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**INSTITUTIONAL PRACTICES AND PROJECT PERFORMANCE IN  
MANUFACTURING SECTOR IN NAIROBI COUNTY, KENYA**

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Accepted, Nov 5<sup>th</sup>, 2022

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**ABSTRACT**

This research study sought to analyse the institutional practices and project performance in manufacturing sector in Nairobi County, Kenya. The study was guided by the following specific objectives; to analyse the effects of stakeholder involvement on project performance in manufacturing sector in Nairobi County, Kenya; to assess the role of technology on project performance in manufacturing sector in Nairobi County, Kenya; to investigate the influence of monitoring and evaluation on project performance in manufacturing sector in Nairobi County, Kenya and to find out the influence of resources availability on project performance in manufacturing sector in Nairobi County, Kenya. The study employed descriptive survey research design. The target population comprised of registered manufacturing firms in Nairobi County with ongoing projects. There are 144 registered manufacturing firms in Nairobi. Out of the 144 project managers a sample of 105 was drawn. Stratified random sampling was used to proportionately select a sample of 105 from the target population. Primary data was collected using a structured and semi-structured questionnaire, which contained both open and closed ended questions. The researcher used SPSS software version 23 to analyze the data. Quantitative data was analyzed using descriptive statistics. The study concluded that stakeholder involvement, technology use, monitoring and evaluation and resource availability had a positive significant impact on project performance in manufacturing sector in Nairobi County, Kenya. The researcher recommends that manufacturing companies should ensure quality stakeholder participation and embrace information technology as these factors were found to play a positive significant role in fostering positive project delivery outcomes. Also Manufacturing companies should subject project implementation process under strict monitoring and evaluation process while ensuring adequate financial, human capacity and time resource before implementation process commences.

**Keywords:** *Stakeholder Involvement, Technology, Monitoring and Evaluation, Resources Availability, Project performance*

## INTRODUCTION

A project alludes to a unique and temporary endeavor embarked on towards delivering an outcome (Vidal, 2017). For most firms, projects are detached from every day activities of business, requiring individuals to temporarily unite to attend on certain objectives of a project. Consequently, operational teamwork is key to the project's success. Crawford and Bryce (2018) note that the success of a given project is attained where the project is done within the budget and on schedule, accomplishes the original deliverables intended for and is admissible and usable by the intended clients target by the project at hand. Kerzner (2018) states that the description of the success of a project has been customized to entail completion in the course of the period allocated, within the cost projected, at ideal level of specification and performance. Similarly, the success of a project has been described as the total measure of the performance of a project (Muller, Geraldi & Turner, 2017). However, regardless of the various developments in the area of management of projects, most projects don not realize or perform as far as the benefits expected are concerned (Baily, 2019).

In the universe, there has been often reports on failure of projects as compared to the success of projects. A research by Standish Group (2018) regarding large, medium and small firms in USA in the sector of manufacturing indicated that below 25 per cent of projects were successful and nearly 76 per cent either failed or faced challenges. Their 2<sup>nd</sup> research in the year 2017 reported that just 32 per cent of the projects were successful, 44% encountered challenges and 24 per cent failed. A research carried out by Gartner Group since 2009 to the year 2015 in 7 European nations revealed that just 25 per cent projects stayed successful (Stewart, 2016).

There has been variance on performance of projects in Saudi Arabia as a result of varying nationalities of professionals used in the projects. Other cases of challenges that the projects in Saudi Arabia have encountered entail time and cost overruns, uncertainties, errors and disputes in specifications and plans, and amplified costs of maintenance. The failure of involving clients in construction of public projects has been suggested as the manor causative of numerous problems (Althynian, 2017). The industry of construction in Gaza Strip encounters a big number of challenges and myriad performance issues. For instance, houses construction at the Rafah region encountered adverse performance as a result of delays for approximately 110 days. There exist several convincing reasons like closures, drawings amendment as well as design amendment. Additionally, there exists other varying causes that affect performance of projects for construction in Gaza strip like poor leadership and management; inappropriate actors; poor coordination and relations; lack of monitoring, controlling, motivation or systems for decision making; insufficient infrastructure, economic status, cultural challenges and political problems (UNRWA, 2000).

In the continent of Africa, delivery delays for projects tends to be a major reality. Hussin and Omran (2019) established that for Nigeria, 7 from 10 projects encountered execution delays. Olatunji (2019) observed that for Sudan, regardless of many cases reported, construction starting from the simplest to the most complex projects have progressively encountered cost increases. This occurrence is equally observed as well in the country of Ghana where Gaba (2016) observed that surveys show a rise in budget overruns, delay in completion of the project, unmet and unsatisfactory objectives of projects for many projects. In SA, Mulama (2017) notes that it's a concern which can be credited to the incapacity of the customer or their representative as well as the team working on the project to have a deep understanding of the project from the beginning to the end of completion. For Uganda, funding of projects in majority of firms is amongst the matters influencing delays of projects, projects incompleteness, cost increases and

poor workmanship thus affecting the entire projects performance. Its proclaimed that where cost increases and delays occur, projects may not be completed successfully within the intended scope, time and budget (Oluwoye & Crawford, 2018).

Studies conducted in Mozambique, Rwanda and Tanzania regarding effects and causes of uncertainties, disruptions, procedures and delays during projects and environmental and managerial effects that result to budget overruns and project time to completion of the project through different researchers like Kikwasi (2016), Al-Tabtabai (2016), and Bennett and Gordon (2018) discovered the main causatives of disruptions and delays as; changes in design, delayed payment to the contractors, delays on information, funding challenges, poor management of projects, compensation and disagreement concerns on work valuation. On the other hand, overrun of time, overrun of cost, adverse social effects, idling of disputes and resources are the major impacts of disruptions and delays.

For Kenya just like other nations, management of projects in the sector of manufacturing is deemed amongst the principal sector that contributes remarkably to the socio-financial enhancement growth. Accomplishing completion of a project in the stipulated time, in the set budget, at certain excellent needs, and most significantly with no unheard escalations of prices is a basic technique of an undertakings achievement (Doloi, 2017). Basically, a given project is deemed successful if finished within stipulated time, budget and price for it. Despite that private companies in manufacturing have invested heavy cash amounts in various projects, the sector is battling huge amounts of problems like spending surpassing the range of prices set, hindrances to assignment completion within the set time, the defect of projects and over-dependence on foreign personnel.

### **Statement of the Problem**

A performing project is the very significant proof that funds allocated for the project have been used in the best manner towards delivering the targets and goals for the project. Nevertheless, majority of projects fail in achieving and realizing the benefits expected (Baily, 2012). Therefore, that has resulted to delays of projects and overrunning costs in other projects. In the world, there has been registered more failed projects as compared to the success of the project. Standish Group (2017) revealed, in USA, just 32 per cent of the projects were successful, 44 per cent got challenged and 24 per cent failed. Further, Stewart (2018) stated that just 25 per cent of projects stay effective. In addition, in developing nations, failure of a project is quite alarming (Haughey, 2018).

Regardless, the manufacturing sectors substantial contribution to developing nations' economy and the vital part it undertakes in development of those nations, the industry's performance holds low in general. As noted by Idoko, (2018), majority of the projects in countries that are developing face sizeable overruns of cost and time, failing to realize profits intended or totally terminating or abandoning the project prior or after. In addition, the manufacturing sector development in the developing nations is generally lagging behind as compared to other sectors in those nations and their fellows in nations that are developed.

Likely to the situation with other nations that are developing, the manufacturing sector of Kenya shares majority of the challenges and problems the sector is encountering in Some developing nations, probably with higher severity. Provided the crucial role played by the manufacturing sector in the nation of Kenya's as well as some other nations that are developing, and also the poor performance level of projects of the sectors in those nations, enhancing the sector's performance of projects is supposed to be a first preference or priority to be acted upon. For Kenya, approximately 30 per cent of the manufacturing companies encounter projects failure

(Mathew, 2018). Kamau (2018) noted, projects might not accomplish objectives and targets as a result of de-motivation, low morale and poor management of the team's commitment and relations as far as the project is concerned.

Several researches have been conducted on this topic both at the domestic and global levels. Kerzner (2017) noted, the reasons for a project's failure to accomplish objectives and target include low morale and poor management of the team's commitment and relations as far as the project is concerned. Rogito (2018) conducted a survey on how monitoring and evaluation influenced YEDF projects and discovered, poor execution of the project can be accredited to the reality that few executers have M&E trainings, poorly conducted baseline research resulting to the project's failure. Gathoni and Ngugi (2016) research assessed enablers of successful performance of a project in the government funded projects for development of constituencies in the county of Kiambu, Kenya and noted, stakeholders are hardly kept up-to-date on the progress of different CDF projects.

Therefore, it's clear there exists aspects that play a part in affecting project's performance. That is because it's a worldwide phenomenon which projects haven't gotten to enjoy a smooth execution through to its completion. Conversely, most projects have encountered various problems that have greatly affected completion of their project. It's a key issue for each project's stakeholder to comprehend these aspects. This research study therefore seeks to analyses the institution practices and project performance in manufacturing sector in Nairobi County, Kenya.

### **Objectives**

- i. To analyse the effects of stakeholder involvement on project performance in manufacturing sector in Nairobi County, Kenya.
- ii. To assess the role of technology on project performance in manufacturing sector in Nairobi County, Kenya.
- iii. To investigate the influence of monitoring and evaluation on project performance in manufacturing sector in Nairobi County, Kenya.
- iv. To find out the influence of resources availability on project performance in manufacturing sector in Nairobi County, Kenya.

## **LITERATURE REVIEW**

### **Theoretical Review**

#### **Theory of Constraints (TOC)**

Goldratt (1984) created this theory being a philosophy of project management which indicates, any system, process or a chain's strength is just as perfect as its most frail link. It aids firms in accomplishing the goals they want through giving a technique of gaining much control over initiatives started by them. TOC is a universal way of identifying constraints hindering the effectiveness of the system and effecting changes for purposes of removing thematic components of distinct, but interconnected concepts like processes of measuring performance, processes of logical thinking as well as logistics.

The TOC's process of logical thinking provides a pattern of steps combining intuition, experience and cause-effect towards gaining knowledge. In this case, the theory covers project performance as the dependent variable. In order to have a project that is performing, there's need for minimizing constraints which may otherwise decrease the quantity or the quality of delivered services and products. The constraints might comprise of poor practices of management like overrunning costs as a result of corruption and poor budgeting. This theory indicates the essence for management of projects for purposes of identifying constraints which hinder projects' performance and efforts giving direct methods towards solving the identified constraints. This

research is going to put this theory into consideration because it looks at issues which are capable of limiting performance of a project.

### **Resource Based Theory**

This theory was developed by Barney (1991). It indicates that possessing the tactical resources gives a firm a very good chance for developing a competitive edge over their competitors. The competitive edge can aid the firm in enjoying increased profits in comparison to corresponding competitors. Managers of a project should be responsible of using the resources available through the cycle phases of the project as follows; identifying and classifying the resources of the company, appraising weaknesses and strengths relative to rivals. Identifying chances of utilizing the resources in a better way, identifying the capabilities of the company, appraising the rent yielding potential and capabilities of the resources on the basis of sustainability potential, selecting the best strategy for exploring the capabilities and resources that the firm has and identifying gaps that need refilling (Johnstone & Brenman, 2016). The theory looks at the essence for appropriate planning and execution basing on the available resources. In that manner, management makes most out of the resources available and uses them towards maximizing performance. Therefore, this theory covers the independent variables because it stresses proper planning, execution, and resources monitoring.

### **Public Participation Theory**

Arnstein (1969) gives an insight of the various approaches that the people may get engaged in the process of making decisions and the different participation levels by the public. In addition, Arnstein describes participation by the public as the process that individuals most particularly the disadvantaged persons, influence allocation of resources, formulation of programs and policies and their execution. The model expects people to act responsibly, thus, be aggressive actors in decision making of the public service. Conversely, Brett (2013) observes, participation by the public has received support with regard to increased community and individual control for government activities towards the citizenry. In addition, Brett states that the engagement and participation of the public in processes of making decisions can be effective in other projects relying on the conditions. This theory is identified as appropriate to this research since M&E aligns with a big proportion of the claims mentioned above by the theory's advocate. Beneficiaries of the project who partake in activities of the program are warranted to demanding services, developing the feeling of program ownership and belonging. Thus, this theory gives an ideal theoretical foundation and framework for basing this research.

### **Social Information Processing Theory**

The theory was developed by Kylie (2013) and states that strong communication links can be established through some few hints that persons can obtain from communications done online. The theory argues that many individuals are quick to dismiss the effectiveness of online communication yet is one of a strong media of communication just like face to face ones. This communication is significant at this era in which email communications at times tend to be more regular as compared to one on one conversations. To keep in that mind on line relationships also matter, project managers should put more care with their words and how to properly relay their message despite lack of social context. The theory gives emphasis to improved project communication methods between the management and the contractors. The management should impress the developed online communication as a project management practice to help acquire global information that will enhance project performance.

## **Empirical Review**

Halloran, (2015) assessed the knowledge on management of stakeholders amongst managers of a project in Ireland's construction sector. The research was conducted on 347 managed in various organizations. A purposive sampling and descriptive design of research were applied in this research. The primary study result showed that the managers of projects in the Irish sector of construction regarded wide engagement and analysis of stakeholders as effective methods. The approach incorporated is mostly reliant on the stakeholders and project characteristics. The outcomes suggest that Ireland's managers of construction projects have a high likelihood of undertaking processes for management of stakeholders with respect to a systemized methodology. Moreover, the participants strongly recommend the application of project register for stakeholders and the core purpose for management of stakeholders in delivery of effective projects

Adan (2012) research assessed how the role of stakeholders' impact on how the CDF projects perform at Isiolo North Constituency, Kenya. Descriptive design was used. The population targeted representatives of 155 projects of CDF in Isiolo North Constituency. Interviews and Semi structured questionnaires were applied in data collection. Inferential and descriptive analysis were used. This research identified that the project execution role by the managers of a project and officials of the government resulted to better projects performance.

Kithinji (2015) researched on the effect of IT on management of inventory in supermarkets in the County of Nairobi. Findings revealed that use of technology has a positive impact on management of inventory. It was also established that supermarkets in Nairobi have implemented vendor-managed systems of inventory and warehouse systems of management. The study recommends that supermarkets should invest more on information communication technology, thus, accomplish integration, reduce costs of communication, improve efficient increase in information sharing and improve performance.

Koushki (2015) determined the delay in time and increase in costs linked a project of private residential construction in Kuwait. The database for the study was 400 selected random private residential. They recognized changing of orders, owner's financial constraints, and owners lacks of experience are the main causes of time delay. Contractors related problem, material related problem and owner's financial constraints were the main reasons for cost over runs. They recommended minimizing the time and cost overrun. The projects required availability of sufficient finances, appropriation of time and funds adequate for the design phase and choosing a highly qualified consultant and dependable contractor to conduct the work.

Wambua (2016) conducted a research on the impact of human resource aspects on performance of a project in the county of Nairobi, assessing selected firms in Westlands. The study design applied was the descriptive survey. Correlation and regression analysis were applied in data analysis. The research identified that practice of HRM impacts on performance of a project. Obegi and Kimutai (2017) research assessed the impact of resource planning on performance of a project of global NGO's in the county of Nairobi, Kenya. In analysis of the data, the research used the descriptive statistics in describing the features of every variable. The research identified, there is periodic monitoring of the budget for purposes of measuring spending's against the budget, project personnel finish their tasks as assigned.

Reyman and Harries (2018) carried out a research to identify problems and constraints which hinders M&E of projects for development in Spain. For purposes of achieving the objectives intended, they used data regarding 37 projects. The research identified, M&E for projects were progressively being acknowledged as an irreplaceable function of the management. Also, the

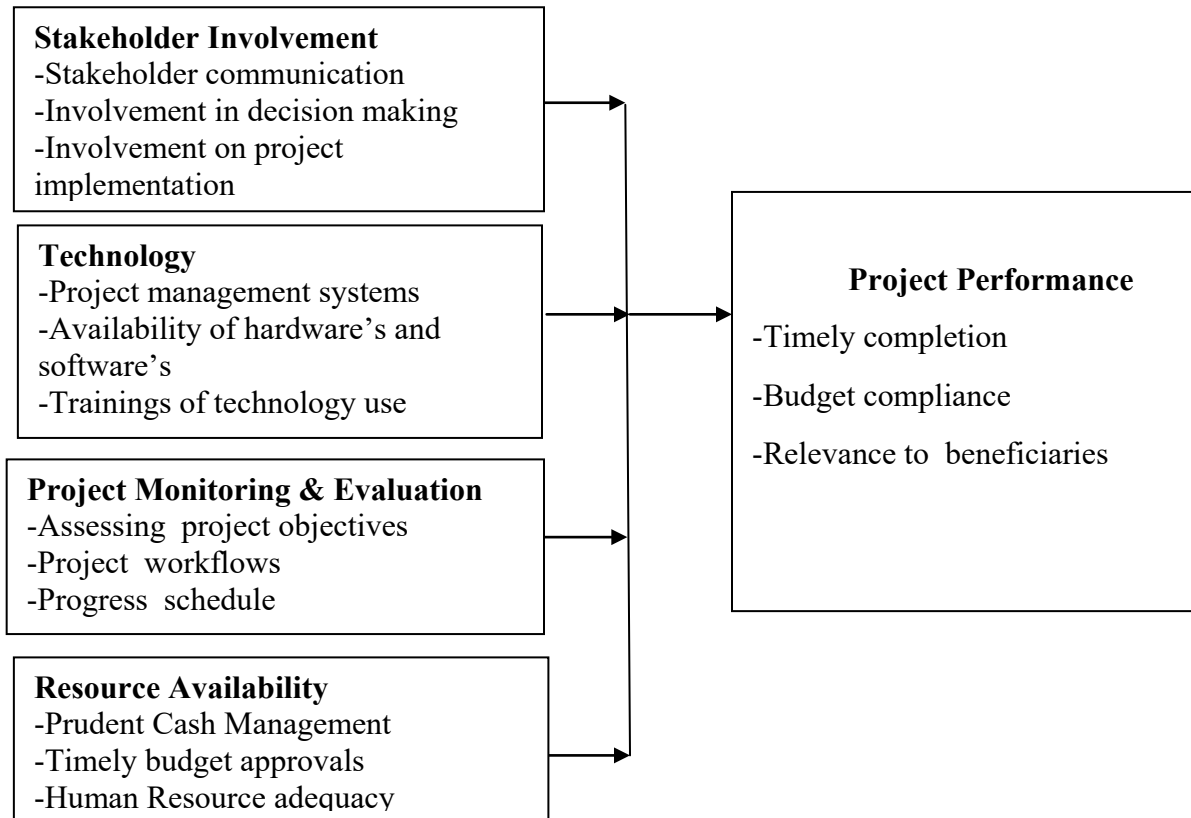
research showed major problems and constraints hampering M&E for projects of development. They entailed; commitment for conducting M&E, failure to conduct, share, discuss and adopt the outcomes of M&E activities. Some more constraints identified by the research included: deficiency of trained personnel, inadequate technical resources, insufficient appropriation of finances for M&E and restrained opportunities for training.

Ndagi, Keiyoro, Mugo, Iribe, and Rambo (2016) during their research on impacts of M&E Planning on Sustainability of agricultural food crop projects in Kenya, M&E field visits or meetings for planning are not regularly carried out by the management. This means, it can be a problem enhancing sharing of experience amongst farmers thus hampering monitoring and sustainability realization for food crop projects. The engagement of the project members is important in M&E. The research findings indicate that lack of connection amongst officers and farmers deny information, technologies, knowledge and experiences needed for boosting sustainability and productivity.

**Conceptual Framework**

**Independent Variables**

**Dependent Variable**



**Figure 1: Conceptual Framework**

Source: Researcher, (2022)

## METHODOLOGY

The research applied the descriptive survey design. The target population comprised of all the registered manufacturing firms in Nairobi County. There are 144 registered manufacturing firms in Nairobi. In all the 144 firms, the study targeted the project managers. In total one respondent were targeted in each firm. Therefore, a population of 144 was sampled in this study. To get the study sample Yamane formulae (1967) was used.

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

$$n = 144 / [1 + (144 \times 0.0025)]$$

$$= 144 / 1.36$$

$$n = 105$$

Out of the 144 project managers a sample of 105 was drawn. Stratified random sampling is to be applied proportionately towards selecting a sample of 105 from the population of target. Gathering of primary data will applied the semi-structured and structured questionnaires, that entailed both open-end and close-end questions. The SPSS software version 23 was used in data analysis. Analysis of quantitative data is to be done by use of descriptive statistics and tabulation conducted in form of frequencies and percentages for describing the data categories. Coding was done for the gathered data, and then recording of the concepts and repeated themes till the point of saturation is attained. The Multiple linear regression model was used in analyzing quantitative data.

## RESULTS

### Stakeholders Involvement

Participants were asked to indicate the extent to which they agreed with the following statements assessing on role and impact of stakeholder involvement on project performance.

**Table 1: Stakeholder's Involvement on Project Performance**

| Statements  | N  | Min  | Max  | Mean        | Std. Dev    |
|---|----|------|------|-------------|-------------|
| Stakeholder analysis is done to identify extent of decision making in a project   | 85 | 2.00 | 5.00 | 3.85        | 0.94        |
| Stakeholder participation enhances support of the project   | 85 | 2.00 | 5.00 | 4.06        | 0.66        |
| Stakeholder participation improves decision making process  | 85 | 2.00 | 5.00 | 3.95        | 0.69        |
| Participation of the stakeholder aids in identifying the project's deviations   | 85 | 3.00 | 5.00 | 4.25        | 0.53        |
| Participation by project stakeholders entails a shared understanding and participation in the project's decision-making process | 85 | 2.00 | 5.00 | 4.06        | 0.66        |
| We aggressively engage the community in activities of M&E   | 85 | 2.00 | 5.00 | 3.79        | 0.93        |
| Our organization has set slots to engage every stakeholder in project execution   | 85 | 2.00 | 5.00 | 3.95        | 0.69        |
| <b>Average Score</b>  |    |      |      | <b>3.98</b> | <b>0.73</b> |



Source: Survey data, (2021)

From the study findings, majority of the participants agreed that participation of the stakeholder aids in identifying the project's deviations (M= 4.25 SD=0.53), stakeholder participation enhances support of the project and that participation by project stakeholders entails a shared understanding and participation in the project's decision-making process (M= 4.06 SD=0.66). This finding concurs with the study findings by Bawole and Ahenkan (2013), a successful stakeholder engagement scheme allows those who are involved in, or influenced by, a decision to participate. Also, the study established that most of the organizations engages every stakeholder in project execution and that stakeholder participation improves decision making process (M= 3.95 SD=0.69). The finding goes hand in hand with research conclusion by Nadeem, & Hameed (2018) that stakeholder engagement not only helped to promote project longevity, but it also made project execution more productive and competitive. Further, the researcher established that stakeholder analysis is done to identify extent of decision making in a project (M=3.85 SD=0.34) and that most of firms aggressively engage the community in activities of M&E (M= 3.79 SD=1.00). These findings contradict the study findings by Nangoli, and Ngoma (2016) both discovered that there was a poor and negligible negative relationship between passive involvement among stakeholders and community improvement project longevity. From the average scores, a mean of 3.98 was established on all the statements which indicates that respondents agreed with the statements regarding stakeholder's involvement. Further, all the standard deviation for all the statements were below one an indication that the responses did not vary that much.

### Technology

Participants were asked to indicate the extent to which they agreed with the following statements assessing impact of technology use on project performance.

**Table 2: Impact of Technology Use on Project Performance**

| Statements  | N  | Min  | Max  | Mean        | Std. Dev    |
|---|----|------|------|-------------|-------------|
| Results showed that IT capabilities had a significantly positive effect on our projects performance.    | 85 | 2.00 | 5.00 | 3.98        | 0.95        |
| Management has the interesting using electronic systems while managing projects                         | 85 | 4.00 | 5.00 | 4.34        | 0.48        |
| Management supports usage of technology   | 85 | 4.00 | 5.00 | 4.36        | 0.48        |
| Our vision for adopting technology in the projects we pursue is communicated widely throughout the firm | 85 | 3.00 | 5.00 | 4.11        | 0.54        |
| Our company has a good understanding of technological   | 85 | 3.00 | 5.00 | 4.22        | 0.61        |
| Our staff has the necessary technical, managerial and other skills to implement the projects            | 85 | 3.00 | 5.00 | 4.29        | 0.55        |
| <b>Average Score</b>  |    |      |      | <b>4.21</b> | <b>0.60</b> |

Source: Survey data, (2021)

From the study findings, majority of the participants agreed that project management committee working for most of the firms, supported the usage of technology in every project that the organization pursues (M=4.36 SD=0.48) and that project managements continually sought to embrace the use of electronic systems while managing projects (M=4.34 SD=0.48). These

findings concur with the study findings by Golicha (2015) Information and communication technology (ICT) plays a vital role in project delivery and sustainability.

Also, the study established that top management ensured that all the staff in project management departments were well equipped with necessary technical, managerial and other skills to implement the projects (M=4.29 SD=0.55) and that most of the companies have a good understanding of technological models that are applicable to our projects (M=4.22 SD=0.61). The finding goes hand in hand with research conclusion by Hurlimann, and Dolnicar, (2018) show that technology adoption is critical for the long-term viability of projects because it simplifies processes and accountability.

Further, the researcher established that most of the firms have a vision for adopting technology in the projects and the same determination was communicated widely throughout the firm (M=4.11 SD=0.54) and that results showed that IT capabilities had a significantly positive effect on projects performance (M=3.98 SD=0.95). These findings concur with the study findings by Jacobsson, and Linderoth, (2010) modern ICT applications equipment led to production of quality structures that were ever easy to maintain and sustain.

On the impact of technology, the average mean was 4.21 an indication that respondents agreed on all the statements. Further all the standard deviations were less than one meaning that respondents had more less a similar opinion.

### **Monitoring and Evaluation**

Participants were asked to indicate the extent to which they agreed with the following statements assessing impact of monitoring and evaluation on project performance.

**Table 3: Impact of Monitoring and Evaluation on Project Performance**

| <b>Statements</b>   | <b>N</b> | <b>Min</b> | <b>Max</b> | <b>Mean</b> | <b>Std. Dev</b> |
|---|----------|------------|------------|-------------|-----------------|
| The company has a structure that is well-defined comprising a unit for monitoring and evaluation                                    | 85       | 3.00       | 5.00       | 4.32        | 0.56            |
| The company carries out examination of the general M&E system performance regularly   | 85       | 3.00       | 5.00       | 4.00        | 0.69            |
| The company has defined standards or policies which describes responsibilities and roles of the functioning of projects' M&E System | 85       | 3.00       | 5.00       | 4.19        | 0.59            |
| The company has skilled staff who collect information regarding projects' performance   | 85       | 2.00       | 5.00       | 3.67        | 0.92            |
| The logical frameworks give the projects' projected outputs   | 85       | 2.00       | 5.00       | 4.04        | 0.78            |
| Our company has key equipment and tools for management of data  | 85       | 2.00       | 5.00       | 3.85        | 0.92            |
| <b>Average Score</b>  |          |            |            | <b>4.01</b> | <b>0.74</b>     |

Source: Survey data, (2021)

From the study findings, majority of the participants agreed that nearly all the firms have a structure that is well-defined comprising a unit for monitoring and evaluation (M=4.32 SD=0.56) and that most the companies have defined standards or policies which describes responsibilities and roles of the functioning of projects' M&E System (M=4.19 SD=0.59). These findings concur with the study findings by Harold (2016) information gotten from M&E enabled managers of a project to come up with better policies which resulted to effective infrastructural projects for roads.

Also, the study established that logical frameworks are instrumental in guiding implementation process towards the projects' projected outputs (M= 4.04 SD=0.78) and that nearly all the companies carried out examination of the general M&E system performance regularly(M= 4.04 SD=0.78).The finding goes hand in hand with research conclusion by Nerubucha (2011) that M&E on projects gives information for supporting projects execution and impart on institutional learning, knowledge sharing, uphold compliance and accountability, give chances for feedback from the stakeholders and impart on mobilization of resources.

Further, the researcher established that most of the companies have a key equipment's and tools for management of data (M= 3.85 SD=0.92) and that nearly all the firms have a skilled staff who collect information regarding projects' performance. (M=3.67 SD=0.92). These findings concur with the study findings by Ndagi, Keiyoro, Mugo, Iribe, and Rambo (2016) M&E focuses on giving systematic oversight on an activity's execution, on the basis of targeted yield, work schedule and input delivery amongst others. On average, the mean of the statements was 4.01 while the standard deviation was 0.74.

#### **Resource Allocation**

Participants were asked to indicate the extent to which they agreed with the following statements assessing on resources adequacy and project performance.

**Table 4: Statements Relating On Resources Adequacy and Project Performance**

| <b>Statements</b>   | <b>N</b> | <b>Min</b> | <b>Max</b> | <b>Mean</b> | <b>Std. Dev</b> |
|---|----------|------------|------------|-------------|-----------------|
| Equipment for the project is allocated to the personnel for utilization in the course of the projects   | 85       | 2.00       | 5.00       | 3.91        | 0.87            |
| Allocation of project personnel is a necessity for purposes of project management   | 85       | 2.00       | 5.00       | 3.99        | 0.88            |
| The firm has policies for management of human resources that measure project performance and entail schemes for rewarding and motivation the staff. | 85       | 2.00       | 5.00       | 3.86        | 0.76            |
| There's periodical monitoring of the budget for measuring spending's against budget   | 85       | 2.00       | 5.00       | 4.15        | 0.84            |
| There's a budget approved for project execution   | 85       | 2.00       | 5.00       | 4.28        | 0.70            |
| The organization give the appropriate amount of the material needed at the ideal  | 85       | 2.00       | 5.00       | 3.78        | 0.94            |

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time for project execution

**Average Score**

**3.99**

**0.83**

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Source: Survey data, (2021)

From the study findings, majority of the participants agreed that project management committee ensured that there is budget approved for project execution (M=4.28 SD=0.70) and periodical monitoring of the budget for measuring spending against budget (M= 4.15 SD=0.84). These findings concur with the study findings by Koushki (2015) understanding resources requirements and knowing how to use them will help implementation committee to avoid obstacles before they can happen.

Also, the study established that allocation of project personnel is a necessity for purposes of project management (M=3.99 SD=0.88) and that the oversight committee ensured that all the necessary equipment required during project execution were allocated to the personnel for utilization in the course of the projects (M=3.91 SD=0.87) The finding goes hand in hand with research conclusion by Graham and Mohamed (2016) that Having accurate resource plans with detailed information of people and material included in a project is key for successful resource planning.

Further, the researcher established that most the firms have has policies for management of human resources that measure project performance and entail schemes for rewarding and motivation the staff (M= 3.86 SD=0.76) and that all the organizations gave the appropriate amount of the material needed at the ideal time for project execution (M= 3.78 SD=0.94). These findings concurs with the study findings by Yam (2016) resource availability is critical in driving the success of project planning and that when managers have a clear overview of who's available to take up the tasks, they can plan the projects precisely.

### **Projects Performance**

Participants were asked to indicate the extent to which they agreed with the following statements assessing on project performance.

**Table 5: Statements Assessing On Project Performance**

| <b>Statements</b>  | <b>N</b> | <b>Min</b> | <b>Max</b> | <b>Mean</b> | <b>Std. Dev</b> |
|--|----------|------------|------------|-------------|-----------------|
| Our projects are completed on time                               | 85       | 2.00       | 5.00       | 4.07        | 0.84            |
| Our Projects are delivered within budget                         | 85       | 2.00       | 4.00       | 3.96        | 0.98            |
| Our projects are delivered to the satisfaction of the financiers | 85       | 2.00       | 4.00       | 3.88        | 0.83            |
| Satisfied stakeholders are a performance indicator in a project  | 85       | 2.00       | 5.00       | 4.15        | 0.82            |
| <b>Average Score</b>   |          |            |            | <b>4.01</b> | <b>0.91</b>     |

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Source: Survey data, (2021)

From the study findings, majority of the participants agreed that satisfied stakeholders are a performance indicator in a project time. (M= 4.15 SD=0.82) and that most of the projects undertaken by most of the organizations were completed on time (M=4.07 SD=0.84). These findings concur with the study findings by Rogito (2018) an organization's competitiveness depends in part on its ability to complete projects profitably.

Also, the study established that most of the projects were delivered within budget (M= 3.96 SD=0.98) and that projects were delivered to the satisfaction of the financiers (M= 3.88

SD=1.03). The finding goes hand in hand with research conclusion by Gathoni and Ngugi (2016) that performance management process ensures that projects remain profitable not just in the technical sense, but also in a strategic sense, so that every project drives organizational improvement.

### Regression Test

In this study, a multiple regression analysis was conducted to test the influence among predictor variables. The research used statistical package for social sciences (SPSS V 25.0) to code, enter and compute the measurements of the multiple regressions. The model summary is presented in the table 6.

**Table 6: Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1     | .689 <sup>a</sup> | .475     | .449              | .58378                     |

Source: Survey data, (2021)

The study used coefficient of determination to evaluate the model fit. The adjusted R<sup>2</sup>, also called the coefficient of multiple determinations, is the percent of the variance in the dependent explained uniquely or jointly by the independent variables. The model had an average adjusted coefficient of determination (R<sup>2</sup>) of 0.449 and which implied that 44.9% of the variations on project performance in manufacturing sector in Nairobi County are explained by the independent variables under study (Stakeholder involvement, technology use, monitoring and evaluation and availability of resources).

The study further tested the significance of the model by use of ANOVA technique. The findings are tabulated in table 7.

**Table 7: Summary of One-Way ANOVA results**

| Model      | Sum of Squares | df | Mean Square | F      | Sig.              |
|------------|----------------|----|-------------|--------|-------------------|
| Regression | 24.666         | 4  | 6.167       | 18.095 | .000 <sup>b</sup> |
| Residual   | 27.264         | 80 | .341        |        |                   |
| Total      | 51.930         | 84 |             |        |                   |

Source: Survey data, (2021)

Critical value = 2.48

From the ANOVA statics, the study established the regression model had a significance level of 0.000% which is an indication that the data was ideal for making a conclusion on the population parameters as the value of significance (p-value) was less than 5%. The calculated value was greater than the critical value (18.095 > 2.48) an indication that Stakeholder involvement, technology use, monitoring and evaluation and availability of resources all have a significant effect on project performance in manufacturing sector in Nairobi County. The significance value was less than 0.05 indicating that the model was significant.

In addition, the study used the coefficient table to determine the study model. The findings are presented in the Table 8.

**Table 8: Coefficients**

| Model        | Unstandardized Coefficients |            | Standardized Coefficients<br>Beta | t     | Sig. |
|--------------|-----------------------------|------------|-----------------------------------|-------|------|
|              | B                           | Std. Error |                                   |       |      |
| 1 (Constant) | .925                        | .583       |                                   | 1.586 | .007 |

|                           |      |      |      |       |      |
|---------------------------|------|------|------|-------|------|
| Stakeholder involvement   | .549 | .177 | .269 | 3.100 | .003 |
| Technology                | .738 | .168 | .374 | 4.388 | .000 |
| M&E                       | .313 | .167 | .165 | 1.877 | .004 |
| Availability of resources | .599 | .210 | .241 | 2.850 | .006 |

Source: Survey data, (2021)

As per the SPSS generated output as presented in table above, the equation ( $Y = \beta_0 + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \beta_4x_4 + \varepsilon$ ) becomes:

$$Y = 1.925 + 0.549X_1 + 0.738X_2 + 0.313X_3 + 0.599X_4$$

From the regression model obtained above, a unit improvement in stakeholder involvement while holding other factors constant would positively change project performance in manufacturing sector in Nairobi County by a factor of 0.549. These findings concur with the observations made by Nadeem, & Hameed (2018) that stakeholder engagement not only helped to promote project longevity, but it also made project execution more productive and competitive.

Results show that a unit improvement in technology while holding the other factors constant would positively change project performance in manufacturing sector in Nairobi County by a factor of 0.738. These findings concur with the study findings Golicha (2015) Information and communication technology (ICT) plays a vital role in project delivery and sustainability.

Test regression results show that unit change in monitoring and evaluation while holding the other factors constant would enhance project performance in manufacturing sector in Nairobi County by a factor of 0.313. These findings concur with empirical findings by Nerubucha (2011) that M&E on projects gives information for supporting projects execution and impart on institutional learning, knowledge sharing, uphold compliance and accountability

Finally test regression results show that unit change in availability of resources while holding the other factors constant would enhance project performance in manufacturing sector in Nairobi County by a factor of 0.599. These findings concur with the study findings by Graham and Mohamed (2016) that having accurate resource plans with detailed information of people and material included in a project is key for successful resource planning.

## CONCLUSION

The study concludes that stakeholder involvement had a positive impact on project performance in manufacturing sector in Nairobi County, Kenya. Successful stakeholder engagement scheme allows those who are involved in, or influenced by, a decision to participate and that stakeholder engagement not only helped to promote project longevity, but it also made project execution more productive and competitive.

The study concludes that technology use has a positive significant impact on project performance in manufacturing sector in Nairobi County, Kenya. Information and communication technology (ICT) plays a vital role in project delivery and sustainability, and that technology adoption is critical for the long-term viability of projects because it simplifies processes and accountability.

The study concludes that monitoring and evaluation has a positive significant impact on project performance in manufacturing sector in Nairobi County, Kenya, information gotten from M&E enabled managers of a project to come up with better policies which resulted to effective

infrastructural projects for roads and that M&E focuses on giving systematic oversight on an activity's execution, on the basis of targeted yield, work schedule and input delivery.

The study concludes that resource availability has a positive significant impact on project performance in manufacturing sector in Nairobi County, Kenya. Project management committee ensured that there is budget approved for project execution and that the oversight committees ensured that all the necessary equipment required during project execution were allocated to the personnel for utilization in the course of the projects

## **RECOMMENDATIONS**

Manufacturing companies should ensure stakeholder participation as this was found to play a significant role in fostering positive project delivery outcomes. By ensuring all interested parties are well consulted, this aspect serves in increasing accountability, promotes embracement and client satisfaction all which are measures of project performance.

Based on the results, the role of ICT use in project implementation cannot be under estimated. For better performance, all Manufacturing companies should embrace Information technology as is this was liked with immense benefits such as enhanced accountability, documentation, process transparency, better focusing of project projections all which help to keep projects on truck.

Manufacturing companies should subject the whole course of project implementation under strict monitoring and evaluation. This is essential in ensuring that plan is roweled out as intended. Information from M&E data is critical in ensuring that ascertaining deviations from the projected trajectory which aids in taking the necessary corrective action.

Given that successful implementation of projects was found to be anchored on resource availability, it's therefore important for manufacturing companies to ensure that adequate resources are availed before rollout process commences. Proper budget estimates must be made prior and that proper risk analysis which affects project financial strength must also be accounted capacity building and proper time estimates must also be well planned for.

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