European Journal of Business and Management
ISSN 2222-1905 (Paper) ISSN 2222-2839 (Online)
Vol.15, No.18, 2023

Project Monitoring and Evaluation on Road Construction Projects Performance in Kenya

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ABSTRACT
The purpose of the study is to evaluate the effect of project Monitoring and Evaluation on road construction projects performance in Kenya. The study will use the following theories as per the variable extreme value theory relevant to the study variables. The study adopted a mixed research design with a target population of 475 and a sample size of 143. Data collection instrument was questionnaire. Piloting was done to test the validity and reliability of the data collection instrument. Data was analyzed using a Statistical Package of Social Sciences (SPSS) Version 27.0. The multiple regression analysis models was developed to establish the relationship between dependent and independent variable. The Analysis of Variance (ANOVA) was used to test significance of variance of one variable over the other. On the prediction that Project monitoring and evaluation did not have significant relationship with the road construction projects performance in Kenya. A p value of 0.000 was less than 0.05 implying rejection of the null hypothesis in favour of the alternative. Therefore, project monitoring and evaluation had a significant relationship with road construction projects performance in Kenya. The management of road construction should put more emphasis on continuous review of all aspects of a construction project with the aim of providing reliable information on whether to rectify, rework, proceed or not, with the endeavor. The finding of the study was important because: it was to assist the government in strengthening the policy framework and enact laws to govern the road construction industry, Road Construction firms will use the findings of this study to enhance their Total Quality Management (TQM) and hence be able to deliver Road projects on time and within budget, Road Construction professionals like Project Managers(Civil & Structural Engineers) and Road Construction Companies will use the findings of this study in their day to day Road construction project management.
Keywords: Project Monitoring and Evaluation, Road Construction Performance
DOI: 10.7176/EJBM/15-18-06
Publication date: November 30th 2023

1.0 Introduction

Project management emerged because of the growing demand for complex, sophisticated, customized goods and services and the exponential expansion of human knowledge (Bakouros & Kelessidis, 2000).Standish (2013), according to a recent Standish Group survey report, 61% of the projects either failed or was challenged to meet success criteria; and 74% faced schedule overruns. The resources utilized in this industry add to 20% of the world resources (Economy Watch, 2010). With such an impact on the world economy and resources, it is prudent that activities within this industry are efficiently and effectively planned. Cost and schedule performance are the primary measures of a projects success. A project is said to be successful if it is completed within the planned cost and time. Developing countries are faced with the problem of scarce financial resources. Road Construction projects comprises of five major phases namely planning, programming and design, procurement, construction and project closure.

Globally, project management practices have a great impact on performance of road construction projects. It has been revealed that project planning input factors affect project performance (Hamrd, 2016) and it was estimated that about 38% of global project fail due to poor scheme design phase. Road Construction Projects failure costed the European Union countries an estimated 142 billion in the year 2012 (Mcmanus & Wood-harper, 2018).In the study conducted in Pakistan exploring how project planning affect project success mediated by with mediating role of risk management and moderating the impact of executive customs regressions and correlations indicated a significant correlation between designing of project and organizational advancement (Naeem et al.,2018) and the study concluded that project planning influences project success and recommended for more focus on planning phase during project implementation. A study conducted by Tesfaye et al., (2017) in USA findings revealed that project planning procedures are very impervious to man's issues and project cost, time and threats being linked with performance of the project. The study concluded that in order to have project success, project planning procedures must be given attention and it was recommended that project managers should focus on initial stages of project planning.

Successful Road construction projects are those delivered safe and sound to the required quality standards, on time, within budget and desired scope (Nibyiza, 2015; & Siguroarson, 2011). The effective management of costs is a vital element in achieving these objectives. Clients rightly expect that the final cost of their projects should not exceed the approved budget, and indeed for some, cost control and certainty is their main priority (Zenger, 2017). The underlying challenge in controlling costs stems from the fact that many clients have limited funds, and budgets are often set at the limit of what is affordable (Margoluis, R. & Salafsky, N. 2010). Cost overruns during the construction phase may seriously over-extend the client financially, to a point where the project may not be finished to the expected standards or may even have to be abandoned (Cunningham, 2017).

Construction industry plays a major role in development and achievement the goals of the society. Construction is one of the largest industries and contributes to about 10% of the gross national product (GNP) in industrialized countries (Navon, 2005). Construction industry has complexity in its nature because it contains large number of parties as clients, contractors, consultants, stakeholders, shareholders and regulators. The performance of the construction industry is affected by national economies (Navon, 2005). In Palestine, efficient construction projects can provide a solid platform for reviving the Palestinian economy and for building a more balance and independent economy during stable political conditions. In 1993, neglect of such systems, services, and institutions, however, has harmed the quality of life of Palestinians and their health and environment. However, project performance in Palestine has suffered since conflict erupted in September 2000 after the breakdown in Israel-Palestinian negotiation on permanent-status issues. This has led to closures and tight restrictions on movement of people and goods in West Bank and Gaza resulting in a dramatic decline in trade, investment, and employment. In addition, this has prevented the planned implementation and has caused problems in performance of projects (World Bank, 2004).

Globally, significant tools for project management towards objectives, impacting policy and practices have been used in determining performance criteria and indicators for M&E (Khandker, Koolwal & Samad, 2010). According to Margoluis and Salafsky (2010) the scales of monitoring and evaluation are significant in surveying project performance which can be distinguished as an instrument in helping the management in project planning for Non-Government Organizations, public and private Projects. Uneb & Raza (2018) conducted a study dedicated towards finding out the perceptions regarding factors related to project failures in the construction industry of Pakistan. It was observed that organizational structure plays a lot. Sarfo (2007) in his study reported that the organizational structure adopted for management of building projects is an important area to consider for the success of projects. In Malaysia, to control construction costs in projects, various procurement strategies are commonly adopted (Bakhshi, P., & Touran, A. 2014). Many factors are responsible for cost overruns such as underestimation of costs, addition of scope during later stages of project planning and even during construction, and changed conditions (Vandevoorde & Vanhoucke, 2016). One of the most important contributing factors to the magnitude of cost overruns in construction projects is the project schedule. Besides, the project size and time length of project development phase from planning to construction seems to be a major factor in the extent of cost overrun (Markenson, 2016). The problem of cost overruns is critical in both developing and developed countries and should be mitigated courtesy of construction cost control (Sundarasen, P. 2013).

Over the years, project management practices have emerged as an important aspect in determining the project success or failures. About 47% of sub-Saharan African project failures have been attributed to poor project planning practices as most projects have been reported to fail. In Ghana project planning process was found to significantly impact project performance (Amponsah, 2012). A study by Gbahabo and Ajuwon, (2017) conducted about effects of project cost and delays on project performance revealed that project expenditure and schedules delays road construction procurement processes that have detrimental effects on utilization of resources. The study concluded that project procurement processes should be streamlined. In Nigeria, Adeyemi, (2013) results revealed that project planning had significant relationship with project quality, success and technical success. The study concluded that project planning must be number one phase undertaken to enable any project to succeed and it was recommended that project managers should majorly focus on this phase.

Rwanda has seen a significant rise in infrastructure developments in the recent past, especially in the fields of road development. However, many road construction projects have failed to achieve project success due to increase risk and uncertainty (Njagi, Mbabazi, & Kibachia, 2016). There are also various failed or abandoned road projects which have denied beneficiaries envisaged facilities and services.

In Zimbabwe, the construction industry is key to economic growth, providing shelter for economic and social activities including on-site and off-site infrastructure to facilitate the smooth functioning of these activities. The industry does not only touch on the lives of virtually everyone on a daily basis; it occupies a fundamental position in many national economies - the bellwether of economic growth (Clough, Sears & Sears, 2015). As a result of the sizeable nature of projects executed; the industry requires substantive injection of capital and any loss through failure or abandonment has a crippling effect on the capabilities of the investors and financiers (Nkwachuku, Ibeawachi & Okoli, 2016). Notwithstanding, the complex nature of the work undertaken by the construction industry, cost and time need to be effectively monitored and controlled 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 (Gyadu-Asiedu, W. 2013). To this end, financiers and executors (contractors) of construction works are bound to be cost conscious if their business objectives are to be realized from the project. Irrespective of the economics generated through effective cost management, most road projects are delivered over-budget. Nine out of ten projects faced cost overrun in the range of 50 to 100%. The problems of project cost overrun are considered to be more severe in developing countries where they sometimes exceed 100% of the anticipated cost of projects, thus, the need for cost control (Momon, Rahma & Azis).

In Northern Uganda, Project Manager Competence, community involvement, coordination and effective project implementation influence project performance ($r = 0.70$, $p < 0.01$ & $r = 0.57p < 0.01$) respectively. In Rwanda, Shukla, (2015) revealed that human resource and financial planning were found to affect the performance of Agaseke project. In summary the reviewed studies have concentrated on agricultural farm access road projects and specifically on Africa project hence the validity of this research.

The total annual cost of worldwide project failures alone is $7.5 trillion dollars, according to Maylor, (2019). A government report from the Ministry of Roads & Public Works (GoK, 2019) identified eight main reasons for the failure of government projects: inadequate planning; insufficient buy-in by senior management; failure to engage effectively with key stakeholders; a lack of technical skills; poor project monitoring and review; inadequate initial evaluation of the project; poor networking skills; and failure to integrate the disparate parties needed to deliver project success. All are issues that can be improved through training and development. Moreover, these reasons apply equally to projects in public and private sector organizations.

Projects play an important role in an organization's overall success. With the increased competition in modern industries, companies expect project teams to perform consistently and at a rapid pace (Obondi, 2020). The project management practices have to be put into consideration for high performance or success of road construction projects. As risks in road construction projects persist, so too does the necessity to embrace reasonable risk management practices. Risk monitoring and control practices should be emphasized and implemented in every construction project to ensure the achievement of project goals (Obondi, 2020). Project managers should be aware of risk monitoring and control practices that include change control, risk audits, risk reassessment, risk status meetings, risk trend analysis, risk matrices, contingency reserves analysis, and technical performance measurement. These practices minimize the negative impacts of risk if performed regularly and adequately (Didraga, 2013). There are instances when a project will experience delays. A delay is a situation whereby an act or event that extends the time required performing the tasks under the contract (Sambasivan, 2007). It is the postponement of time from the original estimated completion time, which might be caused by the contractor, owner or consultant as well as external factors (Koushki and Kartam, 2004). The major impact of delays is increase in project cost, which causes the drain in project budget.

Chism and Armstrong (2010), state that in construction, time is money. If the contractor exhausts the project budget and is unable to make profit in the project, he may abandon the project and allow the client to attach the performance security. This will in turn cause major losses in multiple fronts from the client. This scenario will include uncontrollable other variations, disputes, bludgeoning project budget claims and often a painful end to the client whose dream may end up in abandonment. Sambasivan and Soon (2019) identified causes of delays in the completion of construction projects, including contractor's improper planning, poor site management, inadequate experience, inconsistent flow of payments for completed work, poor management of sub-contractors, inconsistent communication between parties, as well as shortage of materials, equipment, and labor. In South Africa, a government report linked infrastructural project delays with changes in project design, inconsistent flow of financial resources, and contractor's lack of capacity to deliver (Government of South Africa, 2019). In Ghana, delay in payments, poor contractor management, delays in material procurement, poor technical performances, and escalation of material prices were identified as key factors accounting for about 80% of delays in the completion of infrastructural projects (Frimpong, Olowoye, & Crawford,2013).

As evidenced from the critical review of the literature, projects are continuing to fail (Flyvbjerg et al., 2013; Kutsch& Hall, 2015; Kutsch et al., 2021; Mulcahy, 2018; Raz et al., 2022; Success in road construction projects is indicated by its performance in the achievement of project time, cost, quality and environmental sustainability objectives (Zhou et al 2017). Despite the efforts of all players in the road construction industry, generally, many road construction projects in Kenya run a high risk of poor performance by wellbeing over the budget and significantly late. The construction industry has a reputation for time and cost overruns. One of the reasons of the bad performance is that the construction industry is one of riskiest of all business types (Clough et al 2005). Within the sphere of a given project there are several project management activities. Several ways of carrying out these activities emerge and become accepted as day to day practices. Personnel involved in project management may also adopt certain PM practices and stick to them for purposes which may however not relate to the project success. Several practices are therefore carried out in the management of projects but not recognized as PM practices. The need to obtain successful projects calls for the need to also undertake optimum PM practices. Knowing the success, or outcome or performance of a project has a great deal of relevance to

knowing the optimum practices. The effort put into the measurement of project performance in the country has portrayed little or no help in this direction. The possible, simple and most understanding way of measuring project performance with hard data is therefore needed in this regard. Performance of group of projects managed by an organization may differ from performance of another group of projects with similar characteristics but managed by another organization. The kind of PM practices carried out by the different organizations for achieving project success may also influence variation in the performance of the projects. The significance of such differences in performance of the groups of projects is therefore necessary for determination of the characteristics of influential PM practices.

Empirical data (Chamoun, 2011) and (World Bank, 2009) shows project management skill as having the most significant impact on achieving project success which is equated to achieving project objectives. Cooke-Davies, (2010) consistently shows well-trained teams deliver more benefit to project management than undertrained teams. There is a relationship between project management and construction project performance (Ramabadron et al., 2010). Certain PM practices adopted do not necessarily have a significant satisfactory influence on projects performance whilst some have. There would therefore be the need to promote optimum practices and a second look taken at others that confront the success of road construction projects. Thus, clearly there are PM practices which play into account to affect completion of road construction projects. This is because it is a global phenomenon that construction projects have not enjoyed a smooth implementation all the way to completion. On the contrary many projects have been affected by various challenges greatly affecting their completion. The study sought to examine the effect of project monitoring and evaluation on Road construction projects performance in Kenya.

2.1 Project Monitoring and Evaluation

Managing projects is one of the oldest and most respected accomplishments of mankind highlighted by the achievement of the builders of pyramids, the architects of ancient cities, the mason and craftsmen of Great Wall of China and other wonders of the World (Peter, 2015). Monitoring and evaluation should is a very significant exercise. Project Monitoring is the continuous review of all aspects of a construction project with the aim of providing reliable information on whether to rectify, rework, proceed or not, with the endeavor (Njama, 2015). It is a segment that cuts across the board in a project life cycle. At no instance can a construction project manager, or any of the stakeholders afford to shy away from it. It plays an over site role in ensuring that the team delivers through consistent, deliberate and elaborate efforts. This involves, among others, checking the estimates and the projections of the cost of the resources required and the expected flow of benefits along with possible finances and beneficiaries (World Bank, 2012). The appraisal of the construction project may be undertaken internally or externally by experts, donors or consultants and the report may be used to solicit funds (Hamilton, 2015). With such efforts where all activities are kept under scrutiny, the project journey with regard to construction cost control is synchronized, keeping it both in the right truck and on the right track.

Various studies have indeed indicated that monitoring and evaluation function significantly impact project performance (Ocharo, 2020; and Waithera, 2015). For example, in Cuba, Activities such as monitoring and evaluation planning before project initiation and performance, indicator identification have been emphasized in order to have the required project results (Abarinda, 2019). The correlation results revealed to signify correlation between follow up and estimation of project progress 0.8 in Kenya (Phiri, 2015). In Ghana, (Ocharo,2020) study indicated PM practices are essentially related over success of construction projects and in Uganda (Abarinda, 2019) research revealed that monitoring and evaluation planning and training had a significant correlation with project performance of 0.92, 0.725 and 0.622 correspondingly. Construction cost control means far more than the control of expenditure on a construction project (Otim, Nakacwa and Kyakula, 2018). Control of revenue, ensuring that all possible and justifiable management on amount of money received and spent is in accordance with budgets and timing of each transaction is appropriate (The Global Fund, 2017). The main purpose in cost controlling for a construction project should be active controlling of final costs for owners and not just to record and register payments (Korke & Jarad, 2016). Harun (2018) observed that cost control is a process where construction cost of a project is managed with the best methods and in a systematic order that contractor won't suffer any loss when actualising the project and the cost of such as a construction project won't be overstated by developer. According to Harun (2018), this process should continue throughout the construction period to ensure the cost of building is within the approved limits. Thus, control during design stage and when project is on course (UK Essays, 2018). Mostly, the limit on construction expenditure is influenced by the requirements that the building will demand.

Ojedokun, Odewumi and Babalola (2012), pointed out that cost control of a project involves measuring and collecting cost records of a project and the work in progress. It also involves the comparison of actual progress with the planning. Hence the main objective of controlling costs in construction projects is to achieve maximum profit within the predetermined budget, time frame, satisfactory quality and scope of the project (Reh, 2018). Project management practices should therefore have a clear manifestation and manipulation to influence this

principle objective. They connect all the dots in matters pertaining to construction cost control (Njama, 2015). The study conducted in Nakuru, Kenya, by Winch et al., (2010) examined the relationship between project performance and monitoring and evaluation considering agribusiness project results indicated a significant relationship between the dependent and the independent variables. The study concluded that monitoring and evaluation plays a significant role through cost and budget management. The research conducted in Rwanda by Sheillah, (2020), revealed that possession of M&E does not guarantee project success. The findings further indicated that M&E frameworks have a significant correlation with success of projects in agriculture, Spearman's correlation coefficient of 0.511 and Monitoring and evaluation information sharing and utilization Spearman's correlation coefficient of 0.476 were found to significantly influence project performance (Shukla,2015). In summary some studies have indicated how M&E affects project performance even in the agribusiness sector and some have been done in Rwanda.

Project performance metrics focuses on the impact of the project at a point in time or over a fixed timeframe (Njogu, 2016). The value of the impact of the project should supersede the cost of the intervention. Project performance is directly related to the project potential success. A project is considered to be successfully implemented if it is carried on schedule; realizes the purpose the project was designed through achieving the goals and objectives identified; the project is completed within the budgets commonly known as the project Triangle (Hammad, 2013). Despite the many literatures educating the project managers on the various tools and techniques aimed at increasing the likelihood of the success of a project, 7 out of 10 projects are considered unsuccessful (Kelbessa, 2016). These projects are considered unsuccessful either because they were not completed or they are not seen as successful even though they were rolled-out as planned (Ayatah, 2012).Project performance is evaluated differently by various stakeholders of the project based on their expectations in relation to the actual quality, cost and time. Project performance can be measured in terms of the qualitative value the project has to the implementing organization or quantitative in terms of the earned value systems for utility and large government projects (Kelbessa, 2016). For any of the approach used small elements of the project to indicate progress are identified and monitored throughout the project life cycle. The key project indicators should be pre-established. Involvement of the key project stakeholders in the identification and selection of the indicators to monitor increases the likelihood of smooth running and implementation of the project and hence success.

Gyadu-Asiedu (2018) indicated that the overall success of a construction project is affected by the contractor's ability to effectively plan resources, estimate, budget and control cost. Swan and Khalfan (2017) posited that time is regarded as major factor that is used to determine the project success. Furthermore, bureaucratic hindrance and resource availability as planned affects the early completion of construction projects. Egemen and Mohamed (2005) were of the view that undertaking a project to meet the required quality and standard is a major factor in determining project success. The quality of a project is achieved when the legal, aesthetic and functional needs of the project customers or beneficiaries are achieved (Lau and Tang, 2009).

Projects are very sensitive to decision and actions taken by any stakeholder (Aaltonen, 2010). Almost all the projects operate in a context where its respective stakeholders play a primary role in the accomplishments of tasks (Hammad, 2018). According to PMI, 'Project stakeholders is any individual, organization or group who may affect, be affected by or perceive to be affected by a decision, activity, or outcome of a project' (Project Management Institute, 2014). Project stakeholders may be within or outside the organization. Stakeholders of a particular project will vary during the life cycle of the project in terms of needs, numbers and influence. The interests, perception as well as the motivation of all the project stakeholders that have an influence on the success of the project should not be ignored. Stakeholder review and identification should be conducted throughout the project life cycle (Njogu, 2016). Project Management literatures have discussed widely the subject of project success and no consensus has been reached on the project success criteria. According to PMI, the project success indicators include time, scope, cost and quality (PMI, 2008). These parameters relate such that if scope, time or cost changes then at least one of the other parameters will be also be affected. The Iron triangle in project management has been criticized by researchers (Sundarasen, 2018; Shenhar & Dvir, 2017) citing insufficiency in defining project success. The iron triangle also referred to as project management triangle or the triple constrain omits the key dimension of success such as user satisfaction, impact of intervention to stakeholders as well as the learning.

The project management diamond framework has recently overtaken the iron triangle. The project management diamond has four vertices (time, cost, quality and scope) and customer expectations at the central focus of the intervention. According to (Shenhar& Dvir, 2017) meeting the customers' needs and expectation is more important than mere meeting the project deadlines or budget. According to (Olander, 2006) any intervention attracts a vast number of interested parties. These interested parties in a project have different needs, expectations, motivation, power, influence, behaviours, traits, literacy levels etc. (Sankaran, Haslett, & Sheffied, 2010). Projects are all about communication (Alatalo, 2012). According to (Alatalo, 2012) Communication should be enough but not too much nor too little.

Construction projects are considered successful when delivered within scheduled duration, allocated budget, and specified quality (Majid, 2006; Owolabi et al., 2014). Delay in the completion of construction facilities is a critical challenge with a global dimension, often leading to increased costs due to time extension or acceleration as well as loss of productivity, disruption of work, loss of revenue through lawsuits between contractual parties, and project abandonment (Sambasivan& Soon,2017; Owolabi et al., 2014). Many Sub Sahan Africa economies experience losses amounting to billions of dollars, as a result of delayed completion of infrastructural projects, which undermines the noble goal of poverty reduction (Gutman et al., 2015). Delay in the completion of infrastructural projects has significant cost implications, which in turn bears far-reaching consequences in the lives of citizens, especially in developing countries like Kenya. Studies conducted in various contexts have deduced that although delay in the completion of construction projects is a global phenomenon, it appears to be more common in developing than in developed countries (Sambasivan& Soon, 2017;Alaghbari et al., 2007; Aziz, 2013). Among the developed countries, delay in the completion of infrastructural projects has been reported in Canada, the United States, Australia, and Britain, among others. In Canada for instance, De Souza (2019) attributed delays in the completion of infrastructural projects to various factors, including reduced funding by sponsors, communication breakdown, delayed disbursement of funds, poor site management by contractors, and tedious legislative procedures. In the United States, SNL Financial (2010) reported delay in the completion of a pipeline project connecting Florida State and Bahamas, particularly due to design changes.

In Kenya, delays in the completion of infrastructural facilities have been associated with factors, such as poor financial management by government agencies, inadequate designs, and poor management of the construction process by contractors (Talukhaba, 2009). Arguably, these factors are compounded by secondary factors, such as poor management of materials and equipment by contractors, inadequate recognition and response to risks emanating from the physical and socio-economic environments, as well as inadequate regard for stakeholders' needs (Talukhaba, 2009). Another study conducted by Ondari and Gekara (2018) reported significant correlation between project delays and factors, such as management support, design specifications, contractor's capacity, and supervision capacity..

3.0 METHOD

This study adopted a mixed methods research. Mixed methods research combines elements of qualitative and quantitative research approaches for the purposes of the breadth and depth of understanding and collaboration (Creswell 2014). This research study was guided by epistemological research philosophy which relates to acquisition, development and nature of that knowledge. The target population was 475 registered professionals in road construction projects in Kenya. The study used a stratified sampling technique. Each strata will be treated as a separate population and simple random sampling will be used to draw a sample of Road Construction Project, which is homogeneous for analysis. To effectively arrive at the right sample for this study, stratified random sampling will be used. The sampling frame was 143 registered professionals in road construction projects in Kenya. The respondents were the Registered and practicing road Engineers (Project Managers/Consultants in civil and structural engineering field) and The Heads of the Road Construction companies registered under NCA 1 in Kenya. Data collection instruments were structured questionnaires. Piloting was done to test the validity and reliability of the data collection instruments. Once data for the study was collected from the population, It was then be coded, entered and analyzed descriptively using IBM Statistical Package for Social Sciences (SSPS 26). Pearson correlation analysis was used to test the relationship between variables in the study hypotheses. ANOVA multiple linear regression analysis was adopted computed to determine the statistical relationship between the independent variable and the dependent. All diagnostic tests were done**.**

4.0 DISCUSSION

Project Monitoring is the continuous review of all aspects of a construction project with the aim of providing reliable information on whether to rectify, rework, proceed or not, with the endeavor (Njama, 2015). It is a segment that cuts across the board in a project life cycle. At no instance can a construction project manager, or any of the stakeholders afford to shy away from it. It plays an over site role in ensuring that the team delivers through consistent, deliberate and elaborate efforts. This involves, among others, checking the estimates and the projections of the cost of the resources required and the expected flow of benefits along with possible finances and beneficiaries (World Bank, 2012). The appraisal of the construction project may be undertaken internally or externally by experts, donors or consultants and the report may be used to solicit funds (Hamilton, 2015). The study sought to examine the effect of project monitoring and evaluation on Road construction projects performance in Kenya. The findings are presented in a five point Likert scale where SA=strongly agree, A=agree, N=neutral, D=disagree, SD=strongly disagree and T=total. From table 4.1 below, the respondents were asked whether project monitoring is the continuous review of all aspects of a construction project with the aim of providing reliable information on whether to rectify, rework, proceed or not, with the endeavour. The

distribution of findings showed that 31.0 percent of the respondents strongly agreed, 36.0 percent of them agreed, 17.0 percent of the respondents were neutral, 11.0 percent disagreed while 5.0 percent of them strongly disagreed. These findings implied that project monitoring is the continuous review of all aspects of a construction project with the aim of providing reliable information on whether to rectify, rework, proceed or not, with the endeavor.

The respondents were also asked whether monitoring and evaluation plays an role in ensuring team delivery through consistent, deliberate and elaborate efforts checking the estimates and the projections of the cost of the resources required and the expected flow of benefits along with possible finances and beneficiaries. The distribution of the responses indicated that 35.0 percent of the respondents strongly agreed to the statement, 16.0 percent of them agreed, 25.0 percent of them were neutral, 15.0 percent of them disagreed while 9.0 percent of them strongly disagreed to the statement. These findings implied that monitoring and evaluation plays a role in ensuring team delivery through consistent, deliberate and elaborate efforts checking the estimates and the projections of the cost of the resources required and the expected flow of benefits along with possible finances and beneficiaries. The respondents were also asked whether activities such as monitoring and evaluation planning before project initiation and performance, indicator identification have been emphasized in order to have the required project results. The distribution of the responses indicated that 24.0 percent of the respondents strongly agreed to the statement, 42.0 percent of them agreed, 30.0 percent of them were neutral, 4.0 percent of them disagreed while 0 percent of them strongly disagreed to the statement. These findings implied that activities such as monitoring and evaluation planning before project initiation and performance, indicator identification have been emphasized in order to have the required project results.

The respondents were further asked whether with appraisals all activities are kept under scrutiny, the project journey with regard to construction cost control is synchronized, keeping it both in the right truck and on the right track. The distribution of the responses indicated that 9.0 percent of the respondents strongly agreed to the statement, 52.0 percent of them agreed, 24.0 percent of them were neutral while 7.0 percent and 8.0 percent of them disagreed strongly and disagreed to the statement respectively. These findings implied that with appraisals all activities are kept under scrutiny, the project journey with regard to construction cost control is synchronized, keeping it both in the right truck and on the right track. The respondents were further asked whether monitoring and evaluation plays a significant role through cost and budget management. The distribution of the responses indicated that 25.0 percent of the respondents strongly agreed to the statement, 54.0 percent of them agreed and 21.0 percent of them were neutral. None of the respondents disagreed or strongly disagreed to the statement respectively. These findings implied that monitoring and evaluation plays a significant role through cost and budget management.

The respondents were further asked whether control of revenue, ensuring that all possible and justifiable management on amount of money received and spent is in accordance with budgets and timing of each transaction is appropriate. The distribution of the responses indicated that 32.0 percent of the respondents strongly agreed to the statement, 54.0 percent of them agreed and 21.0 percent of them were neutral. None of the respondents disagreed or strongly disagreed to the statement respectively. These findings implied control of revenue, ensuring that all possible and justifiable management on amount of money received and spent is in accordance with budgets and timing of each transaction is appropriate. The respondents were further asked whether cost control in construction projects ensures achievement of maximum profit within the predetermined budget, time frame, satisfactory quality and scope of the project. The distribution of the responses indicated that 25.0 percent of the respondents strongly agreed to the statement, 54.0 percent of them agreed and 21.0 percent of them were neutral. None of the respondents disagreed or strongly disagreed to the statement respectively. These findings implied that cost control in construction projects ensures achievement of maximum profit within the predetermined budget, time frame, satisfactory quality and scope of the project.

The respondents were further asked whether monitoring and evaluation enhances project performance. The distribution of the responses indicated that 33.0 percent of the respondents strongly agreed to the statement, 37.0 percent of them agreed and 10.0 percent of them were neutral. None of the respondents disagreed or strongly disagreed to the statement respectively. These findings implied that monitoring and evaluation enhances project performance.

Table 4.1: Effect of Project Monitoring and Evaluation on Road Construction Projects Performance in Kenya

Statements on Project Monitoring and Evaluation		SA	A	N	D	SD	Mean	Std. Dev
Project monitoring is the continuous review of all aspects of a construction project with the aim of providing reliable information on whether to rectify, rework, proceed or not, with the endeavor	%	31.0	36.0	17.0	11.0	5.0	4.2	0.9
Monitoring and evaluation plays an role in ensuring team delivery through consistent, deliberate and elaborate efforts checking the estimates and the projections of the cost of the resources required and the expected flow of benefits along with possible finances and beneficiaries	%	35.0	16.0	25.0	15.0	9.0	4.3	0.8
Activities such as monitoring and evaluation planning before project initiation and performance, indicator identification have been emphasized in order to have the required project results	%	24.0	42.0	30.0	4.0	0	4.1	1.0
With appraisals all activities are kept under scrutiny, the project journey with regard to construction cost control is synchronized, keeping it both in the right truck and on the right track	%	9.0	52.0	24.0	7.0	8.0	4.3	0.9
Monitoring and evaluation plays a significant role through cost and budget management	%	25.0	54.0	21.0	0	0	4.4	0.9
Control of revenue, ensuring that all possible and justifiable management on amount of money received and spent is in accordance with budgets and timing of each transaction is appropriate	%	32.0	36.0	12.0	12.0	8.0	4.3	1.0
Cost control in construction projects ensures achievement of maximum profit within the predetermined budget, time frame, satisfactory quality and scope of the project	%	42.0	38.0	10.0	4.0	6.0	4.4	0.8
Monitoring and evaluation enhances project performance	%	33.0	37.0	10.0	14.0	6.0	4.5	0.8
Aggregate mean							**4.3**	**0.9**

4.1 Diagnostic Tests

Prior to conducting inferential statistics, a number of diagnostic tests were checked. This was aimed at ensuring that the study data was not biased, which would result to inaccurate estimations. The tests included: multicollinearity, normality, and auto-correlation and linearity tests.

4.1.1 Multicollinearity Test

Multicollinearity is the occurrence of high interrelations among two or more interdependent variables in a multiple regression model. The test is used to check whether there is correlation among independent variables which results in less reliable statistical inferences. Therefore, the purpose of using multicollinearity test was to safeguard the study from using independent variables that were not correlated or repetitive when building multiple regression models that use two or more variables. The study tested multicollinearity between independent variables using VIF. According to (Field, 2009), multi-collinearity is said to exist if there is a strong correlation between two or more independent variables in a model. The results indicate that all the variables had VIF values less than 10 and tolerance levels more than 0.1 implying that there was no multicollinearity among the independent variables. The results are shown in Table 4. 2.

Table 4.2: Multicollinearity test using VIF

Variables	Tolerance	VIF
Project monitoring and evaluation	.452	2.236

4.1.2 Normality Test

Normality test is used to determine whether sample data has been drawn from a normally distributed population (within some tolerance). Normality is important for data since it provide simple summaries about the sample and the measures. Measures of the central tendency and dispersion are used to describe the quantitative data (Anaesth, 2019). Normality of data was tested using the Shapiro-Wilk test. The rule of thumb is that when the P value (Sig) is greater than 0.05, the null hypothesis of normal distribution is not rejected. The findings (Table 4.3) indicate that all the variables had P values (Sig) greater than 0.05 implying that the data was normally distributed.

Table 4.3: Normality Test using Shapiro-Wilk

Variables	Statistic	df	Sig.
Project monitoring and evaluation	0.927	143	.074
Road construction performance	0.912	143	.112

4.1.3 Auto-correlation Test

Auto-correlation refers to the degree of correlation of the same variables between two successive time intervals. It measures how the lagged/protected version of the value of a variable is related to the original version of it in a time series (Scott, 2020). The test of auto-correlation was done using the Durbin-Watson test. This was done to check that the residuals of the model are not correlated since independence of the residuals is one of the basic hypotheses of regression analysis. Durbin Watson test reports a test statistic, with a value from 0 to 4, where; 2 is no autocorrelation, 0 to <2 is positive autocorrelation, >2 to 4 is negative autocorrelation. The rule is that test statistic values in the range of 1.5 to 2.5 are relatively normal, while values outside of this range could be cause for concern. The results (Table 4.4) indicate a Durbin-Watson value of 1.852 implying that the residuals were not auto-correlated.

Table 4.4: Durbin-Watson test of autocorrelation

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.656a	0.426	0.418	0.37565	1.852

a. Predictors: (Constant), X3

b. Dependent Variable: Y

4.1.4 Linearity Test

A linear function is a function where graph lies on a straight line, and which can be described by giving the slope and y intercept of that line. Linearity is most simply thought of as data that is a straight line when graphed. It is characterized by an ordered and predictable system not commonly seen in nature (Chegg, 2003). Linearity test was done using scatterplots. It was expected that the relationship between the independent variables and dependent variable would be linear before the regression models was applied. Results (4.7) indicate that there exists linear dependence between the independent variables (X3) and dependent variable (Y). This was demonstrated by the line of fit.

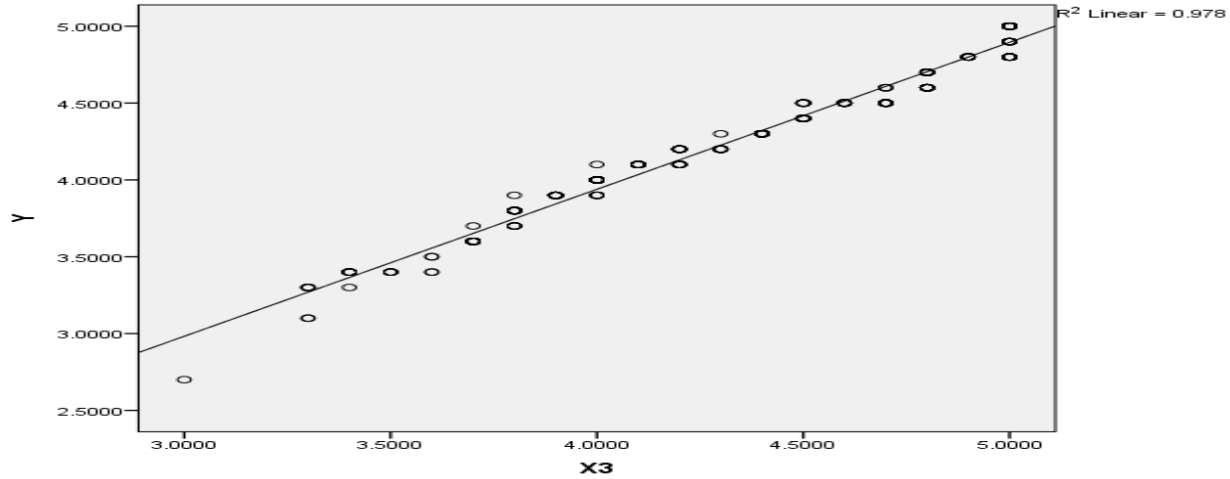

Figure 4.7: Linearity Between Project Monitoring and Evaluation on Road Construction Projects Performance

4.1.5 Heteroscedasticity Test

Heteroscedasticity means equal scatter. In regression analysis, we talk about heteroscedasticity in the context of the residuals or error term. Specifically, heteroscedasticity is a systematic change in the spread of the residuals over the range of measured values (Jim, 2021). Heteroscedasticity is usually defined as some variation of the phrase non-constant error variance or the idea that once the predictors have been included in the regression model, the remaining residual variability changes as a function of something that is not in the model (Cohen, West & Aiken, 2007; Field, 2009; Kutner & Nater, 2004). Levene's test of equality of error variances was used to conduct the heteroscedasticity test. The probability value in Table 4.5 is greater than 0.05, indicating that the null hypothesis of constant variance of error terms was accepted. As a result, the residuals' variance was homoscedastic.

Table 4.5: Levene' s Test of Equality of Error Variances

Dependent Variable: Y

F	df1	df2	Sig.
6.042	110	178	.070

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

4.2 Correlation Analysis

This section provides results on the relationship between the independent and dependent variables. The findings further indicate that project monitoring and evaluation [X3] had a positive and significant relationship with road construction projects performance in Kenya ($r = .609$, $p = 0.000 < 0.05$). This implies that both project monitoring and evaluation and road construction projects performance in Kenya move in the same direction. As such, an increase in project monitoring and evaluation is accompanied by increase in road construction projects performance in Kenya.

Table 4.6: Correlation Matrix; Project Management on Road Construction Projects Performance in Kenya.

		Y	X1	X2	X3	X4
Y	Pearson Correlation	1				
	Sig. (2-tailed)					
X3	Pearson Correlation	.609**	.488**	.645**	1	
	Sig. (2-tailed)	.000	.000	.000		

** Correlation is significant at the 0.01 level (2-tailed).

4.3 Univariate Regression Analysis

Univariate linear regression focuses on determining relationship between one independent (explanatory variable) variable and one dependent variable. Regression comes handy mainly in situation where the relationship between two features is not obvious to the naked eye. Regression analysis is a type of statistical evaluation that enables three things; firstly, description of relationships among the dependent variables and the independent variables can be statically described by means of regression analysis. Secondly, estimation of the values of the dependent variables can be estimated from the observed values of the independent variables. Thirdly, prognostication/prediction of risks factors that influence the outcome can be identified, and individual prognoses can be determined (Fahrmeir, 2009). This section provides regression results on the separate effect of project monitoring and evaluation on road construction projects performance in Kenya.

4.3.1 Effect of Project Monitoring and Evaluation on Road Construction Projects Performance in Kenya

The study sought to determine the effect of project monitoring and evaluation on Road construction projects performance in Kenya. The regression results (Table 4.7) indicate that project monitoring and evaluation explains 36% ($R2 = .356$) of total changes in Road construction projects performance in Kenya. An F statistic of 166.244 and reported p value of $0.000 < 0.05$ imply that project monitoring and evaluation is a significant predictor of Road construction projects performance in Kenya. The results further indicate that project monitoring and evaluation had a positive and significant effect on Road construction projects performance in Kenya ($\beta = .568$, $P < .000$). This implied that an increase in project monitoring and evaluation by one unit would lead to increase in Road construction projects performance in Kenya by 0.568 units.

Estimated model;

$Y = 1.761 + 0.568X_3$

Where; Y- Road construction projects performance in Kenya; X_3- project monitoring and evaluation

Table 4.7: Regression Model; Project Monitoring and Evaluation and Road Construction Projects Performance In Kenya

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.761	.198		8.584	.000
	Project monitoring and evaluation	.568	.044	.603	12.847	.000
	R Squared	.356				
	Adjusted R Squared	.353				
	F statistic	166.244				
	P value	.000				

a Dependent Variable: Road Construction Projects Performance In Kenya

4.4 Multiple Regression Analysis without Moderation

Having separately established the effect of each independent variable on dependent variable, it was imperative to determine the combined effect of the independent variables on Road construction projects performance in Kenya. A multiple regression model was therefore, used to establish the effect of project monitoring and evaluation on road construction projects performance in Kenya.

The results (Table 4.8) indicate that independent variable jointly explain 42% (R^2= .424) of the total variations in the road construction projects performance in Kenya. An F statistic of 54.582 and reported P value of 0.000<0.05 revealed that the proposed model was significant (good fit) in predicting the dependent variable. This means that project management are significant predictors of the road construction projects performance in Kenya. The findings further indicate that project monitoring and evaluation (β2= .336, P =.000); had a positive and significant effect on road construction projects performance in Kenya.

Model without moderation

Y =0.854+.357X3

Where;

Y= Road Construction Projects Performance in Kenya

X_3 = Project Monitoring and Evaluation

Table 4.8: Multiple Regression Model without moderation

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.854	.254		3.311	.004
	X3	.357	.063	.351	5.281	.000
	R Squared	.424				
	Adj. R Squared	.418				
	F statistic	54.582				
	P value	.000				

a Dependent Variable: Y

4.5 Hypotheses Testing

The third null hypothesis (H_{03}) predicted that project monitoring and evaluation did not have significant relationship with the road construction projects performance in Kenya. A p value of 0.000 (Table 4.9) was less than 0.05 implying rejection of the null hypothesis in favour of the alternative. Therefore, project monitoring and evaluation had a significant relationship with road construction projects performance in Kenya.

Table 4.9: Hypotheses Testing Results

	Hypothesis	P value	Decision
H03	Project monitoring and evaluation does not have significance effect on road construction projects performance in Kenya	0.000<0.05	Reject

5.0 Conclusion and Recommendations

The study sought to examine the effect of project monitoring and evaluation on Road construction projects performance in Kenya. The findings revealed that project monitoring is the continuous review of all aspects of a construction project with the aim of providing reliable information on whether to rectify, rework, proceed or not, with the endeavor and that monitoring and evaluation plays a role in ensuring team delivery through consistent, deliberate and elaborate efforts checking the estimates and the projections of the cost of the resources required and the expected flow of benefits along with possible finances and beneficiaries. These findings also implied that activities such as monitoring and evaluation planning before project initiation and performance, indicator identification have been emphasized in order to have the required project results and that with appraisals all activities are kept under scrutiny, the project journey with regard to construction cost control is synchronized, keeping it both in the right truck and on the right track. The findings also showed that monitoring and evaluation plays a significant role through cost and budget management and control of revenue, ensuring that all possible and justifiable management on amount of money received and spent is in accordance with budgets and timing of each transaction is appropriate. These findings implied that cost control in construction projects ensures achievement of maximum profit within the predetermined budget, time frame, satisfactory quality and scope of the project and that monitoring and evaluation enhances project performance.

In conclusion basing on the findings, on the prediction that Project monitoring and evaluation did not have significant relationship with the road construction projects performance in Kenya. A p value of 0.000 was less than 0.05 implying rejection of the null hypothesis in favour of the alternative. Therefore, project monitoring and evaluation had a significant relationship with road construction projects performance in Kenya. The study came up with a number of recommendations. The management of road construction should put more emphasis on continuous review of all aspects of a construction project with the aim of providing reliable information on whether to rectify, rework, proceed or not, with the endeavor.

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