



PROJECT SCOPE MANAGEMENT AND PERFORMANCE OF REAL ESTATE DEVELOPERS' PROJECTS IN MACHAKOS COUNTY, KENYA

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ABSTRACT

The estimated housing demand in urban areas is approximately 150,000 units per year yet the current supply is about 30,000 units. According to KNBS (2014), the sector recorded a growth of 4.8 per cent in 2012 while cement consumption rose by 1.7 per cent (from 3,870.9 thousand tonnes in 2011 to 3,937.3 thousand tonnes in 2012). This study therefore sought to establish the effect of project scope management on performance of real estate developers' projects in Machakos County, Kenya. Specifically, the study sought to assess the effect of scope definition on performance of real estate developers' projects in Machakos County, Kenya and to examine the effect of scope change management on performance of real estate developers' projects in Machakos County, Kenya. The study was based on two theories namely; Resource Based View Theory (RBV) and theory of constraints. This study used a descriptive research design. The target population comprised of 414 employees working in 46 commercial real estate companies that are engaged in Commercial Real Estates development in Machakos County and regulated by the National Construction Authority. The study's sample size was reached at using Krejcie and Morgan sample size determination formula. The 199 respondents were chosen with the help of stratified random sampling technique. This study used structured questionnaires to collect primary data. The collected data was analysed through use of descriptive and inferential statistics with the help of Statistical Package for Social Sciences (SPSS version 25). Descriptive statistics such as frequency distribution, mean (measure of dispersion), standard deviation, and percentages were used. Inferential data analysis was conducted by use of Pearson correlation coefficient, and multiple regression analysis. The study results were presented through use of tables and figures. The study concluded that there is a significant direct correlation between scope definition and performance of real estate developers' projects in Machakos County, Kenya. The study found that scope change management had a positive and significant relationship with project performance. The study therefore concludes that applying the assessment tool in the course of a project life cycle can assist a project management team to determine whether or not change dynamics are being adequately addressed. To deal with the challenge of changing scope, project managers should develop a clear schedule, determine project goals, ensure everyone is in the same page, make realistic assumptions regarding availability of resources, and deadlines to achieve quality results

Key Words: Scope Definition, Scope Change Management, Performance Of Real Estate Developers' Projects, Project Scope Management

Background of the Study

This chapter introduces the thesis by looking at the study's context, issue statement, goals, and research concerns. It also contains a summary of the study's reasoning and scope. The success of real estate developers' projects is crucial to the growth and progress of every economy. They also play an important role in the economy by generating employment and opening up rural areas, making it easier to move farm produce and people (World Bank, 2020). Real estate developers' projects are typically major infrastructural projects that need a lot of time and resources to be successful. Real estate developers' projects contribute to the economy both directly and indirectly. Therefore, it is very unfortunate where such projects are not actualized effectively. This issue is even critical in third world countries characterized with deteriorated rural road network (Mohammed, 2020).

Soderland (2019) noticed that despite the fact that real estate developers' projects were performing generally well in South Africa, majority of the projects were undertaken by constructors from China and Britain. He contended that, local constructors had a bad record of completing projects after a very long time with inflated budgets that surpass the initial budget. Otim and Alinaitwe (2018) noticed that majority of road projects under construction in Uganda experienced scope change ecological issues and inadequate funding leading to abandonment. Poor project scope management was identified as the main reason for unsuccessful completion of these projects.

Assaf and Hejji (2019) established that the main reasons of project completion and delays in Tanzania, Uganda, Nigeria, South Africa and Mozambique as; changing project scope, project design, late disbursement of funds to constructors and payment issues to land owners where the road passes through peoples' lands. Seboru (2019) noticed that construction projects in Kenya always take more time to complete than the planned timeline. This delay causes loss of substantial amount of the money in the economy. Muturi and Oguya (2020) study on determinants of real estate developers' projects in Kenya found that contractor's competency, finances and conflicts affect Successful rollout of real estate developers' projects

Project scope refers to the part of project planning that involves determining and documenting a list of specific project goals and objectives, deliverables, tasks, costs, and deadlines (Atkinson, 2014). The documentation of a project scope can likewise be alluded to as scope statement, terms of reference or statement of work (SOW) which explains the limits of the projects and defines the role of every team member and sets up procedures on how to verify and approve the completed project. The documentation enables the project stakeholders and team members to stay focused on the project.

In Europe, Mabin and Baldrestone (2021) demonstrated that innovative road construction methods can help implement projects effectively and within stipulated time. Lu Shan (2019) expressed that Chinese construction companies utilize appropriate planning and control strategies, appropriate collaboration between technical designing team and contractors and hire professionals which enable them to undertake the projects within scheduled timeline and planned expense. KPMG-PMI (2020) report showed that 25% of progressing road projects in India were deferred because of poor planning deficient utilization of present day innovation. Moreover, unskilled labor force and insufficiency of construction materials and equipment resulted to road project deferments.

Africa is poorly serviced with rural roads. The significant difference is partly due to diverse levels of development in general, but it also reflects the basic geographic fact that Africa is a very large continent, often with vast distances between the main population and production centers. The large size of the continent and the wide spread of population only raises the significance of transport in almost all development decisions. This lack of adequate transportation impacts the level of business activity by lowering productivity and limiting the entry of new enterprises.

According to Khakina (2018) the success of a project is defined by three transaction metrics: time, budget and quality. Success will not only focus on completion but completion within the time, budget and quality constrains. Most projects in Kenya face various challenges including delays in completion, upward revaluation of project costs, poor quality workmanships and premature termination of the projects. The numerous incidents of reported delays and increase in project costs for major projects in Kenya is a major concern to researchers, clients, project sponsors, contractors and other stakeholders and cast a major doubt whether the government is able to guarantee value for money to the taxpayers (Khakina, 2018).

In developing countries like Kenya, construction projects are the life line of construction plan or programs. Failure of projects irrespective of the sector, whether public or private contribute to irreparable loss to society and to the economy as whole (Murgor, 2018). Delays and non-completion of projects from initial cost plan has been prevalent on construction sites. However, little or no efforts have been made to curtail the phenomenon. There have been numerous documented studies on failed or stalled construction projects (Pinto & Covin, 2016). Completion of projects within schedule is a major contribution towards the competitive edge in organizations. This is based on the realization that the achievement of the targeted objectives is determined by the ability to deliver the targeted output within the stipulated time.

Statement of the Problem

The estimated housing demand in urban areas is approximately 150,000 units per year yet the current supply is about 30,000 units (HASS, 2018). According to KNBS (2014), the sector recorded a growth of 4.8 per cent in 2012 while cement consumption rose by 1.7 per cent (from 3,870.9 thousand tonnes in 2011 to 3,937.3 thousand tonnes in 2012). The total value of new private and public buildings completed went up by 9.6 per cent from KSh 46.4 billion in 2011 to KSh 50.8 billion in 2012. According to KNBS, real estates have contributed positively towards the growth of the economy. KNBS report 2016 show an increase in the GDP from 5.8% in 2015 to 5.9% in first quarter of 2016 (Central bank of Kenya, 2016). This has caused an increase in the prices of houses in the subsequent years.

The real estate and construction industry in Machakos has experienced exponential growth as private developers increase investments in the real estate and construction industry in response to the huge demand for housing, office space and recreational facilities caused by the rapid growth in the Country's population, increased foreign direct investment and trade in the region. According to Laird (2018), the shortage for low cost housing is particularly acute in urban areas since only an estimated 6,000 units (20%) of the total number of houses built, fall under this category. This brings about investment opportunities in the construction of prefabricated low-cost housing, residential, commercial and industrial buildings. However, despite this huge investment opportunity in Machakos County, there is high rate of project failure (Murgor, 2018). Delays and non-completion of projects from initial cost plan has been prevalent on construction sites. However, little or no efforts have been made to curtail the phenomenon. It is therefore essential to establish the influence of project scope management and performance of real estate developers' projects in Machakos County, Kenya

There are several studies that have been conducted on project scope management on project performance. For example, the study by Kiprop, Nzulwa and Kwena (2017) focused on the challenges facing property development projects in Kenya, cost management strategies specifically resource planning, cost estimation, cost budgeting and cost control were not incorporated in the analysis. The study did not show the influence of project scope management this presents a conceptual gap. Moreover, a study by Sihoho (2019) investigated the influence of donor reporting demands on the successful implementation of humanitarian health programs but failed to consider the long term effect of scope management on project sustainability. On the other hand, Potts and Ankrah (2018) focused on cost management of

construction projects; Gichuki (2018) explored the effect of scope management strategies in the financial sector. These studies were conducted in different organizations and therefore forming the contextual and knowledge gap. This study therefore sought to fill these research gaps by establishing the influence of project scope management on performance of real estate developers' projects in Machakos County, Kenya.

General Objective

The general objective of the study was to establish the effect of project scope management on performance of real estate developers' projects in Machakos County, Kenya.

Specific Objectives

This study was guided by the following specific objectives:

- i. To determine the effect of scope definition on performance of real estate developers' projects in Machakos County, Kenya
- ii. To examine the effect of scope change management on performance of real estate developers' projects in Machakos County, Kenya

Theoretical Review

Resource Based View Theory (RBV)

This theory was initiated by Wernerfelt (1984) and Rumelt (1984). The theory lies in the applications of a bundle of valuable tangible and intangible resources at the firm's disposal that gives the firm competitive advantage over other firms. It explains the role of valuable tangible and intangible resources that enables the firm to complete its projects within budgeted cost, time schedule and meet desired quality (Barney, 1986). The RBV theory emphasizes that a firm with adequate resources is likely to have competitive advantage and superior performance over other firms. It argues that every project manager wants to continuously improve on the performance of projects undertaken. However these firms experience limited resources and time available to invest in making the changes that are needed to improve the firm performance (William & Dettmer, 2010).

Resources at the disposal of the firm can either be tangible such as machinery and equipment or intangible such as trade mark, intellectual property and processes. Adequate use of modern equipment such as excavators, tippers, rollers and graders can make a firm complete an infrastructure project within the stipulated time and also reduce the cost overruns (Gimeno, 2011). Robert and Bradley (2013) asserted that for a firm to attain superior performance it must first look at what resources it possesses; then it assesses the value of these resources and how best they can be used so as to give a firm competitive advantage. Robert and Bradley further argued that resources such as: capital, equipment, skills of employees and patents can enable a firm to implement its projects in an efficient manner. Also such a firm can easily deliver projects that meet customer standards. Barney and Smith (2010) used this theory in their study on comparing theory of constraints with MRP and JIT. They noted that for a project to be undertaken effectively and efficiently basic resources such as physical, human and technological resources need to be present. Otherwise it will quite difficult to undertake mega infrastructure projects without such resources.

Heinrich and Bofinger (2009) study on factors that influence proper management of a project also used the theory. Bofinger found out that the main source of comparative advantage is putting in place a team of resources to perform various project activities. The theory has also been used by Crivelli and Gupta (2013) study on Public-Private Initiatives in Resource Mobilization and Might and Fisher, (2011) study on Causes and Delays in Malaysian construction Industry. The firm's resources enable it to have superior performance over other firms (Heinrich & Bofinger, 2009). They further argued that a firm that nurtures and develops its resources is able to sustain the firm's competitive advantage. Michael also noted that

Porter's diamond model agrees with the resource based view theory in the sense that the only way to stay competitive is through upgrading the resource pool. Porter also considers innovation as a force that leads to the creation of competitive advantage (CA). It is therefore crucial to the management of a firm to be committed to the necessary investments in the acquisition of better technological innovations applicable in the implementation of road projects. Briceno, Karlis and Vivien (2010) in support of this theory said that the issue of firm competence has been central in strategy research for decades and it encompasses most other questions which have been raised in the field as for instance; why firms differ, how they behave, how they choose strategies and how they are managed. Peteraf and Berney (2012) further argued that the RBV theory create inter-firm competition based on their resources.

Project performance is influenced by the resources at a firm's disposal. This theory is therefore important in this study because it expresses the necessary financial, physical and technological resources required to enhance the performance of road projects. The project management context fits into this theory as envisaged by Rumelt (1984) and Wernerfelt (1984), the initiators of RBV theory. Since the intention of any construction firm is to have a successful project, performance becomes a critical issue. In this context therefore, the RBV theory was relevant to the study because it outlines the resources required by local firms to successfully implemented projects.

Project Management Competency Theory

This theory was established by McClelland and McBer in the 1980. The authors defined competency as the underlying characteristics of an individual that leads to attaining superior performance in a job or a situation. The project management competency development framework defines competency as a cluster of related skills, knowledge, attitudes, and other personal traits that influences the way an individual undertakes a given task. Competency correlates with project performance and can be improved by means of training and development of manpower (PMI, 2011). The theory explains the role of project management competencies, monitoring and evaluation of development projects and effects of group dynamics in the performance of infrastructure projects. Gladder (2010) noted that technical project managers should be able to apply knowledge, skills, tools and techniques 30 effectively so as to deliver as expected and be able to achieve the project's goals and optimize the integrated cost, schedule and effort. The study found out that two of the most influential standards; the PMBOK address only the knowledge aspect of competence while a third, Australian's National competency standards focuses on demonstrable performance. The study also found out that some project managers do not have the required competence skills to implement the road infrastructure projects.

Garish and Huemann (2014) suggests that project managers should be able to select a wide range of management practices and tools that will improve the performance of infrastructure projects. The study further noted that highly skilled project managers can effectively apply different strategies to different projects to optimize project performance (Edum-Fotwe, 2011). Organizations are therefore increasingly managing infrastructure projects in a structured manner to ensure work pursued is consistent and is undertaken by workforce with the required competencies. The competencies of every team member should be assessed and included into a competency profile database which should be updated and reviewed frequently (Kometa, 2013).

Project managers in today's road construction industry are faced with a situation whereby the fundamental roles and functions they perform are witnessing a gradual shift in focus. To maintain their professional competency standards, 31 project managers in this industry need to adapt to the changing industry environment by relying on knowledge and skills acquired through training and experience. The extent to which such training enables project managers to effectively adapt to changing demands have considerable relevance for the training of

future project managers (Francist & Ronald, 2010). According to this theory, application of traditional management approaches to road infrastructure projects is counter-productive.

Conceptual Framework

Mugenda and Mugenda (2018) explained that a conceptual framework is a hypothesized model that identifies the model under examination showing how the dependent variable and independent variables are related.

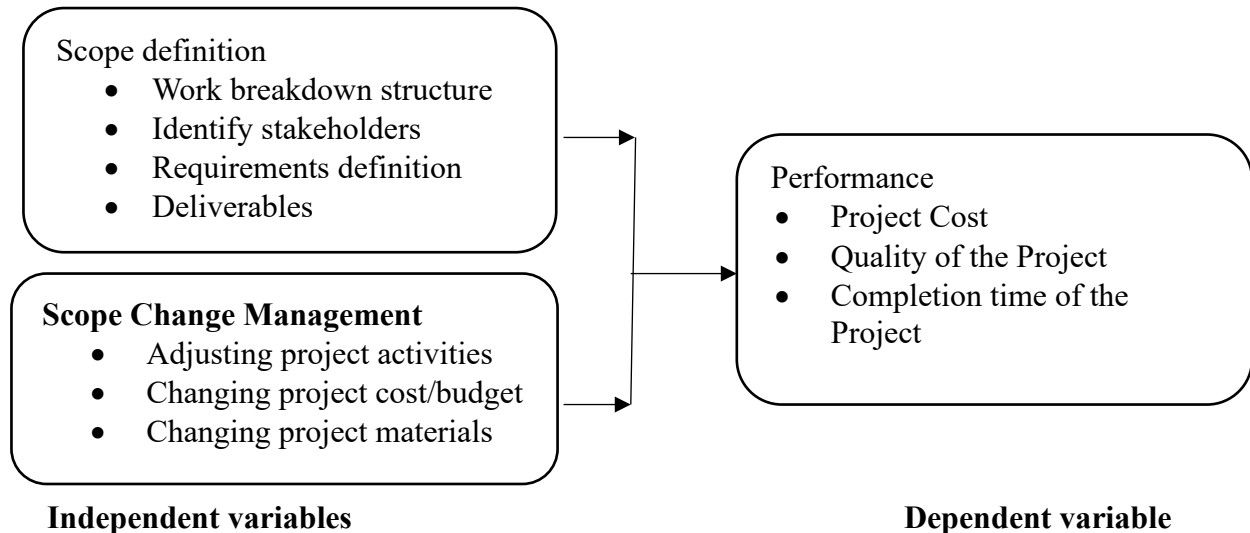


Figure 1: Conceptual Framework

Scope Definition

Project scope definition is a project phase where a project is defined and prepared for implementation. It assists to make decisions on whether to continue with the project or not. An unfinished scope definition in the initial phases of a project life cycle is a typical cause of challenges in construction project implementation (Fageha & Aibinu, 2021). A well-defined project scope facilitates successful completion of projects within scheduled time, cost estimates and quality measures. Scope definition is conducted during pre-planning stage. This period needs allocation of significant amount of time, funds and human resources. This effort is confirmed to be a suitable way of improving project success and notably reducing risks that might come up during project implementation (Morris, 2019).

Work Breakdown Structure. This helps to improve costs, timeline and resources approximations. A WBS additionally makes it simpler to allocate clear obligation to each group of responsibilities which is essential in enabling the project organization to have control of the project (Antvik & Sjöholm, 2017). Scope definition can likewise help with overseeing public delivery timeline anticipations and significantly influence project success. Project definition helps to identify any risk that may arise and suitable actions taken on time to minimize chances of occurring or reducing the impact of risk if it happens. Project scope definition is hence perceived as a risk mitigating method (Weijde, 2018).

Scope Change Management

Kerzner (2018) expressed that scope changes can happen during any project life cycle stage. Scope changes happen since naturally people are unable to describe project plans to be implemented at the initial stages of project planning. As the project advances, project teams acquire more information leading to scope changes. Jones, Snyder, Stackpole and Lambert (2021) urged that scope change usually happens in almost all construction projects. This means that it is generally acceptable and ethical to make changes during project life cycle.

Harrington and McNellis (2016) asserted that all project team members affected by the project deliverables ought to be consulted when evaluating the scope and also consulted when making any changes in the project. Changes on development projects like roads. Changes on development projects present intense and dubious issues. Change is among the main reasons for project delay, budget overrun which negatively affect project implementation. Project change is the key cause of disagreements between project team members usually leading to conflicts.

Empirical Review

Scope Definition and Project Performance

Fageha and Aibinu (2021) sought to determine how project scope management challenges influences project deliverables in Saudi Arabia. The research was carried out using a mixed method. Data was collected using questionnaires. Findings revealed that the project team leaders developed a well-defined project plan that reflected stakeholder anticipations and acknowledged their opinions without interfering with the objectives of the project which resulted in project success.

Banda and Pretorius (2016) studied the nexus between scope definition and performance of development projects in Malawi. The study employed mixed methods. 12 projects were sampled using purposive sampling. Interview schedules and questionnaires were used to obtain data. Results showed that a significant correlation between scope definition and Successful rollout of rural roads construction projects in Malawi. Well-defined projects recorded good performance and poorly-defined projects showed poor performance.

Uwiragiye (2018) evaluated the effect of scope creeping of water projects in Rwanda. Descriptive survey design was employed. The targeted populace was 110 project team members. Solven's formula was used to obtain a sample 86 respondents. Questionnaires and interviews were employed to enhance data collection. Study results showed that proper definition of project resources may help to save costs and complete projects within set time and undefined resources affect project success since it's hard to plan project activities without adequate resources.

Otieno (2019) investigated relationship between project scope management challenges and implementation of projects in public secondary schools in Kisumu County, Kenya. The study employed descriptive survey research design. Both qualitative and quantitative research approaches were used. The target population was 189 and a sample size of 128 respondents was drawn. The study used questionnaires and interviews guides to collect data. The findings revealed that project initiation, project scope definition, scope verification and project change control influenced the implementation of Economic Stimulus Projects in public secondary schools. Significant relationship was established between project cope definition, scope verification and project change control and implementation of Economic Stimulus Projects.

Scope Change Management and Project Performance

Raza (2019) studied the impact of project scope change on the success of the projects in Islamabad. Descriptive research design was employed in the study. The study targeted 50 contractors in the building industry. Data was collected using questionnaires. Findings revealed that during project implementation, project managers had to make tough decisions on project scope to achieve project objectives. Findings also revealed that project changes causes changes in project costs, timeline and quality and changing project scope without changing the budget and timeline increase the dangers of constraining resources.

Ifeanyi (2019) sought to determine project scope change management in building projects in Nigeria. Survey method was adopted. The study targeted 52 building projects and census was applied to sample all the 52 contractors. Questionnaires were administered to collect data. The result showed that the most notable scope changes happen in the implementation stage of

the project lifecycle. Mbabazi (2019) studied impact of Change Management on the Performance of Road Construction Projects in Rwanda. A descriptive survey design was adopted based on a census sampling. The target population was 90 employees from Horizon Construction Company Limited and a sample size of 90 was drawn. Data was collected using structured questionnaires and document reviews. The findings indicate that there was a significant impact of change management practices on the performance construction projects in Rwanda.

Adamu (2018) sought to determine the effect of scope changes on project deliverables in the construction management field in Ethiopia. The study targeted 10 professionals in the construction industry. Questionnaires were used for data collection. Findings revealed that change in scope of a project occurs for various reasons. Once the changes are made, it is important to assess changes in the budget plan, resources plan, and the project timeline. Nibyiza (2019) study aimed at finding out effect of project scope change on project success in Rwanda. The study targeted 30 project members. Interview schedules and questionnaires were used to obtain primary data. Findings revealed that changes in project activities provoke the changes in project cost, time and quality of the product/service of the project. Increase of project budget and time gives project managers a chance to deliver quality projects using quality materials and improved technology leading to stakeholder satisfaction

Kebede (2019) assessed determinants of project scope performance of condominium projects in Ethiopia. The researcher employed descriptive research design. The targeted populace was 84. A questionnaire was the instrument used for data collection. Results revealed that change in project schedule/time cost and quality are the major challenges related to project scope management challenges processes.

RESEARCH METHODOLOGY

This study used a descriptive research design. Mugenda and Mugenda (2018) explained the descriptive design is a process of collecting data in order to test a hypothesis or to answer the questions of the current status of the subject under study. The unit of analysis is what is being targeted in the research. As indicated by national construction authority in their list of registered building construction companies and specifically the ones who deal with Commercial Real Estates within Machakos County, the study targeted 46 companies. Geographically located in Machakos, these 46 commercial real estate companies are engaged in Commercial Real Estates development and regulated by the National Construction Authority. This study targeted 1 Top manager, 3 Middle Manager and 5 Junior Staff from each company; a total of 414. The sampling frame of the study was the 414 respondents from the commercial real estate companies.

The study's sample size was reached at using Krejcie and Morgan sample size determination formula (Russell, 2013). Using this formula a representative sample of 199 was obtained.

The 199 respondents were chosen with the help of stratified random sampling technique. Stratified random sampling technique was used since the population of interest was not homogeneous and could be sub-divided into groups or strata to obtain a representative sample. This sampling technique divides the population into groups or strata. The strata are reached upon on the basis of the shared traits (Singpurwalla, 2017). In this study the strata comprised of the 46 commercial real estate companies in Machakos County. One of the advantages of stratified random sampling is that it allows for each of the strata to be well represented when the sample is chosen (Bryman & Cramer, 2016). The study then used simple random sampling to select respondents from each group. Primary data was used in this study. The study's primary data was obtained using semi-structured questionnaires.

The pretesting sample was made of 20 respondents, representing 10% of the sample size. The results from the pilot test were not used in the main study. In addition, the respondents used in the pilot test were excluded from the final study. Quantitative and qualitative data was

generated from the closed-ended and open-ended questions, respectively. Qualitative data was analyzed on thematic basis and the findings provided in a narrative form. Descriptive statistics such as frequency distribution, mean (measure of dispersion), standard deviation, and percentages were used. Descriptive statistics therefore enables researchers to present the data in a more meaningful way, which allows simpler and easier interpretation (Singpurwalla, 2017). Inferential data analysis was conducted by use of Pearson correlation coefficient, and multiple regression analysis.

RESEARCH FINDINGS, ANALYSIS AND DISCUSSION

Descriptive Statistics

In this section the descriptive statistics for the study variables namely; project performance, scope planning, scope definition, scope control and scope change management are reported. The respondents were obliged to rate their level of agreements or disagreements with the statements in relations to study variables on a scale of 1 to 5. Where 5 represents “strongly agree” and 1 “strongly disagree”. Mean and standard deviation were then computed for each variable.

Scope Definition and Project Performance

The first objective of the study was to determine the effect of scope definition on performance of real estate developers' projects in Machakos County, Kenya. Table 4.4 indicates that 90.9% of the respondents agreed that definition of project scope helped in identifying major project work components, deliverables, and requirements, 79.3% agreed that a detailed scope statement was availed to all the project stakeholders before the implementation of the project and 85.4% agreed that the project stakeholders were well defined. On the statement whether project requirements are well defined; 77% of the respondents agreed with the statement. Finally 70.9% of the respondents agreed that creating Work Breakdown Structure provided the necessary framework for detailed cost estimating and control, along with providing guidance for schedule development and control. The aggregate mean score for this section was 4.06 implying that majority of the respondents agreed on the statements that scope definition influenced project performance to a large extent; however, the answers were varied as shown by the standard deviation of 0.933.

Results are consistent with those of Banda and Pretorius (2016) who studied the nexus between scope definition and performance of development projects in Malawi and showed that a significant correlation between scope definition and Successful rollout of rural roads construction projects in Malawi. Well-defined projects recorded good performance and poorly-defined projects showed poor performance. Additionally, Uwiragiye (2018) evaluated the effect of scope creeping of water projects in Rwanda. Descriptive survey design was employed and showed that proper definition of project resources may help to save costs and complete projects within set time and undefined resources affect project success since it's hard to plan project activities without adequate resources.

Table 1: Responses on Scope Definition

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree	Mean	Std. Deviation
Definition of project scope helps in identifying major project work components, deliverables, and requirements	1.2%	1.8%	6.1%	47.9%	43.0%	4.3	0.767
A detailed scope statement is availed to all the project stakeholders before the implementation of the project	1.2%	3.0%	16.4%	44.8%	34.5%	4.08	0.858
The project stakeholders were well defined	3.0%	1.8%	9.7%	44.2%	41.2%	4.19	0.908
Project requirements are well defined	4.8%	2.4%	15.8%	45.5%	31.5%	3.96	1.005
Creating Work Breakdown Structure provides the necessary framework for detailed cost estimating and control, along with providing guidance for schedule development and control.	4.2%	13.9%	10.9%	43.6%	27.3%	3.76	1.127
Aggregate Score	2.9%	4.6%	11.8%	45.2%	35.5%	4.06	0.933

Scope Change Management and Project Performance

The second and last objective of the study was to examine the effect of scope change management on performance of real estate developers' projects in Machakos County, Kenya. Table 4.2 shows that 79.4% of the respondents agreed that change in project activities resulted to change in Project schedule/time, 85.5% agreed that change in project activities resulted to change in Project cost while 84.3% agreed that change in project activities resulted to change in Project outcome quality and 68.5% agreed that change in project cost affected the project service/product quality. Finally, 71.5% of the respondents agreed that change in project time/schedule affected the service/product quality. The aggregate mean score for this section was 4.06 with a standard deviation of 0.915, which implies that scope change management influences project performance to a large extent.

Results are in tandem with those of Raza (2019) who studied the impact of project scope change on the success of the projects in Islamabad and revealed that project changes cause's changes in project costs, timeline and quality and changing project scope without changing the budget and timeline increase the dangers of constraining resources. Similarly, Mbabazi (2019) who studied impact of Change Management on the Performance of Road Construction Projects in Rwanda found out that there was a significant impact of change management practices on the performance construction projects in Rwanda.

Table 2: Responses on Scope Change Management

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree	Mean	Std. Deviation
Change in project activities results to change in Project schedule/time	3.0%	4.8%	12.7%	40.6%	38.8%	4.07	0.991
Change in project activities results to change in Project cost	1.8%	6.1%	6.7%	40.0%	45.5%	4.21	0.942
Change in project activities results to change in Project outcome quality	0.0%	3.0%	12.7%	45.5%	38.8%	4.20	0.775
Change in project cost affect the project service/product quality	0.0%	8.5%	23.0%	38.2%	30.3%	3.90	0.932
change in project time/schedule affect the service/product quality	1.2%	6.1%	21.2%	40.6%	30.9%	3.94	0.935
Aggregate Score	1.2%	5.7%	15.3%	41.0%	36.9%	4.06	0.915

Project Performance

The study sought to determine the level of agreement in regards to performance of real estate developers' projects in Machakos County, Kenya. The study findings in Table 4.7 indicates that 69.7% of the respondents agreed that projects achieved the desired outcome, 70.9% agreed that projects met the need of beneficiaries while 74.5% agreed that projects satisfied quality expectations and 77.6% agreed that projects met stakeholders satisfaction. The mean score for responses for this section was 3.99 which indicates that majority of the respondents agreed with the statements in relation to projects performance. This could further imply that the organizations are embracing project scope management which enhances performance.

The study findings are in support of Otieno (2019) investigated relationship between project scope management challenges and implementation of projects in public secondary schools in Kisumu County, Kenya. The findings revealed that project initiation, project scope definition, scope verification and project change control influenced the implementation of Economic Stimulus Projects in public secondary schools. Significant relationship was established between project scope definition, scope verification and project change control and implementation of Economic Stimulus Projects.

Table 3: Responses on Project Performance

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree	Mean	Std. Deviation
Achieve the desired outcome	1.2%	6.7%	22.4%	33.9%	35.8%	3.96	0.981
Meet the need of beneficiaries	1.8%	4.8%	22.4%	33.3%	37.6%	4.00	0.982
Satisfy quality expectations	1.8%	4.8%	18.8%	41.2%	33.3%	3.99	0.94
Projects meet stakeholder satisfaction	1.2%	1.8%	19.4%	49.1%	28.5%	4.02	0.815
Aggregate Score	1.5%	4.5%	20.8%	39.4%	33.8%	3.99	0.930

Correlations Analysis

To establish whether there is a linear relationship between the study variables, the study adopted the Pearson product of moment's correlation coefficients as presented in Table 4.8 below. Results indicated that there was a positive and significant relationship between project

performance and all the independent variables. This reveals that any positive change in scope planning, scope definition, scope control and scope change management would lead to improved project performance. The study findings are in support of Otieno (2019) who revealed that project scope definition influenced the implementation of Economic Stimulus Projects in public secondary schools. Significant relationship was established between project scope definition, scope verification and project change control and implementation of Economic Stimulus Projects.

The study findings also indicates that there was a positive and significant ($r=0.765$, $p>0.000$) relationship between scope definition and project performance. The findings reveal that any positive change in project scope definition leads to improved performance. Results are consistent with those of Banda and Pretorius (2016) who studied the nexus between scope definition and performance of development projects in Malawi and showed that a significant correlation between scope definition and Successful rollout of rural roads construction projects in Malawi. Well-defined projects recorded good performance and poorly-defined projects showed poor performance

Finally, the study findings indicated that there existed a positive and significant ($r=0.732$, $p>0.000$) association between project performance and scope change management. The findings imply that any positive change in scope change management led to increased performance of real estate developers' projects. Results are in tandem with those of Raza (2019) who studied the impact of project scope change on the success of the projects in Islamabad and revealed that project changes cause's changes in project costs, timeline and quality and changing project scope without changing the budget and timeline increase the dangers of constraining resources. Similarly, Mbabazi (2019) who studied impact of Change Management on the Performance of Road Construction Projects in Rwanda found out that there was a significant impact of change management practices on the performance construction projects in Rwanda.

Table 4: Correlation Analysis

		Project performance	Scope definition	Scope change Mgt
Project performance	Pearson Correlation	1		
	Sig. (2-tailed)			
Scope definition	Pearson Correlation	.765**	1	
	Sig. (2-tailed)	0.000		
	N	165		
Scope change Mgt	Pearson Correlation	.732**	.700**	1
	Sig. (2-tailed)	0.000	0.000	
	N	165	165	

Regression Analysis

In order to ascertain the statistical significance of the predictor variables on the dependent variable (project performance) regression model analysis was employed. The results presented in the Table 5 below indicate that the goodness of fit for the regression of independent variables and project performance was satisfactory. An R squared of 0.686 indicates that 68.6% of the variations in performance of performance of real estate developers' projects are jointly accounted for by the variations in scope definition as well as scope change management. From the model the adjusted R^2 was 0.678 which indicates that scope definition and scope change management explained 67.8% of variations in project performance. The correlation coefficient of 82.8% indicated that the combined effect of the predictor variables has a strong and positive correlation with project performance. This also

meant that a change in the drivers of project performance (scope definition and scope change management) has a strong and a positive effect on project performance. The study findings are in support of Otieno (2019) who revealed that project initiation, project scope definition, scope verification and project change control influenced the implementation of Economic Stimulus Projects in public secondary schools. Significant relationship was established between project scope definition, scope verification and project change control and implementation of Economic Stimulus Projects.

Table 5: Regression Model Fitness

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.828a	0.686	0.678	0.40831

a Predictors: (Constant), Scope change Mgt and Scope definition

Table 6 below shows the results for the model and indicates that the overall model is significant, that is, scope definition and scope change management are good joint explanatory variables for project performance ($F = 176.72$, $p\text{-value}=0.000$). The findings imply that all the independent variables were statistically significant in explaining changes in project performance. This is demonstrated by a p value of 0.000 which is less than the acceptance critical value of 0.05. The study findings are in line with those of Nibyiza (2019) who revealed that changes in project activities provoke the changes in project cost, time and quality of the product/service of the project. Increase of project budget and time gives project managers a chance to deliver quality projects using quality materials and improved technology leading to stakeholder satisfaction

Table 6: Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	58.32	2	29.16	176.72	.000b
	Residual	26.674	162	0.165		
	Total	84.994	164			

a Dependent Variable: Project performance

b Predictors: (Constant), Scope change Mgt and Scope definition

Table 7 displays the regression coefficients of the independent variables.

The study findings indicated that scope definition had a positive and significant relationship with project performance ($\beta = 0.214$, $P = 0.034$). This implies that a unit increase in scope definition will result to improved performance of real estate developers' projects by 0.214 units. Results are consistent with those of Banda and Pretorius (2016) who studied the nexus between scope definition and performance of development projects in Malawi and showed that a significant correlation between scope definition and Successful rollout of rural roads construction projects in Malawi. Well-defined projects recorded good performance and poorly-defined projects showed poor performance

Finally, study findings indicated that scope change management had a positive and significant relationship with project performance ($\beta = 0.357$, $P = 0.000$). This implies that a unit increase in scope change management will result to improved performance of real estate developers' projects by 0.357 units. Results are in tandem with those of Raza (2019) who studied the impact of project scope change on the success of the projects in Islamabad and revealed that project changes cause's changes in project costs, timeline and quality and changing project scope without changing the budget and timeline increase the dangers of constraining resources. Similarly, Mbabazi (2019) who studied impact of Change Management on the Performance of Road Construction Projects in Rwanda found out that there was a significant impact of change management practices on the performance construction projects in Rwanda.

Table 7: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.056	0.224		0.25	0.803
	Scope definition	0.214	0.100	0.214	2.134	0.034
	Scope change Management	0.357	0.068	0.334	5.245	0.000

a Dependent Variable: Project performance

Conclusions

Based from the study; it was possible to conclude that there was increased and improved performance of real estate developer's projects due to effective project scope management adopted in the projects by organizations.

The study concluded that there is a significant direct correlation between scope definition and performance of real estate developers' projects in Machakos County, Kenya. Projects that are well-defined tended to exhibit good project performance indicators, while those that were poorly-defined tended to exhibit poor project performance indicators.

The study found that scope change management had a positive and significant relationship with project performance. The study therefore concludes that applying the assessment tool in the course of a project life cycle can assist a project management team to determine whether or not change dynamics are being adequately addressed. If not, appropriate strategies and corrective interventions will need to be implemented to ensure that the desired project outcome is achieved and is sustainable.

Recommendations

The project scope can be improved by setting clear goals and objectives. The goals should have the proposed idea and then define the objectives that will guide the achievement of the set goal. The challenge of unrealistic deadlines can be resolved by having an open communication with the clients to determine whether there are other factors that drive the project deadline. Also, through the adoption of impeccable planning, alternative analysis and proper communication on projects real-time progress to project participants, project managers can deal with project deadlines. To deal with the challenge of changing scope, project managers should develop a clear schedule, determine project goals, ensure everyone is on the same page, make realistic assumptions regarding availability of resources, and deadlines to achieve quality results

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