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Workforce Planning Practices and Performance of Mega Dam Projects in Kenya

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Abstract

The construction of dam projects often results in a big role in societies in terms of meeting the development requirements of the economy and more so in changing the quality of life of country's people. The purpose of the study was to determine the effects of Workforce planning practice on performance of mega dam projects in Kenya. This study was guided by reinforcement theory, theory of change, agency theory, stewardship theory, time management theory and resource-based theory which are all relevant to study variables. The study adopted a mixed research design with a target population of 322 registered civil engineers and registered land surveyors in Kenya as of the year 2023 and a sample size of 97 respondents. Data collection instrument was a semi-structured questionnaire and interview schedule. Piloting was done incorporating 10 registered civil engineers and land surveyors in Kases and Siyoi/Muruny mega dams in West Pokot County to test the validity and reliability of the data collection instrument. Data is analysed using a Statistical Package of Social Sciences (SPSS) Version 23.0. The multiple regression analysis models were developed to establish the relationship between dependent and independent variables. The Analysis of Variance (ANOVA) was used to test significance of variance of one variable over the other. Data from the field revealed that project planning practices have a significant positive relationship on performance of mega dam projects in Kenya and that project management policy is a moderator between independent and dependent variable. The most outstanding variable was time management planning practice as it contributed heavily towards performance of mega dam project in Kenya. This study therefore recommends that project administrators should strengthen their project planning practices so as to achieve effective performance. Further, the findings are of great importance to the researchers, academicians, stakeholders and to the entire economy as a whole interested in performance of mega dam projects.

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1. Introduction

Water is a valuable natural resource important for life, development and the general environment (UN-Water/Africa, 2023). While admittance to safe water is a human right, globally, 768 million populaces remain without access to an improved source of water. It is estimated that by the year 2050, the global demand for water will increase by 50% with the maximum demand in developing economies countries (Saeed et.al, 2022). Approximately 80% of Kenya's land area is arid or semi-arid (ASAL), and only 20% is arable. These ASAL areas host about 35% of Kenya's population. Due to this, Kenya is classified as a persistently water-scarce country and is vulnerable due to water uncertainty caused by erratic rainfall patterns and the influence of climate change (Saeed et.al, 2022). Kerzner (2017) indicates that projects are designed, planned and implemented in tandem with the series displayed by the project cycle. During these phases projects are prejudiced by a multiple of factors which can be external or internal to the organization accountable for its proper management and

implementation. The important thing for the project manager is to be familiar with what these factors are and how they impact on the project during the various phases from the beginning to final hand-over to the beneficiaries, (UN-Water/Africa, 2023).

Desai et.al, (2021) alludes that projects make up approximately 50% of all work performed and consequently deemed as responsible for the organizational growth execution. Fretty (2017) notes that, project management practise is the project achievement through application and integration start, planning, execution, controlling, monitoring and closing. On his part, Andrew et.al., (2018) reports that a project can be regarded as a scheme, i.e. dynamic and keeps on changing from one stage to another within its life cycle.

In addition, projects are recently far more complex than ever before. Large capital investment is involved as well as several disciplines embraced, tighter schedules, project participants who are widely disseminated, and quality standard, which are stringent. This combined with fast development in ICT; these components have extremely affected project concert in taking focal points of recently created management tools and the most recent modernization. The project management creative concept is all-inclusive and non-specific. Project managers, who wish to make enhancement on existing project performance or intend to present the project management discipline, need to take cognisance of social, auxiliary, useful and individual components. Armas & Moralde (2022) notes that scheme of a company is the accomplishment plan of management for operating the business as well as conducting operations.

The planning of a project represents an administrative promise to look for after activities' agreement in the growth of the business, pulling in and user pleasure, opposing resourcefully, leading tasks and getting better capital and market performance of the organization. Therefore, some of the construction company's project plan entails increasing the business, building a loyal clientele and outdoing the rivals. In choosing a project plan, management need to affect all the dealing approaches and ways of rivalling hence the management should make use of this competitive and operating approaches combination in moving the organization the expected way, reinforcing its market position and aggressiveness and boosting execution. The project planning choices a company make are not often simple decisions and some of them might turn out to be erroneous but that is not an excuse for not deciding on a concrete course of action (Khattab, 2022). Efficient and operational project management requires whole contributions of competed human resources well equipped with necessary skills, knowledge and approaches to work. Success or subsequent failure of a project or related businesses requires thorough resource planning processes for the whole project to succeed (Besner & Hobbs, 2021). As envisaged by Saeed (2022), any project is termed as effective if it meets the shareholder's prospect and conveys the essential information to them. A strong tie which often begins with project planning results in meeting prospective shareholders who have a strong interest in the construction project. Hendricks, (2022) states that majority of the dam construction projects often be unsuccessful due to poor quality and a failure to suit shareholders' expectations. And in order to attain a dam construction project success, all shareholders' need to be involved in a collaborative project planning (Bajjou et al., 2018).

A number of studies in Madagascar on dam construction projects mainly focusing on construction costs in projects have resulted in the realization that various procurement strategies are usually adopted. Ellis, (2021) alludes that there are myriad factors responsible for cost overruns in most of this dam construction projects, they include underestimation of costs, expansion of the projects scope during later stages of project implementation and the ever-changing environmental conditions. On their part, Gbahabo & Samuel (2017) sight that the most common phenomenon contributing to the magnitude of cost overruns in construction projects is the project schedule. As a matter of fact, besides the project size and length of project development phase from planning to implementation, the major factor affecting any projects success is the cost overrun. This trouble of cost overruns is decisive in both developing and developed countries and need be mitigated courtesy of construction cost control.

In a study by Cheng et al. (2017) who evaluated the performance of sub-contractors, they identified factors that are attached to the performance of the sub-contractor. Amongst the factors are first construction techniques, second duration control abilities, and lastly material wastage. In a different study Mbachu and Nkando (2017) established that quality and outlook to service is one of the key issues constraining successful project delivery in South Africa. A study by Zulu & Chileshe, (2018) found out that the performance of contractors in Zambia, rumour had it that it was below expectation. They even sighted that it was uncommon to them or even the residents to aptly point out of local projects that have not been completed on time or stalled. This has led to these contractors not being competitive enough. Ghana has seen the infrastructure projects having crucial factors that contribute to project delays. They are; delay in payment to contractors/suppliers, price fluctuations, price

increases in raw materials, inadequate funds from sponsors, variation orders and poor capital market. These factors result in cost overrun, time overrun, court cases, lack of permanence by client and intercessions (Alnuaimi, 2020). In a similar scenario, Msele and Alananga (2018) observed that single and two-storey incremental housing builders faced similar set of human related construction challenges and external cost-push issues but were of different governance, physical and interest related constraints; of all the cost-push factors examined, interest rate interference was the only observed strategy that had a far reaching potentials to single-storey low cost incremental builders as such builders were less likely to resort to loans as a mechanism to finance projects (Owili, 2021).

In Zimbabwe, the construction industry is seen as a boost to economic growth that provides shelter for economic and social activities including on-site and off-site infrastructure that facilitates the smooth functioning of the said activities. As observed by Mintzberg (2017), the industry does not only touch on the lives of virtually everyone on a daily basis but occupies a fundamental position in many national economies. As a result of the sizeable nature of projects executed, (Nkwachuku, Ibeawachi & Okoli, 2018) notes that the industry requires substantive injection of capital and, any loss through failure or desertions has a crippling impact on the capabilities of the investors and financiers to invest further in the upcoming construction projects.

Despite the complex nature of the effort undertaken by the construction industry, cost and time need to be successfully monitored and guarded if the anticipated profit margin has to be realized for the contractor and, for the project to be completed within the budget cost of the client expectations. If this is to be adhered to, financiers and contractors of the said construction works are expected to be cost conscious if their business objectives are to be realized from the project. Irrespective of the economies generated through effective cost management, most projects are delivered over-budget. Nine out of ten projects are often faced with cost overrun in the range of 50 to 100%. The problems of project cost swarming are painstaking to be more severe in developing countries where they sometimes surpass 100% of the anticipated cost of projects, thus, the need for cost control, (Momon, Rahma &Azis, 2018). Successful dam construction projects are those delivered safe and sound to the required quality standards, on time, within the stated budget and desired scope (Bamberger & Mabry, (2019). The effectual supervision of costs is a very important element in achieving these objectives. Beneficiaries rightly anticipate that the final cost of their projects should not go beyond the approved budget, and indeed for some, cost control and certainty is their major priority (Zenger, 2017). Capital overruns during the construction phase may seriously over-extend the beneficiaries capitally, to a point where the project may not be completed to the expected values or may even have to be stalled (Cunningham, 2017).

Several studies assert that project management has at its core objective of meeting and surpassing the potential of the project sponsors. The triple constraint is the most vital part of project management as for a project to be successful; they need to be within the cost, time, and scope. As per Meredith, Shafer & Mantel, (2017), the project managers need to weigh one constraint against another and agree on which one will return the best result to the project. In essence, first, the project needs to produce wanted result/outcome for the anticipated cost. Secondly, the project generates desired result/outcome with minimum defects and the project should generate the desired result/outcome within the estimated period. Zolfaghari, Aliahmadi & Mazdeh, (2017), notes that the key endeavours for all projects is to satisfy these three aspects of a project. Conversely, external forces do play such as project management policies and force the project to go off course. It is therefore necessary to carry out a proper planning since projects are capital intensive and carry along many risks and uncertainties with them.

A correctly planned project characteristically has control mechanism that are integral to make sure that all necessary actions are followed to enhance the accomplishment of the project based on the set plan. Eom, Kim & Sherman, (2018) notes that the control mechanisms pledge that actions predictable to execute established plan to action are well harmonized with the set objectives and are able to realize the plan. It is not always easy for a project manager to recognize deviations in capital plan or that there are time and cost overruns. It is through the project control mechanism that these are noted. As noted by Whittaker, (2019), project performance is majorly based on project planning; identification of the key problematic areas during the planning process and taking corrective action is vital in enhancing project construction performance. The past one decade has seen the Kenyan economy enjoy a high economic growth rate. For her to maintain the steady growth, the country seeks to provide more social amenities like roads, electricity, telecommunication networks, sanitation facilities, and large-scale investment aimed at enlarging major dam construction projects. These various projects have a chief role to play in the country's economic development and construction firms in the country have performed majority of these works. Various studies point out that majority of dams construction projects do not achieve success since many of them have not taken off while others are termed as stalled (Ndachi & Kimutai, 2018); Studies by Omondi, (2017) alludes this to incidences where time and cost overruns the project's completion. A notable

example is a report by IBM, (2018) who observed that due to project management change, only about 40% of the projects were able to be completed within time, scope and cost. In a different study, it was established out that one in six of the 1,471 construction projects carried out had an average of time plus cost overrun of 200% and 70% respectively (Flyvbjerg & Budzier, 2018). Further, the Standish Group in 2019 reported that an estimated 43% of projects had cost and time overruns and 18% failed completely to be completed. This is to say that they were stalled.

A study by (David, Iravo & Wanjala, (2021)) who studied 5400 large government funded projects in Kenya, 45% indicated cost overruns and 7% of the projects had time overruns and 56% of these projects had values more than the ones earlier predicted in their budgets. Further, Price Waterhouse Coopers (PwC) (2018), who conducted a survey on several construction projects in 34 industries in 38 countries, established that 86% failure of projects being delivered within time, cost and budget. Furthermore, 60% of the project failed to be accomplished within the specified resources, schedule and extent and less than 10% failed to deliver on their time, scope and excellence based on the established norm. Gwaya, Wanyona and Musau (2019), Kiarie and Wanyoike (2017) and Kariungi (2017) in their studies suggest that the construction projects in most cases were signifying ridiculous time and cost overruns globally. This therefore calls for the assessment of the influence of triple constraint in project management to comprehend how they affect particularly the county funded construction projects in the country (Leong et al., 2017; Osedo, 2016; The Kenya Alliance of Resident Associations, 2019).

Lokuruka, (2020) observes that the Kenyan government has made heavy investments in infrastructure with a view to get bettering her people's socio-economic conditions. The administration aims at competent management and deriving good proceeds on the investment for future progress. Nevertheless, performance of projects in most developing economies is relatively very low notwithstanding their input to these countries. It is even argued that many projects within developing nations fail to meet the three core aspects of victorious project hence they do not convene the intended rationale. A study by Chantal, Cantarelli, Flyvbjerg, Molin, & Van Wee, (2018) shows that different magnitude and rate of cost overruns especially for the government funded construction projects in the country. For instance, in one study the average cost overrun for large scale projects was estimated to range between 20.4 to 44.7 %. A different study by the African Development Bank (AfDB) found the average cost overrun to be 35 % with some cases recording as high as 50% and even 100% (Abusafiya & Suliman, 2017). The later also showed that a tough evidence of scale effect where cost overruns were higher in smaller projects-less than 50 kilometres, than in larger projects. This is consistent with the World Bank study that recorded 90% of the infrastructure projects having experienced cost overruns averaging to 80% (Kariri, Onyango, & Njuguna, 2017).

Occasioned by an ever-changing atmosphere, dam construction projects are struggling. The Kenyan government projects are faced with myriad completion problems, despite their great importance in terms of support provided to the national economy. It is noted that in most cases such projects tackle barriers and challenges of a similar nature. Given the high failure rate and the revolve responsibility played by the county projects in the country, it becomes vital to research on the factors required to enable the projects to survive and indeed progress to the growth phase of the managerial life cycle Baxter (2018). This calls for capital management practices intrusion to train the project managers and employees on how to use the available means of accessing capital services to improve their organizations and also reduce cost of the enterprise. (Hassan & Guyo, 2017).

Cidav, Mandell, Pyne, Beidas, Curran, & Marcus (2020) conceptualizes project planning is the process in which schedules, personnel, milestones, tools, as well as budget estimates are specified otherwise estimating the time, cost, effort and employees' resources required in the execution of the project. It is the project resources systematic plan in the best way to attain objective of the project (Kerzner, (2017). It can also be described as one of the essential tools that stakeholders make use of to make sure that projects are completed as earlier agreed. It also refers to the process of defining suitable approaches for the accomplishment of predefined project objectives (Deb, Sindhya, & Hakanen, 2018).

In early 1980s, lots of practitioners as well as academicians had accepted that Workforce Management planning practice, time management practice, material input planning practice and capital planning practice are the most vital essentials of the accomplishment of an organization (Bryson, 2018). Nowadays, Workforce Management Practice is being transformed within organizations and steadily affirming its premeditated role. Workforce management practice is one area, which influences intention of employees to leave, job satisfaction levels and organizational obligation hence affecting the performance of any given project (Nayak, Jena, & Patnaik, (2021). A project's workforce planning practice contributes to a large extent to enlarged performance and as such help it to grow as well as increase sustainable competitive benefit. Project time planning practice encompasses all

planning procedures necessary for timely project execution and completion. Kozhakhmetova, Gabdullin, Kunanbayeva, Tazhiyeva, & Kydaybergenova (2019) assert that the planning processes in time knowledge area need to be actively defined, activity sequencing, schedule development, activity duration estimating and resource estimating of the activity and of importance is that the plans in the project are, the time plan. Various tasks and activities in a project need to be sequenced accurately in order to receive a realistic and achieved schedules, (Teklehana, (2021). The process of activity resource assessment encompasses fortitude of what resources are required as well as the quantity of each resource that will be used in the construction project. The required resources may be material, equipment and human resources thus the need for material planning practice. This process as well encompasses the determination of when each resource will be available to the project especially the material used in the project (Kozhakhmetova, Gabdullin, Kunanbayeva, Tazhiyeva, & Kydaybergenova, (2019). By and large, there are two methods of estimating any given resource i.e., bottom-up and top-down. In instances of controlled information, the top-down strategy is frequently utilized. The projects' higher management conducts it and it is founded on experience from similar projects. On the contrary, bottom-up method involves each definite work classification in the process, it is also called qualitative based estimations. The capital planning phase of a project entails cost budgeting and cost estimation. Cost planning aims at finishing the project within the permitted capital estimates.

Constructions projects executions are often influenced by budgets; and this is why they are central and crucial in any project. As pointed out by Turner, (2022), all costs are very vital and should be tracked while recording the costs for the various work packages within a project as well when a capital plan for a project is under development, project costs are controlled and often aid in development of a sound and well-functioning cash flow. In a study by Wunsch, (2021) observed that scarce cash flow as a result of poor budgeting is often associated with cases of delays in completing and huge extra implementation costs and consequently may result in a high risk for a temporary and stoppage of the entire construction project. In this case, there ought to be an estimation of cost centred on the scope of the project, the WBS and be linked to the estimated plan of the project.

In a report by Sodi, Han & Singh, (2021), aptly points out that due to the existence of myriad factors occasioned by uncertainty in a project implementation, there is need for the organization to set aside a reserve cost that may be appropriated to tasks with a low work packages level or comprehensive information with a possible high fiscal risk. In this case therefore, project developments must include consideration of goal attainment mechanisms and capital planning practices. Some processes of planning may include this step. Umulisa, Mbabazize & Shukla, (2017) point out that addressing goal quantity need to involve actual articulation of indicators, benchmarks as well as the project set goals. Most of the JIT cost recompense may have happened when large inflation increases that was occasioned by a large increase in the carrying catalogue cost (Sullivan, Barthorpe & Robbins (2017). Nonetheless, looking at Material input planning's fundamental viewpoint, organizations need to be capable on focusing their scheduling only on the available required materials, and when they are actually appropriated (Palmer, (2013). Mega dam projects (i.e., those exceeding 15 million shillings) are often synonymous with poor performance, negative social and environmental impacts (Garcia et al. (2017). Performance of a mega dam project refers to successful execution of dam projects upon completion in order to supply water on a sustainable basis (Knight, 2017). Brown & Williams (2021) intellectualize dam performance as a dam project's ability to meet supply demands i.e. the long-term provision of water. This indicates that sufficient water supply after successful execution of a mega dam project forms the basis for performance of a mega dam project. (Cheben, 2021).

Every year, billions of dollars are lost owing to project execution and input problems (Emek, 2018). For example, Baurzhan, (2021) states that of the 57 World Bank Group-sponsored dam plant developments in Africa, 70% faced a cost overrun, while more than 80% experienced time overruns, potentially incurring additional expenses. Important to point out is the fact that cost overruns have a higher negative impact on the budgeted workforce, availability of funds, time management and material inputs procurement whereas time overruns affect timely usage/performance of the dam project. There are no statistical evidences depicting the adverse effect of overruns of this mega dam projects on there later performance. Most of the mega dam projects in the country are faced with lots of challenges emanating from demand and supply of workforce, capital, material and time management (Shi, Aidana, Xu, & Wang, 2020). This often results in wastages of construction materials, misappropriation of project construction funds, wrong forecasting of workforce supplies and delays due to time management. As a result of time overruns, for instance, Thwake dam project in Makueni County in Kenya is characterized with cases of theft and vandalism of construction materials which in turn has an effect on the performance, KBC news, 2023.

Project planning strategies have a good link with project performance. As a result, firms must plan for project

procedures in order to get an advantage over competitors while also ensuring survival at the end (Nguyen and Watanabe, (2017). As a matter of fact, time spent on planning methods improves the project's chances of success while lowering its risks (Wang & Gibson, 2019). Consequently, poor project planning practice and analysis results in a failed project, but excellent project planning practice boost the project's chances of success (Haron et al., 2017; Kuisela & Partarier, 2022). However, despite the huge amount of research and diversity of project management topics, there is no well-established researches on the relationship between project planning practices and performance of mega dam projects (Pouya, 2023). It is hoped that this study provides ambient information on the effect of workforce planning practice on performance of mega dam projects in Kenya.

2. Workforce Planning Practice

Adam (2023) defines workforce planning practice as a continuous process of systematically planning to achieve optimum use of an organization's most valuable asset which are the employees. Workforce planning ensure the perfect robust between workforce and duties while evading manpower shortages or surpluses. Kilbride (2023) alludes that in a situation where an organization has more than one position, it is necessary to find and uphold a sufficient amount of quality workers. Workforce planning is an integral part of a holistic approach to workforce planning practice. An elaborate plan allows the organization to expect income and future recruitment needs adapt to change, and to grow, among other things. Workforce planning process has four key steps and they include first, analysing current workforce, second, forecasting labour demand, third, balancing projected project labour demand with project supply, and lastly, supporting organizational goals. Workforce planning is a significant investment for any organization as it allows companies to remain both prolific and gainful (Adam, 2023). It allows project management companies to always prepare ahead so that they be able to uphold a steady supply of skilled workers. The process is used to assist project management companies to be able to assess their needs and plan ahead so as to meet the set requirements.

Workforce planning is hypothetical to be supple enough to meet short-term recruitment challenges while adapting to altering conditions in the business environment over the long term. It usually starts by assessing and auditing the prevailing capacity of human resources. At this juncture, identifying a company's skill set and targeting the skills project firm requirements enables it to deliberately reach implementation of projects goals and be able to for future challenges. To remain competitive, businesses may require advanced skills or to up skill their employees as the market environment evolve and changes. To keep hold of employees and remain aggressive, workforce planning practice often looks at organizational intend, workforce motivation, succession planning, and increasing return on asset. Gomathy *et al.,* (2022) assert that workforce planning is a pertinent purpose of management in an organization for the reason of actualizing set goals and objectives. Planning is a progression of analysing organization workforce requirements under ever-changing condition and developing the tasks necessary to satisfy these needs. Superior workforce planning is responsible for increased productivity in the private sector (Gomathy et al., 2022). The dam construction project performance is principally determined by personal capabilities as well as technical knowhow of the available latent leaders than a meagre considerate of the projects' constraints. Belloc (2019) notes that, managers of the project have conventionally invested in technical skills and knowledge as the vital ingredients in the management of projects. The need for successful project management has stressed on a better project management approach that consider human capital and headship skill as essential tools in project management (Muchelule 2023).

Project performance and success in terms of usefulness measures exposed five major component factors namely: client contentment, knowledge and utilization, Stakeholder Objectives, User Satisfaction and functioning pledge (Takim, Roshana & Hamimah, Adnan 2019). Given that usefulness of project success measures are linked with the project 'results', factors for instance meeting the users and client' satisfaction, learning from projects, meeting pre-stated project stakeholders' objectives (accomplishing project objectives as well as core business) and supported by a well-organized commissioning programme are the usual outcomes of the project. The indicators of proper project performance contain aligning project outcomes with customer requirement expectations and stipulation (Um & Kim (2018). As per Lisa (2023) other ways of project performance includes; project completed according to wanted stipulation, completion of project using the particular capital plan and completion of project in the promised schedule of time. Hamilton and Gibson (2021) also argue that the cost and schedule saving is a superior measure of project performance while meeting the prospect of stakeholders. Project performance relies heavily on key indicators such as time taken to complete, meeting the principles set by varies authorities such as the government and county authorities (Kagalwala & Ram, 2018). This study focuses on capital accumulation planning, workforce planning, material input planning and time management planning as the measures of dam construction projects performance.

3. METHOD

The study adopted a mixed research design with a target population consisted of 213 registered civil engineers in Kenya and 109 registered surveyors in Kenya (Venas news 2019, LSB or.ke 2018) and a sample size of 97 registered civil engineers and land surveyors in Kenya. The study applied stratified sampling technique. To effectively arrive at the right sample for this study, stratified random sampling was used. The sampling frame consisted of 322 registered civil engineers and registered land surveyors in Kenya. The researcher used questionnaires as the main tool for collecting data from respondents. Pilot-testing was conducted in Kases dam in North Pokot County and Muruny/Siyoi dam in Pokot South Sub County for testing validity and reliability of the data collection instruments.Processing of quantitative data entailed coding, keying-in, cleaning, transforming measurement scales, where necessary, and aggregating perceptions. Quantitative data analysis generated descriptive results, including frequency distributions and percentages; as well as inferential results, including outputs of Chi-square (χ^2) tests, Spearman's Rank Correlation Coefficients (rs) and multiple linear regression analysis. While $\chi 2$ determined statistical association between variables measured at nominal scales, rs established correlation between variables measured at ordinal scales. Correlation was used to measure the relationship between the variables' (independent and dependent variables). Regression was used to estimate the average relationship and predict the most likely values of one variable for specified values of the other variable.

4. FINDINGS AND DISCUSSION

Workforce planning practice is a significant investment for any organization as it allows companies to remain both prolific and gainful (Adam 2023). It allows project management companies to always prepare ahead so that they are able to uphold a steady supply of skilled workers. The study's first objective is to establish the effects of Workforce planning practice on performance of dam projects in Kenya. The respondents were requested to rate their agreement or otherwise against each statement posed to them, using a 5-level Likert scale (strongly disagree meant a 1, disagree was a 2, neither agree nor disagree was a 3, agree was a 4 and strongly agree was a 5). The statements posed to respondents sought to ascertain their views regarding workforce planning practice.

Table 4.1: Descriptive Statistics on Workforce Planning practice

Statement (N=90)	SD	D	NAD	A	SA	M	S.DEV
There are an elaborate organization plans and the firms' objectives are set and are clear and known to all.	1 (1.1%)	5 (5.6%)	3 (3.3%)	42 (46.7%)	39 (43.3%)	4.3	0.8
There exists a workforce inventory in the organization known to management.	0(0.0%)	0(0.0%)	5(5.6%)	45 (50%)	40 (44.4%)	4.4	0.6
All future supply and demands are well known to the clients, management and employees.	1 (1.1%)	3(3.3%)	5(5.6%)	45 (50%)	36(40%)	4.3	0.7
There is an established action plan of the organization	28 (31.1%)	23 (25.6%)	16 (17.7%)	20 (22.2%)	8 (8.9%)	2.4	1.2
Implementation of the dam construction is based on the matching of the supply and demand needs.	1 (1.1%)	2 (1.8%)	3 (3.3%)	43(47.8%)	41 (45.6%)	4.4	0.7
Mean						**4.0**	**0.8**

The findings in Table 4.1 reveal that majority of the respondents with an aggregate mean score of 4.0 and a standard deviation of 0.8 agreed with statements on workforce planning. The participants agreed with the statements that "There is an elaborate organization plans and the firms' objectives are set and are clear and known to all" (mean=4.3), "There exists a workforce inventory in the organization known to management." (mean=4.4), "All future supply and demands are well known to the clients, management and employees" (mean=4.3) and, "Implementation of the dam construction is based on the matching of the supply and demand needs" (mean=4.4). However, the majority of the respondents disagreed with the statement that "There is an established action plan of the organization" (mean=2.4).

4.1. Descriptive Statistics on Performance of mega Dam Projects in Kenya

The performance of dam projects is principally determined by personal capabilities as well as technical

knowhow of the available latent leaders than a meagre considerate of the projects' constraints. (Jiang, 2009). Berg and Karlsen, (2007) notes that, managers of the project have conventionally invested in technical skills and knowledge as the vital ingredients in the management of projects. The study's main objective is to examine the influence of Performance of dam projects in Kenya. The respondents were requested to rate their agreement or otherwise against each statement posed to them, using a 5-level Likert scale (strongly disagree meant a 1, disagree was a 2, neither agree nor disagree was a 3, agree was a 4 and strongly agree was a 5). The statements posed to respondents sought to find out their views regarding Performance of dam projects.

Table 4.2: Descriptive Statistics on Performance of dam projects

Statement(N=90)	SD	D	NAD	A	SA	M	S.DEV
The dam is constructed based on the agreed cost by all the stakeholders.	1(1.1%)	21 (23.3%)	22 (24.4%)	27 (30%)	19 (21.1%)	3.5	1.1
The dam project was constructed on the agreed upon time.	1(1.1%)	19 (21.1%)	20 (22.2%)	30 (33.3%)	20 (22.2%)	3.6	1.1
Any defects on dam construction projects are put to light and safety measures adhered to	0(0.0%)	15 (16.7%)	12 (13.3%)	40 (44.4%)	23 (25.6%	3.8	1.0
The dam is constructed based on the client's satisfaction	1(1.1%)	21 (23.3%)	22 (24.4%)	24 (26.7%)	22 (24.4%)	3.5	1.1
The constructed dam is productive to the target beneficiaries	2(2.2%)	19 (21.1%)	22 (24.4%)	29 (32.2%)	18 (20.0%)	3.5	1.1
Mean						**3.6**	**1.1**

The findings in Table 4.2 reveal that majority of the respondents with an aggregate mean score of 3.6 and a standard deviation of 1.1 agreed with statements on dams' construction project performance. The respondents agreed with the statements that "The dam is constructed based on the agreed cost by all the stakeholders" (mean=3.5), "The dam project was constructed on the agreed upon time" (mean=3.6), "Any defects on dam construction projects are put to light and safety measures adhered to" (Mean=3.8). "The dam is constructed based on the client's satisfaction" (mean=3.5), and "The constructed dam is productive to the target beneficiaries" (mean=3.5).

4.3. Univariate Regression Results

This section provides findings on the influence of Workforce planning practice, capital accumulation planning practice, material input planning practice, time management practice and performance of mega dam projects.

4.4. Effects of Workforce Planning Practice on Performance of Mega Dam Projects in Kenya

The first object of the study was to determine the effects of workforce planning practice on performance of mega dam projects in Kenya. The independent variable (Workforce planning practice) was regressed on the dependent variable (performance of mega dam projects in Kenya). Tables 4.12, 4.13, and 4.14 provide a model summary, ANOVA, and coefficient results respectively.

Table 4.3 Model Summary; Workforce Planning Practice and Performance of Mega Dam Projects in Kenya

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.767a	0.588	0.587	0.30151

a Predictors: (Constant), X1

Results in Table 4.3 indicate that separately, workforce planning practice explains 58.8% (R^2= .588) of the total variations in the performance of mega dam projects in Kenya. These results confirm the output of the correlation in Table 4.3 that a positive and significant relationship exists between workforce planning practices and performance of mega dam projects in Kenya.

Table 4.4 ANOVA; Workforce Planning Practice and Performance of Mega Dam Projects in Kenya

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	41.265	1	33.311	122.334	.000b
	Residual	24.719	89	0.094		
	Total	65.984	90			

a Dependent Variable: Y
b Predictors: (Constant), X1

The regression ANOVA model in Table 4.4 reveals an F statistic of 122.334 and a reported P value of 0.000. The *P* value is less than the alpha value ($P < .05$), the proposed model is therefore statistically significant (good fit) in predicting the dependent variable.

Table 4.5. Coefficients; Workforce Planning Practice and Performance of Mega Dam Projects in Kenya

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	3.191	0.139		.204	0.000
	X1	0.711	0.038	0.851	19.141	0.000

a Dependent Variable: Y

Since all the factors of workforce planning practice, predictor (X1) has identical (Likert) scales and since the constant value is significant, the study preferred interpreting the B-coefficients rather than the beta coefficients. Consequently, the value of regression weights shown in Table 4.5 indicates that workforce planning practice had a significantly positive influence on performance of mega dam projects in Kenya ($\beta 1=0.711$ $P < .000$).
The estimated model becomes:
$Y = 3.191 + 0.711 X_1$
Where;
Y= Performance of Mega Dam Projects in Kenya
X_1= Workforce planning practices

4.12 Diagnostic Tests Results

Before inferential analyses, data were first subjected to several diagnostic tests. This included normality, heteroscedasticity, auto-correlation, and multicollinearity tests. The purpose of running these tests was to ensure that the data series was not biased, which would result in wrong estimations.

4.12.1 Normality Test

Normality testing in this research was done using the Shapiro-Wilk test. The null hypothesis assumes that the data is normally distributed, which is accepted when the *p*-value, Sig. (2-tailed) is greater than 0.05. The findings in Table 4.30 indicates that all the variables' data had a significant (Sig) value greater than 0.05, which led to the acceptance of the null hypothesis. This denoted that the study data was normally distributed.

Table 4.1 Shapiro-Wilk Test of Normality

Variables	Statistic	df	Sig.
Workforce Planning Practice	.821	90	.051
Performance of Dam Project	.985	90	.075

a Lilliefors Significance Correction

5.0. Conclusions and Recommendations

The study's first objective is to establish the effects of workforce planning practices on performance of mega dam projects in Kenya. The findings revealed that, there was an elaborate organization plans and the firms' objectives are set and are clear and known to all. The findings also implied that there existed a workforce inventory in the organizations that were known to management and other top staff employees. The finding also showed that all future supply and demands are well known to the clients, management and employees. Nonetheless, the findings agreed to the fact that implementation of the dam construction projects were based on

the matching of supply and demand needs. However, there were no known established action plan of the organization involved in the construction of the mega dam projects to the registered civil engineers and land surveyors. Further, linear regression and multiple regression results shows that there is a stronger relationship between workforce planning practice and performance of mega dam projects in Kenya. Thus, any increase in workforce planning practice leads to an increase in performance of mega dam projects in the country. Based on the results of objective 1, this study hypothesized that workforce planning practice do not have a significant impact on the performance of mega dam projects in Kenya. However, the regression coefficient results showed that the reported t-statistic was 3.329 > 1.96, thus the null hypothesis was rejected, indicating that workforce planning practice have a significant impact on the performance of mega dam projects in Kenya. Based on the results, workforce planning practice had a positive and significant impact on the performance of mega dam projects in Kenya. Therefore, this study recommends that project administrators/managers should strengthen their workforce planning practice to achieve effective performance.

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