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DETERMINANTS OF PERFORMANCE OF SANITATION PROJECTS IN INFORMAL SETTLEMENTS IN KENYA: A CASE OF KIAMBIU, KAMUKUNJI SUB COUNTY, NAIROBI, KENYA.

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Abstract

Purpose: The general objective of the study is to establish Determinants of performance of sanitation projects in informal settlements in Kenya. Specific objectives were to assess the effect of project quality, project stakeholder participation, project team development and project resources on performance of sanitation projects in informal settlements in Kenya.

Methodology: The study adopted a descriptive research design. Stratified random sampling was used to divide the population into different strata i.e. Project Managers, Project Engineers and Project Architectures so as to draw randomly a predetermined number of units. The collected data was coded and analyzed using the Statistical Program for Social Sciences (SPSS) version 20 because of its ability to analyze data easily and accurately. ANOVA (analysis of variance), multi-regression data analysis methods was applied to analyze the data obtained from the study. The findings was presented by use of bar charts, graphs, tables and pie charts. A multivariate regression model was applied to determine the relative importance of each of the four variables with respect to factors influencing the success of sanitation projects in informal settlements a case of Kiambu Slums, Kamukunji Sub County.

Results: Correlations analysis was then conducted at 95% confidence interval and 5% confidence level 2-tailed., Results showed that there is a positive relationship between all the four factors and success of sanitation projects in informal settlements. The positive relationship indicates that there is a correlation between the factors and the success of sanitation projects in informal settlements. Based on the correlation coefficients, Project quality have the highest influence on success of sanitation projects in informal settlements at $r = 0.763$ and $p = 0.040$, followed by Stakeholder participation at $r = 0.632$ and $p = 0.009$, then Project team at $r = 0.614$ and $p = 0.022$ while Project resources had the least influence on success of sanitation projects in informal settlements at $r = 0.596$ and $p = 0.016$.

Conclusion: The study concludes that Project managers should focus on making sure that stakeholders are understood in terms of their quality needs. It also involves determining what quality outputs will be exchanged over the course of the project for example status updates, minutes of meetings, reports on deliverables. Project managers should make careful plans to outline who receives which quality, who is responsible to deliver and respond to quality content, and how and when quality will be delivered

Policy Recommendation: The study recommended that Quality plans should be executed and monitored over the course of project implementation and throughout until project is completed

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Keywords: *project quality, stakeholder participation, project team, project resources*

1.0 INTRODUCTION

1.1 Background of the Study

The absence of adequate sanitation has a serious impact on health and social development, especially for children (UNICEF, 2008). Poor sanitation has led to increased diseases among the urban poor. Improving access to sanitation and sustaining the same is an important step towards reducing the impact of these diseases (Mulupi, 2016). Globally, close to 2.7 billion people have inadequate sanitation and more than three million die of diarrheal diseases.

Waste causes a big threat to informal health and the general environment if not stored, collected and disposed of well (Ramatta *et al*, 2014). The rapid and unplanned urbanization is a challenge in India. Out of the 93 million informal settlement residents in India, 81 per cent have inadequate access to sanitation and 15 per cent, have no form of toilet at all and so are forced to use Open spaces (Sinjora, 2013). In China Hunan province, going to the bath room means squatting over a dirty hole in the ground (Zimmerman, 2012).

Sanitation and hygiene is important in schools due to a high prevalence of sanitation related diseases which affect school going children. Improved hygiene and sanitation cut the transmission routes of these diseases. Hygiene education in schools bring about intention to change behavior but intention alone is not enough so adequate, accessible and clean sanitary facilities are required to actualize the behavior change (UNICEF, 1998). Provision of modern technologies that enable improved water, sanitation, and hygiene (WASH) are seen as viable solutions for reducing high rates of diseases and deaths resulting from poor sanitation. Due to the challenges experienced in informal settlements, accessible, hygienic and affordable sanitary facilities are a welcome option (Dreibelbis, 2013).

Rapid population rise in Indian cities has forced many people to live in slums where sanitation becomes a challenge. Pay per use and community managed and owned toilets alleviate the sanitation challenge for transient populations but not domestic. There are Communal sanitation facilities in Bhopal poverty pockets but only few are clean and less crowded which are actually pay per use toilets. A Non-governmental Organization Sulabh has been constructing and operating toilets facilities which has bathing facilities and run on a twenty four hour basis on a low charge pay –per use basis (Biran, 2010).

After a south Asian conference on Total Led sanitation held in Bangladesh in2003, Nepal adopted the idea. SLTS concept was initiated in 2004 following the total sanitation approach. SLTS being a comprehensive arrangement is deemed the solution to universal toilet provision and coverage in all schools and eventually communities which are intended to promote sustainable hygiene behavior. Putting up infrastructure that will not be maintained and operated well defeats the logic of building them in the first place (Adhikari, 2010).

In Africa more than sixty five percent of the population lacks access to improved sanitation facility which can separate them from human wastes (WHO, 2008). There is a rapid urbanization leading to an increase in the urban population and rapid growth in the size and number of informal settlements in Kigali. More than 60% of the city's population lives in these settlements, where they get inadequate and poor quality urban services including WASH (Tsinda *et al*., 2013).

Kenya vision 2030 development roadmap where the environment and sanitation fall under the social pillar also focuses on the Universal provision of sanitation facilities. The city and town councils provided informal toilets but they were poorly managed and not regularly cleaned which kept away users in Kenya and many other developing countries (Wakaba,2014).

There are several informal settlements in Kenya with challenges in sanitation issues. Inadequate access to wash is the main problem facing informal settlement dwellers with 42 percent of the population served by informal sanitation facilities and the rest of the population has no access to toilets, meaning that open defecation and "flying toilets" which is plastic bags containing human excreta thrown away from homes is common(Otsuki, 2013).

1.2 Problem Statement

Water and sanitation related diseases causes a heavy burden in developing countries with 88% of diarrheal diseases linked to unsafe water and poor or low toilet coverage. Communities carry this burden of water and sanitation related diseases and it is worse when there are underlying childhood diseases especially malnutrition and helminthes (WHO, 2009)

According to WRMA (2012), water scarcity in Kiambu slums has been accelerated by increasing demand in the domestic and agricultural sectors. This is associated with rapid population growth and unregulated use of water, which has caused over-exploitation and degradation of water resources. Catchment degradation and extraction of riverine resources such as sand, ballast, building stones and vegetation has led to drying of rivers and shallow boreholes in the Sub-county. Despite this huge investment in water projects, there has been continued outcry by the informal on the inability of the projects to meet their intended objectives while many water projects have taken so long to be completed and many more have been abandoned before completion (Onjala, 2012).

According to the World Health Organization (2011) 2.2 million people in developing countries, most of them children, die every year from diseases associated with lack of safe drinking water and inadequate sanitation and hygiene. Improvements in these services could reduce mortality rates due to diarrheal diseases by an estimated 65% and related morbidity by 26% (WHO, 2011). Chikati (2009) explains that over the past ten years, both in developed and developing countries; analysis has shown that the failure rate for projects achieving their stated objectives is extremely high, at 60% in some cases. Some of these projects have gone to full implementation but without much benefit to the communities.

The UN Joint Monitoring Program estimates the failure rate for most water development projects in Africa at anywhere from 30 to 60%. Despite the failed water development projects governments and international financial institutions continue investing hundreds of millions of dollars to keep the projects going (WB, 2010) despite evidence that they have not succeeded. In Kenya about 35% of the water projects implemented will fail due to poor management of the initiation, planning, execution and closure phases of such projects thus don't meet the desired goals and objectives (UNICEF, 2008).

Despite the government and non- governmental organizations making good efforts to come up with water projects in order to supply water to citizens, this projects they have not been able to cover all areas especially rural areas. Consequently, it has become necessary for communities to organize themselves and launch community water projects to ensure they bring water closer to

their homes (UNICEF, 2014). Many community water projects are started, but fail to realize the intended objectives with a good number of these water projects collapsing before completion. A number water projects established run for one or two years after completion and then collapse; therefore, they fail to meet the intended objectives. This study seeks to establish factors influencing the success of sanitation projects in informal settlements a case of Kiambiu Slums, Kamukunji Sub County.

1.3 Objectives of the Study

i. To what extent does project quality affect performance of sanitation projects in Informal settlements in Kenya?
ii. How does stakeholder participation affect performance of sanitation projects in Informal settlements in Kenya?
iii. What is the effect of project team on performance of sanitation projects in Informal settlements in Kenya?
iv. How do project resources affect sanitation projects in Informal settlements in Kenya**?**

2.0 LITERATURE REVIEW

Project quality

Quality isessential in an increasing complex world. They should enable collaboration within and across organisations in order to improve effectiveness and efficiency in project related activities. Globalization forces a lot of organisations to do projects in an multi-national and cross-cultural context. Thus, quality should give guidance for people involved in such activities. In terms of quality quality it could be monitored by the amount of rework or by the degree of client satisfaction. The long-term indicators will not have been realised yet and consequently they cannot be measured. Therefore, it is convenient to judge success at this time by whether the project management criteria have been satisfied rather than the project criteria. So project management success becomes synonymous with project success, and the two are inseparable.

Project stakeholder participation

According to WRM rules (Reinformal of Kenya, 2008), a stakeholder is a person or entity which has influence over or is affected by a certain activity on a resource. Tilbury and Wortman (2014) defined participation as „ to take part, to share and act together". World Bank (2010) gave a more comprehensive definition of the concept of participation as a process through which stakeholders influence and share control over development initiatives, decisions, and resources that affect them.

Project team

According to Diwan (2009) the people side of project team development and management is very important for project success and in order for project to be successful, every individual including team leader or project personnel need to be properly managed and developed. This aspect is crucial because it will lead them to contribute towards the achievement of the project goals. In the other hand, with good team members, it brings benefits including increased involvement, development and empowerment of employees, expand the use of employee skills and capabilities, helps in decision making process, growing in creativity and work processes and performance may improve.

Project resources

Project resources is the basic physical and organizational structures needed for the well performance of a project for example water projects so on. It is the enterprise or the products, services and facilities necessary for project completion (Sulivan & Sheffrin, 2003). Resources can be described generally as the set of interconnected structural elements that provide framework supporting an entire structure of development. It is the means of achieving an objective or set of objectives and also includes the objectives. It is an important term for judging a country, region or state's and individual's developments/status

2.1 Theoretical review Systems Theory

According Hartman, (2010) everything is fundamentally interrelated and input into one aspect of a complex system will affect other aspects of that system which will in turn affect other aspects of the system and so on and so forth. In addition, complex living systems are composed of smaller systems and are in turn imbedded within larger systems – the idea of nested hierarchy or holonarchy. The ripple effect inherent in system responses also impacts the systems of which the original system is an integral part. Systems are thus circuits of information flow. The circuitry of a system involves the reception of input from the environment, the perception of that input in reference to existing codes, and finally, the system's response (Houghteling, 2009).

An organization cannot be understood without considering the information-generating environment in which it operates. Instead of being fundamentally discreet entities, an organization and its environment co-create their relationship (as noted above, systems operate within systems within systems). Just as systems theory recognizes that an organization is not fundamentally separate from its environment, systems theory does not allow the employee to be seen as fundamentally separate from the organization – or from one another. A workforce is by definition composite. When seen systemically, a workforce can be clearly seen as a network (Houghteling, 2009). According to Wheatley (2009), organizational systems are "process structures" that can reorganize themselves or evolve to a new order, depending on circumstances. The potent force that shapes behavior in these organizations and in all natural systems is the combination of simply expressed expectations of purpose, intent, and values, and the freedom for responsible individuals to make sense of these in their own **way.**

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2.3 CONCEPTUAL FRAMEWORK

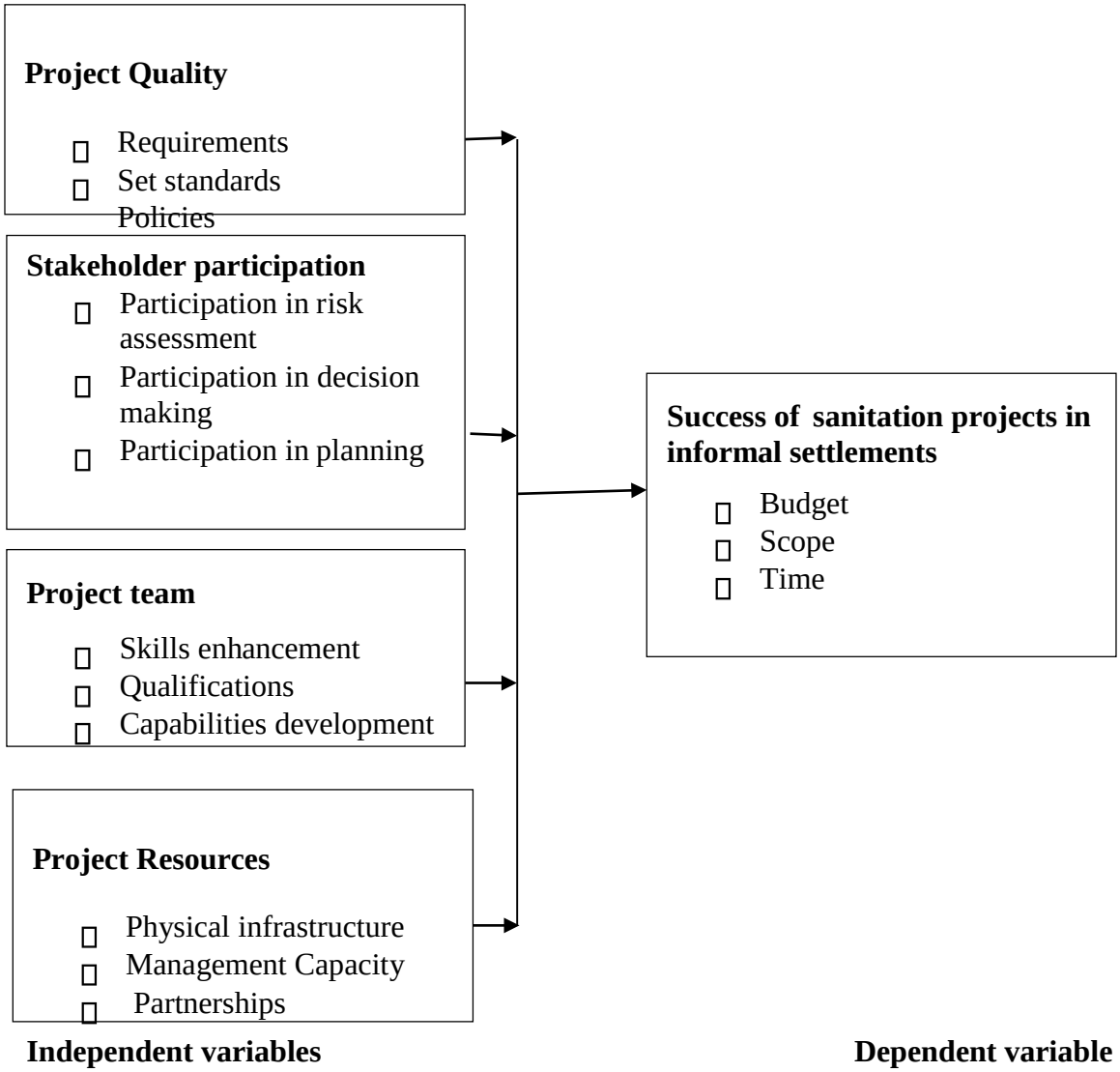

Figure 1: Conceptual Framework

3.0 METHODOLOGY

The study adopted a descriptive research design. Stratified random sampling was used to divide the population into different strata i.e. Project Managers, Project Engineers and Project Architectures so as to draw randomly a predetermined number of units. The collected data was coded into the Statistical Program for Social Sciences (SPSS) version 24 because of its ability to analyze data easily and accurately.

$\mathbf{Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon}$, Where:

Y = success of sanitation projects in informal settlements

β_0= Constant Term

β_1= Beta coefficients

X_1= Project quality

X_2= project stakeholder participation

X_3= project team development X_4= project resources ε = error term β_1……β_4= regression coefficient of four variables.

4. 0 RESULTS FINDINGS

4.1 Descriptive Statistics Statements of Project quality

The respondents were requested to indicate the extent to which the following statements of Project quality have an influence on performance of sanitation projects in informal settlements in Kenya. Their responses were as shown in Table 1.

Table 1: Statement of Project quality

Statements	Mean	Std. Deviation
Project quality Management includes the processes required to ensure timely and appropriate generation, collection, distribution, storage, retrieval and ultimate disposition of project information	3.8700	.88129
Quality is an important skill for project managers to accomplish effective project management	3.8400	.85049
Effective quality is the key to success for the individual as well as for the project	3.5300	1.22882
By using quality skills, the project manager helps to plan, direct, control and coordinate their operations throughout the project life cycle	3.5200	1.00499
The effective Project quality management can determine the extent of the project's success or failure	3.8800	.78102

From the findings on the statements of Project quality that influence the performance of sanitation projects in informal settlements in Kenya , the respondents indicated that the effective Project quality management can determine the extent of the project's success or failure to a great extent as shown by a mean score of 3.8800.

Further, the respondents indicated Project quality Management includes the processes required to ensure timely and appropriate generation, collection, distribution, storage, retrieval and ultimate disposition of project information as shown by a mean score of 3.8700. Additionally, the respondents indicated that By using quality skills, the project manager helps to plan, direct, control and coordinate their operations throughout the project life cycle to a great extent as shown by a mean score of 3.5200, the respondents also indicated with the mean score of 3.8400that the Quality

is an important skill for project managers to accomplish effective project management to a great extent.

Finally it was also established that effective quality is the key to success for the individual as well as for the project as it is indicated with the mean score of 3.5300. This is in line with Kwak and Ibbs, (2002) who found out that Project quality management should also include methods and techniques to build trust and relationships among team members, as well as propagate desirable personal behaviors and clear quality rules.

Stakeholder participation

The respondents were asked to indicate the best statement describing the Stakeholder participation on performance of sanitation projects in informal settlements in Kenya. The results were as shown in Table 2.

According to the table 2, the respondents indicated that senior management must be committed with its own involvement and willingness to allocate valuable resources to the implementation effort to success of sanitation projects in informal settlements to a great extent as shown by a mean score of 4.0800. Additionally, the respondents indicated that the Project team is needed throughout the implementation to a great extent as shown by a mean score of 3.9600. Also, the respondents indicated that the project must receive approval from top management to a great extent as shown by a mean score of 3.8000 each. In addition, the respondents indicated that Effective coordination of top management is much required in project activities to a moderate extent as shown by a mean score of 3.3333.

While to a great extent as shown by a mean score of3.9000 respondents indicated that Competence and adequate support from a project consultant is of equal importance for the success of sanitation projects in informal settlements this was in line with Zwikael, (2011) who found out that Project team of an organization may consider to implement, project procedures, involve the project manager during initiation stage, support ongoing project management training programmes, establish a project management office (PMO), develop a supportive project organizational structure, define clear project success measures and support projects in quality management.

Table 2 : Stakeholder participation

	Mean	Std. D
Stakeholder engagement and management is instrumental in aligning participants and their perspective on project success.	2.9600	1.17189
project managers must consider stakeholder's need and expectation to ensure project success	2.8800	1.01325
The project manager such as the owners' representation must manage the influence of the various stakeholder in the relation to the project requirements to ensure a successful outcome	3.6800	1.10755
Stakeholder analysis can help to obtain feedback on how alternative options to proceed will affect the positive or negative impact of stakeholder to make decision in project management	3.8000	1.11803
Organizations that engage with their stakeholders actively are more likely to succeed with the potential benefits	3.8400	.85049

According to the results, the respondents indicated that the Stakeholder analysis can help to obtain feedback on how alternative options to proceed will affect the positive or negative impact of stakeholder to make decision in project management as shown by a mean score of 3.8000. Additionally, the respondents indicated that the project manager such as the owners' representation must manage the influence of the various stakeholder in the relation to the project requirements to ensure a successful outcome as shown by a mean score of 3.6800. Further, the respondents indicated that the Stakeholder engagement and management is instrumental in aligning participants and their perspective on project success as shown by a mean score of 2.9600. Last but not the least the respondents indicated that the Organizations that engage with their stakeholders actively are more likely to succeed with the potential benefits as shown by a mean score of 3.8400.

Lastly, the respondents indicated that the project managers must consider stakeholder's need and expectation to ensure project success as shown by a mean score of 2.8800. This was in agreement with the findings of Amade (2010) attempted to investigate the determinants of successful project implementation in Nigeria. The questionnaire was distributed to 50 project officer in sanitation companies. The study found that environmental factors, collective responsibility among project stakeholders, ability of project professional to generate accurate designs, cost and time estimates and commitments of clients to project financing obligations are the determinants of successful implementation of projects.

Project team

Statements of Project team influence on the performance of sanitation projects in informal settlements in Kenya

The respondents were further asked to indicate the extent to which the following statements of Project team influence on the performance of sanitation projects in informal settlements in Kenya .The findings were as shown in Table 3.

Table 3: Project team

Statements on Project team	Mean	Std. D
Project team is needed throughout the implementation.	3.9600	1.27410
The project must receive approval from top management	3.8000	1.11803
Senior management must be committed with its own involvement and willingness to allocate valuable resources to the implementation effort to success of sanitation projects in informal settlements	4.0800	1.03763
Effective coordination of top management is much required in project activities	3.3333	1.34056
Competence and adequate support from a project consultant is of equal importance for the success of sanitation projects in informal settlements	3.9000	1.22474

Project resources

The respondents were also requested to indicate the extent to which the following aspects of Project resources have an influence on the performance of sanitation projects in informal settlements in Kenya. The responses were as shown in Table 4.

According to the findings, the respondents indicated that Project managers seem to be satisfied with the tools available, even if they are not using them to their intended capacity to a great extent as shown by a mean score of 4.2800. Additionally, the respondents indicated that there is an evident need to analyze organizational arrangements, technical competency such as project management tools and methods, leadership ability and the characteristics of an effective project manager to a great extent as shown by a mean score of 4.1600.

Further, the respondents indicated that there is not enough knowledge about the dependencies between organizational context and critical success factors in project management to a great extent as shown by a mean score of 3.9583. As well, the respondents indicated that project management software is commonly used by project management professionals to a great extent as shown by a mean score of 3.7917. Furthermore, the respondents indicated that Project management effectiveness is identified in technical competency to a great extent as shown by a mean score of 3.7600.

These findings relate to Bardhan, Krishnan and Lin (2012), who attempted to study team dispersion, Project resources and project management in United States of America (USA). The main conclusion of the study was: firms will realize significant benefits in terms of project outcomes if Project resources is implemented in a manner to support higher bandwidth quality among virtual teams

Table 4: Statements of Project resources on success of sanitation projects in informal settlements

	Mean	Std. Deviation
Project management effectiveness is identified in technical competency	3.7600	1.09087
project management software is commonly used by project management professionals	3.7917	1.17877
Project managers seem to be satisfied with the tools available, even if they are not using them to their intended capacity	4.2800	0.79162
There is an evident need to analyze organizational arrangements, technical competency such as project management tools and methods, leadership ability and the characteristics of an effective project manager	4.1600	1.17898
There is not enough knowledge about the dependencies between organizational context and critical success factors in project management	3.9583	1.26763

According to the findings, the respondents indicated that Project managers seem to be satisfied with the tools available, even if they are not using them to their intended capacity to a great extent as shown by a mean score of 4.2800. Additionally, the respondents indicated that there is an evident need to analyze organizational arrangements, technical competency such as project management tools and methods, leadership ability and the characteristics of an effective project manager to a great extent as shown by a mean score of 4.1600.

Further, the respondents indicated that there is not enough knowledge about the dependencies between organizational context and critical success factors in project management to a great extent

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Success of sanitation projects

The study set out to determine the factors that influence performance of sanitation projects in informal settlements in Kenya. The following are the findings obtained.

The respondents were requested to indicate the extent to which the statements relate to success of sanitation projects in informal settlements. The results were as shown in Table 5.

According to the table 5, the respondents agreed that the informal sanitation project meet the set quality (durability, safety) to a very great extent as shown by a mean score of 4.3600. As well, the respondents agreed that the informal sanitation project is completed within budget to a great extent as shown by a mean score of 4.3200. Lastly, the respondents agreed that the informal sanitation project are completed on time to a great extent as shown by a mean score of 4.1200. Chai and Yusuf (2013), while stressing the importance of completing sanitation projects on time and within budget argue that "time is of essence" and time is "revenue". This means that any delay in meeting project completion time undoubtedly interprets to loss of revenue.

Table 5: Statements regarding success of sanitation projects

	Mean	Std. Deviation
The informal sanitation project are completed on time	4.1200	1.12990
The informal sanitation projects are completed within budget.	4.3200	1.02956
The informal sanitation project meet the set quality(durability, safety)	4.3600	.90738

4.2 Inferential Statistics

The study used inferential statistics to come up with the model explaining the relationship between success of sanitation projects in informal settlements (dependent variable) and Project quality, Project team, Stakeholder participation and Project resources (independent variables).

Correlations Analysis

Correlations analysis was then conducted at 95% confidence interval and 5% confidence level 2tailed. According to the result in Table 6, there is a positive relationship between all the four factors and success of sanitation projects in informal settlements. The positive relationship indicates that there is a correlation between the factors and the success of sanitation projects in informal settlements. Based on the correlation coefficients, Project quality have the highest influence on success of sanitation projects in informal settlements at $r = 0.763$ and $p = 0.040$, followed by Stakeholder participation at $r = 0.632$ and $p = 0.009$, then Project team at $r = 0.614$

and p = 0.022 while Project resources had the least influence on success of sanitation projects in informal settlements at r = 0.596 and p = 0.016.

Table 6: Correlations Matrix

		Success of sanitation projects in informal settlements	Project quality	Project team	Stakeholder participation	Project resources
Success of sanitation projects in informal settlements	**Pearson Correlation**	**1**				
	Sig. (2-tailed)					
Project quality	**Pearson Correlation**	**.763**	**1**			
	Sig. (2-tailed)	**.040**				
Project team	**Pearson Correlation**	**.614**	**.496**	**1**		
	Sig. (2-tailed)	**.022**	**.000**			
Stakeholder participation	**Pearson Correlation**	**.632**	**.526**	**.484**	**1**	
	Sig. (2-tailed)	**.009**	**.000**	**.000**		
Project resources	**Pearson Correlation**	**.596**	**.435**	**.413**	**.346**	**1**
	Sig. (2-tailed)	**.016**	**.644**	**.000**	**.000**	

Regression Analysis

Table 7 is a model fit which establish how fit the model equation fits the data. The adjusted R^2 was used to establish the predictive power of the study model and it was found to be 0.673 implying that 67.3% of the variations in success of sanitation projects in informal settlements are explained by Project quality , Project team , Stakeholder participation and Project resources leaving 32.7% unexplained. Therefore, further studies should be done to establish the other factors (32.7%) influencing success of sanitation projects in informal settlements.

Table 7: Goodness of fit of the model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	**0.853[a]**	**0.728**	**0.673**	**1.673**

a. Predictors: (Constant), Project quality, Project team, Stake holder influence, Project resources.

Table 8: Summary of ANOVA results of the regression analysis between success of sanitation projects in informal settlements and predictor variables

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	172.152	60	43.038	13.366	.000
	Residual	64.4	4	3.220		
	Total	236.552	64			

a. Predictors: (Constant), Project quality, Project team, Stakeholder participation, Project resources

b. Dependent Variable: Success of sanitation projects in informal settlements

The probability value of 0.000 shown in table 4.10 indicates that the regression relationship was highly significant in predicting how Project quality, Project team, Stakeholder participation and Project resources influenced success of sanitation projects in informal settlements. The F calculated at 5 percent level of significance was 13.366 since F calculated is greater than the F critical (value = 2.87), this shows that the overall model was significant.

Table 8: Coefficients of regression equation

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.329	0.473		2.825	0.0105
	Project quality	0.638	0.172	0.205	3.709	0.0139
	Project team	0.576	0.155	0.693	3.716	0.0136
	Stakeholder participation	0.605	0.187	0.222	3.235	0.0415
	Project resources	0.537	0.159	0.468	3.377	0.0299

a. Dependent Variable: success of sanitation projects in informal settlements

The regression findings in table 9 has established that taking all factors into account (Project quality , Project team , Stakeholder participation and Project resources) constant at zero success

of sanitation projects in informal settlements will be 1.329. The findings presented also show that taking all other independent variables at zero, a unit increase in Project quality would lead to a 0.638 increase in success of sanitation projects in informal settlements and a unit increase in Project team would lead to a 0.576 increase in the success of sanitation projects in informal settlements. Further, the findings shows that a unit increase in Stakeholder participation would lead to a 0.605 increase in success of sanitation projects in informal settlements while a unit increase in Project resources would lead to a 0.537 increase in the success of sanitation projects in informal settlements.

In terms of magnitude, the findings indicated that Project quality have the highest influence on success of sanitation projects in informal settlements followed by Stakeholder participation , then Project team while Project resources had the least effect on success of sanitation projects in informal settlements. All the variables were significant as their P-values were less than 0.05.

The established optimal model for the study was:

$$\mathbf{Y = 1.329 + 0.638X_1 + 0.605X_2 + 0.576X_3 + 0.537X_4 + 0.473}$$

5. 0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

With regard to Project quality the study established that the respondents indicated that the effective Project quality management can determine the extent of the project's success or failure to a great extent as shown by a mean score of 3.8800. Further, the respondents indicated Project quality Management includes the processes required to ensure timely and appropriate generation, collection, distribution, storage, retrieval and ultimate disposition of project information as shown by a mean score of 3.8700.

Additionally, the respondents indicated that by using quality skills, the project manager helps to plan, direct, control and coordinate their operations throughout the project life cycle to a great extent as shown by a mean score of 3.5200, the respondents also indicated with the mean score of 3.8400that the Quality is an important skill for project managers to accomplish effective project management to a great extent. Finally it was also established that effective quality is the key to success for the individual as well as for the project as it is indicated with the mean score of 3.5300. In relation to Stakeholder participation, the respondents indicated that the Stakeholder analysis can help to obtain feedback on how alternative options to proceed will affect the positive or negative impact of stakeholder to make decision in project management as shown by a mean score of

3.8000. Additionally, the respondents indicated that the project manager such as the owners' representation must manage the influence of the various stakeholder in the relation to the project requirements to ensure a successful outcome as shown by a mean score of 3.6800.

Further, the respondents indicated that the Stakeholder engagement and management is instrumental in aligning participants and their perspective on project success as shown by a mean score of 2.9600. Last but not the least the respondents indicated that the Organizations that engage with their stakeholders actively are more likely to succeed with the potential benefits as shown by a mean score of 3.8400. Lastly, the respondents indicated that the project managers must consider stakeholder's need and expectation to ensure project success as shown by a mean score of 2.8800.

In regard to Project team, the study established that the respondents indicated that seniormanagementmustbecommittedwithitsowninvolvementandwillingnesstoallocatevaluableres ourcestotheimplementation effort to success of sanitation projects in informal settlements to a great extent as shown by a mean score of 4.0800. Additionally, the respondents indicated that the Project team is needed throughout the implementation to a great extent as shown by a mean score of 3.9600.

The study found that the project must receive approval from top management to a great extent as shown by a mean score of 3.8000 each. In addition, the respondents indicated that Effective coordination of top management is much required in project activities to a moderate extent as shown by a mean score of 3.3333. While to a great extent as shown by a mean score of 3.9000 respondents indicated that Competence and adequate support from a project consultant is of equal importance for the success of sanitation projects in informal settlements.

With regard to Project resources the study findings, the respondents indicated that Project managers seem to be satisfied with the tools available, even if they are not using them to their intended capacity to a great extent as shown by a mean score of 4.2800. Additionally, the respondents indicated that there is an evident need to analyze organizational arrangements, technical competency such as project management tools and methods, leadership ability and the characteristics of an effective project manager to a great extent as shown by a mean score of 4.1600.

Further, the respondents indicated that there is not enough knowledge about the dependencies between organizational context and critical success factors in project management to a great extent as shown by a mean score of 3.9583. As well, the respondents indicated that project management software is commonly used by project management professionals to a great extent as shown by a mean score of 3.7917. Furthermore, the respondents indicated that Project management effectiveness is identified in technical competency to a great extent as shown by a mean score of 3.7600.

The study additionally found out that informal sanitation project meet the set quality (durability, safety) to a very great extent as shown by a mean score of 4.3600. As well, the respondents agreed that the informal sanitation project is completed within budget to a great extent as shown by a mean score of 4.3200. Lastly, the respondents agreed that the informal sanitation projects are completed on time to a great extent as shown by a mean score of 4.1200.

5.2 Recommendations

The study recommends that a similar study should also be done on other counties since their operations are different from those studied in this study. Further studies should be done on other countries and cities other than Informal settlements in Kenya to find out whether it will yield the same information.

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