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**DETERMINANTS OF COMPLETION OF HOUSING PROJECTS IN INFORMAL SETTLEMENTS IN NAIROBI CITY  
COUNTY, KENYA**

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## DETERMINANTS OF COMPLETION OF HOUSING PROJECTS IN INFORMAL SETTLEMENTS IN NAIROBI CITY COUNTY, KENYA

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### ABSTRACT

*The purpose of the study was to establish the determinants of completion of housing projects in informal settlements in Nairobi City County, Kenya. The study targeted project managers involved in the implementation of the projects who provided pertinent information about the research problem. The 100 projects were targeted as per to the records available. Descriptive analysis such as frequencies, percentages were used to present quantitative data in form of tables. Data from questionnaire was coded and logged in the computer using Statistical Package for Social Science. The study further adopted a regression analysis to determine the relationship among the variables at 5% level of significance. It was notable that there exists strong positive relationship between the independent variables and dependent variable as shown by R value (0.849). The coefficient of determination ( $R^2$ ) explains the extent to which changes in the dependent variable can be explained by the change in the independent variables or the percentage of variation in the dependent variable and the four independent variables that were studied explain 72.10% of the completion of housing projects in informal settlements as represented by the  $R^2$ . This therefore means that other factors not studied in this research contributed 27.90% of the completion of housing projects in informal settlements. This implies that these variables are very significant therefore need to be considered in any effort to boost completion of housing projects in informal settlements in Kenya. The study therefore identified variables as critical determinants of completion of housing projects in informal settlements. The study recommended that there is need to allow the project team to have sense of belonging in the management of the affairs in the projects. They can carry out higher responsibilities with other leaders with little supervision. These projects should not lack support from the key and primary stakeholders and beneficiaries. Stakeholders involvement makes everyone feel part and parcel of the project. The organizations need to have decision making process; the various types of risks have to be identified ex ante as far as possible. The organizations should have adequate risk identification mechanisms such as formulation of adequate. There should have risk identification strategy which is the basis for analysis and control of project activities.*

**Key Words:** Risk Management, Project Resources, Stakeholder Involvement, Project Leadership, Housing Projects

## INTRODUCTION

Trumper (2008) refers to project management as the art of making the right decisions and is one of the most important issues in project success. Throughout the projects' lifecycle, the management is faced with making a large number of different decisions in terms of outcomes, consequences and their effect on project success or failure. Unfortunately, throughout history there has been many building collapses across the world, some even more deadly than others. The cases of building failures and eventually collapse in Kenya have reached an alarming rate over the years (Mwangi, 2016).

The need to provide shelter to man and his activities has been the utmost priority. Buildings are constructed to serve as shelter for man and his activities in an environment (Oseghale, Ikpo & Ajayi, 2015) and therefore must be properly designed, well planned, proper decisions made at every stage, well-constructed and maintained to obtain desired satisfaction from environment. However, construction project failures are due to time and cost overruns resulting from lack of experience, poor field investigation, under estimates, inadequate project analysis and poor decisions (Harris & McCaffer, 2002). The increasing number of buildings collapsing while under construction or soon after has reached alarming proportions and has claimed so many lives and properties worth millions of shillings. Some of the real estate companies in Kenya have embarked on constructing affordable housing in line with Vision 2030. Currently, Suraya Property Group, have various on-going projects such as Encasa located off Mombasa road referred to as 'The Starter Home', that aims to attract first time home buyers. The project upon completion is expected to have 1,087 apartments located in 14 courtyards (Suraya, 2017).

Lin-lin et al., (2014) conducted a study on understanding of county government funded projects in China's infrastructure and construction projects. They established that the development of public projects practices in China remains relatively slow despite the urgent need to promote this mechanism for solving socio-economic and environmental disputes in PIC projects. Thus, a four-step strategic plan is suggested to be established to overcome main barriers for the implementation of public participation and promote its development in China.

Ektewan and Ogunlana (2006) did a study on public hearings in Thailand's infrastructure projects. They found that the projects had moderate to low effectiveness primarily because the participation and management performance aspects did not meet the participants' expectations. The relationships of evaluation and satisfaction indices were examined. The hearing participants focus both on the process and outcome of hearings. On the other hand, Ophiyandri *et al.*, (2013) did a study critical success factors for community-based post-disaster housing reconstruction projects in the pre-construction stage in Indonesia. They revealed that it was found that 12 factors are considered to be the critical success factors: transparency and accountability, appropriate reconstruction policy/strategy, an understanding of the community-based method, gathering trust from the community, facilitator capacity, good coordination and communication, sufficient funding availability, implementer capacity, having a significant level of community participation/control, county government support, involvement of all community members, and successful beneficiary identification (McGrew & Bilotta, 2007).

Reports done by construction review online suggest that in 2013, news reports of buildings collapsing claimed more than 60 people across Africa. In

Lagos, Nigeria, buildings continue to sprout to meet the needs of the growing population. In 2015, an Islamic school in the village of Bukuru, Plateau State, Nigeria, collapsed killing six people. The use of substantial materials and shoddy oversight led to the collapse. The supervision of the building that majorly involved critical decision making was poorly coordinated and compromised.

In Kenya like other countries construction industry is one of major industry contributing significantly to the socio-economic development growth. Achieving project implementation on time, within budget, at specified quality standards, and most importantly without unprecedented cost escalations is major criterion of success of project. Generally, a project is considered successful if the project is completed within a stated cost or budget and time. Although the county government of Kenya sets aside huge sums of money to be spent in construction sector, the industry is facing a lot of challenges such as the expenditure exceeding the budget, delay to complete the project in time, the building defects and over-reliance on foreign workers (RoK, 2012).

Most construction projects especially road infrastructure in Kenya are exposed to extreme cost escalation menace to the extent that it calls not only for extra funding but also specialized expertise hence leading to technical and project managerial conflicts between project's parties. Adherence to cost estimates has been a major challenge and considered to be the biggest problem which hinders project's progress since it decreases the contractors' profit margin hence leading to huge losses leaving the project in big trouble (Nyandika, 2014).

### **Statement of the Problem**

The increase of house building project based works in urban areas in the construction industry is necessitated by increased demand due to migration and rapid urbanization (UNCHS, 2006). However the

sustainability of this sector is in jeopardy. The concept of delay in the substantial completion of housing construction projects is a global phenomenon. According to the statistics derived from the Kenya National Bureau of Statistics' (2013), it is adept to reiterate that the housing construction projects in Kenya contributes to 7% of the country's gross domestic product (GDP). The challenge of demand for quality service and upcoming reforms for most of the housing construction projects has realized the need for quality service delivery and efficiency (World Bank, 2014). According to Ahmed et al., (2012), the urban construction housing project is bound to fail due to slow rate in implementation due to lack of proper planning and contract management. This according to UNCHS, (2006), can result to losses of over 19.82%. However, in Kenya, delays in project completion are a common problem in the housing construction industry not only with an immeasurable cost to society but also with debilitating effects on the contracting parties.

Regrettably, many project management decisions are made based on an individual's experience and judgment while handling projects which does not always lead to project success. The delay in making the right decisions on time may contribute to the delay or failure of the project. Research from US-based IT Project Specialist, Standish Group (2011), suggests that latency between decisions is a major contributor to project delays and failures. The research shows that for every \$1000 in project cost, the organization will need to make 1.5 decisions. A \$1 million project will produce 1,500 decisions while a \$5 million project will have 7,500 decisions. While several studies (Musa, 2010; Karimi, 2012; Tulakhaba 2011, Mwandali, 2016) have been done focusing on different aspects of housing project completion and further appreciating the crisis in construction project in terms of implementation, all empirical evidences are in short

of the determinants of housing projects in informal settlements in Nairobi City County, Kenya. It is on this premise the study sought to establish the determinants of housing projects in informal settlements in Nairobi City County, Kenya.

### **Objectives of the Study**

The purpose of the study was to establish the determinants of completion of housing projects in informal settlements in Nairobi City County, Kenya.

The **specific objectives were:-**

- To examine how project risk management affect completion of housing projects in informal settlements in Nairobi City County, Kenya.
- To establish how project resources influence completion of housing projects in informal settlements in Nairobi City County, Kenya.
- To find out how stakeholder involvement affect completion of housing projects in informal settlements in Nairobi City County, Kenya.
- To establish how project leadership influence completion of housing projects in informal settlements in Nairobi City County, Kenya.

## **LITERATURE REVIEW**

### **Theoretical Review**

#### **Prospect Theory**

Prospect theory is a theory of decision-making under conditions of risk (Tversky & Kahneman, 2009). Decisions involve internal conflict over value trade-offs. This theory is designed to better describe, explain, and predict the choices that typical person makes in a world of uncertainty. The theory addresses how these choices are framed and evaluated in the decision making process. Prospect theory advances the notion that utility curves differ in domains of gain from those in domains of loss. Prospect theory is designed to explain a common pattern of choice. It is descriptive and empirical in nature. Prospect Theory looks at two parts of

decision making: the editing, or framing, phase, and the evaluation phase (Tversky, 1967). Framing refers to the way in which a choice or an option can be affected by the order or manner in which it is presented to a decision maker.

The evaluation phase of a prospect theory encompasses two parts, the value function and the weighting function. The value function is defined in terms of gains and losses relative to the reference point not in terms of absolute wealth. In prospect theory, value is a function of change with a focus on the starting point so that the change is either negative or positive. Prospect theory predicts that domain affects risk propensity. Losses have more emotional impact than an equivalent amount of gains and therefore weighted more heavily in our decision -making (Tversky & Kahneman, 2005). In making a decision, a decision maker multiplies the value of each outcome by its decision weight. Decision weights do not serve solely as measures of perceived likelihood of an outcome but also represent an empirically derived assessment of how people actually arrive at their sense of likelihood. An important function of weighting function is that low probabilities are overweighed while high and medium probabilities are subjectively underweighted (Tversky & Kahneman, 1979). Risk is an exposure to the possibility of economic or financial loss or gains, physical damage or injury or delay as a consequence of the uncertainty associated with pursuing ascertain cause of action (Chapman C.B., 1983). Many scholars have defined risk: Wideman (1986), Godfrey (1996) Kliem and Ludin (1997) and Smith (1999). Most definitions include the factors of chance or probability of events and the negative impact on the objectives or project. In mathematics, probability of an event is expressed statistically using the mean, dispersion, confidence interval and other statistical parameters. Relevant data must be available for a statistical analysis. When no data exists, the experience and knowledge of the decision maker is

important in assessing the probability of an adverse event. Prospect theory is used in this study to help demonstrate the influence of risk management on completion of housing construction projects.

### **Resource Based View Theory**

To establish the influence of project resources on completion of housing projects in Kenya, the study will be based on Resource Based Theory. Penrose (1959) provided initial insights of the resource perspective of the firm. However, the resource-based view of the firm (RBV) was put forward by Wenerfelt (1984) and subsequently popularized by Barney's (1991) work. Many authors for example Nelson & winter (1982); Dierick & Cool (1989); Mohoney & Pandian (1992); Eisenhardt & Martin (2000); Zollo & Winter (2002); Zahra & George (2002) and Winter (2003) made significant contribution to its conceptual development. The theory emphasized the importance of organization resources and their influence on performance and competitive advantage in the market.

According to RBV, every project has its own unique resources that enable it to be well implemented, by addressing the rapidly changing environment (Helfat, 2007). These resources may be financial, human, physical, technological and information. These may be valuable, rare and non-substitutable (Crook, Ketchen, Combs & Todd, 2008). Critiques of the RBV have pointed out that some resources contribute to project completion while others do not; hence, not all resources of project have the ability to contribute to its implementation. Secondly, the mere availability of resources are coordinated and integrated (Lopez, 2005). To implement projects, there is need to have adequate resources (James, 2011). Resource Based View theory is used in this study to help demonstrate the influence of resources on completion of housing construction projects.

### **Stakeholder Theory**

Stakeholder theory asserts that organizations should consider the concerns of individuals and groups that can affect or are affected by their activities (Gibson 2000) while making decisions and achieving organizational goals. Stakeholder theory looks at the relationships between an organization and others in its internal and external environment (Agle et al., 2007). It also looks at how these relationships affect how the organization conducts its activities (Filippone, 2012). Bourne (2009) explains that stakeholders can come from inside or outside of the organization. For instance, stakeholders of a project include customers, employees, stockholders, suppliers, contractors, non-profit community organizations, government, and the local community among many others.

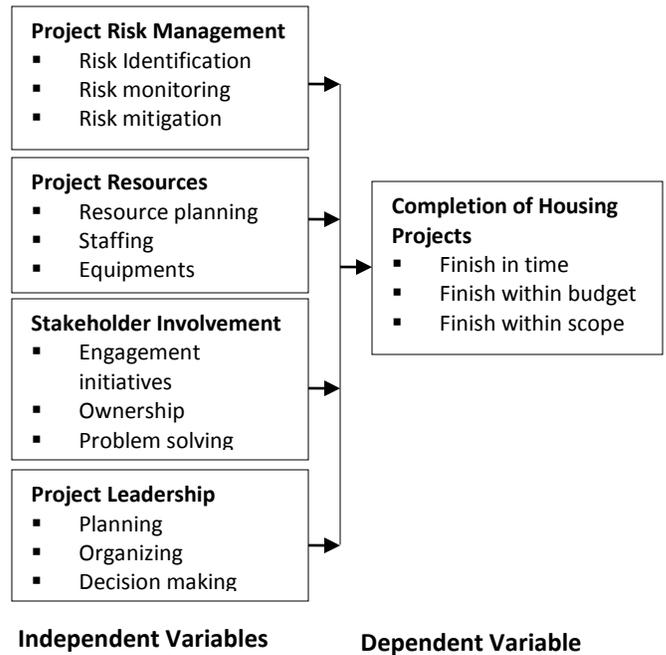
The core idea of stakeholder theory is that organizations that manage their stakeholder relationships effectively would survive longer and perform better than those organizations that do not (Freeman, 1994). Hill and Jones (2012) state that stakeholder theory can be used to buy in the community trust in a project. The same view is supported by Walumbao (2011) that established that stakeholder theory provide principles in which community interests as a stakeholder are identified, analyzed and can be fulfilled. Danny (2014) opines that depending on how the community interests are identified and analyzed, decisions can be made by a firm that help the community or at least prevent harm from coming to the community. These decisions may be to play by the rules of the game, adhere to legal contracts, or act on complaints or pressure brought to bear on the firm. Of more interest, trust is a fundamental aspect of the moral treatment of community within the organization-stakeholder relationship. Community trusts the organization to return benefit or protections from harm commensurate with their contributions or stakes (Kilpatrick, 2005). Stakeholder theory is used in this study to help demonstrate the influence of

stakeholder management on completion of housing construction projects.

**Management by Objective Theory**

Management by objectives (MBO) was first popularized by Drucer (1954). MBO is based on the thinking that various hierarchies within companies need to be integrated. Drucer argued that all organizations exist for a purpose, and, to achieve that purpose, top management sets goals and objectives that are common to the whole organization. The MBO approach injects an element of dialogue into the process of passing plans and objectives from one organizational level to another. The superior brings specific goals and measures for the subordinate to a meeting with this subordinate, who also brings specific objectives and measures that he or she sees as appropriate or contributing to better accomplishment of the job. Together they develop a group of specific goals, measures of achievement, and time frames in which the subordinate commits himself or herself to the accomplishment of those goals. The subordinate is then held responsible for the accomplishment of the goals. In other words MBO is participative goal setting, choosing course of actions and decision making. Despite the critical importance of project completion timeliness, organization practices today remain inadequate in addressing the persistent problem of project completion tardiness. The completion of government projects in a timely manner is often a critical factor and measure of project success. However, in many cases, delays plague the delivery of government funded projects in many developing countries where such projects are often implemented. The above theory supports the influence of project leadership on completion of housing construction projects in the informal settlements in Kenya.

**Conceptual Framework**



**Figure 1: Conceptual Framework**

**Project Risk Management**

Risk management is a continuous process of identifying, analysing, prioritising and mitigating risk that threatens a projects’ likelihood of success (PMBOK, 2008). Proper project risk management implies control of possible future events and is proactive rather than reactive. Successful project outcomes are contingent upon robust risk management practices that support the realization of project objectives and future benefits in the most sustainable and economically efficient manner (Parker, 2004). Decision-making under conditions of risk where there are assigned estimated probabilities and predicted impacts for each identified risk, enables management strategies to be developed as a response including monitoring and controlling the risk mitigation to reduce these risks to the desired level.

There are four basic ways of handling risk: Avoidance is one way to handle risks if the risk will not hurt the project and cannot be prevented from

happening. To mitigate the risk is another way of handling risks and it involves taking some sort of action that will cause it to do as little damage to the project as possible. The other effective way is to transfer the risk where the project manager pays someone else to accept the risk on behalf of the project. When you cannot avoid, mitigate or transfer a risk, then the risk has to be accepted when all the alternatives have been looked at and the consequences known if it occurs. If the risk cannot be avoided and nothing can be done to reduce its impact, then accepting the risk is the only option. Risks need to be planned for from the beginning of the project and keep coming back to do more planning throughout the project. The risk management plan helps the project manager know how to handle risks in a project, documents how risks will be assessed; who is responsible for doing it and how often risk planning will be done.

### **Project Resources**

Resource management is a facet of project management that deals with the human, financial, distribution and demands of project resources (Bowen, 2009). It is the process of identifying initiatives for resources based on priority, planning resource allocation, tracking resource usage and productivity, improving allocation and measuring effectiveness of resources. Effective, proactive resource management delivers the utmost level of optimization and efficiency by enabling proactive allocation of resources based on projects' policies. The resources may be obtained internally through Service Level Agreements or Terms of References between the project and the department or function providing the resource or externally through a procurement process that involves provider selection. If resource allocation is decided upon and done properly, it means that half the project is already completed. The project manager should know the importance of resource

management so that no mistakes occur while allocating resources.

Time is a valuable resource in a project and organizing, planning and allocating the resource can contribute to the effectiveness of a project. Poor allocation of time is the result of poor decisions and can lead to mistakes as you progress towards your project goal. Errors take time to correct and can lead to an ongoing cycle of stress, greater urgency and more mistakes. (Ronda, 2009) A work plan assists in deciding the activities of the project and duration estimates based on resource utilization of each activity. Budgets ensure that the project is developed or implemented below a certain cost and hence cost management is important in planning, estimating, financing, funding, managing and controlling cost. A cost benefit analysis tool can be used when making decisions whether to pursue a project or not. A resource plan, which describes the type of resource needed and timing of that need is critical to effective resource management.

### **Stakeholder Involvement**

A stakeholder is an individual, group or organization who may affect, be affected by or perceive itself to be affected by a decision, activity or outcome of a project (PMBOK, 2013). Stakeholder Management is a process and control that must be planned and guided by underlying principles. It is the systematic identification, analysis, planning and implementation of actions designed to engage with stakeholders. From a practical point of view, stakeholder involvement allows the project leaders to create factors that lead to the effective participation of stakeholders in the project and consequently allow the leaders to reap the benefits of the involvement of the stakeholder with regard to obtaining resources and using their influence (Purvis, 2014). In order to carry out stakeholder management, it is necessary to identify the parties whose interests and influence are relevant in the

project environment and to understand the factors that motivate them, seeking to engage with them when possible to generate mutual benefits.

Stakeholder involvement is the understanding of the behaviour of the stakeholders during the life cycle of the project with the aim of performing actions that meet their expectations (Beringer, 2013). The identification of stakeholders is critical and when the level of their power and influence are mapped, their impact on the project can be better understood. When project stakeholders do not share a common culture, the project must adapt its organizations member and work processes to cope with cultural differences. The three major aspects of cultural differences that can affect a project include: communications, negotiations and decision making. Project Managers encounter cultural differences in communication in language, context and condor. Not sharing the same language can slow down a project.

### **Project Leadership**

Leadership is the ability to get things done through others by focusing the efforts of a group of people toward a common goal and enabling them to work as a team (PMBOK, 2008). It is a function of knowing yourself, having a vision that is well communicated, building trust among colleagues and taking effective action to realize your own leadership potential (Bennis, 2002). It involves the ability to influence people to take actions toward completing a goal. For the project team to effectively meet scope, cost and time goals, one must appreciate the impact of positive leadership. It is up to the project manager to manage issues related to scope, cost and time as well as lead the team to successful completion of these goals and the project as a whole using effective leadership styles.

There are two types of leaders: Transactional leaders; they guide or motivate their followers in

the direction of established goals by clarifying role and task requirements. Transformational leaders; they inspire followers to transcend their own self-interests for the good of the organization and who are capable of having a profound and extraordinary effect on his or her followers. Among factors that lead to effective project leadership include visioning, influencing, communicating, strategizing, team building, decision making and problem solving that eventually lead to success in a project. A project without leadership may underperform, miss strategic opportunities, stifle innovation, underutilize team members or fall short of its project goals, quality, performance and productivity.

Effective leadership skills must be used as needed over the project life cycle. The project manager should be a servant leader in the project initiation stage. The project manager often explores what is possible and defines a high level plan with an indication of project costs. During project planning, the project manager takes ownership and a task orientation; they engage key stakeholders in a democratic, participative leadership style, and then identify the right people for the right role. Project control mechanisms and standards for the project team are then established bureaucratically. The project manager then manage effective meetings and focuses on people-orientation to ensure that awareness, engagement and positive support is built with a wider set of stakeholders during the requirements and analysis stage. The project manager consults with others to make decisions using the autocratic or democratic approaches as needed. (APM, 2017) Leadership must adapt their approach to the needs of those being led, situational leadership. Leadership should be exercised at all levels within the projects and can be exercised by all or some of the team.

## **Project Completion**

The main objective of a project manager is to deliver the project within the time stated and on a defined budget. A project is deemed successful if it meets its objectives under budget and under schedule. But for a development project, success goes beyond meeting schedule and budget goals. It includes delivering the benefits and meeting expectations of beneficiaries, stakeholders, donors or funding agencies (Rodolfo, 2017). Project success can be measured as a level of effectiveness where the project deliverables are measured in terms of benefits and stakeholder satisfaction, that is, the extent to which the project ultimate objectives are attained. Efficiency is related to how the project manages its limited resources to meet the goals while building a good relationship with internal and external stakeholders. A project can fail in many ways: fail in meeting the budget, schedule and scope goals but succeed in meeting the development objectives; a project can meet the budget, schedule and scope and fail in development objectives.

(Siles, 2017) A project can only be successful if the success criteria were defined from the start. When initiating a project, it is essential to define success across three levels; Level one: Project Completion Success. It details the criteria by which process of delivering the project output is successful. The criterion addresses the four project constraints, that is, scope, schedule, budget and quality. This measures the efficiency of how the project used its resources to deliver the project outputs. Level two: Results Success. It is about defining the criteria by which the product or service delivered is deemed successful by beneficiaries. The criteria is measured once the product or service is implemented and over a defined period. Level three: Development Success. It is about defining the criteria by which the product or service delivered brings value to the beneficiaries and how it contributes to their well-

being, for example, affordable housing. Projects that are able to meet the criteria of success are characterized by the use and application of a consistent, repeatable and predictable methodology that supports the planning and implementation of projects.

## **Empirical Review**

### **Project Risk Management**

Mohammed (2008) studied the impact of effective risk management on project success. The conventional view of project success based on cost, time and quality is no longer sufficient. Project success is seen to be relative based on the pre-determined and pre-agreed success criteria set by all stakeholders. From the study, it was established that there was a direct relationship between effective risk management and project success by identifying the key risks, assessing them and planning a mitigation or contingency for the risks. This helps keep track of risk elements, what is being done about them and identifies new risks (Chioma, 2008). Applying principles of risk management supports the quality improvement and improves cost estimation by identifying and mitigating potential risks before a project begins.

Tilk (2011) examined project success through project risk management. Project risk management increases the likelihood of project success. It provides a holistic view of risks, challenges and potential problems while building processes to help monitor and manage them. This gives a tool that reduces risks associated with project investments and activities. A project risk methodology provides for a framework and wide range of supporting processes for undertaking the appropriate set of reviews and risk assessment throughout a project that ensures risks are identified and managed.

### **Project Resources**

Majeed (2012) studied the importance of resource allocation and time management in project management. There are a lot of things to take care of in a project but resource allocation and time management are the two main tools without which it is simply impossible to complete the project successfully. Resource allocation involves the planning of all the resources required for the project and helps in utilizing only that much resources which are required. Project managers have to work in limited or even tight budgets. If you do resource allocation efficiently, it means your half project is already completed as resource allocation is the most important yet difficult part of a project. Being a project manager, one should know its importance so that you may not do any mistake while allocating the resources.

### **Project Leadership**

Adeel (2015) examined the role of leadership and team building in project management. The project manager is tasked to execute project leadership, team building and team motivation to facilitate the achievement of project success. Leadership in projects includes the actions that project leaders take to inspire and motivate the project team towards the desired project goals. Utilizing effective leadership styles plays a vital role in ensuring effective decision making and project success. Chiochio & Hobbs (2015), team building forms a critical aspect in promoting project success. The project manager ensures that he or she selects a competent project team and ensures that the team is inspired and motivated towards achieving the set goals and objectives. Team building also involves defining different roles within teams especially roles that involve collaborative tasks.

Coleman (2015) postulates that project managers can lead a project towards success by ensuring that the team members work efficiently and effectively.

Project managers should focus on utilizing flexible and innovative leadership style to allow sharing of ideas which is important in achieving project success. International Journal of Psychological Studies (2014) proposes that there is a need to extend management practices for project management from a human-related factor by incorporating the cognitive styles in the decision-making process towards the accomplishment of a successful project. Decision-making skills are required from a project manager in every step to avoid any serious buffering in a project schedule.

### **Stakeholder Involvement**

Marom (2013) suggests that it is not practical to change the organizational culture once assigned a project. It is not easy for a project manager to challenge work practice and habits of other stakeholders. He suggests communicating and managing the relevant stakeholders about all stumbling blocks, issues and risks with clear indication of the actions required by the stakeholders to help mitigate the issues. Communication should clearly demonstrate the impact the issues encountered have on the project. Jang (2014) getting and keeping stakeholders engaged increases the quantity and the vetting of ideas for improving the project. They can help the project manager to be proactive by relaying when activities of the project may impact other areas. Stakeholders can also be advocates of a project by getting other stakeholders interested and engaged in the project. Kloosterman (2014), if a systematic process is followed for stakeholder mapping and management, then key steps have been taken towards managing a project successfully.

### **METHODOLOGY**

This study used descriptive survey designed to establish the determinants of completion of housing construction projects in Kenya. A descriptive research study is designed to obtain

pertinent and precise information concerning the current status of phenomena and whenever possible to draw valid general conclusion from the facts discovered. The target population comprised of 100 housing construction projects in Nairobi City County. The Multiple Regression model that aided the analysis of the variable relationships was as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon,$$

Where; Y= Completion of housing construction projects (dependent variable);

$\beta_0$ = constant (coefficient of intercept);

$X_1$ = Project Risk management (independent variable);

$X_2$ = Project Resources (independent variable);

$X_3$ = Project Leadership (independent variable);

$X_4$ = Stakeholder Involvement (independent variable);

$\epsilon$  = Error term;

$\beta_1 \dots \beta_4$ = regression coefficient of four variables.

Data was presented in various forms. A frequency distribution table was used to summarize categorical or numerical data. According to Orodho (2009) a frequency table is a table showing how often each value of the variable occurs in a data set. Frequencies and percentages will also be used to present the data. Frequency distribution tables are the devices that are used to present the data in a simple form. The tables were numbered and a title given to every table.

**Table 1: Completion of Projects**

	0%	Less than 10%	10-20%	21-30%	31-40%	Above 40%	Mode
Finish in Time	5%	35%	20%	15%	15%	10%	2

## FINDINGS

### Completion of Housing Projects

The study sought to examine the determinants of completion of housing projects in informal settlements in Nairobi County, Kenta, attributed to the influence of project leadership, stakeholder involvement, project resources and project risk management. The study was particularly interested in three key indicators, namely finish within budget, schedule and scope, with all the three studied over a 5 year period, running from 2013 to 2017. Table 1 below presents the findings. The first indicator for the dependent variable required to know what the project's completion in terms of finished within time was, 5% of the respondents had 0% , 35% had less than 10%, 20% stated 20-30% , 15% indicated 30-40% , 15% posited 31-40%, 10% indicated over 40% The mode was found to be 2 which imply that on average the most of the project's completion in time is less than 10%. The next indicator required the respondents to state level of completion of projects within budget, 25% of the respondents had 0%, 45% had less than 10%, 10% stated 20-30%, 0% indicated 30-40%, 5% posited 31-40%, 15% indicated over 40%. The mode was found to be 2 which imply that on average the most of the project's completion within budget is less than 10%. When the respondents were asked what the level of completion of projects within scope was, 30% of the respondents had 0%, 55% had less than 10%, 15% stated 20-30%, 5% indicated 30-40% , 5% posited 31-40%, 0 % indicated over 40% The mode was found to be 2 which imply that on average the most of the project's completion within scope is less than 10%.

Within Budget	25%	45%	10%	0%	5%	15%	2
Within Scope	30%	55%	15%	5%	5%	0%	2

**Project Risk Management**

The first objective of the study was to establish the influence of project risk management on completion of housing projects in informal settlements in Kenya. Respondents were thus asked to indicate the extent to which they agreed with various statements relating to project risk management and its influence on completion of housing projects in informal settlements in Kenya. Responses were given on a five-point scale where: 1= Very small extent; 2= Small extent 3= Moderate extent; 4 = Great extent; 5= Very great extent. The scores of ‘Very small extent’ and ‘Small extent’ have been taken to represent a statement not agreed upon, equivalent to mean score of 0 to 2.5. The score of ‘Moderate extent’ has been taken to represent a statement agreed upon moderately, equivalent to a mean score of 2.6 to 3.4. The score of ‘Great extent’ and ‘Very great extent’ have been taken to represent a statement great extent upon equivalent to a mean score of 3.5 to 5.0.

Majority particularly highly agreed to a moderate extent that the project always identify the source of the risks early enough in order to reduce negative aspects to enhance completion of project time (M=3.128); The project identify the type of the risks

and take necessary mitigation measures to reduce negative aspects to enhance the project completion within budget (M=3.229); The project has established adequate risk identification mechanisms such as formulation of adequate managerial resources for risk mitigation to increase the project completion within scope (M=3.125); There is risk identification strategy which is the basis for analysis and control to increase the probability for project completion within time (M=3.220); The project always identify the source of the risks early enough in order to reduce negative aspects to enhance completion of project within budget (M=3.280); The study findings are in agreement with literature review by Wang, Dulaimi, & Aguria, (2004) who established that risk identification process attempts to identify the source and type of risks. Risk identification involves the recognition of potential risk event conditions in the project and the clarification of risk responsibilities. Risk identification is the basis for analysis and control of risk management and ensures risk management effectiveness. The identification and mitigation of business risks are crucial steps in managing projects (Carbone & Tippet, 2004).

**Table 2: Project Risk Management**

Statements	Mean	Std. Dev
The project always identify the source of the risks early enough in order to reduce negative aspects to enhance completion of project time	3.128	1.563
The project identify the type of the risks and take necessary mitigation measures to reduce negative aspects to enhance the project completion within budget	3.229	1.632

There are adequate risk identification mechanisms such as formulation of adequate managerial resources for risk mitigation to increase the project completion within scope	3.125	1.280
There is risk identification strategy which is the basis for analysis and control to increase the probability for project completion within time	3.220	1.373
The project always identify the source of the risks early enough in order to reduce negative aspects to enhance completion of project within budget	3.280	1.280

### Project Resources

The study sought to assess the influence of project resources on completion of housing projects in the informal settlements in the study area. This section presents findings to statements posed in this regard with responses given on a five-point likert scale (where 5 = Very Great Extent; 4 = Great Extent; 3 = Moderate Extent; 2 = Small Extent; 1= Very Small Extent). Table 2 presents the findings. The scores of 'Very Great Extent' and 'Great Extent' have been taken to represent a statement not agreed upon, equivalent to mean score of 3.5 to 5.0. The score of 'Moderate Extent' has been taken to represent a statement agreed upon moderately, equivalent to a mean score of 2.6 to 3.4. The score of 'Small Extent' and 'Very Small Extent' have been taken to represent a statement highly agreed upon equivalent to a mean score of 1.0 to 2.5.

The study findings in Table 3 the respondents indicated to a great extent that there is resource planning(equipments, staffing and funds) for the implementation of the project activities (3.228); The project managers identify the quantities of the needed resources and this is directly linked to the expected cost of the project work (3.210); The project managers ensure the quantities and the schedule of the resources is directly linked to the budget (3.166); There is a professional and transparent approach to the funds allocation to ensure funds are always available when required to implement project activities funds (3.286); Project

staffing is based on the knowledge and skills of the individual teams (3.008); Allocation of the project equipments is based on the work, knowledge of the equipments assigned, roles and responsibilities(2.989). The study findings imply that project resources play a significant role on the completion of the housing projects in the study area. The effects of these resources on project management efficiency have been extensively studied with diverse results. Lots of concerns have been raised in theoretical and empirical research in the economics, management and sociology disciplines on whether the projects are worth investing by allocating these resources (Ghazala & Vijayendra, 2011).With proper allocation and utilization of these resources; there will be efficiency and effectiveness in implementation and thus increased output. Jod Ray (2004) established that a project is a complex non-routine, one life time effort limited by time, budget and resources to met customers' needs. According to Gasper, (2009), availability and adequacy of budgetary allocation of resources play a key role in the formulation and implementation of project management practices in any project. The financing process, such as raising and maintaining adequate funds for project activities, is clearly of critical importance to the progress of a project. Jack & Samuel (2006) states that adequate funding need to be devoted to implementation of project management practices for its potential to be realized in a project.

**Table 3: Project Resources**

Statement	Mean	Std
There is resource planning(equipments, staffing and funds) for the implementation of the project activities	3.228	1.230
The project managers identify the quantities of the needed resources and this is directly linked to the expected cost of the project work	3.210	1.125
The project managers ensure the quantities and the schedule of the resources is directly linked to the budget	3.566	1.322
The project management team does the realistic planning of the project funds	3.286	1.212
There is a professional and transparent approach to the funds allocation to ensure funds are always available when required to implement project activities	3.008	1.618
Project staffing is based on the knowledge and skills of the individual teams	3.108	1.118
Allocation of the project equipments is based on the work, knowledge of the equipments assigned, roles and responsibilities	2.989	1.228

**Stakeholder Involvement**

The third objective of the study was to establish the influence of stakeholder involvement on completion of housing projects in informal settlements in Kenya. Respondents were thus asked to indicate the extent to which they agreed with various statements relating to project leadership and its influence on completion of housing projects in informal settlements in Kenya. Responses were given on a five-point scale where: 1= Very small extent; 2= Small extent 3= Moderate extent; 4 = Great extent; 5= Very great extent. The scores of 'Very small extent' and 'Small extent' have been taken to represent a statement not agreed upon, equivalent to mean score of 0 to 2.5. The score of 'Moderate extent' has been taken to represent a statement agreed upon moderately, equivalent to a mean score of 2.6 to 3.4. The score of 'Great extent' and 'Very great extent' have been taken to represent a statement great extent upon equivalent to a mean score of 3.5 to 5.0.

The study findings in Table 4 indicate that the respondents indicated to a great extent that the user involvement enhanced engagement initiatives in the projects (3.551); They carried out higher responsibilities with the leaders with little supervision (3.220); there was donor involvement in mobilization of the resources for implementation of the project activities (3.112); the user involvement yielded expected implementation projects (3.098); the user involvement enhanced transparency and accountability in the projects (3.722); the stakeholder involvement encouraged ownership of the project activities (3.100); there was implementation problem solutions from the problem identification in the projects (3.321). The study findings are in agreement with literature review by Ofori, (2013) who established that stakeholder Involvement is one of the critical success factors and best practices in project management will improve the quality of project management.

**Table 4: Stakeholder Involvement**

Statement	Mean	Std
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Do you have user involvement to enhance engagement initiatives in the projects?	3.551	.309
Is there donor involvement in mobilization of the resources for implementation of the project activities?	3.220	.223
Does user involvement yields expected implementation projects?	3.112	.246
Does user involvement enhance transparency and accountability in the projects?	3.098	.145
Does stakeholder involvement encourage ownership of the project activities?	3.722	.469
Are there implementation problem solutions from the problem identification in the projects?	3.321	.310
<b>Composite Mean</b>	<b>3.345</b>	

### Project Leadership

The fourth objective of the study was to establish the influence of project leadership on completion of housing projects in informal settlements in Kenya. Respondents were thus asked to indicate the extent to which they agreed with various statements relating to project leadership and its influence on completion of housing projects in informal settlements in Kenya. Responses were given on a five-point scale where: 1= Very small extent; 2= Small extent 3= Moderate extent; 4 = Great extent; 5= Very great extent. The scores of 'Very small extent' and 'Small extent' have been taken to represent a statement not agreed upon, equivalent to mean score of 0 to 2.5. The score of 'Moderate extent' has been taken to represent a statement agreed upon moderately, equivalent to a mean score of 2.6 to 3.4. The score of 'Great extent' and 'Very great extent' have been taken to represent a statement great extent upon equivalent to a mean score of 3.5 to 5.0.

Table 5 below presents the findings. The majority of respondents indicated to moderate extent with most statements posed as regards influence of project leadership on the completion of housing projects in informal settlements in Kenya. Majority particularly to moderate extent that they allowed to have sense of belonging in the management of the affairs in the projects (3.323); They carry out higher responsibilities with other leaders like project managers with little supervision (3.221); The project management has ensured that our orders have zero mistakes (3.532); The project management ensure that they are helped to achieve project goals ( 3.176); The project leaders are involved when important issues arise and retain decision making (3.400); The decision making process is slowed down and workable results require enormous amount of effort (3.213).

The study findings corroborate with the findings of Andawei (2014) found out that project leadership is one of the most important factors for project implementation and utilization of ICT projects. Ochieng, & Price (2010) pointed that a project manager needs to understand the individual desires of each team member. To achieve a project environment where the majority of the members involved are motivated about the project, project managers have to be sensitive to the needs and wants of the team members. Soham, & Rajiv (2013) states that the project management require leadership needs to be involved in the up-front planning efforts and effectiveness of communication, control system, management system and organizational culture.

**Table 5: Project Leadership**

Statements	Mean	Std. Dev
We are allowed to have sense of belonging in the management of the affairs in the projects	3.323	1.356
We carry out higher responsibilities with our leaders with little supervision	3.221	2.780
The project management has ensured that the orders have zero mistakes	3.532	1.783
The project management ensure that we are helped to achieve project goals	3.176	1.903
Project leaders are involved when important issues arise and retain decision making	3.400	1.321
The decision making process is slowed down and workable results require enormous amount of effort	3.213	1.230

**Multiple Regression Analysis**

In addition, the study conducted a multiple regression analysis so as to test relationship among variables (independent) on the dependent variable. The study applied the statistical package for social sciences (SPSS) to compute the measurements of the multiple regressions for the study. Coefficient of determination explains the extent to which changes in the dependent variable can be explained by the change in the independent variables or the percentage of variation in the dependent variable (completion of housing projects) that is explained by all the four independent variables (stakeholder involvement, resources allocation, project resources and project leadership).

According to the model summary Table 6, R is the correlation coefficient which shows the relationship between the independent variables and dependent variable. It is notable that there exists strong positive relationship between the independent variables and dependent variable as shown by R value (0.849). The coefficient of determination ( $R^2$ ) explains the extent to which changes in the dependent variable can be explained by the change in the independent variables or the percentage of variation in the dependent variable and the four independent variables that were studied explain 72.10% of the completion of housing projects in informal settlements as represented by the  $R^2$ . This therefore means that other factors not studied in this research contribute 27.90% of the completion of housing projects in informal settlements. This implies that these variables are very significant therefore need to be considered in any effort to boost completion of housing projects in informal settlements in Kenya. The study therefore identifies variables as critical determinants of completion of housing projects in informal settlements.

**Table 6: Model Summary**

Model	R	$R^2$	Adjusted $R^2$	Std. Error of the Estimate
1	.849	.721	.693	.012

**F-Test Results**

Further, the study revealed that the significance value is 0.005 which is less than 0.05 thus the model is statistically significant in predicting how stakeholder involvement, project resources, project risk management and project leadership influence the completion of housing projects in informal settlements in Kenya. Based on the study results of the ANOVA Test or F-test in Table 7, obtained F-count (calculated) value was 20.246. This is greater than the F-critical (table) value (18.356) with significance of 0.005. Since the significance level of  $0.005 < 0.05$  we conclude that the set of independent variables affect the completion of housing projects in informal settlements and this shows that the overall model was significant.

**Table 7: ANOVA**

Model	Sum of Squares	d.f	Mean Square	F	Sig.
Regression	14.780	4	3.695	20.246	.005
Residual	12.752	70	.1824		
Total	27.532	74			

NB: F-Critical Value = 18.356

The results of multiple regression analysis obtained regression coefficients t value and significance level as indicated in Table 8. The study conducted a multiple regression analysis so as to determine the relationship between the dependent variable and independent variables. From the study findings on the regression equation established, taking all factors into account (independent variables) constant at zero completion of housing projects in informal settlements will be 10.346. The data findings analyzed also shows that taking all other independent variables at zero, a unit increase in project risk management will lead to a 0.722 increase in completion of housing projects in informal settlements; a unit increase in stakeholder involvement will lead to a 0.700 increase in completion of housing projects in informal settlements, a unit increase in project resources will lead to 0.788 increase in completion of housing projects in informal settlements and a unit increase in project leadership will lead to 0.826 increase in completion of housing projects in informal settlements. This infers that project risk management contributed most to completion of housing projects in informal settlements. Based at 5% level of significance, project risk management had a .003 level of significance; stakeholder involvement show a .010 level of significance, project resources show a .003 level of significance and project leadership show a .001 level of significance hence the most significant factor was project leadership.

**Table 8: Coefficient Results**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	$\beta$	Std. Error	$\beta$		
(Constant)	10.843	2.168		5.001	.000
X <sub>1</sub> _Project Risk Management	.722	.156	.567	4.628	.003

X <sub>2</sub> _Stakeholder Involvement	.700	.190	.554	3.684	.010
X <sub>3</sub> _Project Resources	.788	.250	.555	3.152	.003
X <sub>4</sub> _Project Leadership	.826	.358	.632	2.307	.001

The general form of the equation was to predict completion of housing projects in informal settlements from project risk management, stakeholder involvement, project resources and project leadership is:  $(Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \epsilon)$  becomes:  $Y = 10.843 + 0.722X_1 + 0.700X_2 + 0.788X_3 + 0.826X_4$ . This indicates that completion of housing projects in informal settlements =  $10.843 + 0.722 * \text{Project Risk Management} + 0.700 * \text{Stakeholder involvement} + 0.788 * \text{Project resources} + 0.826 * \text{Project Leadership} + 2.168$ .

### CONCLUSION AND RECOMMENDATIONS

From the descriptive results a majority respondents indicated to a moderate extent that the project always identify the source of the risks early enough in order to reduce negative aspects to enhance completion of project time. The projects identify the type of the risks and take necessary mitigation measures to reduce negative aspects to enhance the project completion within budget. The project has established adequate risk identification mechanisms such as formulation of adequate managerial resources for risk mitigation to increase the project completion within scope. There is risk identification strategy which is the basis for analysis and control to increase the probability for project completion within time. The project always identify the source of the risks early enough in order to reduce negative aspects to enhance completion of project within budget.

The study established to a great extent that the user involvement enhance engagement initiatives in the projects. They carry out higher responsibilities with the leaders with little supervision. There is donor involvement in mobilization of the resources for implementation of the project activities. The user involvement yields expected implementation projects and enhance transparency and accountability in the projects. The stakeholder involvement encourages ownership of the project activities. There is an implementation problem solution from the problem identification in the projects.

The study findings indicated to a great extent that there is resource planning (equipments, staffing and funds) for the implementation of the project activities. The project managers identify the quantities of the needed resources and this is directly linked to the expected cost of the project work. The project managers ensure the quantities and the schedule of the resources is directly linked to the budget. There is a professional and transparent approach to the funds allocation to ensure funds are always available when required to implement project activities. Project staffing is based on the knowledge and skills of the individual teams. Allocation of the project equipments is based on the work, knowledge of the equipments assigned, roles and responsibilities.

The study results show that project leadership influences the completion of housing projects in informal settlements in Kenya. Majority particularly to moderate extent that they allowed to have sense of belonging in the management of the affairs in the projects. They carry out higher responsibilities with other leaders like project managers with little supervision. The project leadership has ensured that our orders have zero mistakes. The project leadership ensures that they are helped to achieve project goals. The project leaders are involved

when important issues arise and retain decision making. The decision making process is slowed down and workable results require enormous amount of effort.

From inferential statistics, a positive correlation is seen between each determinant variable and completion of housing projects in informal settlements projects. The strongest correlation was established to be project leadership. All the independent variables were found to have a statistically significant association with the dependent variable at ninety-five level of confidence. Analysis of variance was further done to show whether there is a significant mean and all variables were found to be significant.

### **Conclusions of the Study**

The study concludes that project leadership is the first important factor which affects completion of housing projects in informal settlements Kenya. The regression coefficients of the study show that project leadership has a significant influence on completion of housing projects in informal settlements Kenya. This implies that increasing levels of project leadership would increase the levels of completion of housing projects in informal settlements Kenya.

The study concludes that project resources are the second important factor which affects completion of housing projects in informal settlements Kenya. The regression coefficients of the study show that project resources has a significant influence on completion of housing projects in informal settlements Kenya. This implies that increasing levels of project resources would increase the levels of completion of housing projects in informal settlements Kenya.

The study concludes that project risk management is the third important factor which affects completion of housing projects in informal settlements Kenya. The regression coefficients of the study show that project risk management has a significant influence on completion of housing projects in informal settlements Kenya. This implies that increasing levels of project risk management would increase the levels of completion of housing projects in informal settlements Kenya.

Further, the study concludes that stakeholder involvement is the fourth important factor which affects completion of housing projects in informal settlements Kenya. The regression coefficients of the study show that stakeholder involvement has a significant influence on completion of housing projects in informal settlements Kenya. This implies that increasing levels of stakeholder involvement would increase the levels of completion of housing projects in informal settlements Kenya.

### **Recommendations of the Study**

Based on the study findings, the study found out that project risk management, stakeholder involvement, project resources and project leadership are the major factors that mostly affect completion of housing projects in informal settlements Kenya and suggest the following recommendations:

The study recommends that there is need to allow the project team to have sense of belonging in the management of the affairs in the projects. They can carry out higher responsibilities with other leaders with little supervision. The organization should ensure that the orders and help to achieve their vision and mission. The leaders and project team should be involved when important issues arise and retain decision making rights on the implementation of the project.

The study recommends for the stakeholders involvement at the onset of project activities lead to clear project activities and adoption of poor project management practices which fail to benefit the community as a whole. These projects should not lack support from the key and primary stakeholders and beneficiaries. Stakeholders involvement makes everyone feel part and parcel of the project

The study recommends for adequate resource planning (equipments, staffing and funds) for the implementation of the project activities. The project managers identify the quantities of the needed resources and this is directly linked to the expected cost of the project work. The project managers should ensure the quantities and the schedule of the resources is directly linked to the budget.

The study recommends for the organizations to identify and deal with risks proactively: The organizations need to have decision making process; the various types of risks have to be identified ex ante as far as possible. The organizations should have adequate risk identification mechanisms such as formulation of adequate. There should have risk identification strategy which is the basis for analysis and control.

### **Areas for Further Research**

A review of literature indicated that there is limited research on the determinants of completion of housing projects in informal settlements in the Kenyan context. Thus, the findings of this study serve as a basis for future studies on determinants of completion of housing projects in informal settlements. The effects of determinants on completion of housing projects in informal settlements, has not been widely studied which presents gaps in African and Kenyan contexts. The study has contributed to knowledge by establishing that determinants of completion of housing projects in informal settlements in the Kenyan context.

This study confined itself housing projects in informal settlements in Nairobi City County in Kenya. A comparative study should be carried out to compare whether the findings also apply for other projects in different regions in order to validate whether the findings can be generalized in Kenya. Additionally, the study did not tie the determinants as the only factors of completion of housing projects in informal settlements Thus, there is need to undertake another research to examine the other factors which could be of influence completion of housing projects in informal settlements. The current study should therefore be expanded further in future in order to determine other remaining 27.90% is explained by the variables or other aspects outside the model.

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