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PUBLIC-PRIVATE PARTNERSHIP AND PERFORMANCE OF MANAGED EQUIPMENT SERVICE PROJECT IN HEALTH SERVICE PROVISION IN KENYA

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ABSTRACT

This study assessed the effect of private-public partnership and performance of managed equipment services projects in health service provision in Kenya. The specific objectives of the study were; to examine the extent to which staff skills and knowledge, stakeholder involvement, performance monitoring and contract management influenced the performance of Managed Equipment Services in healthcare provision in Kenya. The study used descriptive and explanatory research design. The target population of this research was the 98 hospitals that are under MES programs in Kenya. The study used purposive sampling to select 47 hospitals from the 98 hospitals that are implementing the MES programs. Primary data was obtained using self-administered questionnaires. A pilot study was done to establish the validity and reliability of the instruments. Data gathered was presented in form of percentages and frequency. SPSS software was used to aid in data analysis. Analysis was done by use of descriptive an inferential statistics. The findings were expected to assist the local health facilities on how to go about their activities with an aim of improving performance through managed equipment service in Kenya and beyond. The study found that staff skills and knowledge, Stakeholder involvement, monitoring and evaluation and contract management was statistically significant to performance of MES projects in Kenya. The study concluded that staff skills and knowledge, Stakeholder involvement, monitoring and evaluation and contract management are related with performance of MES projects. This study recommended that the hospitals in Kenya should ensure that they hire employees with soft and technical skills and they should also be professionally qualified. Further, stakeholders should be allowed to actively participate in planning and decision making. Their opinions play a big role in the performance of MES projects. Also, the hospitals in Kenya should adopt functional, technical, regular, evaluation, process monitoring and outcome evaluations. This would be helpful in checking the progress of the MES projects. Hospitals should adhere to stipulated timelines and ensure that their spending in properly accounted for through frequent provision of financial perfromance.

Key words; *Managed equipment services, skills and knowledge, project performance, stakeholder's involvement, contract management, monitoring and evaluation*

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INTRODUCTION

Healthcare plays a crucial part in growth and management of an economy. When there is improved healthcare, there is an enhanced productivity, improved life expectancy, more investments and savings among the people and a decreased spending on healthcare which eventually leads to a greater economic growth, political and social stability (Burns, 2012). Third world countries like Kenya are losing thousands of children to treatable disease due to marginalization in health and development. The implementation of Managed Equipment Services (MES) has been regarded as one way of creating competitive advantage to hospitals. It helps in establishing efficiency and affordable healthcare (Yadav, Aliasgari & Poellabauer, 2020). Through MES, hospitals get to be equipped with medical equipment thereby improving on their performance.

In the healthcare sector all over the world, there is a growing demand for medical equipment to be used in the facilities. Management of healthcare costs is becoming very challenging, and hence there is a need to opt for solutions that will lead to the improvement of health care (Kibua, Muia, Keraka & African Medical and Research Foundation, 2010). The best option that has been sought by the healthcare practitioners is to ensure that they have the necessary equipment in place which are managed and renewed in the most effective manner (Chen, Dutta & Maina, 2016). According to Yadav *et al.* (2020) globally nations are shifting from procuring consumables and medical technological equipment to models of service by use of intermediaries referred as multivendor services and managed equipment integrators. The intermediaries can buy, run, maintain and fund all medical equipment's.

In the UK, the biggest trust is the Barts Health NHS, it has 15,000 employees and provide treatment to 2.4m patients per year. There is a 35-year partnership on Managed Equipment Services (MES) of Siemens Healthineers to provide support on the Royal London and St Bartholomew's (Barts) hospitals redevelopment and ensure that they have modern medical equipment until 2045. Siemens supplies and manages medical technology for cardiology and radiology departments in hospitals and also provides their expertise in building phase to assist in improving the design of hospitals that is a structure with all the needed equipment (Siemens Healthcare GmbH, 2016).

In Africa, the biggest healthcare providers are governments, with approximately 80 to 20 ratio or higher between the government and private sector. Healthcare faces high financial pressure just like other services provided by governments. This leads to challenges in attaining the universal health coverage goals of making sure that citizens have access to affordable and effective health services as set by World Health Organisation's (WHO's) (WHO, 2015). The major challenges in Africa's healthcare system is inadequate healthcare staff. This further increases the problems due to the fact that sub-Saharan Africa has to deal with more than twenty four percent of disease burden globally with only three percent of healthcare workforce globally and one percent healthcare expenditure globally. African nations wish to invest in new medical technology, however most of the nation's face financial problems. According to WHO seventy percent of investments in medical technology in low-income nations are poorly managed or obsolete and other factors include lack of frequent servicing. Lack of adequately skilled group of biomedical engineers, the needed spare parts and funds, compound medical devices are no longer operational (WHO, 2015).

In Africa, estimated forty percent of medical equipment's are not functional. Also eighty percent of the medical equipment's in most sub-Saharan African nations is funded or donated by foreign sources. 70-90% of donated equipment is never operationalized. The percentage of equipment that are not functional is highly because of obsolete equipment's, difficulties in the acquisition of spare parts and deficiency of skilled staff (Kinley, 2012). The MES method helps in strengthening the system

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of health in a manner that is best for an African situation and improves healthcare workers motivation, as it is associated with professional growth. These aspects help in ensuring MES sustainability (Logan & Patel, 2012).

The Kenyan government understands the significance of healthcare and as a result, it has made it one of the social pillars components. The Kenyan Constitution of 2010 devolved healthcare to enable it reach people at the grassroots (Constitution of Kenya, 2010). The national and county governments are supposed to give affordable healthcare to all citizens. MES involves partnership between the government sponsored healthcare facilities and the private sector for a period of time at an annual fee. The package involves acquisition, installation, training, maintenance and replacement of medical equipment. MES covers medical technology, consulting services, financing, training and maintenance.

MES integration requires combined efforts of healthcare personnel, healthcare institutions, researchers, engineers and other like-minded players. The private sector can offer funds or any other support to supplement government efforts through Private-Public Partnerships (PPP). PPP has been instrumental in ensuring the advancement of healthcare in Kenya. Most of the Non-Governmental Organizations (NGOs) in operation in Kenya deal with healthcare issues. There are other corporates that too inject funds into various healthcare issues. It is evident that in order to realize the development goals in healthcare, PPP is a must (Neeraj *et al,.* 2011). Case in point is the Lions club of Kenya, a private entity that offers free eye checkup annually at government healthcare facilities at various towns across Kenya. Other private firms have also been aiding government efforts in ensuring provision of affordable and easily accessible healthcare only that their efforts do not get publicized. As of June 2020, Kenya and the entire world was dealing the Corona Virus Disease (Covid 19) pandemic. It became noticeable that many health facilities do not have enough Intensive Care Units (ICU) beds or none at all (Ministry of Health, 2020). During this time the private sector was able to supplement government efforts in stemming the spread of the disease. They provided ambulances and funds to buy medical personnel the equipment needed. The government and the private sector in general is able to offer good performance in the healthcare sector when they combine their efforts together.

Kenya is the first African nation to join the largest sustainable projects on healthcare through arrangement of MES comprising providing, running and state of the art medical equipment's servicing. The program was rolled out in ninety-eight hospitals in Kenya, at an approximate cost of $ 5 million (Ministry of Health, 2016). The implementation of the MES Kenyan projects was the one kind that was first adopted in Africa to equip health facilities. Therefore, the lack of empirical literature on challenges and benefits in the African context is evident. The empirical literature will be drawn from existing studies in developed economies and developing economies outside African that have adopted MES model in health care provision.

Resource planning is one of the aspects of project management. Resources consists of people, equipment, finances and everything that is needed in order for a given project activity to materialize (Leon, 2014). Prior to assigning resources to a given project, their availability has to be addressed first. Resource availability includes information regarding the resources that are needed for the project, when they are available, and condition of their availability (Law, 2019). An activity list has to be created earlier on and the knowledge of how an organization handles resources is needed. The resources should then be estimated and assigned to each activity in the list. This can either be done through expert judgement, analyzing options available, use of published data, use of project management software and bottom up estimating. For every project undertaken or a contract, there should be a demonstration of effectiveness towards attaining

the goals set and getting the needs and services that are needed by the public (Schunk, 1996). There should therefore be proper resource allocation and step of actions for non-performance (Onkundi, Karori & Bichanga, 2016).

Statement of the problem

Kenya is losing thousands of people to preventable and curable diseases as a result of inequalities in health facilities (Njogu & Oluoch-Olunya, 2007). Managed equipment services contracts were introduced to improve access to quality health care in different parts of the world (Enthoven, 2014). Through this model, the state is able to eliminate outdated medical services and implement the upgraded ones at affordable rates than opting to purchase costly medical equipment. The adoption of this model is supported by Care (2013) who observed that collaboration with the companies providing managed equipment services increases the quality of care and improves the patient outcomes. The Kenyan government in its efforts to enhance equitable, accessible and quality healthcare equipped two hospitals in each of the forty-seven counties with state of the art specialized medical equipment in 2014. Under MES arrangement, the equipment was outsourced from a single manufacturer, Phillips, who was tasked with supplying, installing and training users for a period of time (Ombogo, 2014).

The MES project now in its fifth year of a seven year contract has not yielded the fruits expected. Majority of the 98 hospitals earmarked for the project have not been using the equipment. The machines lie idle due to lack of electricity, specialists, water and connection to sewer lines (Nisar, 2017). In Migori County, the machines cannot operate due to inadequate trained personnel. In Vihiga County, the equipment lies idle due to lack of electricity. In Nakuru, Nyeri, Kisumu and Isiolo Counties, there has been no operational difficulty (Achieng, 2013). PPPs help expose the state owned hospitals to an increased level of private sector participation and transfer of skills between the two parties. PPPs will help combine skills and resources between the two entities in new ways through sharing responsibilities and skills (Moraa, 2011).

There is an agreement that MES is a good idea if adequate training is given to the personnel. The Medical Practitioners and Dentists Council (KMPDC) notes that there are 7974 doctors and 838 dentists in active practice. Kenya has only 161 anesthetists. The Kenya Medical Association notes that the machines presented by the government lack skilled personnel to operate them. Each of the county is required to pay 131.9 million every year for these equipment (Ministry of Health, 2016). The Kenyan Senate has noted that the procurement of these equipment involved highly inflated prices with revelations that the equipment costs were inflated by up to six times. The general reasons why MES has failed to have a positive effect in the counties according to the Ministry of Health include lack of electricity, lack of skilled workers, financial constraints and lack of space to keep the equipment (Ministry of Health, 2016).

Research gaps include; contextual gaps; Ferreira and Marques (2020) investigated whether public-private partnerships in health care outperform state hospitals in terms of quality and accessibility in Portugal. In the United Kingdom, Espigares and Torres (2015) did a study on public-private partnerships as a new approach of delivering healthcare services. Kosycarz (2019) assessed the potential for successful public–private partnerships in Poland's healthcare industry. Methodologic gaps (de Oliveira, Guimaraes and Jeunon (2017) researched on public-private partnerships: their origins, limitations, and future possibilities for public accounting. Mutia (2013) researched on effectiveness of public private partnerships in Kenya. Conceptual gap, Grazzini and Petretto (2014) studied on PPP and competition in health-care and education in UK, the USA, the Netherlands, and Australia. This study focused on PPP and competition. The reviewed studies mainly focused on public-private partnerships. However, the studies have not clearly identified and assessed the

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effects of PPPs of performance of MES projects; a gap this study seeks to fill. This study focused on the public private partnerships and performance of MES in healthcare and concentrated on health care services in ninety-eight County hospitals spread in the forty seven counties of Kenya earmarked for the project.

Research objectives

The general objective of the study was to analyze the effect of public-private partnership on performance of managed equipment service projects in healthcare service provision in Kenya. The study was guided by the following specific objectives:-

- To examine the extent to which staff skills and knowledge influence the performance of managed equipment service projects in healthcare service provision in Kenya.
- To establish the extent to which stakeholder involvement influences performance of managed equipment service projects in healthcare service provision in Kenya
- To assess the role played by monitoring and evaluation in ensuring the performance of managed equipment service projects in healthcare service provision in Kenya.
- To assess the role played by contract management in ensuring the performance of managed equipment service projects in healthcare service provision in Kenya.

LITERATURE REVIEW

Theoretical review

The study was based on theory-based evaluations that have been basically used to understand how the hospitals adopt and also develop managed equipment services. The theories were; resource-based view, theory of change and the institutional theory.

Institutional theory

This theory was first proposed by William Richard Scott in 1995. The theory explains the process by which routines, structures, norms and rules get to be established as a behavior that is acceptable (Keohane, & Martin, 2014). Suddaby (2015) found out that the organizations are required to act in a way that fulfills both the requirements of a customer and the legal ones as well. The pressure that arises from the two parties greatly influences the adoption of managed equipment services. Hospitals have been forced to institutionalize reverse logistics practices because of the internal and also external and internal pressures. Hospitals have been forced to institutionalize managed equipment services practices as they want to offer better services to the patients and also limit the number of deaths that occur due to lack of specialized equipment to take care of the patients' needs. This is over and above the growing demand of the patients and also the healthcare sector for better treatment that is accorded to the patients. The challenges and pressures always push the firms to consider some of the health impacts of having better equipment (Keohane & Martin, 2014).

Resource Based View Theory

The resource-based view was a theory that emerged in 1980s and 1990s developed by Wernerfelt (1984); Prahalad and Hamel (1996); Barney (1986, 1991). The core idea of the theory is that instead of looking at the competitiveness in the business environment to acquire a market niche and competition and threats edge over, the company can however look at its resources and ability it has already. As per the RBV it is very easy to exploit novel opportunities by use of available resources and competencies, other than the acquisition of novel skills and knowledge for every varied opportunity. The RBV main focus is on these resources and this should be given a priority within organisational strategy development. Tangible and intangible resources are the two sorts of resources. Physical assets are tangible assets, whereas intangible assets are everything that does not have a physical presence but can still be owned by a firm.

Stakeholder Theory

This theory proposed by Edward Freeman in 1984 fronts that stakeholders are the people affected by

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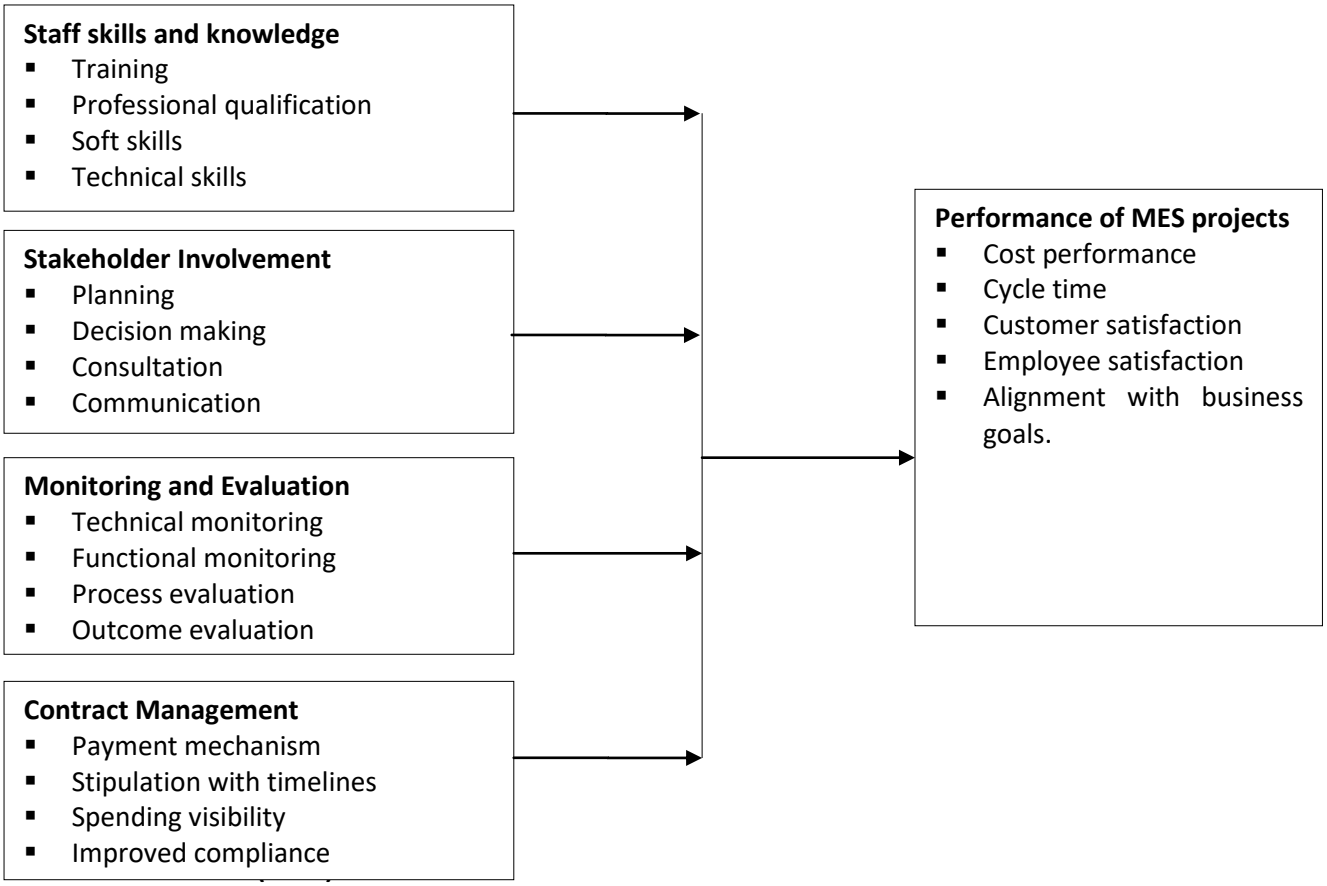
an institution and its workings. The theory argues that institutions should not only make profits for their owners but also consider the well-being of those that surround them. It could include the local community, the media, suppliers and more. The theory notes that the corporate environment is an ecosystem of related groups all of whom need to be taken into account and their needs, meet to keep the institution thriving and in progress in the long run.



Independent Variable **Dependent Variable**

Figure 1: Conceptual Framework

METHODOLOGY

The study used descriptive study design. The descriptive design was adopted to enhance knowledge about the phenomenon of study gained when the research is about certain predictions, narratives and features regarding situations or person (Kothari, 2004). The target population of this research were 2 hospitals in each of the 47 counties that are under MES programs in Kenya and 4 national hospitals. The population was 98 hospitals. The sample that was utilized in this research was arrived at through simple random sampling method where a sample of 47 out of 94 hospitals in every county and 4 National Referral hospitals with outsourced specialized state-of-the-art medical equipment was used. The unit of observation was the hospital supervisor, doctor, nurse, procurement officer and a subordinate officer. The study also adopted simple random sampling to obtain the 5 respondents from each hospital. The five respondents was obtained because it is believed that they are involved in public private partnership activities in hospitals. The study respondents were 255 respondents.

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Primary data was used which was obtained using questionnaires. They were disseminated to the 47 hospitals identified and given to the hospital supervisor and the head of medical services and later be picked from them. Piloting was done to determine the validity and reliability of the study tool. The pilot was done in Murang'a and Machakos Counties since they were within the easy reach of the researcher. The five employees from each of the two counties was used to check the reliability and validity of the items used in the questionnaire and suitability of language applied in the tool to reveal vague questions and unclear instruments.

A self-administered questionnaire was adopted to get data. The collected data was processed and analyzed manually as well as electronically using SPSS version 21. For ease of understanding, the presentation used narrative description and diagrammatic presentation in the form of tables, graphs, and charts. Descriptive statistics like means, standard deviation, percentages and frequencies were used for data analysis and interpretation. Correlation analysis was adopted to identify link among variables.

Regression analysis was adopted to make a prediction and determine how the variables influence the performance of managed equipment services projects in health service provision. SPSS software program was utilized. Performance of managed equipment service System Y_i can be elaborated by the following empirical model

$$Yi = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \acute{\varepsilon}.$$

Where:

X_1= Stakeholder involvement
X_2= Staff knowledge and skills
X_3= Contract management
X_4= Monitoring and evaluation with έ representing the error term.
β_0= constant coefficient
β_0- β_4= are regression coefficients to be estimated
ε = Error term

FINDINGS AND DISCUSSION

A total of 255 people formed the study sample. They were all issued with questionnaires from which 228 were filled and returned the questionnaires creating a response rate of 89%. This response rate was adequate for drawing conclusions for the study. The response rate was typical.

To determine the reliability of the questionnaire, a reliability analysis was performed. Cronbach's Alpha was used in the study. Gliem and Gliem (2003) set the Alpha value threshold at 0.7, establishing a baseline for the study. The findings revealed that staff skills and knowledge has a Cronbach value of 0.816, stakeholder involvement has a Cronbach value of 0.795, monitoring and evaluation has a Cronbach value of 0.802 and contract management has a Cronbach value of 0.871. This demonstrates that every variable was reliable.

Descriptive Statistics

Staff skills and knowledge influence performance on MES

On a scale of 1-5 the respondents were required to specify their level of agreement or disagreement with the statements.

Table 1: Staff skills and knowledge influence performance on MES

Statement	n	Mean	Std. Dev.
Necessary skills play an essential part in MES projects performance	228	4.197	1.007
Training play an essential part in MES projects performance	228	4.123	0.976
Professional qualification play an essential part in MES projects performance	228	4.377	1.328
Soft skills play an essential part in MES projects performance	228	4.272	1.171
Technical skills play an essential part in MES projects performance	228	4.140	0.992
Overall mean		**4.222**	**0.896**

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The respondents agreed that professional qualification play a key role in performance of MES projects indicated by (M = 4.377, Std. Dev =1.328), soft skills play a vital part in performance of MES projects as indicated by (M = 4.272, Std. Dev = 1.171), necessary skills play a vital part in performance of MES projects as indicated by (M = 4.197, Std. Dev = 1.007), technical skills play a vital part in the performance of MES projects as indicated (M = 4.140, Std. Dev = 0.992) and training play an essential MES projects performance as indicated by (M = 4.123, Std. Dev = 0.976). The overall mean is 4.222 and standard deviation 0.896. The findings concur with those of Mackenbach & McKee, (2013) who observed that the success of MES projects was attributed to rigorous training that the staffs were made to go through.

Stakeholder involvement influencing performance of MES

The following are statements on stakeholders involvement influence on performance of MES. The respondents were inquired to state their level of agreement. The presentation of the outcomes was in Table 2.

Table 2: Stakeholder Involvement Influencing Performance of MES

Statement	n	Mean	SD
Participation of stakeholders play an essential role in MES projects performance	228	3.882	0.898
Participation of stakeholders in planning play an essential role in MES projects peformance	228	3.978	0.888
Participation of stakeholders in decision making play an essential role in MES projects peformance	228	3.991	0.871
Consultation with stakeholders play an essential part in MES projects peformance	228	3.947	0.896
Communication with stakeholders play an essential part in MES projects peformance	228	4.149	0.984
Overall mean		**3.989**	**0.907**

From the participants, the participants agreed that communication with stakeholders play a key role in performance of MES projects indicated by (M = 4.149 and Std. Dev = 0.984), participation of stakeholders in decision making play a great part in performance of MES projects demonstrated by (M = 3.991, Std. Dev = 0.871), participation of stakeholders in planning play a great part in performance of MES projects indicated by (M = 3.978, Std. Dev = 0.888), consultation with stakeholders play a great part in performance of MES projects indicated by (M = 3.947, Std. Dev = 0.896) and participation of stakeholders play a great part in performance of MES projects indicated by (M = 3.882, Std. Dev = 0.898). The overall mean is 3.989 and standard deviation 0.907. The findings agrees with those of Muff and Williamson (2014) who observed that successful MES project management can only happen when stakeholders are communicated and informed in a clear manner.

Role of monitoring and evaluation influencing performance of MES

On the following statements on the role of M&E on performance of MES the respondents were requested to show the level of your agreement. The results were as shown in Table 3.

Table 3: Role of Monitoring and Evaluation Influencing Performance of MES

Statement	n	Mean	SD
Regular M & E plays a key an essential part in MES projects delivery peformance	228	3.912	0.946
Technical monitoring plays an essential part in MES projects delivery peformance	228	4.048	0.954
Functional monitoring plays an essential part in MES projects delivery peformance	228	4.118	0.953
Process evaluation plays an essential part in MES projects delivery peformance	228	3.868	1.095
Outcome evaluation play an essential part in MES projects delivery peformance	228	3.868	0.930
Overall mean		**3.963**	**0.976**

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The participants agreed that functional monitoring as an essential part in MES projects performance delivery indicated by (M = 4.118 and standard deviation , Std. Dev = 0.953), technical monitoring plays an essential part in performance delivery of MES projects demonstrated by (M = 4.048, Std. Dev = 0.954), regular monitoring and evaluation is essential in MES projects performance delivery indicated by (M = 3.912, Std. Dev = 0.946), process evaluation plays is essential in MES projects performance delivery indicated by (M = 3.868, Std. Dev = 0.930 and outcome evaluation plays a great part in performance delivery of MES projects as indicated by (M = 3.868, Std. Dev = 1.095). The overall mean score was 3.963 and standard deviation 0.976. The findings are in agreement with those of Naidoo (2011) who suggested that effective M&E of project improves the foundation for evidence-based decisions on project management. Phiri (2015) found that M & E as management functions, have an impact on the performance of projects.

Role of Contract Management on the Performance of MES

On the following statements on contract management influencing performance of MES, the respondents were required to show their level of agreement.

Table 4: Role of Contract Management on the Performance of MES

Statement	n	Mean	SD
Proper contract management is essential in performance delivery of MES projects	228	3.930	0.919
Payment mechanism is essential in performance delivery of MES projects	228	3.991	0.970
Stipulation with timelines is essential in performance delivery of MES projects	228	3.925	0.887
Spending visibility is essential in performance delivery of MES projects	228	4.154	0.984
Improved compliance plays is essential in performance delivery of MES projects	228	4.031	0.920
Overall Mean		**4.006**	**0.936**

The respondents agreed that spending visibility is essential in performance delivery of MES projects demonstrated by (M = 4.154, Std. Dev = 0.984), improved compliance is essential in performance delivery of MES projects as indicated by (M = 4.031, Std. Dev = 0.920), payment mechanism plays is essential in performance delivery of MES projects as demonstrated by (M = 3.991, Std. Dev = 0.970), proper contract management is essential in performance delivery of MES projects indicated by (M = 3.930, Std. Dev = 0.919) and stipulation with timelines is essential in performance delivery of MES projects indicated by (M = 3.925, Std. Dev = 0.887). The overall mean score is 4.006 and standard deviation of 0.936. The findings agrees with those of Maluka *et al,* (2018) who notes that contract management plays a great part in performance of these projects. Lack of a well-defined contract process they note affects the MES projects delivery and the overall performance of the healthcare sector.

Performance of MES Projects

On the following statements on performance of MES, the respondents were required to show their level of agreement.

Table 5: Performance of MES Projects

Statement	n	Mean	Std. Dev
Cost performance of MES projects has improved	228	3.895	0.819
Cycle time of MES projects has improved	228	3.982	0.877
MES projects has improved customer satisfaction	228	4.053	0.920
MES projects has improved employee satisfaction	228	4.031	0.927
MES projects are highly aligned with business goals.	228	3.829	0.803
Overall Mean		**3.958**	**0.8692**

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The respondents were in agreement that MES projects has improved satisfaction of consumers as shown by a mean of 4.053, MES projects has improved employee satisfaction shown by a mean of 4.031, cycle time of MES projects has improved shown by a mean of 3.982, cost performance of MES projects has improved shown by a mean of 3.895 and MES projects are highly aligned with business goals shown by a mean of 3.829.

Inferential Statistics

This section discussed correlation and multiple regression analysis.

Correlational Analysis

In correlation the link between independent and dependent variables is investigated. In this study, Pearson Moment Correlation was used. Table 6 displays the results.

Table 6: Correlational Analysis

		Performance of MES projects	Staff Skills and Knowledge	Stakeholder Involvement	Monitoring and Evaluation	Contract Management
Performance of MES projects	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	228				
Staff Skills and Knowledge	Pearson Correlation	.873**	1			
	Sig. (2-tailed)	.001				
	N	228	228			
Stakeholder Involvement	Pearson Correlation	.809**	.471**	1		
	Sig. (2-tailed)	.001	.032			
	N	228	228	228		
Monitoring and Evaluation	Pearson Correlation	.823**	.365**	.324**	1	
	Sig. (2-tailed)	.001	.048	.051		
	N	228	228	228	228	
Contract Management	Pearson Correlation	.816**	.265**	.224**	.203	.1
	Sig. (2-tailed)	.001	.057	.063	.070	
	N	228	228	228	228	228

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

The outcomes showed a very strong positive correlation between staff skills and knowledge and performance of MES projects as shown by r = 0.873 and p-value = 0.001; stakeholder involvement and performance of MES projects had a very strong positive correlation as shown by r = 0.809 and p-value = 0.001; there was also a very strong positive correlation on monitoring and evaluation and performance of MES projects as shown by r = 0.823 and p-value = 0.001; and contract management and performance of MES projects had a very strong positive correlation as shown by r = 0.816 and p-value = 0.001. This implies that staff skills and knowledge, stakeholder involvement**,** monitoring and evaluation and contract management had a significant connection with performance of MES projects

Model Summary

The model summary is used to examine the variations of the dependent variable due to changes in the independent variables.

Table 7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.829[a]	.687	.673	.10736

Source: Research Data (2021)

Analysis was done on the variations of performance of MES projects due to changes of staff skills and knowledge, stakeholder involvement**,** monitoring and evaluation and contract management. From the results, the adjusted R squared was 0.673 meaning that there was 67.3% variations of performance of MES projects due to changes of staff skills and knowledge, stakeholder involvement**,** monitoring and evaluation and contract management. The remaining 32.7 percent infer that there are other elements influencing MES project performance that were not addressed in the research.

Analysis of Variance

To ascertain if the data used is significant ANOVA was used.

Table 8: ANOVA[a]

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	38.371	4	9.592	171.299	.000[b]
	Residual	12.564	223	.056		
	Total	**100.935**	**227**			

According to the model summary statistics, the regression model had a significance level of 0.000, indicating that there existed significant link among the variables. The calculated F value, from table (171.299) was more than the F critical value, gotten from the f-distributions tables (2.412) an indication that there was a significant link amid staff skills and knowledge, stakeholder involvement**,** M&E and contract management and the dependent variable performance of MES projects. The p value below 0.05 indicates that the model is significant and that the independent variables can be used to predict MES project performance.

Beta Coefficients of the study Variables

The regression equation was

$Y = 1.185 + 0.403\ X_1 + 0.359\ X_2 + 0.372\ X_3 + 0.391\ X_4 + \epsilon$

From the above regression equation, it was noted that holding staff skills and knowledge, stakeholder involvement**,** monitoring and evaluation and contract management to a constant zero, performance of MES projects would be at a constant value of 1.185.

Table 9: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.185	0.131		9.046	.000
	Staff Skills and Knowledge	.403	0.109	.384	3.697	.002
	Stakeholder Involvement	.359	0.095	.317	3.779	.002
	Monitoring and Evaluation	.372	0.102	.329	3.647	.002
	Contract Management	.391	0.098	0.336	3.990	.002

Staff skills and knowledge was statistically significant to performance of MES projects in Kenya (β = 0.403, P = 0.002). This implies that staff skills and knowledge had a significant positive link with MES projects performance. Therefore, an increase in staff skills and knowledge would result to rise in performance of MES projects. The findings concur with those of Mackenbach & McKee, (2013) who observed that the success of MES projects was attributed to rigorous training that the staff were made to go through.

It was also revealed that stakeholder involvement was statistically significant to performance of MES projects in Kenya (β = 0.359, P = 0.002). This shows that stakeholder involvement significantly and positively influences performance of MES projects.

So, a unit rise in stakeholder involvement would result to rise in performance of MES projects. The findings agrees with those of Muff and Williamson (2014) who observed that successful MES project management can only happen when stakeholders are communicated and informed in a clear manner.

Further, monitoring and evaluation was statistically significant to performance of MES projects in Kenya (β = 0.372, P = 0.002). This implies that M&E had a significant positive link with performance of MES projects. Therefore, a rise in monitoring and evaluation would result to rise in performance of MES projects. The findings are in agreement with those of Naidoo (2011) who suggested that effective M&E of project improves the foundation for evidence-based decisions on project management.

Contract management was statistically significant to performance of MES projects in Kenya indicated by (β = 0.391, P = 0.002). This implies that contract management significantly positively link with performance of MES projects. Therefore, a rise in contract management would result to rise in performance of MES projects. The outcomes concur with those of Maluka *et al,* (2018) who notes that contract management plays a key part in the performance of these projects.

CONCLUSIONS AND RECOMMENDATIONS

The study found that professional qualification, soft skills, necessary skills, technical skills and training play a significant part in the performance of MES projects. Further staff skills and knowledge had a statistically significant effect on performance of MES projects in Kenya. Therefore, the study concludes staff skills and knowledge is positively related to performance of MES projects.

The study found a positive correlation between stakeholder involvement and performance of MES projects in Kenya. Further, stakeholder involvement was statistically significant to performance of MES projects in Kenya. Stakeholder involvement had also a significant positive link with performance of MES projects. The study concludes that increase in stakeholder involvement results to an upturn in performance of MES projects.

It was found that functional monitoring, technical monitoring, regular monitoring and evaluation, process evaluation and outcome evaluation play a vital role in the performance of MES projects. It was also revealed that monitoring and evaluation was statistically significant to performance of MES projects in Kenya. The study concludes that monitoring and evaluation is positively related with performance of MES projects.

The study found that spending visibility, improved compliance, payment mechanism, proper contract management and stipulation with timelines play a significant role in the performance of MES projects in Kenya. Further, contract management was statistically significant to performance of MES projects in Kenya. The study concludes that contract management positively influences performance of MES projects.

The study found that professional qualification, soft skills, necessary skills, technical skills and training play a significant part in the performance of MES projects. This study recommends that the hospitals in Kenya should ensure that they hire employees with soft and technical skills and they should also be professionally qualified. Further, the employees should receive proper training on MES, this would help them to undertake their tasks effectively.

The study revealed that communication, participation of stakeholders in planning, decision making and consultation with stakeholder significantly influences performance of MES projects. The study recommends that hospitals in Kenya should ensure that they communicate and consult with their stakeholders on the projects they wish to undertake. Further, stakeholders should be allow to partake in planning and decision making. Their opinions would play a big role in the performance of MES projects.

The study also found that functional monitoring, technical monitoring, regular monitoring and evaluation, process evaluation and outcome

evaluation play a vital role in the performance of MES projects. Therefore, the study recommends that the hospitals in Kenya should adopt functional, technical, regular, evaluation, process monitoring and outcome evaluations. This would be helpful in checking the progress of the MES projects.

The study found that spending visibility, improved compliance, payment mechanism, proper contract management and stipulation with timelines play a significant role in the performance of MES projects in Kenya. The study recommends that the hospitals shoud adopt proper contract management, adhere to stipulated timelines and ensure that their spending in properly accounted for through frequent provision of financial perfromance.

Suggestions for Further Research

This study analyzed the effect of public-private partnership on performance of managed equipment service projects in healthcare service provision in Kenya. It recommended that other studies should be conducted to cover other variables other than staff skills and knowledge, stakeholder involvement, monitoring and evaluation and contract management. Further, this study should be replicated in level five hospitals and a comparison of the results made.

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