INFLUENCE OF WORK BREAKDOWN STRUCTURE TECHNIQUE ON PROJECT PERFORMANCE OF REGISTERED BUILDING WORKS CONTRACTORS IN NAKURU COUNTY, KENYA

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Abstract

Successful construction projects basically rely on successful practices of project management in regard to planning, implementation and cost, time and quality achievements. In reality, however, there are shortcomings as is manifest in schedule deviations and cost overruns. Therefore, the study sought to establish the influence of work breakdown structure on project performance of registered building works contractors in Nakuru County, Kenya. The study was anchored on the concept of theory of triple constraints. A descriptive survey research design was adopted in the study targeting 572 building works contractors engaged in building works in Nakuru County, Kenya. Nassiuma's formula was used to derive the sample size of 85 respondents. Questionnaire was used to collect the primary data desirable for the study. Piloting was carried out in Kisii County to determine the effectiveness of the research instruments. Qualitative data was analyzed by utilization of Statistical Package for Social Sciences (SPSS). Descriptive statistics involved the use of percentages, frequencies, measures of central tendencies (mean) and measures of dispersion (standard deviation). Inferential statistic involved the use of correlation analysis to establish the nature of the affiliation amongst variables at a generally accepted conventional significant level. The findings indicated that there exists a strong positive and significant relationship between work break down structure and project performance of registered building works contractors with a regression coefficient of 0.243.The researcher further recommended registered building works contractors, should use work breakdown structure in complex activity or design to breaks it down into smaller manageable sections that can be easily allocated and tracked to completion. The study suggested that further research should be carried out to assess the challenges facing building construction project in project scheduling.

1.0 Introduction

According to Alias (2014), successful construction projects basically rely on successful practices of project management in regard to planning, implementation and cost, time and quality achievements. In reality, however, there are shortcomings as is manifest in schedule deviations and cost overruns (Altoryman, 2014). Managing projects thoroughly requires a significant amount of time, skill, and finance. Project management has many attributes that make it interesting and demanding. Project managers focus to take an unclear event and make an absolute promise of delivery time to the owner as well as to the whole construction team and community (Blanc & Makovsek, 2016). Project management teams manage to do this within a specified time and a limited budget (Robinson & Richards, 2016). With this information, schedules help the project and business stay on time and under budget.

According to Thomas (2015) it is not uncommon for contractors to provide brief information on particulars of delay events making it difficult for the contract administrator to assess properly the effects of delay. Presumably the contract administrator might be expected to identify all relevant particulars required to decide on the extension of time and ask the contractor to supply them. Some contract forms require the contract administrator to consider the reasonableness of the contractor's endeavor to prevent or minimize delay and the effect of all other events even if not notified by the contractor when reviewing extension of time claims. As a result of these responsibilities, contract administrators with inadequate expertise on analysis of the program of works would not facilitate proper maintenance of program of works for effective delay assessment.

An empirical study carried out in Qatar, over 85% of construction projects were subject to time and cost overruns as a result of factors such as poor design and deficiencies in schedule and cost estimates (Jurf & Beheiry, 2012). According to Altoryman (2014), the Bahrain Construction industry also faced the same problems, with projects delayed due to critical factors such as inadequate planning and scheduling. In Oman, a number of construction projects were also found to be subject to schedule delays by more than 40% beyond their original schedule plans (Alnuaimi & Al Mohsin, 2013). These studies within the Gulf region indicated that insufficient planning and poor scheduling of project activities, ineffective design stages, improper coordination between project stakeholders and lack of knowledge about project requirements were amongst the most critical factors that caused schedule deviations and cost overruns.

Kaliba, Muya and Mumba (2009), conducted a study which aimed at determining the causes and effects of cost escalation and schedule delays in road construction projects in Zambia. Specifically, the study aimed to identify causes and effects of cost escalation and schedule delays in road construction projects. The study found out that bad or inclement weather due to heavy rains and floods, scope changes, environmental protection and mitigation costs, schedule delay, strikes, technical challenges, inflation and local government pressures were the major causes of cost escalation in Zambia's road construction projects. On the other hand, delayed payments, financial processes and difficulties on the part of contractors and clients, contract modification, economic problems, materials procurement, changes in drawings, staffing problems, equipment unavailability, poor super-vision, construction mistakes, poor coordination on site, changes in specifications and labour disputes and strikes were found to be the major causes of schedule delays in road construction projects.

According to Auma, (2014), in Kenya, there is evidence that the performance of the construction in Kenya is poor as time and cost performance of projects are to the extent that the majority of the projects initiated are likely to escalate with time, with a magnitude of over 50% and over 50% of the projects likely to escalate in cost with a magnitude of over 20%. Efficient management of the construction process to reduce in incidences

of claims and Contractors should prepare adequate plans and schedules which can also be used to minimize the effects of rain.

The Contractors registration establishment in Kenya has eight (8) distinct categories ranging from NCA1 (Highest) to NCA8 (Lowest) with most of the contractors doing more than one class of work. The main classes of work include Roads, Water, Building, Electrical and Mechanical. There are over 13,700 contractors registered by NCA with over 22,400 licenses in the above classes of work. Building works has the highest proportion of licensed contractors at 43% followed by Roads at 34%. Water and Electrical works have proportions of 10% and 9% respectively. Mechanical has a paltry 3%. The sector is dominated by small and medium enterprise contractors which account for a total of 79% with NCA5 11%, NCA6 22%, NCA7 31% and NCA8 15%. Large establishment contractors account for 21% with NCA4 13%, NCA3 4%, NCA2 2% and NCA1 3%. 71% of the construction firms are owned by men whilst 21% have joint ownership of both men and women. Women owned companies account for only 7%. (G.O.K., 2011)

Statement of the Problem

Governments and organizations usually embark on different projects with the aim of creating new service or improving the functional efficiency of the existing ones. According to Olateju (2011), such projects require appropriate skills and techniques that encompass good and sound skills to manage limited budgets, monitor shrinking schedules and unpredicted outcomes while at the same time dealing with people and organizational issues. Developmental facilities like housing, roads, and power plants are undertaken with strategic aims of developing infrastructure to facilitate economic growth. Studies conducted by Auma (2014) and Muchungu (2012) indicated that there is evidence that the performance of the construction in Kenya is poor as time and cost performance of projects are to the extent that the majority of the projects initiated are likely to escalate with time, with a magnitude of over 50% and over 50% of the projects likely to escalate in cost with a magnitude of over 20%. The studies also discovered that despite the high quality of training of consultants in the building industry in Kenya and regulation of the industry in major urban areas, construction projects do not always meet their goals. This is manifested by myriad projects that have cost overrun, delayed completion period and poor quality resulting to collapsed buildings in various parts of the country, high maintenance costs, dissatisfied clients and even buildings which are not functional which has remained as major challenge in the building construction industry in Kenya over time. It is against this background that this study sought to establish the influence of work breakdown structure technique on project performance of registered building works contractors in Nakuru County, Kenya.

Research Objective

To determine the influence of work breakdown structure on project performance of registered building works contractors in Nakuru County, Kenya.

Research Hypothesis

H_{01}: Work breakdown structure has no significant influence on project performance of registered building works contractors in Nakuru County, Kenya.

2.0 Literature Review

Theoretical Review

The study adopted theory of Triple Constraints. The theory of triple constraints is rooted in the theory of constraints (TOC), first formulated by Eliyahu Goldratt in 1984. According to Dobson (2004) as cited by Rugenyi and Bwisa, (2016), the theory of the triple constraint states that the triple constraint is a triangle of time, cost and performance that bounds the universe within which every project must be accomplished. According to Mokoena, Pretorius and Van Wayngaad (2013), Scope is a term used to describe qualitative and

quantitative components of a project to accomplish a project objective successfully. The scope of work is normally subdivided into smaller and manageable tasks using a technique of Work Breakdown Structure. Based on the practical experience of the author, it is deduced that the scope of work has three components; quality, specifications and standards to be achieved. The element of the triple constraint is defined as the actual duration estimated for execution and completion of the scope of work.

The Triple Constraint is a model that helps managers know what trade-offs are going to work and what impact they'll have on other aspects of the project. By using a project management dashboard, a manager can keep sight of the project as it progresses (Baratta, 2006, cited by Rugenyi 2016). This particular research agreed with the view of Dobson (2004) of the triple constraint of project scope, cost and time since, as Wayngaad, Pretorius, & Pretorius (2012) evaluated, there is a general agreement that they comprise the key variables of the triple constraint.
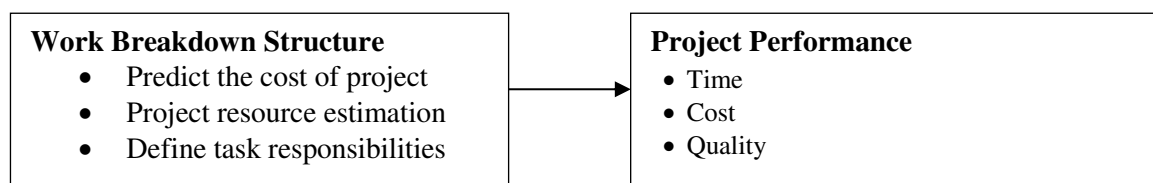
Conceptual Framework

Work Breakdown Structure	Project Performance
• Predict the cost of project • Project resource estimation • Define task responsibilities	• Time • Cost • Quality

Figure 1: Conceptual Framework

Work Breakdown Structure

Work breakdown structure (WBS) is a logical representation of all the work required to complete the project and offers an appropriate level of detailed analysis for planning and control (Malone, 2017). The WBS is a hierarchical deconstruction of the project into levels and sub-levels. It identifies work packages, which are the minimal elements of a WBS. Each WBS element has only one 'parent' and can be an activity, a more specific task, or even a part of the project output Hans (2016). A work package can be used as the basis for planning, budgeting and monitoring the progress of a package. Each work package is a set of basic activities with clearly identified interactions with other work packages, and can be uniquely identified by its inputs, outputs and internal activities. In organizations, it is desirable to define a work package in such a way that only one organizational unit is responsible for its implementation (Globerson, 2014).

Newitt (2005) as cited by Kibui (2016), defines work breakdown structure as a process of dividing the project task into smaller manageable components for planning purpose. He observed that a complex project is made manageable by first breaking it down into individual component in a hierarchical structure, known as the work breakdown structure (WBS). The WBS is the structure which defined task, facilitating resource allocation, assignment of responsibilities and measurement and control the project. The WBS is widely used by the project manager as a tool in the planning activity for the construction project.

Clearly, there are varying levels of detail into which a WBS can be broken down. The choice of the extent to which activities are broken down into smaller components is defined by the need to identify the list of clear outcomes for which the project participants can be held responsible and which can be associated with a final evaluation of the results (in terms of time, cost and quality). Each element in a WBS should be labelled with a unique identifier to allow for a better management report of costs and resources. The numbering should follow a coding scheme which clearly represents a hierarchical structure. This is illustrated in the examples above which show two ways of defining the content of a WBS (Malone, 2017). It is important to note that many projects actually mix the two approaches, combining phases and parts of the project outcomes at different levels of the WBS. This is a realistic response to the need to capture the complexity of a project at the

planning stage. In the example of the book, the writing stage one is divided in sublevels according to the structure of the book, and not on the basis of the writing stages, because that was the most logical way to approach the planning of the writing activity.

A well-done WBS should: Break the project down into smaller units with milestones to demonstrate progress, rather than working on the whole project in one step. Identify all necessary work for the project facilitate accurate cost, duration and resource estimates based on single work packages; Similarly, focus control on single work packages; Define clear responsibility at both an individual and organizational level, giving participants more autonomy and facilitating the integration of different workers; Ensure stakeholders and participants understand and buy into the project's scope and see how their activities or support contribute to its achievement; Support the identification of risk factors through breaking down the work (Horine, 2016).
Wysocki (2009) conducted a study whose focus was to examine the influence of work breakdown structure on project performance in India. The study results indicated that the adoption of the work breakdown structure by project managers was key to ensuring success in project implementation. The results showed that work breakdown structures provided a common framework for the natural development of the overall planning and control of a project and was the basis for dividing work into definable increments from which the Statement of Work was developed and technical, schedule cost, and labour hour reporting was also established.

Work breakdown structure (WBS) are information technology (IT) based solutions that enable a project manager to plan the project, manage the program costs, analyze the attendant risks, monitor and control the projects; nonetheless these systems require specialized knowledge of IT and that particular software whose acquisition is time consuming and may need to be improved as the project progresses through various phases. These knowledge requirements may reduce the opportunity for using this software if the project timelines, conditions and budget is limited. However, all projects that are carried out by various organizations in various fields require effective management which involves planning, staffing, monitoring, organizing, controlling and evaluating the project in all its various phases (Liberatore, 2015).

Hans (2016) on work breakdown structure: a tool for software project scope verification, software project scope verification is a very important process in project scope management, and it needs to be performed properly and thoroughly so as to avoid project rework and scope creep. Moreover, software scope verification is crucial in the process of delivering exactly what the customer requested and minimizing project scope changes. Well defined software scope eases the process of scope verification and contributes to project success. Furthermore, a deliverable oriented WBS provides a road map to a well-defined software scope of work. It is on the basis of this that this paper extends the use of deliverable oriented WBS to that of scope verification process. This paper argues that a deliverable oriented WBS is a tool for software scope verification.

Project Performance
Project performance is the measures of successful completion of projects as per the budgeted cost, time and quality. Monitoring and controlling the progress of project activities are important processes for managers, because it allows them to identify the limits which may compromise the project progress, comparing the current situation with elaborate planning and consequently assisting the managers to balance the project activities and put them according to the initial plan (Grigore, 2018).

Neamat (2017) conducted a study on factors affecting project performance in Kurdistan Region of Iraq. The study investigated for 63 factors of consultants and constructors' viewpoints. A total of 120 questionnaires were distributed to 25 owners, 35 consultants and 60 contractors. The findings revealed that project delay occurs due to shortage and closure of materials; the labors' availability in their work according to project duration; managing of projects and providing the skills of leadership; Alteration in prices of materials; highly

qualified and expert persons need. The findings also revealed that cash flow is significant since it measures the performance cost in every level of construction work. The researcher recommended that constructing organizations should reach their strong purpose in their production. Perfect methods and approaches must be recognized for controlling the impact of political and economic conditions.

Kihoro and Waiganjo (2015) conducted a study on factors affecting performance of projects in the construction industry in Kenya. This study focused on three aspects of performance namely timely completion, cost management as well as quality. A descriptive survey design was used. Quantitative techniques were used for data collection as well as data analysis. Data collection instruments that were used were close ended questionnaires. SPSS statistical tool was used for data analysis. The findings indicated that there was a strong positive relationship between project planning, stakeholder management, competence of project team and performance of the project. The study recommended the use of multi criteria analysis during planning as well proper relationship management among all the stakeholders in the project.

Melba, Dhanya and Ramasamy (2015) conducted a study on factors affecting the performance of the construction projects. The questionnaire was distributed in Chennai, Kerala and Bangalore industries. The questionnaires were distributed to contractors, owners and consultants. Mainly the regions covered were Chennai, Kerala and Bangalore. The analysis of the response was done using the SPSS software. From the findings the top five factors affecting the performance of projects were identified as increase in material cost, inadequate supply of labour, incorrect planning, wrong method of estimation, and poor financial control on site. They recommended that consultants should focus more on design cost by using multi criteria analysis and most economical criteria should be adopted so as to improve their performance and also to increase owner's satisfaction. Contractors should be aware of the business environment risks in their cost estimation. Enough contingency allowances should be there to guard against the increasing material prices.

Critique of the Existing Literature Relevant to the Study

WBS is a hierarchical structure that defines and organizes the total project scope based on deliverables, with each descending level in the hierarchy representing an increasingly detailed definition of the project work (PMI 2013). A study conducted by Wysocki (2009) in India showed that work breakdown structures provided a common framework for the natural development of the overall planning and control of a project and was the basis for dividing work into definable increments from which the Statement of Work was developed and technical, schedule cost, and labour hour reporting was also established. The study applied analysis method to analyze the data from the selected journal articles. However, content analysis can be extremely time consuming and is also subject to increased error, particularly when relational analysis is used to attain a higher level of interpretation. In this regards the present study used descriptive design in collection of primary data by use of questionnaires.

Research Gaps

Kihoro and Waiganjo (2015) carried out a study on factors affecting performance of projects in the construction industry in Kenya. This study focused on three aspects of performance namely timely completion, cost management as well as quality was used for data analysis. The findings indicated that there was a strong positive relationship between project planning, stakeholder management, competence of project team and performance of the project. The study recommended the use of multi criteria analysis during planning as well proper relationship management among all the stakeholders in the project. The study failed to address the influence of scheduling techniques on project performance a gap the current study will address. Melba, Dhanya and Ramasamy (2015) and Neamat (2017) conducted a study on factors affecting the performance of the construction projects. None of them focused on the influence scheduling techniques on project performance a gap the current study will fill.

3.0 Research Methodology

The study used descriptive survey research design. This type of design is appropriate for gathering information, summarizing, presenting and interpreting it for the purpose of clarification (Orodho & Njeru 2004) as cited by Muchelule (2018). According to Orodho (2005) as cited by Obwocha and Wanyoike (2019), descriptive survey research design can generate accurate information for large number of people over a wide area using a small sample. It is used to explore relationships between variables and allows generalizations across populations.

Target Population

The population of interest of this study comprised of 572 registered building works contractors based in Nakuru County, Kenya as of March 2019.

Table 1: Classification of Registered Building Works Contractors in Nakuru County, Kenya

Category	Capability (Kshs)	No. of Registered Contractors	Percentage (%)
NCA 1	Unlimited Amount	4	0.7
NCA 2	Up to 500,000.00	9	1.5
NCA 3	Up to 300,000.00	11	1.9
NCA 4	Up to 200,000.00	39	6.8
NCA 5	Up to 100,000.00	58	10
NCA 6	Up to 50,000.00	83	14.5
NCA 7	Up to 20,000.00	118	20.6
NCA 8	Up to 10,000.00	250	44
Total		**572**	**100**

Sample Size and Sampling Technique

A sample size is the number of units that are chosen from which data were gathered. The sample of the study was 85 Senior Managers and Construction Supervisors working on registered building works contractors in Nakuru County, Kenya.

Sampling Technique

Sampling technique is the process of selecting a sample size. Since the target population of this study is sufficiently large to warrant to use of random sampling methods. The study adopted Nassiuma's (2009) formula to calculate the size of the sample for registered building works contractors. The formula to scientifically derive the sample from the target population is illustrated below:

$$n = \frac{NC^2}{C^2 + (N-1)e^2}$$

Where,
   n = sample size
   N = size of target population
   C = coefficient of variation (0.5)
   e = error margin (0.05)

Substituting these values in the equation, estimated sample size (n) was:

n = 572(0.5)2 / (0.52+ (572-1)0.052)

n =85 respondents

Thus, based on this formula, the sample size for the study was 85 with a coefficient of variation of 0.5 and error margin of 0.05. In the second stage, the study used stratified random sampling in order to obtain the required sample size. The of contractors in each category was divided by the total number of contractors then multiplied by the sample size of 85 to get the sample size of registered building works contractors per each category. The sample size was then allocated into various categories according to their relative sizes in the target population as shown the sampling frame The names of registered building works contactors were put in pieces of paper for each category and the randomly picked.

Table 2: Sample Size for each category of Nakuru County's registered building works Contractors

	Number	**Percentage of Population (%)**	**Sample size for each category**
NCA 1	4	0.7	1
NCA 2	9	1.5	1
NCA 3	11	1.9	2
NCA 4	39	6.8	6
NCA 5	58	10	9
NCA 6	83	14.5	12
NCA 7	118	20.6	18
NCA 8	250	44	36
Total	**572**	**100**	85

Data Collection Instruments and Procedure

Questionnaire was used to collect the primary data desirable for the study. According to Jankowicz, (2015) questionnaires are any written tools that present respondents with questions or statements to which they are expected to give respond to in writings or selected from the answers given (Jankowicz, 2015). The questionnaire contained structured questions which were the questions that the researcher had given the respondents the choices of the answers that the respondents can answer. The design of the questionnaire was based on a multiple-item measurement scale. A five-point Likert Data was employed, using a list of response categories ranging from strongly agree to strongly disagree where 5=Strongly Agree, 4=Agree, 3=Neutral, 2=Disagree and 1=Strongly Disagree.

The researcher first sought permission from the Jomo Kenyatta University to go out and collect data in form of introduction letter. After being granted the permission, the researcher then applied for authorization from National Commission for Science, Technology and Innovations (NACOSTI) to collect data from registered building contractors. In both the introduction letter from the university and research permit from NACOSTI that clearly outlined the name of the researcher and the purpose for the study. With both the letter, the researcher proceeded to visit the registered building works contractors in Nakuru County, Kenya for introduction.

Pilot Test

The pilot study was carried in Kisii County to assess the effectiveness of the data collection instruments before venturing fully into data collection. This consisted 10 building contractors representing 10% of the sample size. Adjustments to the questions and other shortcomings found in the questions were corrected. The results from the pilot study were subjected to the Cronbach's reliability test for internal consistency. Cronbach's Alpha was calculated and used as a measure of internal consistency. It measures how well a set of variables or items measure a single one-dimensional aspect of an individual. The study opted for the content validity method of instrument validation. Content validity which is sometimes called logical or rational validity and face validity - which is personal judgment on the respondent's capability in understanding the concepts of the instrument and whether it addresses the research problem of the research instruments, was established in order to make sure that they reflect the concepts of project schedules in the construction industry. First, the researcher went through the instruments and compares them with the set objectives to ensure that they contain all the information to answer the set of questions and address the objectives. Secondly, expert judgment of the research supervisor was used to test the validity of the research instruments.

Data Analysis and Presentation

The data that was gathered in this study was quantitative in nature. Qualitative data was analysed by utilization of Statistical Package for Social Sciences (SPSS). Descriptive and inferential statistics was employed in the study. Descriptive statistics involved the use of percentages, frequencies, measures of central tendencies (mean) and measures of dispersion (standard deviation) to describe the basic characteristics of the population. Inferential statistics involved the use of Pearson's Product Moment correlation.

Multicollinearity Tests

The term Multicollinearity refers to a situation in which there is an exact (or nearly exact) linear relation among two or more of the input variables, (Ochenge, 2018). A multi-co linearity test was done to ensure that the accepted independent variables do not exhibit co linearity amongst themselves. Multi-co linearity is associated with Variance Inflation Factor (VIF) above 10 and tolerance below 0.1. Cohen, Cohen, West and Aiken (2013), provided that a VIF statistic above 10 is an indicator of multicollinearity and should be removed from regression models.

4.0 Research Findings and Discussion

Response Rate

The study issued 85 questionnaires to registered building works contractors out of which 70 successfully responded. Therefore, the total response rate was 82%. This implies that 82 percent response rate was very appropriate for data analysis.

Demographic Information

Table 3: Highest Education Qualification

Education Qualification	Frequency	Percentage
Diploma	32	46
Bachelor's Degree	28	40
Master's Degree	9	13
Post-Graduate diploma	1	1
Total	**70**	**100**

The study revealed that 46% of the respondents stated they had attained diploma education, 40% of the respondents stated they had attained bachelor's degree education, 13% of the respondents stated they had attained master's degree education, while1% of the respondents stated they had attained post-Graduate diploma education. This implies that majority 86% had a minimum of a diploma qualification suggesting that the respondents had adequate knowledge for providing sufficient information for the outcome of this study.

Table 4: Position within the Organization

Position	Frequency	Percentage
Construction Manager	21	30
Construction supervisor	49	70
Total	**70**	**100**

From table 4, the study revealed that 30% of the respondents were construction managers while 70% of the respondents were construction supervisors. This implies that most of the respondents were construction supervisors.

Descriptive Findings and Discussions

Table 5: Work Breakdown Structure and Project Performance

Statement	SD	D	N	A	SA	Mean	SD
	%	%	%	%	%		
Through work breakdown structures the organization is able to organizes the tasks and duties to specific project team members which ensures efficiency in delivery	5	11	4	37	43	3.79	1.29
Work breakdown structures ensures that the project progress is constantly monitored	2	3	10	50	35	3.91	1.05
In work breakdown structures activities are broken down into smaller tasks for easy management with focus on the final product	6	3	1	50	40	3.84	1.59
Through work breakdown structures the organization is in a capacity to accurately predict the cost, duration and resource estimates based on single work packages	5	5	10	45	35	3.22	1.49
Work breakdown structures helps organization to clearly define responsibility at both an individual and organizational level, giving participants more autonomy and facilitating the integration of different workers	4	5	6	55	30	3.77	1.47
Work breakdown structures ensure stakeholders and participants understand and buy into the project's scope and see how their activities or support contribute to its achievement	3	6	1	51	39	3.62	0.88

From Table 5, the findings of the study established that majority of the respondents (43%) strongly agreed that through work breakdown structures, the organization was able to organize the tasks and duties to specific project team members which ensured efficiency in delivery with a mean of 3.79 and   within a standard deviation of 1.29. This agrees with Globerson (2014), who stated that a work package can be used as the basis for planning, budgeting and monitoring the progress of a package. Each work package is a set of basic

activities with clearly identified interactions with other work packages, and can be uniquely identified by its inputs, outputs and internal activities. In organizations, it is desirable to define a work package in such a way that only one organizational unit is responsible for its implementation.

Further majority of the respondents (50%) agreed that work breakdown structure ensured that the project progress is constantly monitored with a mean of 3.91 and within a Standard deviation of 1.05. This agrees with a study by Horine (2016), that well-done WBS should break the project down into smaller units with milestones to demonstrate progress, rather than working on the whole project in one step, identify all necessary work for the project, facilitate accurate cost, duration and resource estimates based on single work packages. Majority respondents (50%) also agreed that in work breakdown structures activities are broken down into smaller tasks for easy management with focus on the final product with a mean of 3.84 and a standard deviation of 1.59. According to Horine (2016), project teams should focus control on single work packages; Define clear responsibility at both an individual and organizational level, giving participants more autonomy and facilitating the integration of different workers; Ensure stakeholders and participants understand and buy into the project's scope and see how their activities or support contribute to its achievement; Support the identification of risk factors through breaking down the work.

From the study, majority of the respondents (45%) agreed with a mean of 3.22 and a standard deviation of 1.49 that through work breakdown structures the organization was in a capacity to accurately predict the cost, duration and resource estimates based on single work packages. By allocating time and cost estimates to specific sections of the work breakdown structure, a project schedule and budget can be quickly developed. As the project is executed, specific sections of the work breakdown structure can be tracked to identify project cost performance and identify issues and problem areas in the project organization. A study by Malone (2017), reported that each element in a WBS should be labelled with a unique identifier to allow for a better management report of costs and resources. The numbering should follow a coding scheme which clearly represents a hierarchical structure. This is illustrated in the examples above which show two ways of defining the content of a WBS. It is important to note that many projects actually mix the two approaches, combining phases and parts of the project outcomes at different levels of the WBS. This is a realistic response to the need to capture the complexity of a project at the planning stage.

In addition majority of the respondents (55%) agreed that work breakdown structure helped organizations to clearly define responsibility at both an individual and organizational level, giving participants more autonomy and facilitating the integration of different workers with a mean of 3.77 and a standard deviation of 1.47. Work breakdown structure helps further identify individual tasks among those deliverables, which can be completed regardless of the completion of other tasks. It was established by Zwikael (2014), that project planning enables efficient allocation and use of available resources. Developing the work breakdown structure and cost breakdown structure and making the necessary adjustments along the way requires detailed planning to ensure a project is moving towards achievement of pre-set objectives. Successful projects seek to employ limited resources while maximizing output and effectiveness.

Furthermore, majority of the respondents (51%) that work breakdown structure, ensures stakeholders and participants understand and buy into the project's scope and see how their activities or support contribute to its achievement with a mean of 3.62 and a standard deviation of 0.88. The findings of the study are in line with Horine (2016) who found that work breakdown structure identify all necessary work for the project to facilitate accurate cost, duration and resource estimates based on single work packages; Similarly, the project focuses on control on single work packages; it define clear responsibility at both an individual and organizational level, giving participants more autonomy and facilitating the integration of different workers.

Project Performance of Registered Building Works Contractors

<div align="center">Table 6: Project Performance of Registered Building Works Contractors</div>

Statement	SD	D	N	A	SA	Mean	Std
	%	*%*	*%*	*%*	*%*		
Our agency completed the project during the last two years at the stipulated time	2	8	5	50	30	3.83	0.68
Our agency has not experienced cost overruns in the last three years	3	7	10	30	50	3.94	1.03
The stakeholders are satisfied with the project quality	4	6	10	35	45	3.92	1.01
Our project team are normally paid in time	2	8	8	42	40	3.82	1.07
Our projects have not experienced delay in scheduled start date in the past year.	3	7	3	47	40	3.69	1.08

From Table 6, the findings of the study established that majority of the respondents (50%) agreed that their agency completed the project during the last two years at the stipulated time with mean of 3.83 and a standard deviation of 0.68. This agrees with a study conducted by Neamat (2017), on the factors affecting project performance in Kurdistan Region of Iraq. The findings of his study revealed that project delay occurs due to shortage and closure of materials; the labors' availability in their work according to project duration; managing of projects and providing the skills of leadership; Alteration in prices of materials; highly qualified and expert persons need. The findings also revealed that cash flow is significant since it measures the performance cost in every level of constructing work. The researcher recommended that constructing organizations should reach their strong purpose in their production.

Further, most of the respondents (50%) strongly agreed that their agency had not experienced cost overruns in the previous three years with a mean of 3.94 and within a standard deviation of 1.03. This agrees with a study by Kihoro and Waiganjo (2015) on factors affecting performance of projects in the construction industry in Kenya. His study focused on three aspects of performance namely timely completion, cost management as well as quality. The findings indicated that there was a strong positive relationship between project planning, stakeholder management, competence of project team and performance of the project.

Majority of the respondents (45%) also strongly agreed that the stakeholders were satisfied with the project quality with a mean of 3.92 and a standard deviation of 1.01. According to Melba, Dhanya and Ramasamy (2015) on factors affecting the performance of the construction projects. From the findings the top five factors affecting the performance of projects were identified as increase in material cost, inadequate supply of labour, incorrect planning, wrong method of estimation, and poor financial control on site.

Furthermore, majority of the respondents (42%) agreed that their project team were normally paid in time with a mean of 3.82 and a standard deviation of 1.07. As established by Nyangwara and Datche (2015) while studying the factors affecting the performance of construction projects in the Coastal Region of Kenya, the most important factors agreed by the owners, consultants and contractors were average delay because of closures and materials shortage; availability of resources as planned through project duration; leadership skills for project manager; escalation of material prices; availability of personals with high experience and qualification; and quality of equipment and raw materials in project. In addition, majority of the respondents (47%) agreed with a mean of 3.69 and standard deviation of 1.08 that their projects have not experienced delay in scheduled start date in the past year. These findings contrast those of Onjure and Wanyoike (2016) on the influence of monitoring and evaluation practices on performance of national government funded

construction projects in Uasin Gishu County-Kenya who concluded that monitoring tools have no statistically significant relationship with the performance of national government funded construction projects.

Multicollinearity Test

Table 7: Tolerance and VIF Test

Variables	Collinearity Statistics	
	Tolerance	**VIF**
Work Breakdown Structure	0.537	1.863

From the findings of the study established Work Breakdown Structure had a tolerance of 0.537 and a VIF of 1.863. Since the tolerance was more than 0.1 and the VIF was not more than 10 therefore there was no need of further investigations.

Inferential Statistics

The Pearson product-moment correlation coefficient was used to obtain a measure of the strength of association between two variables (Independent and Dependent). The Pearson correlation coefficient, r, can take a range of values from +1 to -1. The study sought to determine the relationship between study variables, to achieve this, the researcher used simple regression analysis, multiple regression analysis and Pearson correlation.

Correlations between Work Breakdown Structure Technique and Project Performance

The study conducted a correlation analysis between work breakdown structure technique and project performance of registered building works contractors in Nakuru County, Kenya.

Table 8: Correlation between brand ambassadorship and positioning of Kenya

		Project Performance
Work Breakdown Structure Technique	Pearson Correlation	0.540[**]
	Sig. (2-tailed)	0.000
	N	70

*. Correlation is significant at the 0.05 level (2-tailed).

The study results indicated in Table 8, established that there exists a strong positive and significant relationship (r = 0.540, P=0.000) between work breakdown structure technique and project performance of registered building works contractors in Nakuru County, Kenya. This implies that implementation of scheduling techniques related to work breakdown structure technique are responsible for the increase in project performance. This implied that both work breakdown structure technique and project performance change in the same direction. The findings agrees with Liberatore, (2015) who found that a well-done work break down structure breaks the project down into smaller units with milestones to demonstrate progress, it further identify all necessary work for the project to facilitate accurate cost, duration and resource estimates based on single work packages which in turn improves the performance of the project.

CONCLUSION

The study concluded that construction and building organizations embraces the use of work breakdown structure in their operations. The researcher also concluded that through work breakdown structures organizations are able to organize the tasks and duties to specific project team members which ensures efficiency in delivery. In work breakdown structures activities are broken down into smaller tasks for easy management with focus on the final product. A work breakdown structure takes a complex project activity or design and breaks it down into smaller manageable sections that can be easily allocated and tracked to completion. It is performed before any cost and time estimation is fully determined. In fact, the work breakdown structure is what determines the estimated time and money required to complete the desired outcome. The findings indicated that there exists a strong positive and significant relationship between work break down structure and project performance of registered building works contractors with a regression coefficient of 0.243.

RECOMMENDATIONS

From the findings the researcher recommended that work breakdown structures should help in identification of problems during the implementation of project and ensure better management of finances during the implementation of building construction project. The study recommends that construction and building organizations should embraces the use of work breakdown structure in their operations. The researcher also recommends that through work breakdown structures the organization should be able to organize the tasks and duties to specific project team members which ensures efficiency in delivery. In work breakdown structures activities should be broken down into smaller tasks for easy management with focus on the final product. In addition, registered building works contractors, should use work breakdown structure in complex activity or design to break it down into smaller manageable sections that can be easily allocated and tracked to completion. This should be performed before any cost and time estimation is fully determined. In fact, the work breakdown structure should also be employed in determining the estimated time and money required to complete the desired outcome.

Suggestions for Further Research

From the study findings, further research should be carried out to assess other factors affecting the performance of registered building works contractors in Kenya. Also, further studies should be carried out to assess the influence of scheduling Techniques on project performance of registered building contractors at national level.

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