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# Critical Success Factors of Technological Projects in Kenya; Case Study of Nairobi County

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***Abstract:*** **Project implementation process is multifaceted, usually necessitates extensive and collective attention to a comprehensive aspect of budgetary, technical and human variables. In addition, projects often need a specialized set of critical success factors (CFS) which if managed and given appropriate attention improves the probability of successful execution. Nairobi County has invested significant capital in IT projects but intended objectives have not been realised. The purpose of this project was to explore critical success factors of technological projects in Nairobi County. This was achieved by determining the effect of risk factors on the success of information technology projects and client vendor collaboration factors on the success of information technology projects in Nairobi County. In addition, the research sought to determine leadership factors on success of information technology besides examining expertise coordination factors on success of information technology projects in Nairobi County. A quantitative research design was used where data was collected by using a questionnaire. Descriptive and inferential statistics were used in data analysis. The study revealed that risk management tools have not been used optimally at the county level IT projects. However, there is adoption of a systemic and holistic view that ensures there is cooperation, steady flow of information and focus on competency on the part of suppliers. As well, expertise outsourcing is crucial in IT projects since it has a positive influence on their success. Therefore, risk management should become part of the culture of IT projects and there should be client supplier relation procedures to enhance collaboration. Also, project leaders should consider the opinions of subordinates in the decision-making process and to improve on the skill set in the projects, there is need for expertise outsourcing.**

***Keywords:*** **Critical Success Factors, Expertise Outsourcing, Information Technology, Project Management.**

## 1. INTRODUCTION

A recent review of over 50 years of project management journals, texts, curricula, and professional literature, supplemented with interviews with project managers, found project risk management to be institutionalized and a norm within the information systems (IS) field [4] Yet, the expense and opportunity lost from information systems development (ISD) projects that completely fail or miss critical objectives on schedule, budget, and/or scope are well established. This undoubtedly shows that if projects are executed and steps are not taken to manage them efficiently, the probabilities of failure are significant.

Across the globe studies show that a number of factors affect the success of project. [5] evaluated the success of software development projects in Belarus Russia, and Ukraine The research showed that most of the projects have problems with schedule, architecture, quality, budget and requirements. Similarly, [5] evaluated factors affecting successful execution of IT projects in Nigeria. The researchers presented an ordinal profile of factors contributing to effective project implementation and the degree of the contribution based on regression models and variance analysis. The study established that six factors namely; clear goals and objectives, realistic schedule, clear specifications and requirements, efficient project management skills and methods, top management support and end-user participation have combined effect on implementation of IT-Projects in Nigeria.

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## 2. EMPIRICAL REVIEW

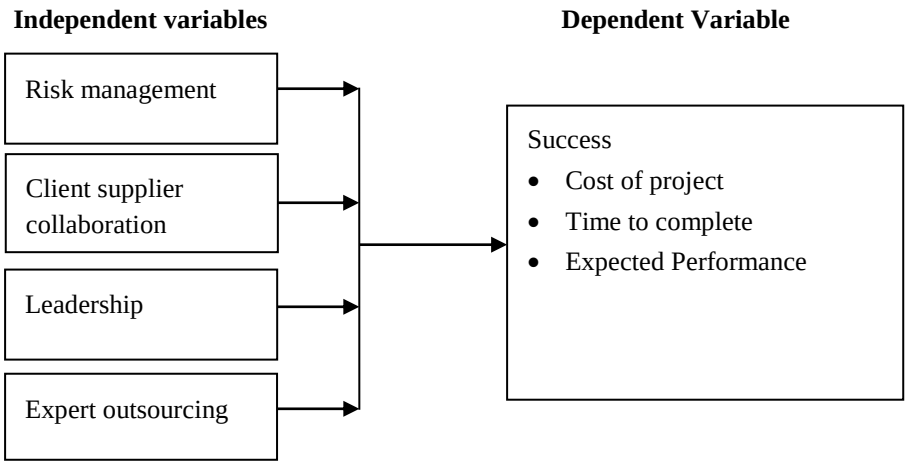
Planning is important organisation initiatives. In this regard, [3] conducted a study to explore the effect of planning and other organizational factors on the success of small IT projects. The researcher tested the relationship between the type and level of project planning performed on small (IT) projects, and the success of those projects. The researcher took into consideration effect of well-documented project CSFs and other project and organizational traits. The researcher collected empirical data from 79 projects of varying complication in which the main objective was to upgrade the operating system on personal computers in company systems and networks to Windows 7 from Windows XP. The study did not reveal a statistically significant relationship between the project risk and the success of projects. However, the levels of risk significantly affected the level of planning on project success. In addition, project teams that supposed higher levels of risk undertook more extensive planning on small IT projects to mitigate that extra risk.

Manufacturing companies implement a number of projects aimed at reducing costs, increasing efficient, managing supply chain among other motivations. [2] Evaluated the CS influencing the project success undertaken by manufacturing companies in Malaysia. The statistical result revealed that client's acceptance was not associated to project success. However, a look at the sample size shows that the respondents comprised project members and leaders, consequently did not represent the opinions of the clients who the project was designed for. In addition, most of the participants were responding to technology based project where time to market is a major concern.

Most organisations have implemented customised programs that perform specific functions to increase efficiency and service delivery besides cutting down costs. One common program is enterprise resource program which has been adopted in both private and public sector. This wide use motivated [7] to study CSF that affect the success if ERP implementation. The researcher interviewed IT managers who had been involved in deployment of ERP. In addition, there was data triangulation with relevant secondary sources. The findings showed that worked with functionality, maintained scope, project team, management support, competency of consultants, internal readiness, training, planning and adequate testing were the CSF affecting ERP.

In the project management field, in some cases CSF can be present yet the project still not deemed a success at its conclusion. Conversely in some cases CSF have not been present but the project have been considered success upon implementation. This inconsistency motivated [1] the role of vision as a critical success element in project management as well as how the effective development and communication of a project vision impact project outcomes. The researcher used a qualitative research design to collect data from multiple case studies in the public sector. The findings strongly suggested that a project's vision is a CSF to successful project outcomes. This is because project vision is instrumental in signalling change to stakeholders. In addition, the project vision is critical in knowledge management projects where the purpose is to share new, best or next best practices. Maintenance of a project vision has important impacts on the successful completion of the project, particularly on its timeliness for completion due to enhanced decision making.

## 3. CONCEPTUAL FRAMEWORK



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## 4. SUMMARY AND CRITIQUE OF EXISTING LITERATURE

In conclusion, [3] collected data from 79 projects whose main objective was to upgrade the operating system on personal computers in company systems and networks to Windows 7 from Windows XP. Even if the projects included were of varying complexity, upgrading a system on personal computers is not as complicated as launching a new software or program in an international organisation or for the public sector. Arguably, the findings of [3] are limited to projects of similar complexities and risks. The review literature includes studies focusing on the public and private sector. These two sections of the economy have dissimilar traits hence their projects will likely be affected by different factors.

In particular the main aim of government projects is to increase service delivery to the people, be more efficient. In addition politics plays a role in launching of project and ultimately their success. On the other hand, in the private sector the main aim is to optimize profits by reducing operational costs and increasing efficiency. Private corporations are less affected by politics than public institutions whose managers may be political appointees.

## 5. RESEARCH METHODOLOGY

The study adopted a descriptive survey design. In this study, inferential statistics and measures of central, dispersion and distribution were applied In this study the target population were 556 registered staffs who were involved in deployment of IT projects in Nairobi county over the last five years. The study adopted census sampling technique since the population is less and known. The study was stratified sampling technique to select the employees where a respondent was picked from. Therefore, employees were stratified into four strata's where the sample size will be distributed . The study used self-administered questionnaires and observation schedules. This study utilized both primary and secondary data. Questionnaires were used to collect primary data which was distributed to the staff.

The test for significance of coefficient of correlation was determined by the use of f-test. The following multiple linear regression was used:

$Y= \alpha+\beta_1 〖X_1+\beta〗_2 X_2 〖+\beta〗_3 X_3 〖+\beta〗_4 X_4+\varepsilon$…….1

Where, Y = project success

α = Constant

β1… β5= the slope representing degree of change in independent variable by one unit variable.

X1= risk management

X2= Client and supplier collaboration

X3= Leadership style

X4= outsourcing expertise.

## 6. RESULTS AND DISCUSSION

**Response Rate:**

A total of two hundred and twenty-six respondents were selected for the study. From the data collected, out of the 232 questionnaires administered to respondents, 198 were filled and returned. This translated to a response rate of 87.6%. The high response rate facilitated the gathering sufficient data that could be adequately generalized to the target population especially in IT projects in Nairobi county. Reliability analysis was done with the use of Cronbach's Alpha which measures the internal consistency by establishing whether certain items within a scale measure the same construct. Nunnally (1978) recommends that instruments used in research should have reliability of 0.70 and above, thus forming the study's benchmark. Cronbach Alpha was established for every objective which formed a scale. Table 4.1 shows that expert outsourcing had the highest reliability (α=0.84), followed by leadership (α=0.774), client-supplier relationship (α=0.756), risk management (α=0.73) and project success (α=0.701). The scales were reliable as their reliability values exceeded the prescribed threshold of 0.7.

| | Cronbach's Alpha Based on Standardized Items |
|---|---|
| Project success | 0.701 |
| Risk management | 0.73 |
| Client-supplier collaboration | 0.756 |
| Leadership | 0.774 |
| Expertise outsourcing | 0.84 |

**6.1 Risk management:**

From the results, 51.5% of the employees strongly agreed that risks are escalated to senior management according to guidelines (mean = 4.17, SD = 1.075). Moreover, 38.4% of the employees agreed that an early warning system is used to track critical risks and decide on activating mitigating measures (mean = 3.67, SD = 0.977). In addition, 42.9% of the respondents affirmed that and risk management process is regularly reviewed improved (mean = 3.5, SD = 0.841). Furthermore, 30.8% of the employees agreed that risks are regularly re-assessed according to guidelines for instance. after specific events or after a certain time interval (mean = 3.37, SD = 1.081). In a nutshell, it can be deduced that risks are escalated to the senior management, Besides, an early warning sign system is used to track critical risks. As well, risk management process is regularly reviewed improved..

**6.2 Client- supplier collaboration:**

From the results, 44.4% of the respondents agreed that the suppliers they always collaborate with are very competent (mean = 4.31, SD = 0.678). Moreover, the respondents were in agreement that the suppliers they collaborate with are always cooperative (mean = 4.08, SD = 0.686). Furthermore, 33.1% of the respondents strongly agreed that the suppliers they collaborate with are always polite (mean = 4.08, SD = 0.686). Besides, the said suppliers provide information that is required by the IT projects (mean = 3.88, SD = 0.778).

However, 33.3% (66) of the employees were not sure if the suppliers they collaborate with always keep their promises (mean = 3.25, SD = 1.025). Also, 37.4% of the respondents agreed to a moderate extent that they receive a good response from the suppliers we collaborate with (mean = 3.13, SD = 0.908). Furthermore, 37.4% of the respondents' lack confidence in the suppliers they collaborate with (mean = 3.13, SD = 0.908). From the foregoing, the suppliers that the respondents collaborate with are very competent, always cooperative and polite. However, it is undefined whether the suppliers always keep their promises, give good responses and are reliable

**6.3 Leadership:**

From results, 51.5% of the respondents strongly agreed that project leaders consider opinions of subordinates in decision making process (mean = 4.44, SD = 0.648). Also, 30.8% of the respondents strongly agreed that project leaders explain the way tasks should be carried out (mean = 3.82, SD = 0.927). Besides, 58.6% of the respondents agreed that project leaders treat all group members equally (mean = 3.72, SD = 0.711). Finally, the respondents were in agreement that project leaders look out for the personal welfare of group members (mean = 3.5, SD = 0.986). To sum, the project leaders consider opinions of subordinates in decision making process and they explain the way tasks should be carried out. Also, the project leaders treat all the group members equally and look out for the personal welfare of group members. In line with the study findings.

**6.4 Expertise Outsourcing:**

As evidenced , 44.4% of the respondents agreed that the project seeks assistance from external auditors (mean = 4.31, SD = 0.678) Furthermore, 27.8% of the respondents agreed that the project outsources to an HR firm on hiring of employees (mean = 4.08, SD = 0.686). However, 33.3% of the respondents are not sure if the project outsources management to experts (mean = 3.25, SD = 1.025). Similarly, 33.3% of the respondents are not certain whether the county outsources to an ICT expert on technology use in my firms for instance web design (mean = 3.25, SD = 1.025). Also, it is undefined whether the project outsources to training experts to train their employees (mean = 3.13, SD = 0.908). As well, 37.4% of the respondents are not sure if the project outsources financial accounting to experts (mean = 3.13, SD = 0.908).

Generally, the project seeks assistance from external auditors and outsources to an HR firm on hiring of employees. However, there is doubt whether the project outsources management to experts, if the county outsources to an ICT expert on technology use in my firms for instance web design, whether the project outsources raining experts to train their employees and if the project outsources financial accounting to experts..

**6.5 Success of IT Project:**

Based on the findings in table 4.8, 44.9% of the respondents agreed that most of the projects implemented provide good returns (mean = 4.39, SD = 0.633). Furthermore, 37.9% of the respondents agreed that project results meet stakeholders' expectations. (mean = 4.06, SD = 0.932). Besides, 30.3% of the respondents agreed that stakeholders are satisfied with project results (mean = 3.82, SD = 0.949). As well, 45.5% (90) of the respondents agreed that projects stay within set out budget limits. (mean = 3.62, SD = 0.974). Further, the respondents were in agreement that projects meet their technical or social performance goals (mean = 3.56, SD = 1.044). Additionally, 45.5% of the respondents agreed that projects

implemented meet their schedule objectives (mean = 3.47, SD = 1.079). Finally, 32.3% of the respondents agreed to a moderate extent that programs achieve cost-benefits objectives (mean = 3.43, SD = 1.319).

**6.6 Correlation Results:**

The study analysed the relationships that are inherent among the independent and dependent variables as well as among the independent variables/ factors. From the results, risk management had a negative and significant relationship with the success of IT projects (r = -0.352, p-value = 0.000) at 0.01 level of significance. The findings also showed that supplier collaboration did have a positive and significant relationship with the success of IT projects (r = 0.380, p-value = 0.000). Furthermore, there is a positive and significant relationship between leadership and the success of IT projects (r = 0.647, p-value = 0.000) at 0.01 level of significance. Finally, the findings showed that there is positive and significant relationship between expertise outsourcing and the success of IT projects (r = 0.477, p-value = 0.000) at 0.01 level of significance

## 7. CONCLUSION

Risk management is done in projects mainly to deal with the occurrence of unexpected and undesired events. Even though risk management is a good idea, the study has established that risk management has a negative effect on project success. It could be that the risk management tools have not been used optimally at the county level IT projects. Similarly, there may be reluctance to apply risk management tools to IT projects. The implication is that risk management is yet to become a key tool in ensuring project success of IT projects.

Furthermore, client supplier relationship is potentially beneficial to both the clients and suppliers. In the study's context, it is clear that the relationship established between clients and suppliers results in an improvement in project success. There is adoption of a systemic and holistic view that ensures cooperation, steady flow of information and focus on competency on the part of suppliers. As such, the relationship established between clients and suppliers results in project success.

Additionally, the study has established that significant number of projects fail to achieve their anticipated goals and the causes for failure are frequently lack of strong leadership skills. Besides, the leadership in place conduct themselves in such a way that the subordinates play a role in decision making and all members in the organization are treated fairly.

Finally, expertise outsourcing is crucial in IT projects since it has a positive influence on their success. Specifically, the IT projects sorted the services of external auditors and HR official to aid with the hiring of employees. As such, the projects had access to highly qualified staff because of a thorough review of prospective employees. Besides, with expertise outsourcing, there was a clique of individuals who could offer new ideas, skills and viewpoints thereby contributing positively to project success.

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