



**FACTORS INFLUENCING COMPLETION OF GOVERNMENT ROAD INFRASTRUCTURE PROJECTS IN KENYA: A
CASE OF MERU COUNTY**

ROSELINE GAKII KITHINJI, DR. MARY KAMAARA

FACTORS INFLUENCING COMPLETION OF GOVERNMENT ROAD INFRASTRUCTURE PROJECTS IN KENYA: A CASE OF MERU COUNTY

Roseline Gakii Kithinji, Dr. Mary Kamaara

^{*1}Msc. Candidate, Jomo Kenyatta University of Agriculture and Technology [JKUAT], Nairobi, Kenya

²Jomo Kenyatta University of Agriculture and Technology, [JKUAT], Nairobi, Kenya

Accepted: October 13, 2017

ABSTRACT

The general objective was to evaluate factors influencing completion of Government road infrastructure projects in Kenya, a case of Meru County. The specific objectives were; to determine how project finances and technology influenced completion of infrastructure projects of government. The scope of the study was infrastructure projects in Meru County. The research design adopted was descriptive design. The target population included contractors and construction project managers . A census survey technique method was adopted and sample size was 80 respondents. A closed and open-ended questionnaire was used to collect primary data. Both quantitative and qualitative approaches were used for data analysis. Quantitative data was summarized and analyzed using descriptive statistics with the help of Statistical Package for Social Sciences (SPSS) version 23. Qualitative data adopted Content analysis while inferential statistics was applied to identify a mathematical relationship between variables using multiple regression analysis, which was used to establish the degree of statistical relationships between the study variables. A response rate of 82.5% was established with 66 respondents reached, out of the 80 targeted .The finding indicated that project finance, and project technology innovation largely influenced infrastructure project completion. The study recommended that since the study was conducted to evaluate factors influencing government infrastructure project Completion in Meru County other studies should be conducted in other counties and different variables employed to find out how counties faced challenges in the completing infrastructure project. Further research study should be conducted on different projects to investigate into the challenges facing project implementation, and research study should be carried in the area of the influence of governance institutions on project implementation and project completion.

Keywords: Project Finances, Technological Innovations, Government Road Infrastructure in Kenya

INTRODUCTION

Infrastructural projects are considered successful when delivered within scheduled duration, allocated budget, and specified quality (Owolabi , 2014). Delay in the completion of infrastructural facilities is a critical challenge with a global dimension, often leading to increased construction 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 (Owolabi *et al*, 2014). Infrastructure accounts for a significant portion of the world's gross domestic product. In the developing world, the construction sector provides a substantial source of employment to the majority of citizens of countries (Basheka & Tumutegereize, 2011). Globally, the annual value of the construction industry is of the order of 1.5 trillion dollars constituting about 8% of GDP and about 60% of fixed capital formation. It is one of the most relevant forces of the world economy representing 7% of its total employment. Projects delay in the construction industry is a global issue that needs to be analyzed so as the implementers can deliver projects to the beneficiaries in good time. Ramanathan, Narayanan and Idrus (2012) observed that majority of project delays occur during the construction phase, where many unforeseen factors are always involved. In construction, delay could be defined as the time overrun either beyond completion date specified in a contract, or beyond the date that the parties agreed upon for the delivery of a project.

Completing projects on time is among the challenges that most projects are facing. According to Memon (2014) study on contractor perspective on time overrun factors in Malaysian construction projects, the major factors causing delays were: Frequent design changes, Change in the scope of the project, financial difficulties of owner, Delays in decisions making and unforeseen ground conditions.

In Qatar, a Public Works Report of 2009 linked delays in completion of about one-third of infrastructural projects to contractors lack of capacity, escalation of construction material prices, prolonged transfer of land ownership rights to contractors, deferral of payments due to design issues, as well as legislative challenges in the procurement of necessary equipment and machinery from overseas market (Government of Qatar, 2009). According to Meed Projects, (August 2014), 20 percent of the construction projects in the Gulf Cooperation Council were on hold, while 24 percent were cancelled. This meant that projects worth 89 billion QAR were on hold in Qatar, while those worth 107 billion QAR were cancelled. Project management institute, (2012), 80 percent of projects in the Middle East was delayed, and nearly half of the projects were behind by more than six months. When delay was experienced, there was bound to be an extra cost because of factors such as hired manpower, equipment rentals, increasing material cost and extension of third-party services.

Developing countries are experiencing delays in the constructing industry which influence completion of the projects. According to Mustapha (2013) research on the factors causing delays in project delivery in Ghana found out that the major delay factors were: Delay in honouring payment certificates, Delay by sub-contractors, Fluctuation of prices, Difficulty in accessing bank credit and Client initiated variations. While Asiamah and Asiamah (2013), study on causes of delays in construction of public buildings in Ghana revealed that the following were the main causes of delay: Method of construction; long bureaucratic process of honouring certificates; Variation orders; Cash flow problems and attitude to decision making.

According to Ramabodu and Verster (2013), empirical analysis in South Africa found change in scope of work on site, incomplete design at the time of tender, contractual claims, lack of cost

planning and monitoring of funds, delays in costing variations and additional works as important overrun factors in South Africa. Prinsloo, Kasese and Hoffman, (2011) study has shown that time and cost overruns are a real problem in the Botswana local authorities. Leading causes being inefficient contractor's management, low productivity of contractor's workforce, low productivity of contractor's equipment, client's responsibility, and design errors by consultants as being the highest ranked causes.

It is observed that, in recent years, there has been a tremendous increase in the number of construction projects in different counties in Kenya. Gwayo(2014) noted, there is a growing concern regarding the reasons why the requisite objectives are not achieved as per the projects' client's expectation.

According to Kenya Urban Road Authority, (2013) reported there were many projects which were not completed due to obstacles by client, non-availability of materials, poor infrastructure, lack of funds and lack of project managers competency. According to Kimathi (2016), Kinoru stadium in Meru county that was expected to be completed in 2015 did not completed due to slow progress on the work by contractors. Meru government was forced to stop the construction inconveniencing the ministry of sport. The contractors were accused of violating the terms and conditions of the tender. Failure of the contractors to meet the deadline lead to increase in cost since the county officials increased the funding for the renovating the stadium to speed up its completion.

Statement of the problem

Meru County is experiencing poor timely delivery of government infrastructure projects, the county government projects are delayed or stalled affecting development growth and agriculture sector. According to Kathure (2013), Meru county

experience delay in commencement of infrastructure development project .

Meru county government is facing poor economic growth, which has been contributed by poor infrastructure (Kimathi, 2016). According to Government of Kenya (2014), infrastructure plays a vital role in the economic development of the nation by increasing productivity and competitiveness. The second Medium Term Plan (2013-2017) has identified infrastructure as a key enabler for sustained growth and development under the Kenya Vision 2030 development agenda.

According Institute of certified public Accountants of Kenya devolution baseline survey (2014), Different counties indicate that they inherit poor infrastructure thus hindering them from effective implementing their functions. Meru County was listed by ICPAK among the five counties with less than 15% infrastructure growth, which affect growth and development in the county. According to Meru County intergrated development plan 2013-2017 Meru County is facing development challenges where poor infrastructure is among the challenges.

Meru county development has been hindered by poor infrastructure especially in areas where agriculture is practiced, although being among the 5 counties that had more than 25% priority to agriculture (ICPAK, 2014). According to Agricultural sector development strategy 2010-2013, the agricultural sector is the backbone of Kenya's economy and the means of livelihood for most of our rural population. Sustained agricultural growth is critical to uplifting the living standards of our people as well as generating rapid economic growth.

Due to Booming construction industry in Meru county that have been attributed by demand for business premises, housing increases, Improved infrastructure, development growth, a rise in the number of banks, better services, non-

governmental organizations as well as institutions of higher learning (Kimathi, 2015), Study on factors influencing completion of government infrastructure projects will lead to a better understanding of the effects of timely project completion in Meru County. According to fiscal strategy 2016-2017 infrastructure in Meru county will contribute 6.3% of the gross domestic products (GDP) in relation to Kenya vision 2030. Thus, the study sought to bridge the gap of how addressing the factors influencing government road infrastructure projects completion would lead to effective timely delivery of Government infrastructure projects in Meru County therefore improving the County economy development .

General objective

The purpose of the study was to evaluate factors influencing completion of government road infrastructure projects in Meru County, Kenya. The study was guided by the following specific objectives:

- To determine how project finance influence completion of government road infrastructure project in Meru County, Kenya.
- To find out how technology innovation influences completion of government road infrastructure project in Meru County, Kenya.

LITERATURE REVIEW

Theoretical review

Wreckers Financial distress theory

According to Brigham and Ehrhardt (2013), the financial distress theory seeks to look at the different factors that lead to a decline in a project performance. Beaver, Correia, & McNichols (2011), describe financial distress as the inability of an organization to pay its financial obligations as they mature. It is important to consider the finance of the organization because it determines the cost benefits associated within any project investment. An organizations investment decision and financing are separable and independent.

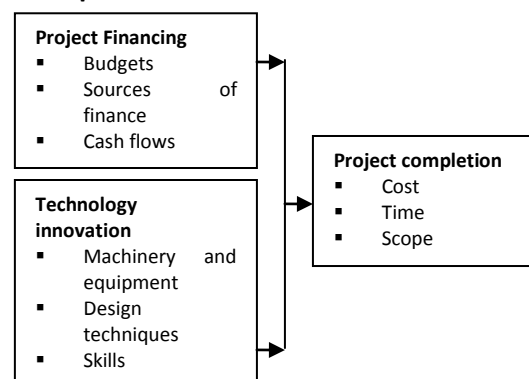
However, not most organizations recognize this hence holding their balance sheets on debts and equity claims as one, which then reduces their leverage on costs (Finnerty, 2013). Balcaen & Ooghe (2006), posits that financial distress is manifested when a organization encounters consistent lack of finances. Generally, a financial distress prediction tool seeks to establish whether a company is likely to lack finances based on its current and publicly available financial information. The financial distress theory hence shows the relationship between an organizations financial cash flow and the ability to finance its projects. Each organization aiming at undertaking a projects should ensure that its financial capability has been well planned for as well as project funding opportunities well planned, communicated and prepared for before making a decision on whether to carry out a project or not. Organizations should also consider the length of time required to release funds needed for a project or investment during the project preplanning stage before determining or agreeing on project start dates to ensure on time project funding release so as to prevent delays associated with late funds disbursements that may be influenced by several factors relating to the late release of fund. Organizations with high cost projects are supposed to be able to finance these projects and when this is not possible, then projects will not be completed on time. This theory is therefore important when addressing the financial factors influencing project completion. Project delivering organizations experience financial constraints due to late funding, poor budget estimations and late flow of project funds. This theory guided in the understanding of the first research question on the extent to which finances influenced project completion.

Rogers's innovation diffusion theory

Rogers (1983), considers the process on innovation diffusion as one that is dictated by uncertainty reduction behavior amongst potential adopters during the introduction of technological innovations. Though innovations offer new ways of tackling problems, the uncertainty of whether the new ways will be superior to existing ones becomes an obstacle to the adoption process. To counter this uncertainty, potential adopters are motivated to seek additional information, particularly from their workplace peers (Niederman, Brancheau & Wetherbe, 1991). Many innovations take long from when they become available to when they adopted, the common problem amongst individuals and organizations is how to speed up the rate of diffusion of an innovation (Rogers, 1983). According to Sahin (2006) there are four key characteristics of innovation that consistently influence the adoption of new technologies; relative advantage, which is the degree to which a technology is perceived to be better than the idea it supersedes, compatibility, is the degree to which a technology is perceived as being consistent with existing values, past experiences and needs of potential adopters; complexity is the degree to which technology innovation is perceived as difficult to understand and use; and trial ability, which is the extent to which an innovation may be experimented with on limited basis. Moreover, Moore and Benbasat (1991), add that image and visibility are also key features of technology innovation that determine the diffusion rate. Image is the self-perception that adopting an innovation could result in enhanced social status for individual amongst peers. Visibility on the other hand is the degree to which prospective users see technology innovation as being visible in the adoption context. There are various reasons why an organization chooses to invest in technology innovation Project Management Software. These reasons include

making the work of a project manager easier and more efficient, providing applications to aid in planning, designs, managing of project costs, tracking activities and monitor project schedules (Marti & O'Brien, 2005). However, Davis (1989), advises that the benefits derived from use of Information technology can be undermined by user reluctance to accept and use new technologies at their disposal. Technology innovation benefits can only be realized if the intended users utilize the systems in a way that will enable successful project completion and hence contribute to the strategic and operational objectives of the organization. The innovation diffusion theory addressed the second research question, which asked how technology innovation influences project completion.

Conceptual framework



Independent variables Dependent Variable

Figure 1: Conceptual frame work

Project Financing

Chiocha (2011) defines project financing as raising of funds to finance an economically separable capital investment project which the providers of funds look primarily to the cash flow from the project as the source of funds to service their loans and provide the returns of equity invested in the project. Matesehe (2013) defines project financing as financing a particular economic unit in which a lender is satisfied to look initially to the cash flow and earnings of that economic unit as the source of funds from which a loan will be repaid and to the assets of the economic unit as

the collateral for the loan. Finance is a branch of economics concerned with resource allocation as well as resource management, acquisition and investment. Simply, finance deals with matters related to money and the markets. Therefore, if the government treasury does not release the allocated amount of money on time this will lead to delay on projects

Technology Innovation

According to Kaehka, (2013) Construction technology is use of advanced methods and equipment which can be used to build structures. Construction builds two types of structures, These include buildings and heavy engineering structures. Construction uses various technological actions to erect a structure on the site where it will be. The use of construction technological tools like heavy tractors to prepare land where the construction will be, computer design software to create designs for structures on computers and in 3D format, using various construction technologies to enclose structures and install utilities has helped in advancing both residential buildings and commercial buildings today

Project completion

Timely completion of the projects is one of the most important factors of project (Abbasi , 2015; & Tarhini ,2015). In the study of Assafand Al-Hejji (2009), delay could be defined as the time overrun either beyond completion date specified in a contract or beyond the date that the parties agree upon for delivery of a project. Project delay is that project which is experiencing delays in the construction period where there are different gaps between the actual in-progress sites work compared to the work scheduled. The failure to achieve targeted time, budgeted cost and specified quality can result in various negative effects on the projects. When the construction projects are delayed, they are usually extended or accelerated and therefore incur additional costs.

Empirical Review

Project Financing

According to Peterson (2003), Budgeting is difficult in developing countries due to their limited and uncertain resources and the politicized process of resource allocation. It is how the cash is distributed to ensure that an organization is able to achieve the key functions that it was supposed to achieve and deliver its functions within specified time. Project payment contributes to project delay .Memon, Rahman, Aziz, Ravish, and Hanas (2011) have associated prolonged delays in payment with consequences, such as high risk of industrial disputes, destruction of property, and a low turn-over of workers; while Raj and Kothai (2014) pointed out that timely payment of workers is necessary for maintaining motivation, willingness, confidence, discipline, and cheerfulness to perform work. Abdul-Rahman, Taki and Min (2009) linked delayed payment to causal factors, such as clients' poor financial and business management; financial impropriety and political interference; inaccurate valuation for completed works; as well as insufficient documentation and information for valuation. Memon (2011), has focused on the effects of delayed payment of contractors on the completion of infrastructural projects. Most government-funded projects are hurdled by the financial constraints during the time of their implementation. Since budgets are based on operating departments, it is important to superimpose key non-dollar factors that would signal whether the strategic programs are proceeding on schedule. The concern for financial measurement accuracy in the budgets seems to have jeopardized the concern for relevance in some companies' budgets (Holland., 2009). There is great concern for delays and cost overruns in public sector construction as most projects are executed with public funds. The funding for construction activities helps in regulating the economy in many countries. As the construction, industry continues to grow in size, so do planning

and budgeting problems. It is now common for projects not being completed on time and within the initial budget (Apolot, Alinaitwe and Tindwesi, 2013). A pressing concern is however the rate of project overruns (cost and time) of both economic and social infrastructure projects in most developing countries (Omoregie and Radford, 2006). Hussin and Omran (2012) states that 70% of the projects abandoned in Malaysian transport construction projects were due to financial problems of developers, contractors, the local and national governments, stakeholders like the donors. Therefore, for a project to be completed on time, the organization should look at its financial capabilities.

Technology Innovation

Construction companies have been investing heavily in technology in recent years by adopting new processes and purchasing state-of-the-art machinery. This has enabled workers to increase efficiency, shorten the duration of projects and ultimately increase profit. Design and production of construction projects share a need for rapid access to information and communication in real time (Cowell, 2005). Improving information and communication support for the core activities at the design and construction stage has become a strategic challenge for the construction industry to increase efficiency and productivity in the construction process (Samuelson, 2008). According to Technology Trends Transforming the Construction Industry (2017), An innovative piece of construction technology, Building Information Modeling (BIM) has been acknowledged as an industry-changing process, transforming how projects are designed and built. Previously, construction companies would rely on detailed 2D drawings; now however, 3D BIM offers extensive 3D modeling combined with the use of intelligent data. Data is embedded into the model and managed, which allows workers to run multiple scenarios, change processes and input functions to view the implications of these on the project. Alongside 3D BIM modeling, which is

considered an imperative level, there is also 4D and 5D BIM, depending on the types of data incorporated. 4D BIM embeds time-related information into the model, while 5D BIM incorporates schedule and costs. According to Technology Trends Transforming the Construction Industry (2017), Innovative 3D laser scanning digitally captures the exact measurements of a building to provide point-cloud data. This data can then be embedded into BIM software to establish the exact size and shape of a structure. Understanding the exact dimensions of a project using this form of construction technology means there is no reliance on human measurements, and so reducing human error which saves on project cost and rework time. Project managers and contractors control should always manage the exchange of documents between members of the project team so that the overall deadlines of the project are met (e-Business Market Watch, 2005). It is essential that each team member receives the right documents at the right time such as the latest version of design drawings and specifications requirements. There are other numerous software packages available to complement the working process of the construction industry in varied fields including Architectural Design, Civil Engineering Design and Specifications, Financial Management, Marketing, Contracts, Project Management, Procurement, Quantity Surveying, Site Management, and Valuation. Many these applications exist already and can be bought as complete solutions (Hore, 2006).

Project completion

Delays are usually followed by cost and time overruns, delays experienced in construction project have immeasurable effects on client, contractor, consultant to a contract in terms of a growth in the way they relate, mistrust, litigation, mediation, arbitration, cash-flow problems, and a feeling of apprehension toward each other (Oraro, 2012). Hassebet *al.*, (2011) noted that a project's success depends on meeting objectives

within time and budget limits. The inability of the project team to have a comprehensive overview of the construction process from inception to completion is likely to be the reason for the non-realization of projected delivery date (Aiyetan and Smallwood, 2010). According to Memon, Rahman and Azis (2012), study on time and cost performance in construction projects in Malaysia revealed that only 21% of public sector projects and 33% of private sector projects were completed within time. The results of the study showed that most important delay factors were: Design and Documentation Issues; Financial Resource Management; Project Management and Contract Administration; Contractors Site Management; and Information and Communication Technology. Owolabi et al. (2014) studied the causes and effects of delay on project construction delivery time in Nigeria. They stated that seven out of ten projects in Nigeria suffered delays in their execution. The results of the study indicated that the following were the five major causes of delay: Lack of funds to finance the project to completion, Changes in drawings, Lack of effective communication among the parties involved, Lack of adequate information from consultants, and slow decision making. Ramanathan, Narayanan and Idrus (2012) stated in their study carried out in Malaysia to examine 41 studies carried out around the world on construction delays conclude that there is an increase in the number of construction projects experiencing delays leading to exceeding the initial time and cost budget. In Morocco, Challal and Tkiouat (2012) researched on the causes of deadline slippage in construction projects and found out the five major causes of delay were: Errors in initial budget assessment; Architecture and engineering volatility program, Site hazards, Failure of an actor, and Insufficiency or lack of prior study and feasibility. In India, Ravisankar, Anandakumar and Krishnamoorthy (2014) conducted a study on the quantification of delay factors in the construction industry. The researchers indicated that time overrun vary

between 50% and 80% for projects completed worldwide. According to Shanmugapriya and Subramanian (2013) investigated significant factors influencing time and cost overruns in Indian construction projects where Shortage of unskilled and skilled labour, Design changes by owner or his agent during construction, Fluctuation of prices, High waiting time for availability of work teams; and Rework due to errors. Completion of projects requires adequate and effective project management techniques and skills of the contractor. Weak management of contractors has often affected the completion of construction projects. In Lebanon, contractual relations and project management from viewpoints of contractors and consultants have been found to affect completion of infrastructural projects (Khalafizadeh, Mirhosseini & Tayari, 2014). Choge and Muturi (2014) also associate the completion of infrastructural projects on the experience of the contractor. Contractors are selected on the basis of price, experience in undertaking particular types of construction project and their reputation or track record in producing high quality work within budget and on time.

METHODOLOGY

Research design is the strategy, plan and structure of conducting a research so as to obtain answers to research questions which includes selecting a research method, operationalizing constructs of interest, and devising an appropriate sampling strategy (Kombo and Tromp, 2011). The study adopted descriptive research design to collect information through administration of a questionnaire to the contractors and project managers from the selected projects in Meru County. Data was collected from 40 infrastructure projects in Meru County (Annual public Roads Programme, 2014/2015). A series of statistical analysis were performed using the Statistical Package for the Social Science (SPSS) data analysis software version 21 to enable further exploration

of the characteristics of the variables under study to validate the research. Qualitative data was analyzed through content analysis, which involves putting data in common themes.

RESULTS AND DISCUSSIONS

Study variables

The study set out to examine factors influencing completion of government infrastructure projects

Table 1: Influence of Project finance in completion of government infrastructure projects.

| Response | Frequency | Percent % |
|-------------------|-----------|------------|
| Moderate extent | 3 | 4.5 |
| Great extent | 36 | 54.5 |
| Very great extent | 27 | 40.9 |
| Total | 66 | 100 |

Table 1 illustrated that at Moderate extent were 3 respondents which is 4.5%, great extent were 36 respondents which was 54.5% and very great extent were 27 respondents which was 40.9% of the total number of respondents. The study finding was in line with literature review of Hussin and Omran (2012) that state 70% of the projects abandoned in Malaysian transport construction projects were due to financial problems. Table 2 illustrated the rating on what extent that the attributes of finance influenced completion of government road infrastructure projects. The study sought to identify how attributes of project finance generally influenced government infrastructure projects Completion in Kenya, Meru County.

Rating of project finance attributes

From the study, release of funds throughout the project and budget-planning project were rated to be significant to a very great extent by mean scores of 4.106 and 4.045 respectively and that sources of finance is also significant to a very great extent in the completion of a projects by mean scores of 4.015. Majority of the respondents rated cost benefit analysis to be significant to a great extent by a mean score of

in Meru County, Kenya. To this end, two variables were conceptualized as components of factors influencing completion of government projects.

Influence of Project finance on completion of government projects

The respondents were asked to indicate to what extent project finance influenced completion of government project.

3.909, financial planning by the mean of 3.848 as well as cash flow by a mean score of 3.863, cost appraisal by a mean score of 3.439, inflation and relative prices by a mean score of 3.348, and cost control by a mean score of 3.151. Finding showed that project finance influenced completion of government road project in Kenya, Meru county . The findings agreed with Jackson, (2010) that project finances availability and planning was an important factor that influenced delivery of a project. This means that project financing was a key aspect of construction projects and should be guaranteed to ensure that projects are successfully completed.

Influence of Technology and innovation on infrastructure project completion.

Figure 2 illustrated influence of technology innovation on infrastructure project completion. The respondents' data in terms of extent of technology innovation on influencing project completion was as follows; Small extent was 1 respondent which was 1.5%, moderate extent were 15 respondents which was 22.7%, great extent were 40 respondents which was 60.6% and very great extent were 10 respondents which was 15.2% of the total number of respondents.

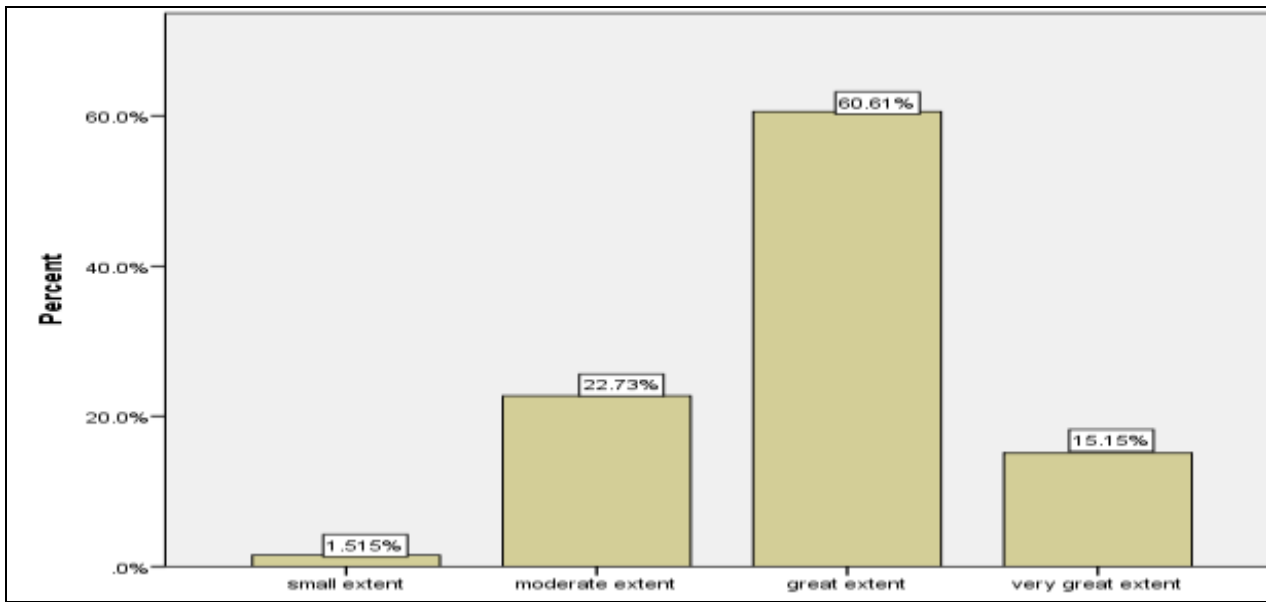


Figure 2: Influence of project technology innovation

Table 3: Rating of Project technology innovation attributes

| Project technology innovation attributes | N | Mean | Std. Deviation |
|--|----|-------|----------------|
| To what extent do procedure of purchase influence completion of project | 66 | 3.409 | .803 |
| To what extent do Technical skills influence completion of project | 66 | 3.924 | .882 |
| Indicate to what extent does design techniques influence completion of projects | 66 | 3.181 | .975 |
| To what extent does cost of adopting technology process influence completion of projects | 66 | 3.909 | .738 |
| Indicate to what extent does technical experience influence completion of projects | 66 | 3.621 | 1.092 |
| Does software programs influence completion of government project | 66 | 3.257 | .965 |
| To what extent does outdated technology influence completion of projects | 66 | 3.787 | .868 |
| Does Technical Training influence completion of government projects | 66 | 4.030 | .910 |
| To what extent does Knowledge of operation influence completion of government projects | 66 | 3.681 | .897 |
| Valid N (listwise) | 66 | | |

From the Table 3 finding it was noted that majority of the respondents agreed that Project technology innovation influences government road projects Completion Meru County. Majority agreed technical training influenced Government

road infrastructure projects Completion in Meru County at a very great extent since its mean score of majority was 4.030, Technical skills scored a mean of 3.924, Cost of adopting technology scored mean of 3.909 indicating influence on

project completion at a great extent. Outdated technology scored a mean of 3.787, knowledge on operations scored a mean of 3.681, technical experience scored a mean of 3.621, procedure of procurement scored a mean of 3.409, software programs scored a mean of 3.257 and design techniques scored a mean of 3.181. Therefore, the finding indicated technology innovation was key in timely delivery of the projects. The findings agreed with Stake, (2008) who stated that the use of IT improved better coordination and communication among project teams and participants. It increased the speed of communication and decreases documentation errors.

CONCLUSION AND RECOMMENDATIONS

From the descriptive statistics, majority agreed with the following attributes on Project finance that Budgets, sources of finance, Cash flows influenced the government infrastructure projects Completion in Meru County. Therefore, the project finance attributed need to be addressed to in a great extent to enable a timely delivery of the government infrastructure projects in Meru county.

From descriptive statistics majority of respondents agreed with the following variable on Project technology innovation that machinery and equipment influenced government infrastructure projects Completion in Meru County, design techniques influenced government infrastructure projects Completion in Meru County, technical skills influenced the government infrastructure projects Completion in Meru County. The study drew conclusion that government Project Completion was greatly influenced by project technology innovation.

Conclusion of the study

The construction industry is a key industry in the economy of any country worldwide. It is one of the biggest industries in the world contributing to

around 10% of the global GDP. The completion of infrastructure projects in the country is, therefore, an essential aspect for the growth and development of the country.

The study concluded that Project finance influenced the completion of a project. cash flow, sources of finance and budgets were the variables under project finance that influence project completion. From the finding majority agreed that project finance influence completion of projects at great extent which therefore needs all the government project committee to usually plan on the budget well and have an idea on how the project funds would be sourced to enable continuous implementation of the project and also the cash flow should be address as among the project finance attributes at have impact on project timely completion .

From the study majority agreed with the following variable on Project Technology that influence road construction projects Completion. From the finding majority agreed that project technology innovation influenced project completion at great extent.

Recommendation for the study

From the findings and conclusion, the study recommended that construction industries and other organizations must provide clear guidance on how to measure the outcome of a project. Alignment between company's objectives and projects is crucial since Poor alignment can lead to wasted effort and resources despite completing a project within the triple constraints.

Project managers in all government projects need to be aware of all project technology preferences and provide the tools and equipment to the project team, as they can be more motivated. Implementation of technological systems can either act as a medium for change or be the means of achieving a desired change in a project.

Recommendation for further Studies

The researcher suggested that since the study was conducted to evaluate factors influencing government infrastructure project Completion in Meru County other study should be conducted in other counties and different variables should be employed. The following areas were recommended for further study: -Further research study should be conducted on different projects to investigate into the challenges facing project implementation since this study only researched the selected variables and projects.

Further study should also be conducted on the key performance indicators (KPIs) in order to identify the causal relationships between completion of infrastructure projects and KPIs. A study should also be conducted in order to assess the resource mobilization approaches and capacity needs for effective completion of road construction projects and comparative study should also be done on the effectiveness of contract documentation in different types of projects to allow easy generalization.

REFERENCES

- Abbasi MS, Tarhini A, Hassouna M, Shah F. (2015). Social, organizational, demography and individuals' technology acceptance behaviour: A conceptual model. *European Scientific Journal*, 11(3), 39-68.
- Afshari et al. (2011). Causes of delay in large constructions Projects. *Journal of project management*, 24-30.
- Ahmed, R. M. (2014). Performance of project in public sector of Pakistan: Developing a Framework for future Challenges. *Serbian Project Management Journal*, 4(1), 3-12.
- Alaghbari, W.A. (2014). *Factors affecting construction speed of industrialized building systems in Malaysia*. Serdang: University Putra Malaysia.
- Alexandrova, M, a. I. (2014). Critical success factors of project management. *International Journal of social sciences and entrepreneurship Vol.1, vol.1 (Issue 12)*, 9.
- Alinaitwe, H., Apolot, R., Tindiwensi, D. (2013). Investigating into the causes of delays and cost overruns in Uganda's Public Sector Construction. *Journal of construction in Developing countries*, 18(2), 33-47.
- Angus, Craig. (2016). *England Patent No. 7339626*.
- Apolot, R. a. ((2013)). Investigation into the causes of Delays and Cost Overruns in Uganda Public Sector Construction projects. *Journal of Construction in Developing Countries*, 18(2), 33-47.
- Babbie, E.R. (2007). *The basics of social sciences research*. Wadsworth: Australia.
- Basheka, B. &. (2011). Measuring the performance of contractors in government construction project in development countries : Uganda's context. *African journal of bussiness Mnagement*, 6(32), 9210-9217.
- Beaver, W.H., Correia, M., & McNichols, M.,. (2011). *Financial Statement Analysis and the prediction of financial distress*. Massachusetts, USA: Now publishers inc.
- Berg, B.L. (2001). *Qualitative Research Methods for social Sciences 4th edition*. Pearson Education Company.

- Brigham,E.,&Ehrhardt,M.,. (2013.). *Financial management:Theory and practice*. Ohio,USA: Cengage learning publishers.
- Bui.T.,& Ling.F. (2010). Factors Affecting Construction Project outcomes:. *Case Study of vietnam*, 136(3),(Eng.educ.pract.), 148-155.
- Chandra,P. (2010). *Project planning analysis Review*.
- Chiocha,C. (2011). *Corruption and its effects on the development of the construction industry in Malawi*. Port Elizabeth:Nelson mandela Metropolitan University: Unpublished master of science degree treatise.
- Choge,J.K.&Muturi,W.M. (2014). Factors affecting adherence to cost estimates:A survey of construction projects of Kenya National Highways Authority. *International journal of social Sciences and Entrepreneurship*, 689-705.
- Chwala,D ., & Sondhi, N . (2011). *Research Methodology:concepts and Cases*. New Delhi: Vikas Publishing House.
- Colwell, D. (2008). Executive Director construction Technology Center Atlatic. *Improving Risk Mnagement and Productivity in Megaprojects through Ict investment*.
- Cooper,D.R., & Schindler,P.S. (2011). *Business Research Methods*. Boston: McGraw-Hill Higher Education.
- Creswell,J.W. (2003). *Research design: Quantitive,qualitative and mixed methods approaches*. Sage: Thousand Oaks,.
- (2016). *Delayed completion of NKubu-mikumbune road*. Hansard.
- e-Bussiness W@tch. (2005). *ICT and Electronic Business in the Construction Industry*,.
- Elaine J.Hom. (2013). *Bussiness News Daily*. Small Business Solutions & Inspiration.
- Elkington,Pand smallman,C. (2002). Managing project risks:a case study from the utilities sector. *International Journal of project Management*,, 49-57.
- Finnerty,J.D.,. (2013). *Project Financing:Asset-Based Financial Engineering*. NJ,USA: Jown wiley and Sons publishers.
- Gall,D., and Borg,W.R . (2007). *Educational Research*:. Boston: Pearson Education.
- GOK. (2014, June). Roads for National Connectivity and Regional Intergrationi. (M. Mbeo, Ed.) *Uchukuzi*(Issue 1).
- Gwayo, A. (2014). A Critical Analysis of the causes pf project Management Failures in Kenya. *International Journal of soft Computing and Engineering*, 4(1), 64-69.

Hamzah Abdul Rahman, R. T. (2009, August). Financial related causes contributing to project delays. *Journal of retail & Leisure Property*, 8(3), 225-238.

Hatfield, M. (2016). Game Theory in Management Modelling Business Decision And Consequences. In PMBOK@guide, *Project Management Procurement* (p. 93).

Hore, A. (2006). Use of IT in managing information and data on construction projects -A prespective for the Irish construction industry. *Information Technology in construction Project Management Engineers Ireland Project management society*.

Jackson K.,. (2010). Fundamentals of project performance Measurement.

karehka Ramey. (2012, december). *New busness technology*. Retrieved january 31, 2017, from www.use of technology.com: <http://>

Kathure.M. (2013). *state of stalled project in meru country*. Standard Digital.

Kemps,M. (2012). *Fundamentals of Project Performance Measurement*,. Sandiego.

Khalafizadeh,H.,Mirhosseini,R.T., & Tayari,O. (2014). Investigating Causes of delasy in Construction projects and Presenting a solution(Case study of northwest projects in Iran). *New york Science Journal*,, 7(10), pp 43-47.

Kikwasi, G. (2012). Causes and effects of Delay and Disruptions in constraction Projects in Tanzania. *Australasian Journal of construction Economics and building,Conference Series*, 1(2), 52-59.

Kikwasi, G. (2012). Causes and effects of delay and disruptions in construction in Tanzania. *Australasian Journal of Construction Economics and Building*,, 1(2), 52-59.

Kimani & Kimwele. (2015). Factors influencing project delay. *International journal of social sciences management and Entreprenuership*, 2(1).

Kimathi .K. (2016). *Meru County Reak estate growth*. Daily Nation.

Kimathi.K. (2016). *breifing on meru county projects*. Dairy nation.

Kombo,D.K.,& Tromp,D.L.A. (2011). *An Introduction To Proposal and Thesis Writing*,. Nairobi: Paulines Publications Africa.

Kothari,C.R. (2004). *Research Methodology,Methods and Techniques*. New Delhi: New Age International Ltd.

L.Muhwezi, J. (2012). Buildins construction projects in uganda. *causes of delays in construction industry*, 47-69.

Marti,M.M.& O'Brien,K.L.,. (2005). Prooject Management Software:. *Pratical Applications for Improved Project management Minnesota*.

- Memon,A.H. (2013). Contractor Perspective on Time Overrun Factors in Malaysian Construction Projects. *International Journal of science,Environment and technology,, 3(3)*, 1184-1192.
- Miller,D., and Lee,J. (2001). The people makes the process: Commitment to employees,decision making and performance. *Journal of Management*.
- MooreG.C.,& Benbasat.J. (1991). Development of an instrument to measure the perception of adopting an information technology. *Information system research,, 2(3)*, 173-191.
- Mugenda & Mugenda. (2003). *Research Methods: Quantitative and Qualitative Approaches*. Nairobi: Press African Center For Technology Studies.
- Muller, R. a. (2005). The Impact of Principal-Agent Relationship and contract Type on communication between project owner and manager,. *International Journal of project Management,, Vol.23,No .5*, pp.398-403.
- Mustapha, Z. (2013). Accelerated Fcators of Delays on Project Delivery In Ghana:Acase study of ape Coast Metropolis,. *Journal of Applied Sciences & Environmental sustainability, 1(1)*, 54-61.
- Muzio,E.,Fisher,D.J.,Thomas,E.R.,& Petrs,V. (2007). Soft skills quantification(SSQ) for project manager competencies,. *Project Management Journal*, 30-38.
- MyMG. (2011). Procurement management 5 steps of the process.
- National Assembly. (2016). *Delayed completion of Nkubu -Mikumbune road*. Nairobi: Hansard.
- Ngechu,M. (2004). *Understanding the Research Procecess and Methods.Introduction to Research Methods*. Nairobi: Acts press.
- Niederman.F.Brancheau,F.& Wetherbe,J. (1991). Information System Management for the 1990s,. *MIS quarterly, 15(4)*, 475-500.
- Njuguna,B. (2008). *The Construction Industry in Kenya and Tanzania,Understanding Mechanism that Promotes Performance*. Nairobi: Esamdba.
- Ondari, P. G. (2013). Factors influencing successful completion of roads projects in Kenya. *International Journal of sciences and Entrepreneurship,, 1(6)*, 26-48.
- Orodho, A. J. (2005). *Essentials of Educational and social sciences research Methods.Qualitative and quantitative Approaches*. Nairobi: Press African Center fot Technology studies.
- Ounsanmi;O.E.,Iyagba R.O.A and Omirin,M.M. (n.d.). A comparative study of the Performance of Traditional and Labour only Procurements in Nigeria . *Journal of Nigeria Institute of Building*, 12-27.
- Owolabi,J.D.,. (2014). Causes and effect of dealy on Project Construction delively time. *International journal of education and research, 2(4)*, 197-208.

- Pearman,R.,. (2010). Contractors look abroad for high rise expertise. *Contract Journal*, 435.
- Ramabodo, M. a. (2012). Causes and effects of delay and disruptions in construction project in Tanzania. *Australasian journal of construction Economics and building,Conference Series,1(2)*, 52-59.
- Ramanathan,C.,Narayanan S.& Idrus,A.B. (2012). Construction delays causing risks on time and cost. *Australasian Journal of Construction Economics and Building,, 12(1)*, pp37-57.
- Ramanathan,C.,Narayanan,S.P & Idrus,A.B. (2012). construction delays causing risks on time and cost- a critical review',. *Australasian journal of construction economics and building, 12(1)*, 37-57.
- report, n. a. (2016). *Delayed completion of Nkubu-Mikumbune road*. Hansard.
- Rogers, M.E. (1983). *Diffusion of innovations*. New York: The free Press.
- Sahin,I. (2006). Detailed Review of Rogers Diffusion of innovation theory and Education Technology-Related Studies Based on Rogers' Theory. *The Turkish Online Journal of Educational Technoogy,, 5(3)*, 14-23.
- Samuelson O. (2008). The IT-barometer-Adecade's development of IT use in the Swedish construction sector. *Journal of information Technology in Construction (ITcon),, vol13,(No1)*, 1-19.
- Schieg, M. (2008). Strategies for Avoiding Asymmetric Information in Construction Project Management,. *Journal of business Economics and Management,, Vol.9,No.1,, pp.47-51*.
- Sekara.U.,Bougie,R.,. (n.d.). Research Methods for business:Askill building approach.
- Shanmugapriya & Subramanian. (2013). Factors influencinng time and cost overruns. *International Indian construction journal*, 50-60.
- Steven.Norton. (2016, march 20). Game Theory in procurement. pp. 6-7.
- Wambugu,D.M. (2013). Determinant of successful completion of rural electrification projects in kenya:A case study of Rural electrification Authority. *International journal of Social Sciences and Entrepreneurship, Vol .1(Issue 2,2013,1(2))*, pp.549-560.
- william, W. (2006). Dynamics of perception and actions,. *American psychological association., 113(2)*, 358-389.
- Yvas, S. (2013). Causes of Delay in project Construction in Develloping Countries. *International Journal of commerce and management studies, 2(1)*, 24-29.
- Zikmund,w.g.,Babin,B.J.,Carr,J.C.,and Griffin,M. (2010). *Bussiness Research Methods*. McMillan Publishers.