audit purposes (Babbie & Mouton, 2009). According to Kahilu (2010), Monitoring and evaluation adds value to the overall performance of projects by offering corrective action to the variances from the expected standard.

Although previous studies have discussed project implementation factors in industries like manufacturing (Kuen, 2009; Muller & Turner, 2015); construction and management (Skitmore & Wo Seng Lei, 2014), there is less evidence of research on the critical implementation factors focused on IT projects within the aviation industry specifically. Walubengo (2013) sites several causes of the project failures: corrupt leadership, complex procurement processes, poor change management due to lack of top management support and lack of institutionalization of projects under implementation. But could these be similar factors affecting information technology projects implemented by aviation industry and has use of methodologies led to any change in projects outcome? This study sought to establish the effects of project management practices on the implementation of information technology projects in Kenya Airports Authority.

Research Objectives

The general objective of this study was to determine the effect of project management practices on implementation of IT projects in state corporations in Kenya. The study was guided by the following specific objectives;

- To determine the effects of stakeholder involvement on implementation of IT projects in state corporations in Kenya.
- To establish the influence of risk management on implementation of IT projects in state corporations in Kenya.
- To assess the influence of monitoring and evaluation on implementation of IT projects in state corporations in Kenya.
- To ascertain the how human resource management has influenced implementation of IT projects in state corporations in Kenya.

LITERATURE REVIEW

Stakeholder Theory

The main proponent of the stakeholder theory was Milton Friedman who stipulated that the organisation should be viewed as a grouping of stakeholders with the primary objective of managing the interests, needs and perspectives of stakeholders (Fontaine, Haarman & Schmid, 2006). The stakeholder theory as stated by Freeman, forms a ground for many other developments on stakeholder involvement. Freeman's stakeholders' theory evolved through his "Strategic Management: A Stakeholder Approach" which became the theoretical ground for further developments. Stakeholder theory is a theory of organizational management and ethics which opposes the free market norm of shareholder capitalization and promotes stakeholder maximization (Phillips, Freeman, & Wicks, 2013). For centuries, economists have defined the purpose of a business as an instrument to capitalize on shareholders, this was also known as the legal purpose of a business. Stakeholder scholar Stout (2012) stated that this is a misinterpretation since the law has not defined the purpose of a business to capitalize on shareholders; it simply says to do the lawful. This may reflect the purpose of a project as an instrument established to deliver benefits to its stakeholders that include the project owner (Fageha & Aibinu, 2012).

Theory of Change

A theory of change might be utilized to design a task from the beginning. Utilizing a theory of change when the undertaking is in progress can empower a comprehension of why a program does or does not work, and gives an evaluator or specialist a chance to see where in the chain things are not going as they should (CARE, 2012). It can improve planning and avert task float, and feature holes in learning or believing that is inadequate in lucidity. Theory of change puts procedures and results that can be looked into after some time. This enables associations to evaluate their commitment to change and to amend their hypothesis of progress (Fulbright-Anderson, Kubisch & Connell, 1998). The qualities ascribed to theory of change incorporate the capacity to enable evaluators and directors to recount to a commitment story that is legitimate to those engaged with the task. It additionally enables conclusions to be drawn on the reason impact components of a mediation. In any case, a portion of the shortcomings of the theory of change incorporate the way that it might require a lot of information so as to build up the rationale (Sharma & Lutchman, 2016). In certain examples, more than one theory of change may emerge and consequently the need to test every one of them against proof to see which theory best reflects reality. This may not give a quantitative proportion of the size of the commitment an intercession is making (Weiss, 2017).

Theory of Risk Management

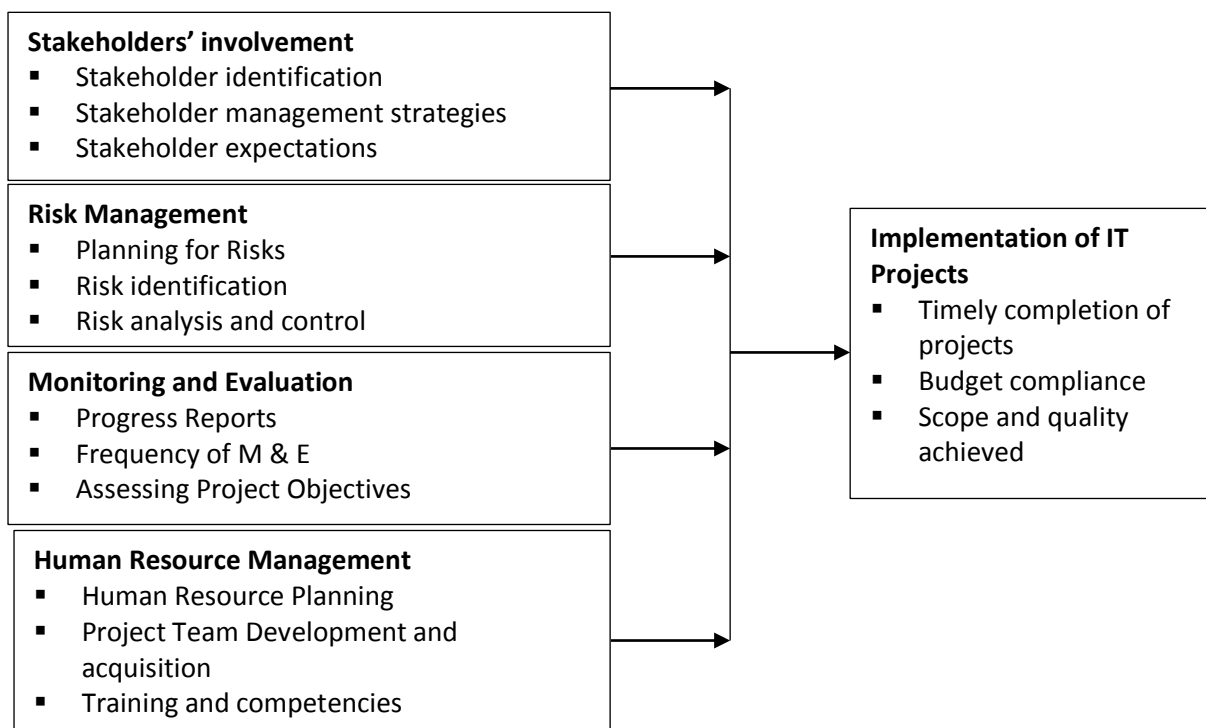
The theory of risk management holds that individuals and organisations will always gravitate towards less risky situations in any operational undertaking but will be willing to assume higher levels of risk for an agreed upon compensation in the form of higher prices or better opportunities for business (Sparrow, 2000). Thus, risk management is a balancing technique of determining the appropriate risk exposure given the potential for realising opportunities such that the value of the risk or opportunity must surpass the cost of exposure. Given the huge levels of investment in

projects, long execution processes, participation of multiple stakeholders, and unstable economic and political environments, there is a high level of complexity which leads to a high level of uncertainty thereby necessitating appropriate risk assessment and control throughout all the project implementation phases (Cagliano, Gimaldi & Rafele, 2015). The choice of risk management technique should be determined by the available information and the project operational context as well as the nature of the organisation itself.

Douglas McGregor’s Theory X and Theory Y

Gannon and Boguszak (2013), two of the proponents of Douglas McGregor’s Theory X and Theory Y, explain that Douglas McGregor first proposed the concept of Theory X and Theory Y in ‘The Human Side of Enterprise’ as follows: Theory X holds that people were opposed to working, lacked ambition and did not seek responsibility, were selfish, resistant to change and naïve, thus they were willing to be led by others; while Theory Y

supposes that people are not passive, it is the management’s responsibility to provide an enabling environment for the development of their employees so as ensure the harnessing of their efforts so as to release their potential and lead to the achievement of organisational objectives. Arslan and Staub (2013) add that the theory leads to the development of different leadership styles in keeping with the duality of the theory such as those leaders who espouse Theory X will be authoritarian and very controlling while those who espouse Theory Y will be more participative and trusting of their employees. Whilst the latter leadership style appears to be gaining more popularity owing to the emergence of greater levels of democracy, its linkage to enhanced performance as evidenced by greater profitability has yet to be clearly demonstrated. Nonetheless, through a more participatory leadership style emanating from Theory Y, employees are happier and more motivated to work.



Independent variables

Dependent variable

Figure 1: Conceptual Framework

Empirical Review

Kibera (2013) found that stakeholder involvement in IT projects is most effectively facilitated by the use of relationship software, such as customer relationship management (CRM) systems, since they enable organisations to keep tabs on records, latest trends and integrate and manage all aspects of stakeholder interactions within the organisation and to handle stakeholder demands effectively and efficiently by providing an automated mechanism for handling institutional processes associated with managing stakeholder relationships. A different study by Maina (2013) determined that the involvement of stakeholders has a positive influence on the success of projects particularly in the identification of appropriate projects to undertake through feasibility studies, the selection of project management team members, in the preparation of the project stakeholders terms of reference, as well as project planning and initiation processes. These findings were echoed by Aapaoja, Haapasalo and Söderström (2013) when they determined that early stakeholder involvement in the project definition phase enables projects to apply the knowledge base of stakeholders so as to lead to value generation owing to a number of advantages including: lowering the likelihood of poor project designs; better designs lead to improved project operations; stakeholder develop early knowledge about end-users thus heightening the chances of customer satisfaction; and improved knowledge of project specifications by stakeholders led to an improvement in their ability to continue to improve the project specifications.

According to Gitau (2015), many construction projects in Rwanda run the risk of cost overruns as late delivery due to poor risk planning as manifested by poor construction budget and scheduling given that the planning process is carried out by poorly qualified engineers and engineers with inadequate risk management knowledge and experience in applying risk management practices. In fact, the involvement of consultants in site selection and validation during the project planning

phase was found to be a significant contributor to effective risk management through risk mitigation of time and cost variation. Zwikael and Ahn (2011) affirmed that the effectiveness of risk management planning practices is dependent on whether the level of project risk is medium-to-high such that low risk projects tend to exhibit ineffective risk management planning while the reverse is true for high risk projects. Further, the cultural orientation of a given country plays a significant role in influencing the risk planning management practices such that those countries which seek to avoid uncertainty will invariably be more effective risk planners than those that do not. Ghasemi, Sari, Yousefi, Falsafi and Tamošaitiene (2018) posited that the determination of project portfolio risk was dependent on the level of interdependence between the individual projects within the portfolio such that those projects that had a higher dependence on the performance of another partner tended to have a higher level of risk and would require provisions to be made in design of the risk planning model so as to institute appropriate risk mitigation mechanisms.

Anyaeche *et al.* (2012) argued that the most effective means of preparing a project progress report is by starting off with designing a project progress report template which can either focus on time periods where work is summarised according to work accomplished in the preceding period, work currently performed, or work planned for the next period; or project tasks where a work breakdown structure is used to break up projects into single tasks. Once the template has been prepared, effective evaluation will be facilitated by the establishment of benchmarks using Gantt charts, resource (cost) schedules and resource (cost) distribution so as to capture the information contained in the progress report template and use this as an input for establishing a network diagram, determining the critical path, determining the cost schedule for each of the time periods, and determining the cost distribution graphs for each time period. Mathews, Love, Heinemann, Chandler,

Rumsey and Olatunj (2015) posited that progress reporting in engineering projects can be enhanced by using building information modelling (BIM) which ensures real time progress management through cloud-based technology for real-time information delivery to reinforce progress monitoring. Thus, the BIM provides the design team and contractors to monitor actual against planned performance in real-time to enable the development of strategies to improve workflows and minimise rework and delays.

A study conducted by El-Dash (2018), revealed that Kuwait suffers from a deficiency of experienced and qualified human resources mainly because although the Government has put in place an enabling enterprise environment that engender organisational process assets that are essential for human resources planning, the private sector does not have assets that are well established. Additionally, commercial documentation such as the project management plan are not available in the market which has made it difficult for organisations to carry out quality assurance, risk management, and procurement and contracts. Zhu, Cieri, Fan and Zhang (2018) explained that organisations such as multinational enterprises (MNEs) consider their expatriate staff to be very valuable to them and as such are both legally and morally bound to protect their welfare by developed detailed human resource plans that incorporate accommodation arrangements and all necessary risk management to protect the reputation of the organisation. According to Mohan (2017), human resource planning in projects must makes provisions for interdisciplinary work groups, quality circles, planned job rotation, delegation of responsibility, integration of functions, performance related pay, delegation of responsibility, and internal and external training.

A study carried out by Shehu, Holt, Endut and Akintoye (2014) found that project duration can be influenced by several project characteristics whether singly or in combination including nature of the project, project sector, procurement method,

nature of work, and tendering methods. Indeed, the most successfully completed projects tend to involve the application of construction management procurement and negotiated tendering. In a separate study, Olubajo, Hughes and Schweber (2019) determined that the quality of work, which is a derivative of the knowledge and skills of the project team, is an important factor in ensuring timely completion of a project since it minimises on re-works since it meets stakeholders' approval; additionally, the resourcefulness of the strategic partnerships that have been established by an organisation play a significant role on the timely completion of projects. Lai and Lam (2010) posited that timely completion of projects is the overriding consideration for project managers since delays lead to loss of revenue owing to slackened production; while delays will translate to failure of progress monitoring or faulty design to the consultant; while delays for a contractor will mean penalties and increased overheads.

METHODOLOGY

The study used the experimental research design, which is a type of causal research design. The study targeted a population of 129 staff working within the Nairobi offices based on the fact that all servers were centered in KAA HQ and most super users managing all systems were stationed here. The study used self-administered questionnaires on 129 respondents from the target population who were given fourteen days to complete the questionnaires before collection using a drop and pick arrangement. The study used a five point Likert scale in accordance with the recommendations of Boone, Jr. and Boone (2012) to develop the questionnaire to use along with two measures of central tendency, standard deviation and mean, to describe the data. The data was then examined using the Statistical Package for Social Sciences to conduct regression analysis, descriptive analysis and inferential analysis. The results were then presented using graphs and tables.

The analysis used Pearson's bivariate correlation (r) model with the degree of correlation in magnitude

and statistical significance joint effect based on regression analysis from the following model (DeLong, DeLong & Clark-Pearson, 1988):

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$$

Where;

Y = the project's dependent variable (Successful Implementation of IT Projects)

X₁= the first independent variable (Stakeholder Involvement)

X₂= the second independent variable (Risk Management)

X₃= the third independent variable (Monitoring and Evaluation)

X₄= the fourth independent variable (Human Resource Management)

ε= the error term

β₀= the constant term

According to the formula, Y is determined by changes in X₁, X₂, X₃ and X₄. Beta coefficient is the extent to which a unit change in any of the Xs influences Y. The constant refers to the value of Y when X is zero.

FINDINGS

Effectiveness of Project Management Practices

The distribution of responses relating to the issue of the effectiveness of project management practices of the participants at KAA was shown in table 1 below. Accordingly, out of the 93 participants, 63 were in agreement, 14 were uncertain, 11 strongly agreed, 4 disagreed and 1 strongly disagreed, representing 67.7%, 15.1%, 11.8%, 4.3% and 1.1%, respectively. This was an indicator that the vast majority of participants were in agreement that project management practices at KAA have been effective. This tallied with the findings of Bates, Sturges and Hutchinson (1999) that many organisations in the aviation industry demonstrate their commitment to project management by carrying out their activities in controlled conditions of a modern factory which ensures the effectiveness of their project management practices.

Table 1: Effectiveness of Project Management Practices

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	1	1.1	1.1	1.1
Disagree	4	4.3	4.3	5.4
Uncertain	14	15.1	15.1	20.4
Agree	63	67.7	67.7	88.2
Strongly Agree	11	11.8	11.8	100.0
Total	93	100.0	100.0	

Out of 93 participants, 55 agreed, 28 strongly agreed, 7 were uncertain and 3 strongly disagreed, representing 59.1%, 30.1%, 7.5% and 3.2%, respectively. This indicated that the vast majority of respondents were in agreement about whether project implementation has been prioritised by KAA. This was inconsistent with Wachira, Kidombo and Kinyua (2015) who found that many organisations in Kenya are constrained by a lack managerial support for the successful implementation of projects.

Stakeholder Involvement on the Implementation of IT Projects

Table 2 illustrated the distribution of responses from the participants for questions pertaining to the descriptive statistics of stakeholder involvement. According to the results, 60.2% of the respondents agreed that the organization uses relationship software to manage stakeholder involvement. This was consistent with Kibera (2013) who found that stakeholder involvement in IT projects is most effectively facilitated by the use of relationship software, such customer relationship management (CRM) systems. Additionally, 61.3% of the respondents agreed that the organization had

ensured early involvement of stakeholders in project implementation which tallied with Aapaoja, *et al.* (2013) when they determined that early stakeholder involvement in the project definition phase enables projects to apply the knowledge base of stakeholders so as to lead to value generation. Further, 55% of the respondents agreed that the organisation has employed effective stakeholder communication strategies, however, a significant 35.5% were uncertain about this. This echoed Williams (2017) who found that the most effective stakeholder management strategies for IT projects include: the institutionalization of effective communication of business strategies to project stakeholder in order to enhance congruence of purpose.

The study also found that 74.2% of the respondents were in agreement that the organization has identified linkages between stakeholders and organisational resources. This was consistent with El-Naway, *et al.* (2015) who found that the most

effective stakeholder management practices include identifying linkages between the stakeholders and the available resources. 65.6% also agreed that the organization was compelled to deal with a passionate end-user stakeholder group that expresses the expectations of stakeholders which tallied Nalewaik and Mills (2015) who determined that stakeholders within the construction industry tend to have an outspoken and passionate group of end-user stakeholders who have restricted visualization of the final product and not very knowledgeable about safety regulations, therefore they tend to influence the project through late amendments. Lastly, 74.2% of the respondents agreed that the organisation has ensured the incorporation of all key stakeholders' expectations in its project implementation. This was consistent with El-Naway *et al.* (2015) who established that acceptance of the project hinges on the successful incorporation of the different perspectives of the various stakeholder's expectations on the project.

Table 2: Descriptive Statistics of Stakeholder Involvement

	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
The organization uses relationship software to manage stakeholder involvement	6.5%	19.4%	14.0%	46.2%	14.0%
The organization has ensured early involvement of stakeholders in project implementation	8.6%	12.9%	17.2%	43.0%	18.3%
The organisation has employed effective stakeholder communication strategies	2.2%	7.5%	35.5%	32.3%	22.6%
The organization has identified linkages between stakeholders and organisational resources		10.8%	15.1%	39.8%	34.4%
The organization is compelled to deal with a passionate end-user stakeholder group that expresses the expectations of stakeholders	2.2%	9.7%	22.6%	44.1%	21.5%
The organisation has ensured the incorporation of all key stakeholders' expectations in its project implementation		6.5%	19.4%	50.5%	23.7%

Risk Management on the Implementation of IT Projects

The distribution of responses relating to the descriptive statistics of risk management are

illustrated in table 3. According to the results, “the organisation has prioritised risk analysis in major projects over minor ones” had the highest mean score of 3.9355 indicating that the majority of the

respondents were in agreement with this statement. This was consistent with Musyoka (2012) who found that minor projects at the Kenya Airports Authority neglected the application of risk management practices such as risk analysis while major ones tended to be more cognizant of risk management practices given their perceived higher risk levels. Indeed, the predominant risk management practices that were applied at the KAA were risk identification and risk response monitoring. Further, “the organisation uses risk analysis to ensure that adequate resources have been committed towards project implementation” had a mean score of 3.8387 also indicating a high level of agreement by the majority of respondents. This echoed Rubin (2013) who maintained that risk analysis is essential for facilitating the process of confirming feasibility of projects since it provides the assurance that adequate resources have been committed towards the implementation of the project as well as the appropriate mitigation of anticipated risk occurrence due to time and cost constraints. Additionally, “the organisation has ensured the identification of risks related to project scope definition during the initial stages of project implementation” had a mean of 3.8065 illustrating an agreement by most of the respondents which was backed by Batson (2009) who found that projects can also utilize a computerized Project Definition Rating Index (PDRI) to identify and measure risks pertaining to the definition of project scope during the initial stages of project development such that the level of risk tended to rise in direct correlation with the less definition of the scope.

The results also indicated that “the organisation uses brainstorming as an effective risk identification technique” had a mean of 3.6989 also reflecting an

agreement by the majority of respondents and was consistent with Kiral *et al.* (2014) who established that one of the most effective risk identification techniques in projects is brainstorming which involves the use of a group of experts to offer opinions of probable remedies for failure through a stimulating and encouraging freely-flowing exchange of ideas so as to save time, cost and enables the identification of a wide range of risks and attendant extraordinary solutions. “The organisation has invested more resources in minimising risks on bigger projects which it views as more high risk” had a mean of 3.6022 also indicating a high level of agreement by most of the respondents. This matched Zwikael and Ahn (2011) who affirmed that the effectiveness of risk management planning practices is dependent on whether the level of project risk is medium-to-high such that low risk projects tend to exhibit ineffective risk management planning while the reverse is true for high risk projects. Lastly, “the organisation's poor risk planning has led to cost overruns which have inhibited project implementation” had a mean of 3.2796 also reflecting the fact that the majority of respondents agreed with this. This was consistent with Gitau (2015) who found that many construction projects in Rwanda run the risk of cost overruns as late delivery due to poor risk planning as manifested by poor construction budget and scheduling given that the planning process is carried out by poorly qualified engineers and engineers with inadequate risk management knowledge and experience in applying risk management practices. Since all the standard deviations were so low, it is clear that all the responses were concentrated tightly around the average responses indicating a low variation in the responses.

Table 3: Descriptive Statistics of Risk Management

	Mean	Std. Deviation
The organisation's poor risk planning has led to cost overruns which have inhibited project implementation	3.2796	1.25426
The organisation has invested more resources in minimising risks on bigger projects which it views as more high risk	3.6022	1.04403

The organisation uses brainstorming as an effective risk identification technique.	3.6989	1.04033
The organisation has ensured the identification of risks related to project scope definition during the initial stages of project implementation	3.8065	.98088
The organisation uses risk analysis to ensure that adequate resources have been committed towards project implementation	3.8387	1.02459
The organisation has prioritised risk analysis in major projects over minor ones.	3.9355	.90658

Monitoring and Evaluation on the Implementation of IT Projects

Table 4 showed the distribution of responses for the descriptive statistics of monitoring and evaluation. The results indicate that 60.3% of the respondents agreed that the organisation uses a progress report template as preparation for writing the progress report which mirrored Anyaeché *et al.* (2012) who argued that the most effective means of preparing a project progress report is by starting off with designing a project progress report template which can either focus on time periods where work is summarised according to work accomplished in the preceding period, work currently performed, or work planned for the next period; or project tasks where a work breakdown structure is used to break up projects into single tasks. Additionally, 40.9% disagreed that the organisation uses cloud-based technology to ensure real time progress reporting on project implementation while 25.8% were uncertain. This was inconsistent with Mathews, *et al.* (2015) who posited that progress reporting in engineering projects can be enhanced by using building information modelling (BIM) which ensures real time progress management through cloud-based technology for real-time information delivery to reinforce progress monitoring. Further, 72.1% of the respondents agreed that the organisation involves key stakeholders in the development of the M&E schedule. This echoed Kissi, *et al.* (2019) who determined that all key stakeholders should be involved in the development of the M&E schedule which stipulates the specification of often data collection should be carried out because this would be a direct reflection of the level of importance attached to M&E.

The results also showed that 64.6% of the respondents agreed that the organisation conducts impact assessments to determine the appropriate frequency of M&E. This was consistent with Huang, *et al.* (2018) who found that the performance of an effective impact assessment of the large-scale construction of many medium and large hydropower projects is dependent on the establishment of an Evaluation Index System for resettlers' sustainable development which espouses the principle of creation of value through the inclusion of population indexes with high application frequency. 66.7% of the respondents also agreed that the organisation uses the logical framework approach to link the project implementation to the intended project objectives. This matched Loma-Osorio and Zepeda (2014) who determined that organisations can utilise logic model-based methods such as the Logical Framework Approach (LFA) to provide linkages between the M&E practices and the project objectives by integrating the LFA in project cycle management methodology and conducting stakeholder analysis, problem analysis, objective analysis, strategies analysis, planning, activity, and resource and cost scheduling. Finally, 77.5% of the respondents agreed that the organisation has developed a customised implementation framework which matches the internal and external project objectives. This corresponded with Koehn and Uitto (2015) who revealed that a well-thought and tailored M&E implementation framework is critical towards the harmonisation of the internal and external project objectives for the attainment of more sustainable projects.

Table 4: Descriptive Statistics of Monitoring and Evaluation

		Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
The organisation uses a progress report template as preparation for writing the progress report	2.2 %	14.0 %	23.7%		45.2%	15.1%
The organisation uses cloud-based technology to ensure real time progress reporting on project implementation	4.3 %	25.8 %	40.9%		17.2%	11.8%
The organisation involves key stakeholders in the development of the M&E schedule		6.5%	21.5%		53.8%	18.3%
The organisation conducts impact assessments to determine the appropriate frequency of M&E	2.2 %	8.6%	24.7%		45.2%	19.4%
The organisation uses the logical framework approach to link the project implementation to the intended project objectives	3.2 %	10.8 %	19.4%		44.1%	22.6%
The organisation has developed a customised implementation framework which matches the internal and external project objectives	4.3 %	6.5%	11.8%		45.2%	32.3%

Human Resource Management on the Implementation of IT Projects

The responses pertaining to the descriptive statistics of human resource management are captured by table 5. According to the results, “the organisation's projects benefit from effective teamwork and cooperation” had a mean of 3.9892 reflecting a high level of agreement amongst the majority of respondents. This was congruent with Grzesik and Piwowar-Sulej (2018) who established that project managers working in strictly project-oriented organisations tend to be more sensitive to the opinions of others given the specificity of such environments; teamwork and cooperation is also a more critical competency for such project managers than those performing project based management for internal purposes. Further, “the organisation's leadership has ensured the development of project teams” had a mean of 3.9677 indicating the fact that most of the respondents were in agreement

with this and tallying with Anantatmula (2010) who found that there are several management practices that critical towards the definition and monitoring of project outcomes, effectiveness and efficiency, motivational factors that can result in knowledge sharing, team development and innovation provided the organisation has the right project leadership in place since this can result in trust and open communications. “The organisation has considered inter-disciplinary work groups in its human resource planning” had a mean of 3.8925 indicating a high level of agreement by the majority of respondents regarding this statement. This mirrored Mohan (2017) who found that human resource planning in projects must makes provisions for interdisciplinary work groups, quality circles, planned job rotation, delegation of responsibility, integration of functions, performance related pay, delegation of responsibility, and internal and external training.

“The organisation has established linkages with institutions of higher learning to facilitate the development of technical competencies amongst its staff” had a mean score of 3.8172 indicating that most of the respondents agreed with this. This matched the findings of Abdullah, *et al.* (2018) who affirmed that the Malaysian construction industry has developed high technical competencies by obtaining education from institutions of higher learning and training from the Construction Industry Development Board (CIDB) as well as customized in-house training conducted by contracting organisations. “The Government has put in place an enabling environment for effective human resource planning in the organisation” had a mean of 3.6129 also reflecting a high level of affirmation from most of the participants. This agreed with El-Dash (2018) who revealed that Kuwait suffers from a deficiency of experienced and qualified human resources mainly because although the Government has put in place an enabling

enterprise environment that engender organisational process assets that are essential for human resources planning, the private sector does not have assets that are well established. Finally, “the organisation has provided a dynamic and holistic learning culture which has ensured effective project team development” had a mean of 3.5376 again indicating that most of the respondents agreed with this. This was consistent with Kolb and Kolb (2011) who determined that project team development can also be enhanced through the integration of a dynamic and holistic learning process operating on the level of the individual, team and organisation to facilitate problem solving by improved situation analysis, problem analysis, solution analysis, and implementation analysis. Additionally, since all the standard deviations were so low, it is clear that all the responses were concentrated tightly around the average responses indicating a low variation in the responses.

Table 5: Descriptive Statistics of Human Resource Management

	Mean	Std. Deviation
The Government has put in place an enabling environment for effective human resource planning in the organisation	3.6129	1.07372
The organisation has considered inter-disciplinary work groups in its human resource planning	3.8925	1.01577
The organisation's leadership has ensured the development of project teams	3.9677	1.02630
The organisation has provided a dynamic and holistic learning culture which has ensured effective project team development	3.5376	1.03797
The organisation has established linkages with institutions of higher learning to facilitate the development of technical competencies amongst its staff	3.8172	.96624
The organisation's projects benefit from effective teamwork and cooperation	3.9892	1.09836

Implementation of Information Technology Projects in state corporations in Kenya

Table 6 illustrates the distribution of responses relating the descriptive statistics of successful implementation of IT projects. According to the results, 77.4% of the participants agreed that the organisation has established appropriate procurement management and tendering practices to ensure timely completion of its projects. This is consistent with Shehu, *et al.* (2014) who found that

project duration can be influenced by several project characteristics whether singly or in combination including nature of the project, project sector, procurement method, nature of work, and tendering methods. Additionally, 73.1% felt that the organisation's quality of work has ensured timely completion of its projects which tallies with Olubajo, *et al.* (2019) when they determined that the quality of work, which is a derivative of the knowledge and skills of the project team, is an

important factor in ensuring timely completion of a project since it minimises on re-works since it meets stakeholders' approval. 68.8% of the respondents agreed that the organisation uses performance-based budgeting to ensure budget compliance. This is congruent with Aliabadi *et al.* (2019) who determined that budget compliance in projects is an intricate undertaking that calls for the application of dynamic approaches to budgeting such as performance-based budgeting which bases the increments in budgets on output per unit rather than the conventional incremental budgeting techniques based on last year's expenses and expenditures.

Further, 60.3% of the respondents agreed that the organisation has transferred budget compliance responsibility from the project manager to the product owner which matches the findings of Nuottila *et al.* (2016) when they establish that the responsibility for budget compliance in public sector projects may be shifted from the project manager to the product owner who manages the

budget and uses it for features that have been prioritised for each phase of implementation in an agile project arrangement. 69.9% of the respondents also felt that the organisation has established effective project configuration systems which have ensured the attainment of scope and quality. This agreed with Shafiee, *et al.* (2014) who determined that the successful implementation of projects hinges on the accurate formulation of configuration systems which in turn stipulates the scope of most of the work to be done. Further, 79.6% of the respondents agreed that the organisation involves all key stakeholders in the definition of project scope. This was consistent with Fageha and Aibinu (2013) who affirmed that given the importance of scope definition towards the successful implementation of projects, all the key stakeholders should be involved in the process of defining the scope through a participatory process during the pre-project planning stage so as to ensure that the project reflects the needs and requirements of the stakeholders without compromising the purpose of the project.

Table 6: Descriptive Statistics of Implementation of Information Technology Projects

	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
The organisation has established appropriate procurement management and tendering practices to ensure timely completion of its projects	4.3%	12.9%	5.4%	60.2%	17.2%
The organisation's quality of work has ensured timely completion of its projects	2.2%	10.8%	14.0%	46.2%	26.9%
The organisation uses performance-based budgeting to ensure budget compliance	7.5%	2.2%	21.5%	33.3%	35.5%
The organisation has transferred budget compliance responsibility from the project manager to the product owner	2.2%	12.9%	24.7%	40.9%	19.4%
The organisation has established effective project configuration systems which have ensured the attainment of scope and quality	4.3%	7.5%	18.3%	49.5%	20.4%
The organisation involves all key stakeholders in the definition of project scope	4.3%	7.5%	8.6%	47.3%	32.3%

Inferential Statistics

Table 7: Pearson Correlation Coefficients

		SI	RM	M&E	HRM	IITP
SI	Pearson Correlation	1				
	Sig. (2-tailed)					
RM	Pearson Correlation	.394**	1			
	Sig. (2-tailed)	.000				
M&E	Pearson Correlation	.272**	.324**	1		
	Sig. (2-tailed)	.008	.002			
HRM	Pearson Correlation	.148	.094	.340**	1	
	Sig. (2-tailed)	.157	.372	.001		
IITP	Pearson Correlation	.703	.732	.886**	.763**	1
	Sig. (2-tailed)	.007	.000	.005	.000	

** . Correlation is significant at the 0.01 level (2-tailed).

Key: SI – Stakeholder Involvement; RM – Risk Management; M&E – Monitoring and Evaluation; HRM – Human Resource Management; IITP – Implementation of IT Projects

Table 8: Multiple Regression Statistics

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.813a	.775	.747	.66172

a. Predictors: (Constant), Human Resource Management, Risk Management, Stakeholder Involvement, Monitoring and Evaluation

Table 9: ANOVA Statistics

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	23.167	4	5.792	13.227	.000b
	Residual	38.532	88	.438		
	Total	61.699	92			

a. Dependent Variable: Implementation of IT projects

b. Predictors: (Constant), Human Resource Management, Risk Management, Stakeholder Involvement, Monitoring and Evaluation

Table 10: Beta Coefficients

Model		Coefficients				
		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	
1	(Constant)	2.190	.531		4.124	.000
	Stakeholder Involvement	.253	.100	.235	2.522	.013
	Risk Management	.027	.115	.023	.239	.012
	Monitoring and Evaluation	.196	.117	.159	1.669	.009
	Human Resource Management	.469	.078	.542	6.033	.000

a. Dependent Variable: Implementation of IT projects

Discussion

According to the results relating to the descriptive statistics of stakeholder involvement, the majority of the respondents were in agreement with all the examined aspects of stakeholder involvement, reflecting the success with which state corporations had involved stakeholders in its projects. Indeed, the most critical components of stakeholder involvement were the identification of linkages between stakeholders and organisational resources, and the incorporation of all key stakeholders' expectations. Additionally, a review of the descriptive statistics of risk management indicates that it has been prioritised by state corporations with risk analysis and project scope definition being the most important aspects of risk management while risk planning was the least performing aspect.

The results of the descriptive statistics of monitoring and evaluation indicated that although the organisation has been able to incorporate most of the studied aspects of M&E, it has been unable to apply cloud-based technology to ensure real time progress reporting on project implementation. It is apparent that the most significant aspect of M&E was the development of a customised implementation framework which matches the internal and external project objectives, followed by the involvement of key stakeholders in the development of the M&E schedule. Further, an assessment of the descriptive statistics of human resource management indicates that there was a strong positive agreement amongst the respondents that the organisation had implemented all the aspects of human resource management under review. In fact, the factors of HRM that have played the biggest roles are effective teamwork and cooperation as well as leadership. Finally, the descriptive statistics of implementation of IT projects showed that most of the respondents were in agreement that the organisation had attained effective implementation of all the aspects of implementation of IT projects with the involvement of key stakeholders in the definition of the project scope being the most

significant followed by the establishment of appropriate procurement management and tendering practices, and quality of work.

The results of the correlation analysis showed that Monitoring and Evaluation had the strongest positive correlation with Implementation of IT Projects, followed by Human Resource Management, Risk Management and Stakeholder Involvement, respectively. This indicates that Monitoring and Evaluation is the most influential factor on the implementation of IT projects. The high value of R^2 for the multiple regression model indicates that the model has a strong relationship with the response variable which is Implementation of IT Projects and can, thus, be used to confidently predict behaviour of the response variable.

CONCLUSIONS AND RECOMMENDATIONS

The study concluded that state corporations had prioritised the identification of linkages between stakeholders and organisational resources, as well as the incorporation of all key stakeholders' expectations in the attainment of effective stakeholder involvement. Additionally, it was compelled to deal with passionate end-user stakeholder group. However, although its use of effective stakeholder communication strategies and relationship software to manage stakeholder involvement have only been used to a moderately successful effect. The findings concludes the ways of promoting project ownership and sustainability by the stakeholders to include: formulation and implementation processes which satisfy all and stakeholders in a project, paying attention to stakeholders in order to satisfy those involved or affected, and ensuring maximum participation of all the stakeholders.

From the study, it was concluded that the aspects of risk management undertaken by the state corporations have been successfully implemented. Nonetheless, the most important ones are: its prioritisation of risk analysis in major projects over minor ones; its use of risk analysis to ensure that adequate resources have been committed towards

project implementation; and the identification of risk related to project scope definition during the initial stages of project implementation. To a slightly lesser extent it has also include brainstorming; the minimisation of risks on bigger projects which it views as higher risk. However, poor risk planning has led to cost overruns which have inhibited project implementation.

The study concluded that State corporations have prioritised the use of monitoring and evaluation as a tool for the implementation of IT projects, however, it has only failed to use cloud-based technology to ensure real time progress reporting on project implementation. The study goes further to conclude that M&E Officer monitors the project and that they provided feedback to the beneficiaries after monitoring. Further, it was concluded that the state corporations was able to apply human resource management in its implementation of IT projects very effectively given the affirmative responses to all the various aspects of HRM.

The most critical determinants of successful implementation of IT projects are the involvement of all key stakeholders in the definition of project scope, and the establishment of appropriate procurement management and tendering practices to ensure timely completion of its projects. However, all the other aspects were also proven to be crucial, particularly quality of work and the establishment of effective project configuration systems, while performance-based budgeting and budget compliance were at the tail end of the approval rating.

From the study, it was evident that monitoring and evaluation is rated highly when it comes to effect project management practices in implementation IT projects. Most state corporations should therefore devote enough resources to this factor while ensuring adequate training to all personnel on the use of the diverse technology; this will enhance the implementation of the IT projects to a great extent. Monitoring and evaluation should be undertaken in every step of project implementation and not a

onetime event as it is common with many donor funded projects. This will help identify, loopholes and deviations from overall projects goals, and correct them early as to ensure successful quality implementation.

The stakeholders must be willing and able to listen, truly seeking and valuing diverse voices, making a special effort to hear and understand. The process also requires that all participants demonstrate respect for each other and commitment to the process, and have the patience and discipline to work together toward shared perspectives and common outcomes. Effective participation cannot be achieved by simply adopting a successful model from another context. Public participation should be designed and informed by key principles and be sensitive to relevant local institutions and governance arrangements.

KAA should ensure that adoption and implementation of sound risk management practices, ensure that there is appropriate risk policy in place, that there is appropriate risk-return trade off policy, that there exists favorable internal business environment and that appropriate credit risk limits are set as they impact on the financial performance of implementation of IT projects.

A step-by-step manual on designing and managing evaluation projects would be much needed to increase the quality and ownership of evaluation reports. To this end other international organizations' handbooks could be translated and adapted to local conditions which can be used by KAA. IT projects should not only invest in monitoring and evaluation, but also training of the project team, put proper mitigations on managing risks and involve stakeholders before, during and after implementing a project. This will ensure quality of work done and also improve on project timelines and budget of implementation

KAA should invest more on building capacity in areas that need most specialized skills, this will in turn save on cost and improve on team work during projects execution. Adequate training should have

no leverage of biasness and it should be to all project team members.

Areas for Further Research

The study determined that more research needs to be done in the field of project management

practices in Kenya so as to build on the existing body of knowledge. Additionally, research should be focused on project management practices within the Aviation industry in Kenya.

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