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Risk Management Processes and Success of Projects: A Case Study of Kenya Power Company

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Abstract:

The poor performance of several Kenya Power (KP) projects is due to illegal connection, inadequate power distribution, untimely completion of projects, and inadequate utilization of risk management strategies. Such failures point to the reason why several KP projects have failed to meet the given time frame. Therefore, a research was done to determine the link between project risk management processes and success of projects at KP. The study used four objectives; to establish the influence of risk identification process, risk assessment process, risk response process and risk evaluation process on the success of projects at KP. The study utilized both descriptive and explanatory approaches. The target population in this study was 231 staff located at the KP head quarter. The sample size used was 146 based on Yamane formula. Questionnaires were used to collect data. The study used Statistical Packages for Social Sciences (SPSS) version 20.0 for data analysis. Data was analyzed by use of descriptive statistics and multiple regressions analysis. Regarding regression analysis, the study found that risk identification, risk assessment, risk response and risk evaluation processes had positive relationship with the success of KP projects. The study concludes that risk identification, risk assessment, risk response and risk evaluation processes were practiced at KP, however, failures in projects was still evident. It was recommended that KP project team should be adequately equipped with resources to determine the timing of risks; that project team employees should be subjected to regular specific risk management training and; that the company should regularly evaluate project risks to promote projects' success rates.

Keywords: Risk Management processes project success, risk identification, risk assessment, risk response, and risk evaluation

1. Introduction

To enhance the success of projects, it is important that a given firm should have full details of any potential risks, to methodically and to quantifiably evaluate each of the potential risks as well as their respective possible causes, impacts and effects, and then putting in place mechanisms that can mitigate or rather mange the assessed risks (Hillson & Murray-Webster, 2013).

Therefore, for the ascertainment of risk management in a project, elements such as projects' viability, analysis of possible risks, proper planning mechanisms and also putting in place sound measures that can reduce dissatisfactions from customers on the initiated projects must be embraced. However, in spite of the noble steps that can be employed to manage risks, many organizations in the country still face myriad of challenges in managing projects risks thus the energy sector in Kenya is not an exception (Thamhain, 2013).

In Kenya, it has been established that challenges such as interruption of power, power shortages, high cost of electricity, fraud and electricity theft have been found to have adversely affected the success of projects in the energy sector (Cheruiyot, 2013). Therefore, since these projects are important for achieving economic growth the research seeks to investigate the influence of risk management practices on KP projects.

1.1. KP Projects

KP has several projects. One of the projects being undertaken by KP is the last mile connectivity project. The project is aimed at connecting customers in 32 counties to the distribution network. The approximate amount of funding needed for the project is EUR180 million. In this project, households who are connected to power supply are those who are near existing transformers. Another project being implemented is the street lighting. The cost of this project was 10 billion. There was also the implementation of distribution automation system. This project would therefore aid in fault identification such that it takes a shorter time to restore power and reduce on costs since there will be less overtime being paid. This project is World Bank funded and is being done in phases since the entire project is expensive.

Again, there is the smart metering project which was to cost 26.2 billion. This deals mainly with large power customers whereby the meter will be able to send readings to Kenya power and then Kenya power will do billing. The project would limit fraud since it would be difficult to tamper with the meters and the customer is also able to get their

billing in good time. Other projects being undertaken by KP include mwangaza mtaani whereby KP was to install more than 12,000 LED lamps across the country.

1.2. Statement of the Problem

The KP has faced myriad of implementation concerns with some projects. Ouma (2016) found that the school electrification program was not completed on time hence this resulted to delay of school laptop program. Further, last mile project was also scheduled to begin on September 2015 but ended up starting in 2016. The company has also reported loss of funds due to illegal connection of power especially in the slum areas (Cheruiyot, 2013). It is clear that many projects initiated by KP have not been completed within stipulated time frame. As reported by Macharia and Ngugi (2014), weak distribution and transmission infrastructure, low countrywide electricity access and lower per capita power consumption has lowered success rate of several project by KP.

Several studies such as one by Macharia and Ngugi (2014) found that timely completion of projects, quality projects, and customer satisfaction were some of the factors determining project success. However, the study was not clear on independent variables hence the conclusion cannot apply in this study hence a research gap. Further, Adams (2016) study was on challenges facing electricity transmission in the United Kingdom. However, the study did not consider risk management processes hence a research gap. Musyoka (2010) study concluded that most projects at KAA had applied risk management strategies which increased the success rate of the projects. Nevertheless, the study results cannot be used to justify project success at KPLC since it has dissimilar projects as compared with KAA hence a research gap.

As shown above, none of the studies specifically used risk identification, risk assessment, risk response and risk evaluation are research variables, the current study bridges the gap by using these variables to determine the extent they have been used by the organization to promote successful project completion.

1.3. General Study Objective

The study aimed at finding out the influence of project risk management processes on success of projects at KP. The following specific objectives were used;

- To determine how risk identification process influenced project success at KP
- To establish how risk assessment process influenced project success at KP
- To find out how risk response process influenced project success at KP
- To assess how risk evaluation process influenced project success at KP

1.4. Scope of the Study

The study only focused on KP and its key projects. The main objective of the study was on project risk management and success of projects at KP. The study was conducted among 231 employees based at KP head offices at Electricity House situated along Aga Khan Walk.

2. Literature Review

2.1. Theoretical Framework

2.1.1. Contingency Theory

The study is premised on the contingency theory. The fact that the theory identifies potential risks that could impede the performance of various projects makes it relevance to the study. The theory argues that all potential risks identified must be put into consideration and that they must be implemented to enhance the success of any initiated projects (Burns & Stalker, 1961).

The theory argues for application of unique and totally different actions in handling each of the identified project risks. The theory is suitable for the study at hand since it opines that there is no one specific way of coping with risks associated with projects because all project risks must be given attention to promote project success hence its relevance to the study.

2.1.2. Agency Theory

The agency theory basically assesses the separation aspects of motivational mechanisms that boost employees' morale in their quest for the successful of assigned tasks (Smith & Stulz, 1985). The attitude of managers towards providing solutions to the identified risks is generally affected by agency related scenarios in the field of risk management. Thus, the hurdles come into play when managers' and agents' interest and concerns are not adequately addressed.

The relevance of the theory to the study is based on the fact that all stakeholders (managers, project team, management, employees) must work as a team to promote successful completion of projects. This implies that any dissenting voice or argument should be addressed at all project life cycle stages to promote success of such projects. Empirical Review

2.2. Risk Identification Process and the Success of Projects

The initial stage in project management is identifying possible risks that could hamper project success. Getting to know the level of potential risk can assist managers to come up with efficient and effective mechanisms that can handle risks in order to enhance successful completion of projects (Hillson & Murray-Webster, 2013). Therefore, identification of risks is a way of exploring risky areas for the programs in order to document the associated risk. This identification stage

could consist of brainstorming whereby project managers put in place a checklist of issues that could hamper success of projects to avoid project failures.

To properly carry out identification of risks effectively, initial project documentation ought to be set aside (Kuang, 2011). Mechanisms such as project charter, statement of scope, and extensive plan for project management should be available to enhance the capture all potential risks so that laid down strategies could be initiated to counter risk related issues.

Pourrostam and Ismail (2011) carried out research on identification of causative and effects of unnecessary implementation delay of Iranian projects. Study found that proper implementation of identification process had statistical relationship with success of projects while a study by Cruz, Cano and Cruz (2016) demonstrated lack of project identification process does not affect the ultimate success of the projects as long as procedures are laid down promptly. Therefore, the current attempts to establish the influence of identification process on project success at KPLC.

2.3. Risk Assessment Process and the Success of Projects

Risk assessment reflects the projects resistance for a given risk and also identifies levels of costs, period of completion, team to run the project, availability of systems and resources that if adopted may help in the running of the projects in the entire life cycle (Olamiwale, 2014). Therefore, every aspects of identified risks should be arrived at based on assessment of projects managers. According to Mills (2011), risks assessed could be rated as high which relates to risks that has the possibility to heavily influence cost of project and period of completion. Secondly, risks can also be rated as medium which refers to risks that has a slight influence on project success. The final is known as low risk which has little cost effect on projects.

To determine the risk levels, it is prudent organizations carry out continual assessment process because it is not a onetime event but a continual process that is performed over and over again in order identifying any new risk. Adams (2016) in United Kingdom carried out a study based on the extent public organizations adapted risk management processes. He found that generally nearly all public organizations followed all the four processes in risk management and this improved the success of many projects that have been commissioned. However, a study conducted by Ghoddousi and Hosseini (2012) in Iran found that only 32% of parastatals embraced explicitly the four stages (identification, analysis, responses and monitoring and reporting) while 54% had not adhered to the four stages pertaining to risk management.

2.4. Risk Response Process and the Success of Projects

Risk response phase is clearly the most risk management due to the fact that by nature it is the phase in which the project team have an opportunity to make a difference to the risks that a given project is faced with (Potts, 2018). Such action is integral as it informs the direction the project takes in as far as success or otherwise is concerned. Therefore, it is normally the mandate of every project team to suggest the type of response that is most appropriate so that projects' success is ascertained.

To comprehend the core indicators for risk response, various notable strategies such as reduction, retention or acceptance, transference, and avoidance have been utilized. Regarding risk reduction, one way to reduce risks in a project is to increase expenditures that in the long term can be beneficial to the projects (Diallo & Thuillier, 2014). On risk avoidance, can either be through elimination of risk source or by avoiding projects. Therefore, team training, alternative approaches, preventive maintenance, reviews of operations, elaborate planning, frequent inspections, work permits and procedural changes can help reduce risk.

Further risks transference which is the process of transferring losses that hampers the success of projects to a third party can also be embraced. Therefore, if risks can be well handled by a third party who upholds better capacity or capability, the correct alternative is to transference (Alexandra-Mihaela & Danut, 2013). Lastly, risks acceptance that ensures that risk remains unaddressed can also be used to deal with risks. Therefore, whenever a risk cannot follow the previous steps, viable option is to accept it.

2.5. Risk Evaluation Process and the Success of Projects

Risk evaluation is employed to ensure that identifications, assessments and response to risk related issues that affect project success are on-going (Avazkhah & Mohebbi, 2013). Risk evaluations could consist with the implementation of that plans that have been put in place to promote project success. There are major impediments that project managers often come across during evaluation as such the managers should ensure that plan is effectively implemented; vital documentation and records that assist the process of evaluation should be made available. Such steps promote risk evaluations.

To compound the need for risk evaluation, Grace (2010) did a study in the United States and found that majority of companies followed all the four risk management processes which ultimately led to success of projects of both private and public companies in the country. Therefore, evaluation of risk is important as it helps in understanding the success of strategies embraced against a certain risk that could hinder success of projects.

2.6. Conceptual Framework and Measurement of Variables

The relationship between variables is captured in Figure 1.



Figure 1: Conceptual Framework Source: Olala Lorna Anyango (2021)

3. Research Methodology

3.1. Research Design

The study used descriptive design that helped in establishing how an issue affects study (Saunders, Saunders, Lewis, & Thornhill, 2011). Descriptive design was therefore important to this study because it undertook the attitude and opinion of respondents from questionnaires projects success.

3.2. Target Population

Target population was KP's last mile connectivity project, street lighting distribution automation system, smart metering project, and mwangaza mtaani.

3.3. Sampling Techniques

The simple random sampling was used because it permitted each participant to be part of sampling frame. To achieve this, the researcher first acquired list of employees. In order to study the success of the 3 projects, a population of 231 workers in the headquarters categorized as shown in Table 3.1 was used.

Departmental Distribution of Respondents	Number of Employees
Customer services	35
Finance	21
Supply chain	19
Technical services	23
Design and construction	22
Marketing	26
Total Number of Respondents	231

Table 1: Total Number of Respondents Source: KPLC HR Records, 2019

3.4. Sample Size

The Yamane formula was used because it helped in accurately generating scientific sample size number based on the target population.

Yamane (1967) formula; $n=N/1+N(e)^2$

Where N is the population size; n is the sample size; and e is the level of precision (Yamane, 1967).

Therefore, $n = 231/1 + 231(0.05)^2$

Sample size (n) = 146

3.5. Data Collection Instruments

The primary data was used to gauge responses as per research objectives. The primary data was collected using questionnaire.

3.6. Pilot Study

As part of testing validity and reliability, pilot study was done outside the study scope. It was done on project employees based at Buruburu KP offices. Bryman and Bell (2013) assert that a Cronbach result of more than 0.5 is deemed reliable.

3.7. Validity and Reliability

3.7.1. Validity of Research Instruments

Validity was achieved by involving the views of independent experts. The experts in academic research such as the University supervisors were involved and their views were incorporated in the final questionnaire construction. The university supervisors helped in correcting ambiguities and consistency of the research instruments. The validation of content of instruments through competent judgment is satisfactory when the sampling of items is wide and judicious and helps in improving validity of instruments before final collection. The study also upheld construct validity which was based on the logistical relationship among variables such as identification process, assessment process, response process, and evaluation process.

3.8. Reliability of Research Instruments

To achieve reliability, Cronbach's Alpha Coefficients was used a measure. For an instrument to be reliable, an Alpha coefficient of more than 0.5 percent acceptable (Matkar, 2012). Upon carrying out reliability tests using the below formular, a Cronbach's Alpha Coefficients score of 0.763 was obtained which was satisfactory for main data collection exercise.

$$Re = \frac{2r}{r+1}$$

Re = reliability of the original test r = reliability of the coefficient

4. Data Analysis Procedures

The output data was in the form of figures and tables and this was aided by use of SPSS version. 20.0. To promote understanding and interpretation, both descriptive statistics, preliminary diagnostic tests, and multiple regressions were utilized.

4.1. Descriptive Statistics

The descriptive statistics output was in the form of percentages and frequencies that helped in the presentation, interpretation, and discussion of data to provide relevant meaning to the results.

4.2. Diagnostic Tests

The study used both the normality and multicollinearity tests to determine the reliability of the data. The normality test helped in determining the normal distribution of data. If data distribution is along the diagonal line then the data is termed as normal and vice versa. Multicollinearity test helped in establishing the reliability of the model used in the study; the regression model. A Variance Inflation Factor (VIF) that was below ten was deemed good fit for the study.

4.3. Multiple Regression Analysis

where:		
Y	-	Project success
α ₀	-	Is the constant
X1	-	Risk identification
X ₂	-	Risk assessment
X ₃	-	Risk response
X_4	-	Risk evaluation
$\beta_1, \beta_2, \beta_3 \& \beta_4$	-	Coefficients
ε	-	Residual error term

5. Research Findings and Discussion

The results are presented, interpreted and discussed as per research questions and shown in the subsequent sections. The results were presented in tables and figure formats and only percentages and frequency values were interpreted.

5.1. Risk Identification Process and Project Success at KP

In Table 2, the results for statements regarding the influence of risk identification process on success of projects at KP are presented.

	Strongly	Disagree	Indifferent	Agree	Strongly	Total
	Disagree (%)	(%)	(%)	(%)	agree (%)	(%)
Project team understands the scope of	8	15	5	36	35	100
potential risks that may result to unsuccessful projects						
Projects team believes that success of	4	11	7	31	47	100
projects depends on the existence of						
proper project management plan						
Project team utilize risk identification	19	37	20	15	9	100
breakdown structures (RBS) as a						
checklist tool for enlisting potential						
risks						
Project team has put in place	12	8	12	37	31	100
brainstorming sessions to enhance						
project identification risks						
The company regularly collects	19	52	16	7	7	100
projects information by use of surveys						
to enhance risk identification						
The company uses strength,	3	12	8	38	38	100
weaknesses, opportunity and threats						
during risk identification stage						
There is availability of project charter	7	10	10	35	38	100
that has helped in the identification of						
risks						

Table 2: Risk Identification Process and Project Success at KP

The results show that project team understands the scope of potential risks that may result to unsuccessful projects as supported by 36 percent and 35 percent agreement and strong agreement levels respectively. However, 15 percent disagreed with the statement. The results are in agreement with another study by Warszawski and Sacks (2014) who found that in-depth understanding of scope of risks improves implementation of projects. The study revealed that projects team at KP believes that success of projects depends on the existence of proper project management plan. It was found that 47 percent and 31 percent strongly agreed and agreed with this statement respectively while 11 percent disagreed. In agreement, Hillson and Murray-Webster (2013) argue that having good planning enhances the success of projects. On whether the project team utilized risk identification breakdown structures (RBS) as a checklist tool for enlisting potential risks, 37 percent and 19 percent disagreed and strongly disagreed respectively while 15 percent agreed with the statement. The results contradict another study by Adams (2016) that found that firms that used risk identification structures thwarted the potential risk threats.

Again, it was established that KP uses strength, weaknesses, opportunity and threats during risk identification stage as reported by respondents who agreed and strongly agreed on a similar representation of 38 percent. In Skorupka (2017) methods such as gathering past information by use of questionnaires and SWOT analysis promotes projects' implementation. It was also found that there was availability of project charter that has helped in the identification of risks as revealed by 38 percent and 35 percent respondents who strongly agreed and agreed respectively. According to Kuang (2011), use of projects related charters verily supports the full implementation of projects. Regression results found that risk identification was statistically and positively related with project success. In agreement, Cruz et al. (2016) established that identification of risks is associated with the successful implementation of projects.

5.2. Risk Assessment Process and Project Success at KP

Results on statements regarding the influence of risk assessment process on success of projects at KP are presented in Table 3.

	Strongly Disagree (%)	Disagree (%)	Indifferent (%)	Agree (%)	Strongly Agree (%)	Total (%)
Project team adhere to clarification and prioritization of project risks to help minimize projects failures	7	9	11	38	35	100
Project team manages to identify infrastructural resources tolerance level in order to promote risk assessment	4	4	15	41	35	100
Project team always rate risk levels so as to come up with right mitigation measures	5	22	9	30	34	100
Project team believes risk assessment is a continuous process that should be carried out frequently	2	5	1	35	56	100
Project team is capable of analyzing degree of risks' impacts on project success rate	4	10	8	42	36	100
Project team is well equipped to determine the timing of risk occurrences	21	63	11	3	2	100

Table 3: Risk Assessment Process and Project Success At KP

Results revealed that project team at KP adhered to clarification and prioritization of project risks to help minimize projects failures as indicated 38 percent and 35 percent respondents who agreed and strongly agreed respectively whereas 11 percent had indifference response on the statement. In support another study by Olamiwale (2014) risk assessment is basically about giving priority to risks measures to the benefit of project success. The study also found that project team managed to identify infrastructural resources tolerance level in order to promote risk assessment and this was reported by 41 percent and 35 percent respondents who agreed and strongly agreed respectively. On the same statement 15 percent had neutral response.

It was again found that project team always rated risk levels so as to come up with right mitigation measures. The results were supported by 34 percent and 30 percent respondents who strongly agreed and agreed respectively. Meanwhile 22 percent disagreed with the statement. Project team at KP also believed that risk assessment is a continuous process that should be carried out frequently. In support of the statement, 56 percent and 35 percent strongly agreed and agreed respectively with the statement while 5 percent disagreed. In agreement, Kerzner (2014) asserts that risk assessment is not a onetime event but a continual process that is performed over and over again in order identifying any new risk.

Again, it was established that 63 percent and 21 percent disagreed and strongly disagreed respectively that KP project team was well equipped to determine the timing of risk occurrences. In support, another study by Baker et al. (2015) shows that provision of resource support promotes the assessment of risks. Further test by utilization of multiple regression found that risk assessment had positive significant relationship with project success. In agreement, Bakker et al. (2014) found that assessment of risks did have statistical positive relationship with the success of projects in Italy.

5.3. Risk Response Process and Project Success at KP

Below in Table 4 are results on statements regarding the influence of risk response process on success of projects at KP

	Strongly	Disagree	Indifferent	Agree	Strongly	Total
	Disagree (%)	(%)	(%)	(%)	Agree (%)	(%)
Recognized training approaches used to enhance general knowledge and skills on risk responses	1	22	37	20	20	100
Contingency plans are used in order to avoid any situation that may cause delays in projects	1	10	16	41	32	100
KP normally outsource some functions particularly on those that could have effect on project duration	5	12	12	38	32	100
KP purchases insurance premiums on some items so as to ensure no threats to success of projects	8	27	21	31	13	100
KP avails funding so as to facilitate timely response on risks that may hamper success of projects	5	4	12	43	35	100
KP encourages use of detailed work plans so that issues that may hamper project' success are managed	2	1	5	40	52	100

Table 4: Risk Response Process and Project Success at KP

Presented results show that 37 percent neutrally said that recognized training approaches were used by KP to enhance general knowledge and skills on risk responses. However, 22 percent disagreed while 20 percent on a similarly agreed and strongly agreed with the statement. In a study by Augustine et al. (2015), it was revealed regular training of project staff increases success of projects. It was established that contingency plans are used at KP in order to avoid any situation that may cause delays in projects. This result was supported by 41 percent and 32 percent respondents who agreed and strongly agreed respectively while 16 percent gave indifference response. In agreement, Potts (2018) the upholding contingency plans does have significant association with the implementation of projects.

On whether KP normally outsources some functions particularly on those that could have effect on project duration, 38 percent and 32 percent agreed and strongly agreed respectively with the statement whereas 12% disagreed. In Diallo and Thuillier (2014), hiring of experts or outsourcing of experts to manage high-risk projects can also be embraced to increase success of projects. The study again found that 31 percent agreed that KP purchases insurance premiums on some items so as to ensure no threats to success of projects. On the same statement, 27 percent and 21 percent disagreed and had neutral response respectively. However, Alexandra-Mihaela and Danut (2013) indicates that transference of risks can be by purchasing of insurance from insurance company on certain items.

Further, it was found that KP does encourage use of detailed work plans so that issues that may hamper project' success are managed as reported by 52 percent and 40 percent strong agreement and agreeable levels respectively. In support, Alexandra-Mihaela and Danut (2013) report that use of detailed work plans promotes implementation of public projects. Upon carrying out multiple regression analysis, the study found that risk response had a positive significant association with project success. In yet another study, Shenhar et al. (2011) found that risk response strategies do have positive relationship with the successful implementation of projects.

5.4. Risk Evaluation Process and Project Success at KP

The findings on statements regarding the influence of risk evaluation process on success of projects at KP are descriptively presented in Table 5.

	Strongly Disagree (%)	Disagree (%)	Indifferent (%)	Agree (%)	Strongly Agree (%)	Total (%)
Project team normally checks status of identified risks in order to limit project failures	4	14	23	34	24	100
Project team evaluates efficiency of risk responses on time to enhance project success	32	20	19	22	8	100
Project team has mitigating measures to handle new risks if they occur	3	4	29	32	32	100
Project team have significant documentation to support risk evaluation	0	19	7	25	49	100
Project team are privy of the fact that evaluation is based on proactive approach	16	32	18	14	20	100
Project team believes that evaluating risks periodically enhances success of projects	1	3	2	34	59	100
Project team have alternative plans to manage predictable risks to promote success of projects	4	12	4	51	29	100

Table 5: Risk Evaluation Process and Project Success at KP

It was found that 34 percent and 24 percent respondents agreed and strongly agreed respectively that project team normally checks status of identified risks in order to limit project failures. Meanwhile 14 percent and 23 percent disagreed and remained neutral respectively with the statement. In agreement, Loosemore et al. (2016) state that evaluating status of risks allows for appropriate measures to be put in place. On whether project team evaluates efficiency of risk responses on time to enhance project success, 32 percent and 20 percent strongly disagreed and disagreed with the statement while 22 percent agreed. The results are inconsistent with yet another study by Brown and Chong (2016) that found that the basic necessity for this stage relates with controlling the conditions of determined risks on timely basis.

It was revealed that project team has mitigating measures in place to handle secondary (new risks) as agreed and strongly agreed with a similar representation of 32 percent while 29 percent respondents had indifference argument. In agreement, Kerzner (2014) found that evaluation is based on embracing the correct mitigation mechanisms and redefining them regularly for the success of existing projects. Further, the study established that 49 percent and 25 percent strongly agreed and agreed respectively that project team at KP have significant documentation to support risk evaluation to promote project success. Only 19 percent disagreed with the same statement. In support, Berkeley et al. (2015) say that

vital documentation and records assist the process of evaluation. Again, 32 percent and 16 percent disagreed and strongly disagreed respectively that project team is privy of the fact that evaluation is based on proactive approach while 20 percent and 14 percent strongly agreed and agreed with the statement respectively. However, a study by Mills (2011) found that basing evaluation on proactive approach enhances evaluation process.

The results also revealed that 59 percent and 34 percent strongly agreed and agreed respectively that project team believes that evaluating risks periodically enhances success of projects. In support, Chapman and Ward (2017) states that continual evaluation risks and coming up with rightful decisions as well as making all stakeholders aware of all potential risks. It is also evident that project team have alternative plans to manage predictable risks to promote success of projects as supported by 51 percent (agreeable) and 29 percent (strong agreement). On the same statement 12 percent disagreed. In another study, Lester (2017) found that having alternative plans reduces the chances of project failures. Advance analysis by use of multiple regression established that risk evaluation was positively related with project success. The results disagree with another study; Tang et al. (2017) found that risk evaluation processes had significant relationship with development of projects.

5.5. Measures of Projects' Success at KP

The following in Table 6 are the results for statements regarding the measures of success of projects at KP.

	Strongly Disagree (%)	Disagree (%)	Indifferent (%)	Agree (%)	Strongly Agree (%)	Total (%)
The projects are completed within a given time frame	7	22	18	37	16	100
The projects are completed within budget (project costs)	19	21	19	20	22	100
Completed projects adheres to standard quality	1	7	10	46	36	100
There are sufficient financial resources for successful implementation of projects	5	27	19	29	20	100
There are adequate employees who helps in implementing projects	13	43	12	14	18	100

Table 6: Measures of Projects' Success at KP

According to the results, most of the projects were completed within a given time frame as reported by 37 percent and 16 percent respondents who agreed and strongly agreed respectively. However, 22 percent disagreed while 18 percent were indifferent. The results resonate with another study by Macharia and Ngugi (2014) who revealed that completion of projects within time frame enhances its benefits. On whether projects were completed within budget (project costs), 22 percent and 20 percent strongly agreed and agreed respectively. In the contrary, 21 percent and 19 percent disagreed and strongly disagreed respectively. In support, Cheruiyot (2013) found that viable projects are completed within budget frame as well as within the provided timeline. Further results show that completed projects adheres to standard quality as reported by 46 percent and 36 percent respondents who agreed and strongly agreed respectively. In agreement, Zwikael and Ahn (2011) reports that project quality guarantees its viability and usefulness.

It was also found that most respondents agreed and strongly agreed at 29 percent and 20 percent respectively that there was sufficient financial resource for successful implementation of projects. In objection to the statement, 27 percent disagreed that financial resources were adequate. The results are in uniformity with another study by Wang et al (2014) that suggested that adequacy of financial resources improves success of private projects. The results again indicate that 43 percent and 13 percent disagreed that there were adequate employees who helped in implementing projects. In the contrary, 18 percent and 14 percent said that employees were adequate. The results are in contradiction with yet another study by Thamhain (2013) who established that public run projects in Turkey had been allocated enough employees so as to increase the success rate of the projects.

5.6. Diagnostic Tests

5.6.1. Normality Test

The results in Figure 2 show that data for the independent and dependent variables were normally distributed since the dotted patterns are along the diagonal line.



Figure 2: Normality Test

5.6.2. Multicollinearity Test

As shown in the regression table 7, the variables had VIF values of 1.380 for risk identification, 1.135 for risk assessment, 1.220 for risk response and 1.363 for risk evaluation which is an indication the model was good fit for the study.

5.7. Multiple Regression Results

The results are indicated in Table 8.

Dependent Variable = Project Success						
Variable	Standardized	Collinearity (VIF)				
	Coefficient (β)		-			
(Constant)	1.300	0.396	0.033			
Risk identification process	0.270**	2.670	0.009	1.380		
Risk assessment process	0.529***	1.135				
Risk response process	0.070*	1.220				
Risk evaluation process	0.234*	2.333	0.022	1.363		
N 91						
Adjusted R-squared	0.					
F-statistic (p-value)	12.305 (0.000 ^b)					

Table 7: Multiple Regression Results

* Coefficient Significant at 0.05

** Coefficient Significant at 0.01

 $Y = \alpha_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon....(ii)$ Therefore, the resultant regression equation will be; $Y = 1.200 + 0.270 Y_1 + 0.520 Y_2 + 0.070 Y_1 + 0.224 Y_2 + \varepsilon...(iii)$

 $Y = 1.300 + 0.270X_1 + 0.529X_2 + 0.070X_3 + 0.234X_4 + \epsilon.....(iii)$

The results show that the adjusted R square (coefficient of determination) is 0.534. Implying that 53.4 percent in the project success at KP can be explained by the model used in the study hence good fit. Further the results show that the model is significant at the 1% (0.01) level (F-value = 12.305, p-value = 0.000). Based on the results, the model is significantly reliable.

The results also show that risk identification process was significantly and positively associated with success of projects at KP at the 1% level (β = 0.270, p-value = 0.009). It was also found that risk assessment process has positive and significant relationship with success of projects at the 1 percent level (β = 0.529, p-value = 0.000). Further the study established that risk response process was positively and significantly related to project success at the 5 percent level (β = 0.070, p-value = 0.043). It was also found that risk evaluation process had significant and positive relationship with success of projects at the 5 percent level (β = 0.234, p-value = 0.022). The results, therefore, imply that an improvement in risk strategic management process could lead to success of projects at KP.

6. Conclusions

The study concludes that risk identification process was practiced at KP. The reasons given was because the project team understood the scope of potential risks, there was brainstorming sessions that enhanced project identification risks, the firm used both SWOT analysis and project charter in the identification of risk. However, the project team did not fully utilize RBS as a checklist tool for enlisting potential risks and again KP did not regularly collect projects information regularly by use of surveys.

On risk assessment and success of projects, the study concluded that project managers and team adhered to clarification and prioritization of project risks to helps minimize projects failures, project team always rated risk levels so as to come up with right mitigation measures, project team believed that risk assessment is a continuous process and that

the project team was capable of assessing threat level of risks on project success rate. However, KP project team was found to be inadequately equipped to determine the timing of risk occurrences.

Thirdly, based on risk response, the study concluded that it was mostly initiated at the firm. This is due to the presence of contingency plans that avoided unnecessary projects delays, availability of funds to facilitate timely risk response and the encouraged use of detailed work plans so that issues that may hamper project' success are managed. However, recognized on-job training was inadequately used and that purchasing of insurance premiums on some items as a risk response strategy was rarely used.

Fourthly, the study concluded that KP attempted to evaluate the situation of project risks by checking status of identified risks in order to limit project failures, by having alternative plans to manage predictable risks and by periodically evaluating risks. However, risk responses strategies were not evaluated on timely basis and project team based their evaluation on reactive approach.

7. Recommendations

In relation to risk identification, the study recommends that project managers and team should fully utilize RBS as check list. This will help in enlisting potential risks that could threaten the success of projects. Again, KP should regularly collect projects related information by use of surveys to enhance the process of risk identification.

In connection to risk assessment, it was recommended that project team and managers should be adequately equipped to promptly determine the timing of risks. Adequacy should be based on resources such as finance and human resources as this will help in enhancing the process of risk assessment by the company. Again, risk assessment should also be a continuous process.

On risk response, the study recommends that all project team employees should be subjected to regular specific training. This is because subjecting project team to recognized on-job training will sharpen their skills and knowledge insofar as risk response strategies are concerned.

Meanwhile on risk evaluation, the study recommends that KP should on timely and regularly basis evaluate risk associated with projects to promote the success rate of projects. The evaluation of project risks should at all-time be based on proactive approaches rather than reactive approaches that could lower success rate of projects.

Finally, the study recommends that a similar study should be carried out with a focus on all government parastatals in Kenya. This is because the current study was limited to only one government institutions whereas many of them face project risk management challenges.

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