
Influence of Risk Analysis as a Risk Management Practice on Project Performance in Kenya Commercial Banks

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Abstract

Undertaking an information technology project in a banking environment is a complex task. Studies globally and locally indicate a high failure rate of information technology projects. Standish group report 2019 states that 83.9 percent of information technology projects partially or completely fail. The majority of projects 52 percent were over budget, overdue, or lacked promised functionality. Previous studies indicate information technology projects in commercial Banks in Kenya experience the same project performance variations, as projects are either delayed, over budget or have issues with functionality. Risk is a factor that challenges project performance. Project risk management includes risk identification, analysis, response, and monitoring and control of risk in a project. The overall goal of this study was to examine the relationship of risk management and information technology project performance in Kenyan commercial banks, taking into account the moderating effect of project complexity and the mediating effect of risk culture, both of which had been largely overlooked in previous research hence filling a research vacuum. The target population was forty projects in Kenyan commercial banks in Kenya which made the unit of analysis. Stratified and simple random sampling technique was used. Stratified and simple random sampling technique was used. Questionnaires were used to collect the data from the targeted one hundred and eight respondents. The instrument was tested for reliability by use of Cronbach's alpha coefficient of internal consistency test and validity by use of selected information technology project professionals' review. Drop and pick method of administering questionnaires was used so as to allow respondents enough time to go through the questionnaires and give their responses. An option of online questionnaires was also available to respondents. Based on a survey, the research used both descriptive and explanatory analysis designs. The association between risk analysis and performance of information technology projects in Kenyan commercial banks was investigated using multiple regression. Quantitative data was analyzed using multiple regression analysis model software tool SPSS Version 25. The study adopted empirical model of least squares method while testing the hypotheses. The researcher conducted diagnostic tests of Normality, Linearity, Homoscedasticity and Multicollinearity to see if the data conforms to the basic assumptions of linear regression. The findings were presented using statistical parameter estimates. Tables and figures were used to present data, and supported by explanatory annotations. The results indicated that risk analysis had significant effects on the performance of

information technology projects in the banking sector. The study recommends that banks should consider implementing and fully operationalize risk analysis in information technology projects. The Central Bank of Kenya should also consider putting in place an information technology projects risk policy framework to aid the banks in project undertakings. The finding in this research will aid project managers and different stakeholders in the banking and related sectors in managing information technology projects risks and hence increase the success rate of the projects. The knowledge gap is also addressed by scholarly work that has resulted from this research by providing statistical data analysis and explanations on the IT project performance in relation to risk analysis influence in commercial banks in Kenya.

Keywords: Risk management, Risk Analysis, Project Performance.

1. Introduction

The success or failure of IT projects has piqued scholars' curiosity throughout the last two decades (Pimchangthong & Boonjing, 2017). Mandal and Pal (2015) states that there are several examples of failed software projects. The study presents the Standish group international statistics, European service strategy unit and KPMG survey that indicate that up to 70% of all IT projects fail to meet their objectives. Great IT projects ran 45 percent over budget and 7% behind time in 2012, according to the McKinsey Global Institute (MGI), delivering 56 percent less value than expected.

The Project Management Institute (PMI) reported in 2017 that 14% of IT projects fail. "That number, however, only includes total failures. In the projects that didn't fail outright, 31% failed to accomplish their objectives, 43% went over budget, and 49% were late. IT project implementation is a complex task". One aspect that directly influences this success or failures in the IT project is the inherent risks within the Project. Despite the fact that management of risk is critical to IT project accomplishment, its acceptance and implementation are inconsistent in many organizations. Furthermore, due to financial constraints, a number of project managers have opted not to use risk management. This is depicted in the paper by (Kutsch & Hall, 2009).

Information technology (IT) is critical to economies, and the performance of IT projects is seen as critical (Javani & Rwelamila, 2015). This is true to the banking sector in Kenya. Because of organizations like banks' reliance on computer-based systems to remain competitive, IT projects have become a vital feature of most companies (Jiang et al., 2002). The Kenyan banking sector has gone under a massive digital transformation in the last decade. These initiatives are undertaken through IT related projects. Cracknell (2019) study, the young generation, mobile money, smartphones and fintech are driving forces in the banking sector's disintermediation, which necessitates more IT projects.

1.1 Project Performance

To be deemed satisfactory, an IT project must be completed at a cost that is equal to the budgeted amount, on time, and with all of the necessary functionalities delivered (Alami, 2016) in today's economy and industry, information technology (IT) is critical. Banks consider the progress of IT projects to be equally significant. The implementation of IT projects has become a

crucial feature of most companies, according to Jiang et al. (2002), due to organizational dependence on digital systems to remain strategic. Several companies are working on IT ventures as part of their ongoing strategy to stay on the cutting edge of competition. The broad nature of a project in terms of its impact, esteem among recipients, execution adequacy, quality, and sustainability is referred to as project performance. (Gemuenden & Lechler, 2010)

The high failure rate of IT projects is well-known. Baccarini et al (2015) detailed interview with IT specialists from leading companies in Australia was conducted in the study of management of risks in information technology projects to check the way IT risks were handled in respective projects. 27 IT risks were rated in terms of probability and implications in order to classify the most significant risks affecting the Projects' results. The care method of risk reduction was used by the vast majority of respondents. Furthermore, rather than being technological systems, these methods were largely project management processes.

Akrofi (2017) a project is taken as effective if it is concluded on time, on budget, and with deliverables that meet the requirements. This is the conventional viewpoint; however, there are a variety of ideas about what constitutes a successful project, especially an IT project. Also, for the projects that are accomplished on schedule, on budget, the majority struggle to achieve planned business results, according to the project database. (Gulla, 2011). This clearly demonstrates that completing IT projects on time and on budget does not guarantee success. Other aspect of consumer satisfaction and uptake of the service comes into play.

Karlsen (2017) notes that an IT project is rarely a complete success or failure, according to the author. Instead, the performance of the IT project would be calculated in degrees of success. This research would look at risk management and its effects on performance of IT projects. Measuring the project performance indicators such as scope, schedule, budget, and quality can serve as baseline pointers of success (PMI, 2018). According to project management institute, six ways to measure project performance are scope, budget, schedule, team satisfaction, client satisfaction and Quality. In this Study performance was evaluated on four lines of quality, budget, schedule and scope aspects of the project and whether the project attained its overall objective.

1.2 Performance of IT projects in Kenyan Banking Sector

Mangare and James (2017) indicate an empirical study by Onsogo (2008). According to the findings of an IT investment study of commercial banks in Kenya, 56 percent of the banks assessed have had more than two (2) failed IT projects owing to failure to achieve originally set targets, project failure to be within budget, and fail to be completed within the prescribed time. According to Onsogo (2008), small banks experienced the greatest number of project failures, accounting for 41 percent of all failures compared to 25 percent for big banks.

According to the CBK 2019 banking supervision annual report, uptake of technology in the banking sector has resulted in a significant shift in the strategies of banks. According to the 2018-2019 Innovation Survey conducted by CBK, 94 percent of Kenyan banks introduced a fintech product between January 1, 2015 and December 31, 2019. Moreover, according to the 2019 Innovation Survey, 80 percent of the banks and 86 percent of Micro-Finance Banks (MFBs) introduced a new Fintech product between January 1, 2019 and December 31, 2019.

The Kenyan Banking sector has gone under a massive digital transformation in the last decade. One of the leading contributing factors to this scenario is the digital transformation. This transformation is driven by Information Technology based Projects. The growth of the younger generation, the smartphone, mobile money, and fintech are all driving forces in the banking sector's disintermediation. (King, 2012)

Cracknell (2019) notes that Kenya deserves its fair share of credit. The Kenya Mobile money transformation started with the introduction of M- PESA in 2007. In the spirit of the 'financial inclusion for all' agenda, the Central Bank of Kenya (CBK) enabled it to function on a 'test and learn' basis. The digital transformation and data on the Projects being undertaken by the Banks is less reported due to the Competitive nature of the Sector.

The transformations projects include revamping the Core Banking systems, Mobile money applications projects, Internet Banking projects, agency Banking projects and lately mobile applications projects. Other developments include those in payments, which see everyone paying bills straight through their mobile payment wallets or traditional bank accounts, as well as the upsurge of digital Micro-credit and MShwari.

According to the CBK the year 2017 saw a number of Kenyan Banks engage it on licensing financial technology use cases. e.g. Block chain Technology, Chat bots, Video Teller Machines (VTMs, Psychometric credit scores). This is an indication to increased uptake of IT related platforms for business performance. These emerging disruptive technologies Projects bring with them, various forms of challenges in project performance with regards to budget overruns, project delays and technical functionality lapse.

Some of the Major undertaken projects in the sector involves setting up of the Core Banking system. With the Covid-19 pandemic, Banks have been urged to digitize to build resilience and sustain progress. Banks in Kenya have introduced a number of core banking system initiatives, including: Flexcube system by DBK and DTB, The Mysys Bank Fusion Universal Banking_ (Co-op Bank), Finacle10 (ABSA & Equity Bank), Temenos' T24 (CBK, KCB), Fusion Banking Essence (FBE), eBBS (Standard Chartered Bank). The number of projects vary with each Bank and practices of risk management in these projects is not certain and shall be evaluated in this study. The level of project complexities and risk culture in these projects also vary and the contingent effect was analysed in the study results.

1.3 Risk Management

Meyer (2015) Project risk management, according to the author, is a well-defined field of study with numerous books and papers on the topic. "In the best interests of accomplishing project objectives, project risk management is the art and science of recognizing, investigating, and responding to risk throughout the life of a project"(Schwalbe, 2012). Alhawari et al.(2012) "project risk management entailed analysing and comprehending possible risks that might arise during the project, as well as how they could obstruct project efficiency. Incorrect risk management was found to be common reason of project issues like delays in many studies. Risk management plays a critical element of effective IT project execution and performance."

Varajão and Amaral (2020) risk management in projects assists project managers in defining and prioritizing risks in line of their occurrence with actionable information. As the scale, complexity, dimension, and level of creativity needed are greater, risk management becomes much more important. There are compelling factors for incorporating risk management processes into information technology project management on a regular basis.

According to the 10th global project management survey (2018) of the institute of project management a question was posed on how often organizations use risk management practice. The results 27 percent always, 35 percent often, 25 percent sometimes, 11 percent rarely and 3 percent never. This shows that the use of risk management is not standard across organizations globally. Shrivastava (2012) project risk management is least well-known yet most successful tools project managers can use to improve the chances of a project's success.

Many things are unpredictable, and risks are described as those uncertainties that will have an effect on the project if they arise (Weaver, 2008). A research done by ISACA and the Risk Management Society RIMS (2019) states risk management ought to be part of technology implementation from the start of a project and across its life cycle in order to achieve maximum value. IT and risk management experts will recognize the best opportunities for cooperation by considering the technology life cycle.

Banking and financial services are fundamentally conservative because they are heavily regulated. It's the one sector where a dedication to creativity and immediate action is counterproductive and, in the case of failure, poses a major risk to the institution. The Central Bank of Kenya (CBK) has released a cyber-security guidance note to resolve technology and cyber threats, as well as the related reputational harm, that have arisen as outcome of the growing digitization in financial services.

Risk management was divided into four categories in several research to explore the connection between risk management and IT project performance. The four categories were risk assessment, risk analysis methods, risk response preparation, and monitoring and control (Didraga, 2013). The project's subjective success was unaffected by risk detection and risk mitigation, reliability, easiness, versatility, satisfaction, or quality according to the findings.

According to analyst prep (2018) there has been an intense change in the role of risk management in the years. Moreover, in the last decade, the work of risk management has not just involved the purchase of insurance but also expanded beyond its limits and evaded financial exposure to cater to various risks. There are two ways in which corporations can manage their risks: tackling risks at a time in a systematic and devolved manner or operating from all points of view in a systematic and corresponding manner enterprise risk management (ERM). It notes that ERM is more robust and should be adopted by organizations.

Shields et al. (2010) discovered that usage of risk-aligned project management strategies was uncommon. It brings to focus the actual interphase between the theory of risk management and

actual practice. Kutsch and Hall (2009) few studies show what project managers really do in relation to risk management. In this study, focus was on actual practice of risk management and its linkage to performance of IT Projects.

PMBOK 6th edition outlines Project risk management as "risk identification, analysis, response, monitoring and Control of risk in a project. The goals of these techniques are to raise the probability/impact of positive risks while lowering the likelihood/impact of negative risks in order to maximize project success prospects". This study intended to analyses the risk management on risk identification, risk analysis, risk responses and risk monitoring and control and their relation to the outcomes of IT projects in Banks in Kenya.

1.4 Statement of the Problem

Project completed on schedule, on budget, and with deliverables that meet the requirements, is considered successful (Akrofi, 2017). Undertaking an IT project in a Banking environment is a complex task. Major projects like changing the Core Banking System is equated to changing the engine of an Airplane mid-air (Arumugam, 2017). Mangare and James (2017) indicate an empirical study by Onsogo (2008) according to research on IT venture evaluation of commercial banks in Kenya, 56 percent of the banks studied had more than two failed IT projects owing to failure to meet initial set targets, budget, and completion within the prescribed timeframe. Onsogo (2008) recognized that the uppermost number of project failures happened in smaller banks accounting for 41 percent of the total, while big banks accounted for 25 percent.

In the Kenyan context, though limited in published survey, several examples can be sighted in the IT project performance in one aspect or another. Core Banking System (Flexcube) Development project by a Bank that was to be implemented in two years, took over five years to implement with numerous vendor and technical challenges. National Bank's 2018 report identifies failure of integrating the In Duplum Rule (section 44A (1) (b) of the Banking Act) into the core banking system which makes it impossible to operationalize the rule on interest accrued on the non-performing loans over and above the outstanding principals. In 2015 Equity Bank had to upgrade its System to a new version Finacle Version 10, to deal with a public relations crisis following widespread IT system breakdown.

According to a study published by the PMI in 2017, 14 percent of IT projects fail. Usmani (2015) notes that it's truly amazing that in this age and time, so many system implementations still fail, that it is baffling. Randell et al. (2014) notes 70 percent of software projects fail owing to poor requirements, resulting in an annual rework expense of slightly about Usd 45 B. Jenner (2015) expounded on disheartening IT project underperformance rates amid 50 to 70 percent. Lehtinen et al. (2014) elaborates that software project failures are common.

Mandal and Pal (2015) argues that there is a sufficient amount of proof of software project failures. Studies have been done in various jurisdictions to analyses the place of risk management practice in performance of IT related projects (Ziemba& Kolasa 2015; Javani & Rwelamila 2016; Akofi 2017). This has contributed to varied results as to the influence of risk management practices on projects performance. (Baccarini et al.; Kutsch & Hall, 2009; Tams&

Hill 2015). According to a global survey conducted by the Standish Company, 83.9 percent of IT projects fail partially or entirely.

One aspect that can contribute to IT project performance is the risk management. With these challenges in implementing IT projects and high failure rate, a study is necessary to evaluate the risks management practices and how it affects performance of the IT Project. There is research gap in evaluating risks management practices in IT projects in the banking sector in Kenya. Mutua and Kirui (2020) notes that risk management in finance and banking has been less explored hence creating research gaps in performance of core banking systems in Kenya's banking industry. Studies reviewed have been conducted in other jurisdictions and are in other sectors. Results generated may not be in context with the Kenyan commercial banking Sector scenario.

This research aimed to assess risk management and project performance in Kenyan commercial banks IT projects, noting the moderating control of project complexity and the mediating effect of risk culture. This study generated data that quantify the contribution by risk management field of study on performance of IT projects and make recommendations to the Banks. This study's findings improve awareness of project risk management in IT projects in Kenyan banks, thereby addressing the research gap; "the effect of risk management on IT projects performance in commercial Banks in Kenya"

1.5 Objectives of the Study

The study's objective was to examine the influence of Risk Analysis on IT Project performance in commercial Banks in Kenya.

1.6 Research Hypothesis

The study hypothesis was that Risk Analysis doesn't have a significant weighting on performance of IT projects in the commercial Banks in Kenya.

2. Theoretical Literature Review

2.1 Enterprise Risk Management Theory

Initial scholarly articles of enterprise risk management theory were written by (Nocco & Stulz, 2006). The authors argue in the context of well-designed ERM program, where all significant organizational risks are treated and handled within one framework, can provide long-term competitive advantage and value by affecting both the company-wide and the business unit level. Outside pressure, resulting from corporate scandals involving huge risks, has had a significant impact on this growth. (Gates, 2006). Jankensgård (2019) explains that ERM quickly established as the mainstream theory of corporate risk management.

The ERM theory of project risk management includes the agency problem of undertaking risk management under the risk governance pillar that includes "the processes of conducting risk management planning, risk identification, risk analysis, response planning, response implementation, and monitoring risk on a project". Nocco and Stulz (2006) according to the study, corporate risk management has grown further than insurance and financial liability

hedging in the last years to include other types of risk, including reputational risk, operational risk and strategic risk. Eaton (2015) expounds that “ERM is a relatively new all-inclusive and strategic approach for handling risks in today’s organizations.” As a result, ERM theory builds on conventional corporate risk management theory, which focuses on removing the impact of external frictions like the taxation or contractual issues amid the company and other business stakeholders (Smith & Stulz, 1985).

Galer (2015) highlights the main critics of ERM that it cannot identify and protect an organization from all significant uncertainties, ERM tends to focus on the negative aspects of risk rather than the positive and that implementing an ERM model is expensive to organizations. As a key theory in risk management, the enterprise risk management theory has vast relevance in this study. This is because the study evaluates the practice of and the application of risk management and performance of IT projects. The theory thus anchors the hypotheses relating to risk analysis. The research objective was illuminated by this theory.

2.2 Critical Success Factor theory of Information Technology.

Grunert (1992) states that the idea that there's a few factors that are critical to the company's performance, and they are determinable, was initially brought to fore by Daniel (1961) and then largely expounded by Rockart (1979; Bullen & Rockart, 1981) in the context of undertaking management information systems. From the 1960s, there have been authors (e.g. Ingram, 2000; Wright, 1997; Turner, 1993) who have specified that success in project undertaking is a result of three constraints in the sets of time, cost and specification, this has been the indication of project success.

Milis & Vanhoof (2006) conducted research on success criteria for ICT projects. According to the findings, the triple constraints have a minor effect on performance evaluation. Other factors, such as customer satisfaction and financial or commercial performance, matter even more. This theory anchors the dependent variable, Project performance. Adzmi and Hassan (2018) points out that businesses have made substantial investments in ICT projects in the hopes of gaining competitive advantages, development, and productivity improvements. On the top of debates in the project management field is the project's progress and shortcomings.

Chiemelie (2014) states that for a high-potential ICT project, the project manager must recognize the parameters by which project performance is assessed, and meeting these criteria ought to be the project manager's top priority. In regards to ICT project, the determination of whether a project is successful or not is different from the normal projects and more compound thing to do (Belassi & Tukel, 1996) In this study aspects considered included: desired quality, project within budget, project within schedule and project undertaken within scope. This theory anchors the dependent variable, project performance.

3. Empirical Literature Review

3.1 Risk Analysis and Project Performance.

Risk analysis, according to the PMBOK 6th edition, entails “performing qualitative risk analysis. This is the process of prioritizing itemized project risks for further analysis or action by measuring their probability of occurrence and impact, as well as another feature. The other step is quantitative risk analysis. This process entails mathematically analysing the combined effect of identified individual project risks and how it affects the project as a whole”

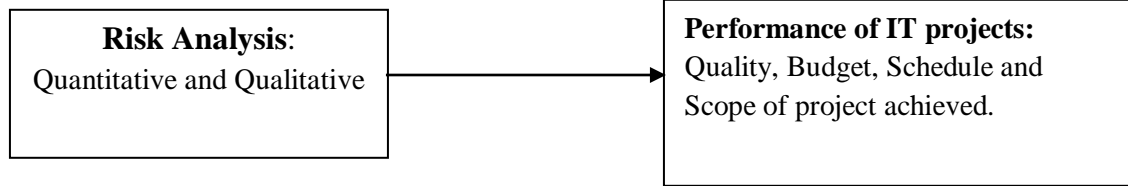
Pimchangthong and Boonjing (2017) undertook a study in Thailand on the effects of risk management practices on the success of IT Project. The study's goals were to appraise how risk management strategies affect the progress of IT projects. Data was obtained via questionnaires from two hundred project managers, IT leads, and IT analysts in IT companies, and was evaluated using the, One-way ANOVA, independent Sample t-test, and multiple linear regression and at 0.05 statistical significance level. Risk assessment and risk response preparation were found to have a positive effect on product results, while risk analysis had a negative impact. This implies that the lesser risk analysis is done, the better the product's output ought to be. Business ought to prudently consider undertaking risk management due to time and financial details as reinforced by Didagra (2013) that, from the application point, a number of project leaders choose not to adopt any risk management owing to financial motives.

Reeves et al. (2013) notes qualitative evaluation may be continued into a quantitative study if it is considered necessary for the project. It is the only stage of the technique that is not required to be used because it has drawbacks when applied to a live, interactive project. . Raz et al. (2002) states that all projects have risks and that many project managers assume that their projects will be successful without analysing risks. The paper notes that only limited projects undertake risk analysis.

Raz, Dvir and Dor (2002) conducted a study in Israel on over 100 projects across varied industries. To ensure accuracy of outcomes, descriptive analysis of variables was combined with a Pearson correlation coefficient of risk practice variables'-test. Cronbach alpha level greater than 0.7 were used to test multiple scale risk management items. The findings revealed that risk assessment techniques such as probabilistic risk analysis are not commonly used, but when they are, they tend to contribute to project progress in terms of budget and timeliness, rather than requirements and product quality. The study's conclusion, risk management is commonly used in high-risk ventures, but that it is still in its infancy, and that more knowledge, resources, trainings, and studies are needed.

Independent Variable.

Dependent Variable



4. Research Methodology

Descriptive and explanatory research design was used in this study. Information obtained was illuminated as part of results attained in the study. Descriptive and explanatory design is used in this study. Information obtained is illuminated as part of results attained in the study. The research design is described as the study's whole strategy for incorporating the various modules of the study in a consistent and organized manner, ensuring that the research issue is well addressed (De Vaus, 2001). This study employs the descriptive and explanatory research design on a survey to ascertain the consequence of risk analysis on performance of IT projects in the commercial Banks in Kenya.

The target population in this study was forty (40) projects in forty commercial Banks licensed in Kenya as per the indication of the published 2019 banking supervision report. For each project, three (3) respondents were targeted. Staff in the project departments, IT department and risk management departments were the respondents. Sampling of the above respondents was by stratified random sampling which is considered the most effective probability sampling method where the target populations are not homogeneous (Kothari & Garg, 2019). Proportionate stratified random sampling was used because the population is diverse, scattered, and of various tiers. The stratification was done using the bank's tier, then the project at the commercial banks. Yamane (1967) formulae to recognize a representative sample was used.

$$n = N / 1 + N (e)^2$$

n= represent the required sample size

N= the total population

e = donates accuracy level required.

The Standard error = 5%

Derived from a population of 40 projects, the sample was:

$$n = 40 / 1 + 40 (0.05)^2$$

n= 36 projects

The response rate when using questionnaires is highly variable (Saunders and Lewis, 2012). The key data gathering tool in this study was semi-structured questionnaires. Data was collected on the targeted 108 professionals that entailed project Leads, IT managers, the IT analysts in the risk management departments in the commercial Banks in Kenya then analysed. The three kinds of validity that were put into consideration in this research were content validity, face validity and construct validity. Face and content validity was checked by engaging a selected number of PMI and ISACA members in a pilot study who have a vast experience in IT projects risk management

Cronbach Alpha was used in this study, and a reliability alpha value of above 0.70 was used because it provides a quantitatively unique estimate. Construct validity in this study was ensured by using a five point Likert Scale as proposed by (Likert, 2017). The study assumed a regression model of the form $P = \beta_0 + \beta_1RA + \epsilon$ where P= Performance of IT project, RA= Risk Analysis, β_0 =constant, β_1 is a Beta Coefficient while ϵ =Error Term

5. Study Findings

The questionnaire items in this section sought to measure responses on what respondents felt were risk analysis activities undertaken in the IT project. The questionnaire items were adapted from the project management book of knowledge (PMBOK) 6th edition and PMI risk management practice guide thereby addressing concerns on IT project performance. The first five questions tested qualitative risk analysis while the last five tested quantitative risk analysis. The presentation on the responses to the items has been made using table 5.10 with brief discussions of the descriptive statistics being made below the table.

Table 5. 1 Risk Analysis Descriptive Statistics Results

	N	Mean	Std. Deviation	Variance
Qualitative Risk Analysis				
The project used experts to conduct risk analysis.	87	3.5747	1.226	1.503
Interviews were carried out to analyses risks	87	3.4368	1.05325	1.109
Risk probability and impact assessment were conducted	87	3.6667	1.08549	1.178
Risk categorization was done in the project	87	3.7241	1.04202	1.086
Updates were conducted on project documents after analysis.	87	3.7241	1.0308	1.063
Aggregate Score		3.62528	1.087512	1.1878
Quantitative Risk Analysis				
Overall project risk analysis was conducted.	87	3.908	0.94785	0.898
Risk facilitation workshops are were carried out.	87	3.2069	1.05806	1.119
Project uncertainty representation was conducted.	87	3.1724	1.17342	1.377
Data analysis tools like Simulations, sensitivity analysis, decision tree was used.	87	3.1609	1.26559	1.602
Project documents were updated after analysis	87	3.6092	1.06046	1.125
Aggregate score		3.41148	1.101076	1.2242
Overall Aggregate Score		3.51838	1.094294	1.206

Source: Survey data, 2021

The results depicted on Table 5.10 above indicates that the aggregate scores to the questionnaire items risk analysis was 3.51, with standard deviation of 1.094. The aggregate mean score for

qualitative risk analysis components was 3.411 and a standard deviation of 1.10, this mean was lower than the mean of qualitative risk analysis components of 3.625 and standard deviation of 1.08. This indicates lesser of quantitative risk analysis components than qualitative risk analysis is practised in the IT projects within the Banks.

The mean response on the question on whether risk categorization was done in the project and updates were conducted on project documents after analysis had mean score of 3.72 and standard deviation of 1.04 indicating that most respondents agreed to the practice. On whether the project's uncertainty representation was conducted and data analysis tools like simulations, sensitivity analysis, and decision tree were used, the respondents were neutral in their responses with a lower mean score of 3.1 and standard deviation of 1.2 and 1.0 respectively. These two activities received the lowest mean score, followed closely with whether risk facilitation workshops were carried out during the projects, this had a mean of 3.20 and standard deviation of 1.05.

Table 5. 2 Model Summary Results

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.930 ^a	.866	.859	.25154

Source: Survey data, 2021

The model summary table 5.20 indicates that the coefficient of determination R^2 was 0.866 and adjusted R^2 was 0.859 implying that 85.9 % of the total variation in IT project performance in commercial banks was accounted for by the four predictors namely risk identification, risk analysis, risk responses and risk monitoring and control. Other variables other than those discussed in this study can be accounted for by the 14.1%.

Table 5.21 shows the results of ANOVA that was used to test the overall significance of the model.

Table 4. 3 ANOVA Results

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	33.477	4	8.369	132.274	.000 ^b
	Residual	5.188	82	.063		
	Total	38.665	86			

Source: Survey data, 2021

Table 5. 4 Coefficients Results

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.287	.149		1.929	.057
	Risk Analysis	.254	.125	.300	2.038	.045

a. Dependent Variable: Information Technology Project Performance

Source: Survey data, 2021

In the empirical model, risk analysis was regressed on IT project performance and

Summarized as follows:

$$P = 0.287 + 0.254 RA$$

Where;

P= Performance of IT projects

RA= Risk Analysis

Table 5.22 shows that Beta coefficient for risk analysis was 0.300 and with P-value of 0.045. The results indicated that if the other factors were held constant, a magnitude change in risk analysis leads to 0.300 positive change in IT projects performance in commercial banks in Kenya. The results P-value was less than 0.05 ($P < 0.05$) indicated that null hypothesis (H_{02}) was rejected implying that risk analysis had statistical significance influence on the performance of IT projects in commercial banks in Kenya. Consequently, hypothesis two is rejected at 5% significance level, which then implies that based on the data collected, there is sufficient evidence to indicate that risk analysis contributes to the performance of IT projects in commercial Banks in Kenya.

This finding is in agreement with Raz, Dvir and Dor (2002) that conducted a study in Israel on over 100 projects across varied industries. The findings revealed that risk assessment techniques such as probabilistic risk analysis are not commonly used, but when they are, they tend to contribute to project progress in terms of budget and timeliness, rather than requirements and product quality. The results is also in concurrence with the study 'effect of risk management strategies on project performance on small and medium information technology enterprises in Nairobi Kenya" (Kinyua et al., 2015) that established that risk analysis in enterprises influence project performance to a very great extent.

6. Conclusions

The risk analysis variable that comprised of qualitative and quantitative risk analysis activities had a significant influence on the performance of IT projects hence affecting their performance. The regression analysis established that risk analysis influenced performance of IT projects. This

implies that an increase in the undertaking of risk analysis activities in a project contributed positively to the performance of the project. Therefore, risk analysis was confirmed to be a significant risk management factor that positively affects the performance of IT projects in Kenyan commercial banks.

7. Policy Recommendations

The Central Bank of Kenya should set policy guidelines on project risk management activities and applications to guide commercial banks in Kenya undertake the IT projects. This can be derived from risk management guideline 2013. The policy formulation can be undertaken through the collaborations with commercial banks, Information Technology companies and fintech, Kenya bankers' associations and related service providers in project management and professional association's bodies like PMI.

8. Suggestions for Further Research

The study recommends that further study be undertaken to establish the maturity level of risk management practice in commercial banks in Kenya and the related regulatory financial institutions. The study also recommends that further investigation be undertaken to determine the integration of risk management functions and the practice of risk management in other projects. To address the limitations highlighted in this study, it is suggested that a longitudinal study be undertaken to establish whether the findings of this study could hold. This is important given that the study was undertaken in a period when the banking sector and the business fraternity as a whole in Kenya was undergoing a turbulent time occasioned from the effects of the Covid -19 pandemic that occasion working from home that may impact on business operations.

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