PROJECT PLANNING AND IMPLEMENTATION OF INFORMATION COMMUNICATION AND TECHNOLOGY PROJECTS IN KAKAMEGA COUNTY KENYA

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ABSTRACT

The purpose of this study was to examine project planning and implementation of information communication technology projects in Kakamega County in Kenya. The specific objectives of the study included: Assess the influence of project resource planning on implementation of information communication technology projects in Kakamega county; Investigate the degree of participation in planning processes on information communication technology projects in Kakamega county. The study adopted a descriptive research design. The target population for the study was 110 (project managers, supervisors and Engineers of the projects involved in implementation of information communication technology projects in Kakamega county. The study sample size was 110 respondents. The study conducted stratified and sampling techniques to select respondents to the sample size. A pilot study was undertaken to check the validity and reliability of the data collection instrument. A questionnaire was used to collect primary data and consisted of both structured and open-ended questions to give qualitative and quantitative data. Data was analysed using descriptive and inferential statistics in which frequencies and percentages were used. SPSS was used to analyse the data and to determine whether the independent variables related to the dependent variable. Data was presented in tables, pie charts and graphs. Qualitative data was coded, and themes related to research questions in the study identified. Qualitative data was interpreted by attaching significance to themes and patterns observed using content analysis. The study found that all the independent variables had strong positive correlations with the dependent variable. The multiple regression model had a fairly strong relationship with the data associated with the variables indicating that it is a good predictive model. There is also a statistically significant relationship between the independent variables and the dependent variable. The study also showed that degree of pparticipation in planning was the strongest determinant of implementation of ICT Projects followed by project resource planning. It recommended that the county government should undertake to recruit more qualified personnel for the implementation of the ICT projects by offering incentives for fresh graduates to join the workforce as part of an apprenticeship program.

Key Words: Project planning, Information communication technology projects, Resource planning, Degree of participation, Planning processes

Background to the Study

Performance of ICT projects is considered as a source of concern to both public and private sector clients (Githenya & Ngugi, 2014). Project success requires creating a well-planned project schedule as well as understanding of the key success factors (Friederici et al., 2017). According to the research community, the following factors are the most widely used predictors of project success: the project's mission, top management support, the project schedule plan, client consultation, personnel, technology to support the project's clients, monitoring, and feedback channels for troubleshooting (Moenga & Moronge, 2016). The County ICT Projects aims at ensuring that county Government offices are connected to the internet as well as promoting online services using telephones, emails and teleconferencing. With increased internet connection in the counties, there is faster delivery of services and documents such as birth certificates and National Identification Cards. In addition, the public has equal access to high quality public services both from the central and county offices. The project specifically aims to connect County Commissioners Offices, Treasury Departments, Civil Registration Departments, National Registry Bureau, Education Department Offices, and Governors Offices.

In Phase I of the project, 28 counties were fully connected to the Government Common Core Network (GCCN) and the sites are monitored and supported at the Network Operating Centre (NOC) at the National Treasury. In Phase II, the remaining 19 counties and two sites in (Kilifi and Laikipia) were connected to the National Fibre Optic Backbone (NOFBI). In Phase III, was expanded to other departments in the counties as well as securing the County project infrastructure. At the completion of the project by 2016, several factors were used by the World Bank to rank Performance of the project. These factors included achievement of Project Development Objective (PDO), overall implementation progress, and overall completion outcomes. These factors were rated moderately unsatisfactory for both Project Development Objective (PDO) and overall implementation progress and moderately satisfactory for overall completion outcomes (World Bank., 2016).

Statement of the Problem

ICT is one of the key drivers of Kenya's growth and development strategy to become a middle-income country by the year 2030, according to Kenya's Vision 2030. Access to ICTs is emphasized in Vision 2030 due to its ability to boost local enterprises' productivity and competitiveness in a knowledge-based economy (Kimani, 2017). To achieve this, the government is making significant investments to guarantee that everyone in the nation has affordable access to internet services. Government has invested in fibre optic cables at least to every provincial headquarters and has an ambitious plan to have all urban centre connected to the World Wide Web (Kimani, 2017). To ensure that there is proper implementation of ICT projects, counties have identified effective project planning as one of the key strategies. Implementation of county ICT projects has, however, proven to be a difficult task making some to abandon these projects altogether (Mwitia, 2017).

According to Munyare (2018), many ICT projects undertaken by public agencies in Kenya have failed due to the misalignment between the organisational vision and the implementation strategies; and the absence of appropriate change management planning which resulted in high levels of staff resistance to change. Mburu (2017) affirmed that the performance of ICT project in state corporations in Kenya was hampered by budget overruns owing to deficient estimations and poor planning leading to underutilisation of ICT devices. Kimani (2017) opined that many county governments in Kenya had experienced difficulties in the integration of ICT due to inadequate ICT infrastructure, inadequate staff competencies in ICT, poor staff attitude towards the adoption of

technology, and the absence of managerial support. All these challenges could be linked to poor project planning.

The design and execution of local initiatives have also been the subject of studies by local researchers in fields other than ICT, including Rugenyi and Bwisa (2016), Kiarie and Wanyoike (2016), Sikudi and Otieno (2017), and Mwangi (2018). This study aims to address a gap since none of the previous studies examined the connection between project planning and implementation of ICT initiatives in Kakamega County. Based on this assumption, the study aims to determine how project planning—including project design, scheduling, resource planning, and level of participation—affects the execution of ICT projects in Kakamega County.

Objectives of the Study

The general objective of the study was to establish the influence of project planning on implementation of ICT projects in Kakamega County, Kenya

The specific objectives that this research sought to achieve were:
1. To determine the influence of resource planning on the implementation of ICT projects in Kakamega County
2. To assess the influence of degree of participation in planning towards the implementation of ICT projects in Kakamega County.

LITERATURE REVIEW
Theoretical Review
Resource Based Theory

This study was guided by Barney's (1991) Resource-Based View (RBV) theory that posits that a firm is defined as a set of resources. The theory originated from strategic management research on how firms create value and specifically how they can obtain a competitive advantage in the market. Barney (1991) suggested that a firm's competitive advantage is its value-creating strategy, one that is significantly distinct from the current or future strategy of the competitors. Therefore, in this view, the firm's resources are its source of sustained competitive advantage. That is, the resources that a firm has are their primary source of competitive advantage, and the resources can either be strength or a weakness, including both the intangible and tangible resources available to the company.

The critics of the theory such as Foss (1997) charges RBV scholars of being silent on the endogenous creation of new resources by firms. While Dierickx et al. (2019) and Wernerfelt (2014) have given an initial impetus to create a conceptual model that incorporates new resource creation into the RBV, these important contributions are only first beginnings. Foss hypothesizes that the reason for this underexposure is the RBV's reliance on strict equilibrium economics assumptions (such as complete rationality). Indeed, the very concept of sustainable competitive advantage is often defined in equilibrium terms. This deficiency is a symptom of a general difficulty of handling the more dynamic issues of resource creation, which originates from the variety of theoretical contributions in the RBV that partly incorporate dynamic factors and partly do not. The lack of dynamism in the RBV, which is also signalled by Priem et al. (2018), extends further than the lack of attention for endogenous resource creation.

A second deficiency in RBV logic is that it neglects the environment (cf. Foss, 1997) or fails to specify the context within which the theory is supposed to hold (Priem et al., 2018). In context of the SWOT framework, the RBV neglects the Opportunities and Threats part: environmental analysis of how to best position in a product market. Barney explains in response to this critique that this is a restatement of the observation that 'value' is exogenously determined in the RBV. The

RBV is primarily concerned with decisions about acquiring resources at factor markets and deploying resources inside the firm. Since the value of these resources can only be known in the product market, and these are outside the RBV scope, value remains a black box. Priem et al. (2018) infer that this elemental fallacy of value as an exogenous black box hinders prescriptions regarding competitive advantage, and thus limits its managerial applicability.

The RBV theory is applicable to the current study since one of the critical aspects of project management includes project resource planning/scheduling/management. Identified resources by the project managers of the ICT projects should meet the required criteria as it ensures that the resources are properly utilized and as much as there might be no competitors, the resources should be used to obtain the advantage. The project manager, who is faced with the challenge of resource availability, will establish the key resources (tangible and intangible) and capabilities that will ensure the ICT projects are completed within time and within budget. Additionally, proper resource management in ICT projects is critical when dealing with project cost overruns and time delays. This theory will guide the study to establish the relationship between resource planning and implementation of ICT projects in Kakamega County.

Conceptual Framework

In order to demonstrate the relationship between the independent variables (project resource planning, and project participatory processes) and the dependent variable (implementation of ICT projects), Chepkwei (2020) advises developing a conceptual framework before beginning a study. Numerous variables are suggested by the literature review, but the variables in this study are Project design (Design Blue Print, Design Scope, and Design Plan), Project Scheduling (Project Activity Level, Complexity of the Activities, and Activity Sequencing), Resource Planning (Human Resources, Financial Resources, and Non-Financial Resources), and Degree of Participation (Decision Making, Engagement, and Mapping Process). The implementation of ICT projects (completion within time, budget and stakeholder satisfaction).This is illustrated in Figure 2.1.
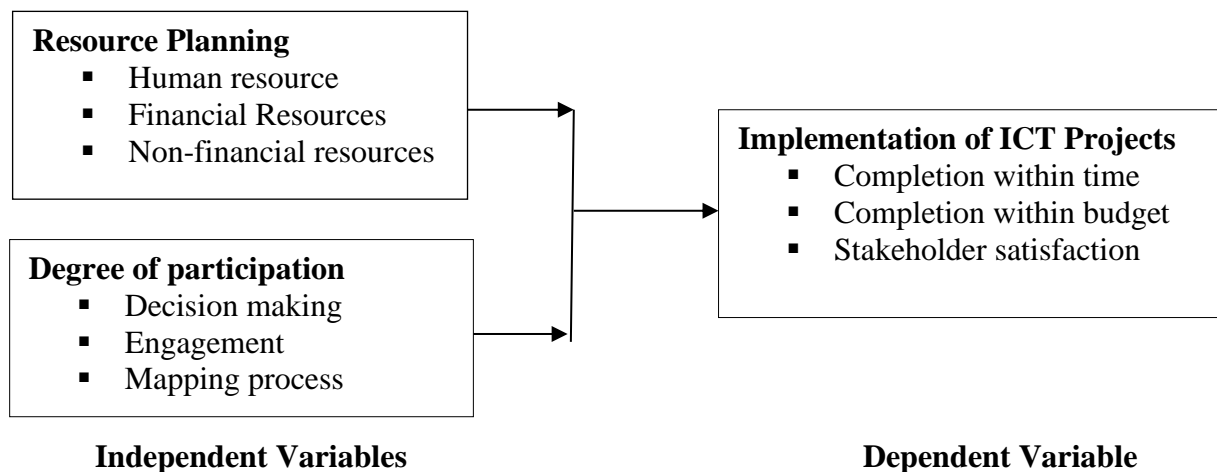
Resource Planning
- Human resource
- Financial Resources
- Non-financial resources

Degree of participation
- Decision making
- Engagement
- Mapping process

Implementation of ICT Projects
- Completion within time
- Completion within budget
- Stakeholder satisfaction

           Independent Variables   **Dependent Variable**
Figure 2. 1: Conceptual Framework
Project Resource Planning

According to Manzoor (2019), a resource is an entity that contributes to the accomplishment of project activities. Time and cost are directly dependent on the availability of resources. The time required maybe determined by dividing the productivity associated with the resources used on the activity into the defined quantity of work for the activity. Each activity is allocated with a specific resource and must be completed within the time limit, otherwise it may adversely affect the overall duration of the project. Therefore, Karunaratne *et al.* (2018) affirmed that the best combination of

resources to use for performing an ICT activity is required to manage the success of the project. Resource scheduling, availability and optimization are considered key to project success implementation. Allocation of limited resources is based on the priority given to each of the project activities. To implement a project means to carry out activities proposed in the application form with the aim to achieve project objectives and deliver results and outputs. Its success depends on many internal and external factors. Some of the most important ones are a very well organized project various resources (Kagendo, 2013). Human resource management is an important function when managing projects. Over the years, project management has developed and consolidated a robust theory base that lead to a body of knowledge that is unique to its practice and distinct within the larger management discipline. Managing people in projects is essential for project success and is of strategic importance to the organization. Projects are temporary and unique in nature. Given the specific resource requirements of each project, the human resource configuration-policies, systems, and practices, will change according to the project (Keegan, Huemann & Ringhofer, 2017).

ICT software and hardware materials are a critical element in the ICT project as it contributes a major portion to the cost of projects. The purchase of the materials may account 50-60 % of the project cost (Otundo, 2014). Therefore, material management is an important element in project management. Material management planning, the most important parts of the overall material management process, comprises the task of identification and determination of required materials, set up and maintain the materials records, determines target inventory levels, delivery frequency including materials logistic planning such as temporary facilities, access roads and storage area (Anshassi, Laux & Townsend, 2019). Usually, the materials plans are developed based on detailed project design, bills of quantities, procurement plans, resource plan and project schedule (Razali, Tajudin & Tajuddin, 2016). Baker and Ricciardi (2015) explained that apparently, the planning process is also integrated with other processes including financial planning. This is the process of estimating the capital required and determining its competition. It is the process of framing financial policies in relation to procurement, investment and administration of funds of an enterprise. Financial planning means to prepare the financial plan. A financial plan is also called capital plan. A financial plan is an estimate of the total capital requirements of the company. It selects the most economical sources of finance. It also tells us how to use this finance profitably. Financial plan gives a total picture of the future financial activities of the project

Degree of Participation in Planning

Jeong, Koo, Hong and Park (2015) posited that project planning is the second phase of a project life cycle. During this stage, the project solution is further developed with the required steps to achieve the project goals identified. It involves planning for resources-human and financial. It also involves the formulation of work plan. When one talks of participatory processes, it means that including community members in developing the project plan (Seidi, 2015). The participatory planning aspects that lead to project success includes participation in the development of project plan through engagement, decision making role and consultation on resources needed (human and non-human) (Seidi, 2015). Participatory project planning ensures inclusion of the stakeholders in making key decisions of every phase of the project. Stakeholders take active role in the identification, planning, execution, monitoring, and control as well as in closure phase. Participation in this context is where groups, organizations and individuals decide to take an active role in decision-making in a project on issues that affect them (Usadolo & Caldwel, 2016). Participative approaches in projects rely on people and success is determined by their involvement and cooperation. Several projects have collapsed due to lack of significant participatory processes involving people and hence project management gaps emerge and this threatens the survival and success of these projects (Barasa & Jelagat, 2013). Evidence has shown that funds availability does

not guarantee project success and sustainability. However, stakeholder participation in management, monitoring, and evaluation is essential.

Degree of participation in planning includes project needs identification. During project needs identification, people take part in pointing out their needs and ranking them in terms of the most pressing. If people are involved in these processes, they end up owning the project as their own and manage it effectively. Participatory development is effective because it starts an empowerment process that allow the beneficiaries of the project to assume responsibility for developing and designing initiatives, executing them and ensuring high levels of project success are maintained. Participation is a goal by itself and can be seen as an empowerment process in which people acquire knowledge, skills and experience to pursue greater accountability for their development (Barasa & Jelagat, 2013).

Implementation of ICT Projects

According to Jonga (2016), project implementation refers to the actualization of the project plans through the execution of the various activities associated with the accomplishment of the project objectives. It involves the transformation of inputs into outputs so as to lead to the attainment of project outcomes. Ndambuki, Kyalo and Kisimbii (2019) posited that effective project implementation is dependent upon the change of scope, the level of cash flow, leadership competencies, and environmental factors.

The first indicator of the implementation of ICT project is completion within time. Abeyisinghe and Jayathilaka (2022) the completion of projects within time relates to the extent to which the duration of implementation of a project is within the stipulated period in the project plans. It is established through comparisons between the actual duration of implementation and the forecasted duration of implementation such that the reasons of any deviations will need to be determined and addressed accordingly.

The second indicator of the implementation of ICT projects is completion within budget. Project budgets are itemized and quantified estimates of the costs of various activities that will be carried out during the implementation of the project. Thus, through budget monitoring techniques it is possible for the project management team to ascertain the usage of funds in relation to the various budget lines and eventually upon completion they will also be able to determine how closely the implementation has been done in comparison with the budget (Kwon & Kang, 2018).

The third indicator of the implementation of ICT projects is stakeholder satisfaction. Maqbool, Deng and Rashid (2020) established that stakeholder satisfaction, which is one of the most critical success factors of project performance, relates to degree to which a given project is able to meet or exceed the performance expectations of stakeholders. The degree is measured through such factors as fitness of purpose, aesthetics, final cost of product, clarity of communication of product attributes, amongst others.

Empirical Review
Project Resource Planning and Implementation of ICT Projects

Umulisa, Mbabazize and Shukla (2015) studied the effects of project resource planning on project performance of Agaseke project in Kigali city in Rwanda. The study findings indicated that human, financial, time and material resources had an effect on project performance of Agaseke project in Kigali city in Rwanda. Additionally, the study found that there were a sufficient number of staff recruited to enable effective implementation of the project. Ndayisaba and Mulyungi (2018) conducted a study on the effect of resources management on project success implementation in Rwanda. The results revealed that resources management has an influence of 83,7% on project success implementation of strengthening livelihoods in rural Rwanda project Muhanga district. Further, it was determined that owing to inadequate financial resources, the project had been

unable to recruit adequate numbers of skilled personnel needed to accomplishment of the project objective.

Kebenei (2014) examined the factors that influence project planning in Kenya's rural health development projects. The study found that most of the respondents 82% (mean = 4.1) were of the view that the government has allocated sufficient funds for development of rural health projects, the CDF in Turbo is allocated some funds to oversee the development of these projects and plan for structures to facilitate development of rural health projects. Wangila (2015) studied the financing of ICT projects in Mombasa County, Kenya and established that whilst there was commendable progress in the implementation of the projects, a critical challenge remained in the availability of adequate funding to ensure the procurement of required ICT facilities and training of project staff.

Ochoe (2018) investigated the impact of ICT integration in teaching and learning in Kisii County, Kenya and determined that the implementation of the ICT integration project had been hampered by inadequate technological resources including computers, modern computer lab, and inadequate internet . Thus, the study recommended that the project management teams conduct resource mobilisation in their networks so as to initiate discussions on sponsorship for the acquisition of these critical resources. A study by Mwitia (2017) on the determinants of the implementation of ICT projects in Kenyan government agencies established that there was a general deficiency in the availability of reliable ICT infrastructural facilities which had an adverse effect on internet and the overall penetration of ICT in these agencies across the country.

Degree of Participation in Planning and Implementation of ICT Projects

Ben-Meiyer (2017) presents the historic and conceptually inherent link between housing and community development and it entailed participatory planning of housing and community development. The study found that the application of participatory planning had ensured the involvement of key project stakeholders in the decision making process, particularly those decisions relating to planning, project identification and selection, and project implementation. Pokopy (2015) examined the relationship between participation and project success: Evidence from Rural Water Supply Projects in India. The study made three major conclusions. First, overall community participation is fundamentally important to project success. Second, the greater the number of households who have contributed towards capital cost in a village, the more likely households are to be satisfied and to rate the project as effective. Third, transparency of committee operations where representative of stakeholders are able to participate in making critical decisions which is important for project success as measured by tariff payment and overall project effectiveness.

Wanjala, and Muiruri (2016) carried out a study on how community participation in planning process has affected the provision of quality water; improved healthcare facilities; education facilities; and improved infrastructure in Webuye Municipality in Kenya. The study established that community participation mechanisms established by the project administrators had enabled the consultation of stakeholders on the project resources needed for the implementation of the projects. In a study on the influence of stakeholder engagement on the implementation of IT projects, Mukherjee (2019) opined that the gradual increment in the understanding of project stakeholders of their needs has compelled project managers to incorporate adequate stakeholder engagement platforms so as to include the stakeholder opinions and views in the implementation of the projects. This has led to greater accountability and reduced the level of resistance to the project implementation efforts.

Ngumi and Senelwa (2021) examined the role of stakeholders' involvement in implementation of ICT projects in state corporations in Kenya a stakeholder mapping exercise enabled the identification of stakeholders and assignment of roles which enhanced clarity on the manner in which they should participate in the projects. However, the study found that there was only a limited adoption of this tool of stakeholder analysis. Ontiri (2016) investigated the influence of stakeholder participation on successful project implementation in Mombasa County, Kenya and affirmed that the projects employed a stakeholder mapping technique that focused on the characteristics of the stakeholders such as the level of education and professional experience in order to determine their level of participation in the identification of the projects.

RESEARCH METHODOLOGY

The study adopted a descriptive research design. Portray (2020) explained the descriptive design is a process of collecting data in order to test a hypothesis or to answer the questions of the current status of the subject under study. The population of the study comprised of all the ICT projects in Kakamega county namely; County Enterprise Resource Planning (ERP) system aimed at automating the all the county functions Revenue management, finance and accounting, human resource, fleet management, hospital management. The cashless revenue collection system that integrates all the own generated revenue collected within the county. The fixed assets and tagging system. CCTV and security surveillance system, Electronic County Integrated Evaluation and Monitoring Sytem. Health Information System and Information Security Management Sytem. The unit of observation included the project managers and departmental heads. These individuals have a better conceptual view of their projects concerning project planning issues and they also understand the challenges that affect implementation of the ICT projects. The projects studied were ongoing or closed ones.

The study adopted a census with respect of unit of observation and therefore will rule out application of any specific sampling technique. The study used a census since the population of 110 is small which less than 200 and the study aims to reach all the respondents. The study's primary data was obtained using semi-structured questionnaires. The structured questions will be useful as they enabled easy analysis of data and reduced the time and resources needed for data collection. Quantitative and qualitative data was generated from the closed-ended and open-ended questions, respectively. Qualitative data was analyzed on thematic basis and the findings provided in a narrative form. Inferential and descriptive statistics were employed for analysis of quantitative data with the assistance of Statistical Package for Social Sciences (SPSS version 25).

Inferential data analysis is conducted by use of Pearson correlation coefficient, and multiple regression analysis. Inferential statistic is used to make judgments about the probability that an observation is dependable or one that happened by chance in the study. The relationship between the study variables was tested using multivariate regression models.

RESEARCH FINDINGS, ANALYSIS AND DISCUSSIONS

The study administered questionnaires to 110 individuals but only 93 were responded to, representing a response rate of 84.5% which was consistent with the findings of Gordon (2002).

Descriptive Statistics
Project Resource Planning and Implementation of ICT Projects

The results of the descriptive statistics of Project Resource Planning are shown in Table 1. According to the results, the statement "there are enough workers in the projects" had a mean score of 2.1505 reflecting the fact that most of the respondents disagreed with it and contradicting the findings of Umulisa *et al.* (2015). Additionally, the statement "there is a limited number of skilled labour recruited for the implementation of the projects" had a mean score of 4.2796 reflecting the

high level of approval amongst the respondents and confirming the findings of Ndayisaba and Mulyungi (2018).

Further, the statement "there were sufficient funds allocated for the implementation of the projects" had a mean score of 1.3548 indicating a very low level of approval amongst the respondents and contradicting the findings of Kebenei (2014). The results also showed that the statement "there was inadequate funding to ensure the procurement of required ICT facilities and training of project staff" had a high mean score of 4.2903 reinforcing the perception that most of the respondents agreed with the statement and affirming the findings of Wangila (2015).

The results further showed that the statement "the implementation of the ICT projects had been hampered by inadequate technological resources" had a mean score of 3.8495 indicating that the majority of respondents were in agreement with it which was consistent with the findings of Ochoe (2018). Lastly, the results showed that the statement "there was a general deficiency in the availability of reliable ICT infrastructural facilities which had an adverse effect on implementation" had a mean score of 2.4301 confirming that most of the respondents disagreed with it which was inconsistent with the findings of Mwitia (2017). The standard deviations of the responses ranged between 0.54464 and 0.92546 indicating that all the responses were concentrated tightly around the average response and indicating that there was little variation between each response and the average response.

Table 1: Descriptive Statistics of Project Resource Planning

	Mean	Std. Deviation
There are enough workers in the projects.	2.1505	.75103
There is a limited number of skilled labours recruited for the implementation of the projects.	4.2796	.82575
There were sufficient funds allocated for the implementation of the projects.	1.3548	.54464
There was inadequate funding to ensure the procurement of required ICT facilities and training of project staff.	4.2903	.61821
The implementation of the ICT projects had been hampered by inadequate technological resources.	3.8495	.72151
There was a general deficiency in the availability of reliable ICT infrastructural facilities which had an adverse effect on implementation.	2.4301	.92546

Degree of Participation in Planning and Implementation of ICT Projects

The results of the descriptive statistics of Degree of Participation in Planning are shown in Table 2. According to the results, the statement "the application of participatory planning had ensured the involvement of key project stakeholders in the decision-making process" had a mean score of 3.9247 indicating a high level of agreement amongst the respondents and affirming the findings of Ben-Meiyer (2017). Additionally, the statement "there is transparency of committee operations where representative of stakeholders can participate in making critical decisions" had a mean score of 2.7957 indicating a very marginally positive level of affirmation amongst the respondents and only partially agreeing with Pokopy (2015).

The results also showed that the statement "stakeholders are consulted on the project resources needed for the implementation of the projects" had a mean score of 3.4086 indicating that the majority of respondents were highly in agreement with it which was aligned with the findings of Wanjala, and Muiruri (2016). Further, the statement "project managers have incorporated adequate

stakeholder engagement platforms to include stakeholder opinions and views " had a mean score of 3.2366 indicating that the majority affirmed it and confirming the findings of Mukherjee (2019).

Additionally, the statement "A stakeholder mapping exercise is carried out for the identification of stakeholders" had a mean score of 3.1075 indicating that a moderate majority of respondents were in agreement with it which echoed the findings of Ngumi and Senelwa (2021). Lastly, the statement "There is stakeholder mapping technique that focuses on the characteristics of the stakeholders" had a mean score of 3.1075 indicating that a moderate majority of respondents were in agreement with it which echoed the findings of Ontiri (2016).

The standard deviations of the responses pertaining to the variable ranged between 0.56071 and 0.98064 indicating that all the responses were concentrated tightly around the average response and indicating that there was little variation between each response and the average response.

Table 2: Descriptive Statistics of Degree of Participation

	Mean	Std. Deviation
There is participatory planning to ensure involvement of key project stakeholders in the decision-making process	3.9247	.71073
There is transparency of committee operations of stakeholders can participate in making critical decisions.	2.7957	.95050
Stakeholders are consulted on the project resources needed for the implementation of the projects.	3.4086	.98064
Project managers have incorporated adequate stakeholder engagement platforms to include stakeholder opinions and views	3.2366	.91364
A stakeholder mapping exercise is carried out for the identification of stakeholders	3.1075	.56071
There is stakeholder mapping technique that focuses on the characteristics of the stakeholders	3.1075	.56071

Implementation of ICT Projects

The results of the descriptive statistics of Implementation of ICT Projects are shown in Table 3. According to the results, the statement "The projects are delivered within the timelines" had a mean score of 4.1720 indicating a high level of affirmation by the respondents and confirming the findings of Mwitia (2017). Additionally, the statement "There is more precise estimation of time and the eventual timely delivery of the project" had a mean score of 3.7527 indicating that most of the respondents were strongly in agreement with it and affirming the findings of Sigalai and Iravo (2017).

The results further showed that the statement "Projects do not run into cost overruns upon completion" had a mean score of 3.5914 indicating that most of the respondents were strongly in agreement with it and corroborated the findings of Mburu (2017). The statement "The projects were completed within the budget since financial estimates were done at multiple stages of implementation" had a low mean score of 2.3011 reinforcing the view that most of the respondents were not in agreement with the statement and contradicted the findings of Odhiambo *et al.* (2017).

The results also showed that the statement "The implemented projects meet the stakeholder satisfaction "had a mean score of 3.7312 indicating a high level of affirmation which was consistent with the findings of Kipkoech (2022). Lastly, the results showed that the statement "the majority of stakeholders were satisfied with the project outcomes" had a mean score of 3.1075 indicating only a moderately positive level of agreement and affirming the findings of Abdul

(2019). The standard deviations of the responses pertaining to the variable ranged between 0.60115 and 0.89031 indicating that all the responses were concentrated tightly around the average response and indicating that there was little variation between each response and the average response.

Table 3: Descriptive Statistics of Implementation of ICT Projects

	Mean	Std. Deviation
The projects are delivered within the timelines	4.1720	.60115
There is more precise estimation of time and the eventual timely delivery of the project.	3.7527	.67011
Projects do not run into cost overruns upon completion	3.5914	.88755
The projects were completed within the budget since financial estimates were done at multiple stages of implementation.	2.3011	.88201
The implemented projects meet the stakeholder satisfaction	3.7312	.66168
The majority of stakeholders were satisfied with the project outcomes.	3.1075	.89031

Inferential Statistics

Pearson Correlation Coefficient Analysis

Benesty, Chen, Huang and Cohen (2009) defined a Pearson correlation coefficient as the extent to which two or more variables relate linearly. The Pearson correlation coefficients of this study are illustrated in Table 4. According to the results, the four independent variables, Project Resource Planning and Degree of Participation in Planning had positive correlations of r = 0.802 and r = 0.904, respectively with the dependent variable, Implementation of ICT Projects. Thus, a change in Project Resource Planning by one unit will lead to a corresponding change of 0.802 in Implementation of ICT Projects; a change in Degree of Participation in Planning by one unit will lead to a 0.904 change in Implementation of ICT Projects. Further, an assessment of the p-values showed that all the independent variables had p-values that were below 0.05 indicating that there a statistically significant relationship between all of them and the dependent variable. This affirmed Dahiru (2008) who determined that in instances where there are confidence intervals of 95%, p-values are supposed to be below 0.05 so that the observed differences between groups are not likely to be down to chance and, as such, statistically significant.

Table 4: Pearson Correlation Coefficients

		Project Resource Planning	Degree of Participation in the Planning Process	Implementation of ICT Projects
Project Resource Planning	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	93		
Degree of Participation in the Planning Process	Pearson Correlation	.080	1	
	Sig. (2-tailed)	.443		
	N	93	93	
Implementation of ICT Projects	Pearson Correlation	.802	.904	1
	Sig. (2-tailed)	.037	.004	
	N	93	93	93

Multiple Regression Analysis

Multiple regression is a statistical technique that is concerned with the establishment of associations between one or more independent variables and a dependent variable by fitting a line of best fit through a series of observations (Mooi & Startstedt, 2014). The summary of the study's multiple regression model is presented in Table 5. These results show that the R Square value for all the variables was 0.749 indicating that the model explained 74.90% of any changes in the dependent variable, Implementation of ICT Projects whenever there is a one percent change in the independent variables. This means that the model was able to reach the 0.7 threshold for significance of the R Square value as recommended by Hamilton, Ghert and Simpson (2015). This demonstrates a fairly strong goodness-of-fit of the regression model.

Table 51: Summary of Model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.866[a]	.749	.734	.49204

ANOVA Statistics

Sawyer (2009) explained that the Analysis of Variance (ANOVA) is a statistical procedure that seeks to determine existing differences between experimental group means in situations where there are one or more independent variables and a dependent variable. The results of the ANOVA of the study are presented in Table 6. The results indicate that the ANOVA F-test score, calculated value F_{cal} at 5% level of significance is equivalent to 66.840, which is greater than the F critical value (F_{crit}) of 2.45 indicating that there is a significant relationship between all the independent variables and the dependent variable of Implementation of ICT Projects. The p-value of 0.003 is less than 0.05 indicating that there is a statistically significant relationship between each of the independent variables and Implementation of ICT Projects as suggested by of Kao and Green (2008). This demonstrates the goodness of fit of the model.

Table 62: ANOVA Statistics

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	6.684	4	1.671	66.84	.003
	Residual	2.241	88	.025		
1	Total	8.925	92			

Beta Coefficient Analysis

Beta Coefficients refer to unknown constants that are forecasted from the data which are linked to particular independent variables (Peterson & Brown, 2005). These coefficients facilitate the measurement of the magnitude of change in an independent variable and its impact on the dependent variable when the rest of the independent variables are held constant. The results of the Beta Coefficients of the study variables are shown in Table 6. The values of the constants and coefficients enabled the generation of the following multiple regression model:

$$Y = 2.047 + 0.282X_2 + 0.392X_3 + 0.936$$

According to the equation, taking all the independent variables to be zero, Implementation of ICT Projects will be a constant equivalent to 2.047. A review of the findings also shows that a unit increase in Project Resource Planning will lead to a 0.282 increase in Implementation of ICT Projects when all other independent variables are held constant. Finally, a unit increase in Degree of Participation in Planning will lead to a 0.392 increase in Implementation of ICT Projects when

all other independent variables are held constant. Lastly, the p-values for all the variables are all below 0.05, which indicates that they are all statistically significant.

Table 7: Beta Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	2.047	.936		2.187	.031
Resource Planning	.282	.239	.212	2.027	.001
1 Degree of Participation	.392	.308	.389	.846	.004

Conclusions

There is a limited number of skilled labour recruited for the implementation of the projects. There was inadequate funding to ensure the procurement of required ICT facilities and training of project staff. The implementation of the ICT integration project had been hampered by inadequate technological resources. However, there are not enough workers in the projects; there were sufficient funds allocated for the implementation of the projects; and there was a general deficiency in the availability of reliable ICT infrastructural facilities which had an adverse effect on internet.

There is participatory planning to ensure involvement of key project stakeholders in the decision-making process. Stakeholders are consulted on the project resources needed for the implementation of the projects. Project managers have incorporated adequate stakeholder engagement platforms to include stakeholder opinions and views. However, stakeholder mapping had yet to be applied as a stakeholder identification technique.

Recommendations

The county government should undertake to recruit more qualified personnel for the implementation of the ICT projects by offering incentives for fresh graduates to join the workforce as part of an apprenticeship program. The county government should also benchmark both locally and internationally to determine ways to completing projects within budget and time.

Areas for Further Research

Overall, the findings of the study provide substantial support for the conceptual framework. Specifically, the results demonstrate that project planning can act as a powerful tool that can directly lead to improved implementation of ICT projects. The study also found out that adopted joint project planning dimensions explained 74.90% of the implementation of ICT projects in Kenya. The study, therefore, suggests further studies on the other factors (25.10%) influencing implementation of ICT projects in Kenya. The additional model could be explained through the insertion of other moderators like, project leadership, project management skills and project complexity interventions to the hypothesized model. Future research may replicate this variable in similar study in other different infrastructure projects to find out whether the finding is different from the current results. In this study, the research focused on the relationship between project planning dimensions and implementation of ICT projects in Kenya. A replica of this study can be carried out with a further scope to include other different ICT projects and examine whether the findings hold true. Future studies should apply different research instruments like focus group discussions to involve respondents in discussions to generate detailed information which will help in bringing out better project planning practices to enhance implementation of ICT projects.

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