FACTORS INFLUENCING PROJECT COMPLETION IN THE HOUSING CONSTRUCTION INDUSTRY, NAIROBI COUNTY

BY

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DECLARATION

This research project is my original work and has not been presented for a degree in any other institution.

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This research project has been submitted for the examination with my approval as the candidate's supervisor.

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DEDICATION

This project is dedicated to my wife Jenny, children Lisa, Mona and Jaden and my parents Joseph and Eunice.

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ABSTRACT

The property development industry greatly impacts on a country's growth and development. It is an industry that contributes generously to the gross domestic product of a nation both directly and indirectly. Property development employs a huge proportion of the population and this includes both skilled and unskilled labour and spurs growth in many and other sectors of the economy. The study focused on four factors that have a great influence on the successful completion of property development projects: project management, finance, consultants and the contractor. The study aimed to establish how each of these factors influences project completion. The study also aimed at finding out whether the following targets of project management i.e. time, cost and quality have any importance on the completion of property development project. The research relied both on primary and secondary data. The population was stratified into three with each group of respondents handling different responsibilities in the project. Primary data was collected using both questionnaires and an interview schedule. Secondary data was collected from project reports for different developments. At 95% confidence interval the study findings revealed that there is a weak relationship between budgeted cost and actual cost of successful completion of property development projects at 35%. This implies that the actual costs incurred were greater than the budgeted costs. Also at 95% confidence interval the study findings revealed that there is a weak relationship between target completion time and actual completion time of successful completion of property development projects at 26%. This implies that majority of projects in the property development industry were completed later in time after expiry of their targeted completion timelines. The results of the regression equation showed that for a point increase in the independent variables, successful completion of development projects is predicted to increase by 4.441, given that all the other factors are held constant. The research findings also indicated that there was a very strong positive relationship (R= 0.852) between the variables. It was revealed that 72.7% of successful completion of property development projects could be explained by the factors under study. From this study it is evident that at 95% confidence level, the variables produce statistically significant values and can be relied on explain to successful completion of development projects The study recommends that during project preparation, enough time and resources should be allocated to ensure that adequate field investigation are conducted, appropriate and up to date information is gathered, specifications are prepared, scope is well defined, good estimates on material are made, adequate project analysis is done, and linkages in projects activities are identified. The project manager must appreciate the environment of development projects, maintain flexibility, and be competent to analyze the nature of associated problems and their diverse effects on the success of the project, and address these promptly. Lastly, complex works interfaces should be avoided and works should only be split into packages that can easily be managed.

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LIST OF ABBREVIATIONS AND ACRONYMS

BIM	Building Information Modeling
CAD	Computer Aided Drawings
GDP	Gross Domestic Product
Kshs.	Kenya Shillings
NEMA	National Environmental Management Authority
SPV	Special Purpose Vehicle
SWOT	Strengths, Weaknesses, Opportunities and Threats
CPM	Competitive Profile Matrix
OBS	Organization Breakdown Structures
ICT	Information Communication Technology

CHAPTER ONE

INTRODUCTION

1.1Background Information

The construction industry contributes significantly in terms of scale and shares in the development process the world over. The construction product provides the necessary public infrastructure and private physical structures for many productive activities such as services, commerce, utilities and other industries. The industry is not only important for its finished product, but it also employs a large number of people (directly and indirectly) and therefore has an effect on the economy of a country/region during the actual construction process (Wibowo, 2009). The impact of the property market on the global economy came to light with the US property meltdown. The effect of foreclosures and property devaluation left the global economies on downward spirals that they are still trying to recover from today. McKibbin and Stoeckel (2006) felt that static or falling home prices would dampen consumer sentiment with lower spending and economic activity not far behind. He argued that the housing downturn would likely lead to a recession in early 2007. Any downturn would have repercussions for the world economy. The bursting of the US housing bubble would change expected returns to housing assets and would lead to a reallocation of capital within the United States as well as between countries. This reallocation of capital would have knock-on effects for the world economy, exchange rates and international capital flows. This is what happened and the global economies are still trying to recover from this recession.

Kelly (2008) points out that as Africa's burgeoning middle classes demand affordable homes, housing aimed at low- to middle-income earners are springing up in capital cities throughout the continent. With houses in short supply, such residential property developments offer investors the potential to generate attractive yields. Unlike the developed global economies, the African continent has so far emerged largely unscathed from the credit crunch. Its financial system has little exposure to the types of loans such as sub-prime mortgages that have destabilized financial institutions in the US and Europe. With the credit crisis in developed markets still unwinding, it seems inevitable that investors seeking shelter from the economic turbulence will continue to

divert funds to Africa. If continent-wide GDP growth retains its current rate of 6%, many more Africans are likely to move up the socio-economic ladder over the next few years, demanding middle-class assets such as houses as they do so. For property investors as well as banks expanding into housing finance the boom could well continue for some time, providing portfolio diversification when property markets elsewhere have peaked for this cycle.

In Kenya, Vision 2030 puts a lot of emphasis on property development. Real estate development has outgrown its 'industry' status and is now considered to be a 'sector'. According to Brand Kenya, the economic review, the construction Industry contributed 8.1% growth to the GDP in the first half of 2011. Waithaka, J. (2012), reported that a Memorandum of Understanding was signed between the Vision 2030 Delivery Board and Tatu City endorsing it as a flagship for future urbanization in the country. It was observed that the city will bring about social and economic development. The study focused on the property development industry in Nairobi. Nairobi features globally as one of the cities that yields good returns to investors in real estate. According to the Global Property Guide that publishes the country investment ratings, Nairobi netts a Gross Rental Yield of 7.18% making it a good long term property investment. (http://www.globalpropertyguide.com/investment-rating). The potential of good returns has increased the demand for property in Nairobi thereby making it an attractive investment location to developers. The construction outputs can be classified as a major component of investment and part of fixed capital. Both are essential factors for a continuous economic growth. Products of construction require a long period of gestation and are expected to supply services for a period of time. Investments in construction assume major importance since any expansion in the economy requires infrastructure investment as a precondition for potential economic growth (Gruneberg and Ive, 2000; Hillebrandt 2000).

Property or building development spurs a country's growth in a number of ways: it brings about an increase in investments/savings, employment and spurs growth in other related infrastructure developments such as roads, power supply, water supply, sewer systems, among others. According to Nwachukwu and Emoh (2011) the strategic importance of building as an economic facility, the construction or developmental process and its investment potential are some attributes that attract all sectors of the economy to this industry. Property development is like a catalyst that not only serves as an engine that energizes other sectors of the economy but gives

impetus to the developmental rating of a country. Housing development employment cuts across all categories of human endeavor. Nwachukwu and Emoh (2011) further state that building material production, its marketing, distribution, supply and storage has a huge impact on a country's economy. Laborers and employees wages and salaries, consultants fees, agents commissions, among others contributes positively to world economic growth. The investment attraction of building development by public and private sectors of the economy anchor on its indispensable and strategic importance as a solid rock of support and strength to all sectors of the economy. To this end, any effort to encourage investment in property development should be seen as a step in the right direction. The building construction industry ranks very high among other economic sectors in terms of inter-sector linkages. The importance of this sector as an agent of development is enhanced by its ability to provide gainful employment for the world's teeming population.

According to Roy (2005), noticeable development and the aesthetic transformation of the environment is bound up with and predicated on the building construction industry. Nwachukwu (2008), emphasizes that the building construction industry is a major factor in the social and political integration of the society and ranks as one of the major budgetary areas of developing economies. Bhavesh (2006), states that the building construction industry is proven to be the corner stone and bedrock of rapid economic growth of any nation. Nwachukwu went on to point out that the products of the construction industry are desired mainly for the services which they help to create. In other words most business, social, religious, economic, industrial activities, among others operate on building infrastructure. According to Eric (2003), the industry is likely to remain a major area of development activity as the need for the provision and replacement of infrastructure become more important in the years ahead.

Nwachukwu, Echeme and Okoli (2010) identify the building development sector of the construction industry as a catalyst, a rock, and the strongest base for rapid economic growth. It therefore becomes very imperative that building projects are project managed efficiently to succeed. The completion of a building project is very important in a developing economy if we critically analyze the quantum of resources wasted and its negative impact to the Gross Domestic Product(GDP) of the a nations economy. The property development process employs both professionals and non-professionals from all the fields of life and the sector has a geometric

progression financial impact on the economy. This means that success will reflect the sector as an engine of growth but failure, abandonment and collapse a catastrophe to nation building economically.

Owing to the huge importance of this industry to the economy, this study seeks to establish the factors that lead to successful completion in property development projects. According to Baker, Murphy and Fisher (1988), project successful completion is defined as meeting the project's technical specification or mission while at the same time attaining a high level of satisfaction on the part of the organization, clients, users and the project team. Completion therefore has to do with the attainment of timeliness, completion within the budget, satisfaction in technical performance both in terms of scope and quality and client or customer acceptance. Atkinson (1999), stated that project performance is usually evaluated using schedule, cost and quality performance, also known as the iron triangle.

1.2 Purpose of the study

The purpose of the study was to determine the factors influencing project completion in the housing construction industry with focus on Nairobi, Kenya.

1.3 Statement of the problem

According to Young (2010), a project is a temporary endeavour to achieve some specific objectives in a defined time. My study is based on property development projects in Kenya. For a property development project to be successfully completed, there are a number of key success factors that it is dependent upon. Rockart (1982) defined critical success factors, for any business, as the limited number of areas in which results, if they are satisfactory, will ensure competitive performance.

My study focused on the internal factors which are within a firms' control: project management, finances, the consultants and the contractor. The factors considered were identified based on literature review by Nguyen, Ogunlana and Lan (2004), Arslan and Kivrak (2008), Salleh (2009) and Fugar and Agyakwah-Baah (2010). Project completion in my study was based on Baker's (1988) definition of project success which is that of meeting the project's technical specification while at the same time attaining a high level of satisfaction on the part of the stakeholders. Atkinson (1999) went further to state that a project must meet the time, cost and quality criteria.

According to Nwachukwu and Emoh (2011), project failure is illustrated by a failure to achieve the above four success criteria. It does not mean that the project may not have been physically completed but the question is when is the completion? Is there any time or cost overrun? Is the quality specified standard achieved? Can it stand the test of time? Can its potential be maximally realized? Is the client and end-user satisfied? If the client is proposing another project, can he insist on working with the same team? If the answers to the above questions are in the affirmative, the project is termed successfully complete but if otherwise it means it was a failure.

My county and specifically Nairobi has numerous examples of property failure. An incomplete development project refers to a project that stalls mid-way and is abandoned with no construction works being carried out on it. An unsuccessfully completed project is one that is completed outside the defined parameters of time, cost and quality. Such cases lead to cost escalations and time delays. Mwanzia (2012) wrote about the construction of the Vice Presidents official residence in Karen that was completed 5 years outside the scheduled completion time and Kshs. 186 Million above the budgeted cost. In recent times, cases of collapsing buildings have been prevalent. Such cases of project failure were witnessed in Kasarani in February 2012 and in Mlolongo in May 2012 (Gichuhi, 2012). There are many stakeholders involved in property development with each having different interests. The ultimate goal in property development is the successful completion of these projects. Stakeholders include the government, developers, financiers, buyers, lessees, consultants, laborers, amongst others. Each party is affected by project failure in different ways. Property development as discussed earlier plays a pivotal role in a country's economy hence its importance.

Each one of the factors, that is, project management, finances, consultants and contractors has an impact on the successful completion of property development projects. Little is known as to the extent to which each of these factors individually influences the project completion. A number of studies have investigated factors which aid successful completion of projects particularly those that affect projects success more than others. Salleh (2009) stated that the first study to identify factors most influential in successfully completing construction projects was conducted by David Ashley (1987). This indicates the novelty in this area of study. The researcher has not come across a similar study that has been carried out in Kenya to research this topic. Through the identification of this research gap, the study sought to reduce the existing gap.

1.4 Research Objectives

The objectives of the study were:

i. To establish the influence of project management on project completion.
ii. To determine the influence of finance on project completion.
iii. To verify the influence of consultants on project completion.
iv. To find out the influence of contractors on project completion.

1.5 Research Questions

The research questions of the study were:

i. What is the influence of project management on project completion?
ii. What is the influence of finances on project completion?
iii. What is the influence of consultants on project completion?
iv. What is the influence of contractors on project completion?

1.6 Scope of the Study

The study was about the factors that contribute to the successful completion of housing construction projects. The study covered projects within Nairobi which accounts for most of the property development projects carried out in the country. Nairobi is globally rated as one of the cities with the highest returns or yield on real estate investment making it an attractive city to property developers. The results generated in Nairobi can be generalized to the rest of the country and most of Africa. We studied four firms that are leaders in the property development industry: Tamarind Properties Limited, Suraya Property Group, Mentor Group and Oyster Homes. The criteria that guided the choice was the organizations' experience in the industry and the magnitude or value of the projects they have previously and are currently undertaking.

1.7 Limitations

The researcher encountered quite a number of challenges related to the research and most particularly during the process of data collection. Due to inadequate resources, the researcher conducted this research under constraints of finances and therefore collected data from one urban center. Some respondents were biased while giving information due to reasons such as victimization in the event the research findings turned sour.

Lack of cooperation was undoubtedly the greatest challenge that was witnessed by the researcher. Respondents were naturally suspicious and uneasy when directed to cooperate in a study that they were not aware of its consequence. To calm and set at ease the respondents, the researcher explained the nature of the study and its intended purpose and that it was purely an academic undertaking

1.8 Assumptions

The study assumed that the respondents were honestly in their response to the research questions. It was also assumed that the respondents possessed the relevant knowledge that will help the researcher to make an accurate conclusion. This was actually confirmed from the information provided which was adequate as it enabled the researcher to make accurate, valid and reliable conclusions.

1.9 Significance of the Study

This study will be beneficial to the financiers in the planning structure of the available funds for the project. In this case it will enable them to appraise and assess the projects accurately.

The study will assist property development companies in achieving successful completion of their development projects. With the knowledge and insight on the factors that influence project completion, firms in the industry will be in a position to manage their projects more efficiently.

Academicians will have the opportunity to use the study as reference material in other studies in the future. Further studies can be conducted in the property development industry using this research as a basis or foundation for the same.

Policy makers can use the study as a guide in designing and developing policies to regulate and stimulate growth in this industry.

1.10 Definition of significant terms

Housing construction: Also known as building construction or property construction, this describes the erection of buildings.

Project completion: Also described as successful project completion is meeting the project's technical specification while at the same time attaining a high level of satisfaction on the part of

the stakeholders. The project must be physically completed and meet the time, cost and quality criteria.

Project failure: There are three different kinds of project failure with each one fitting a certain description: an abandoned project is one that is not physically completed and its construction stalls mid-way; collapsed buildings are termed as project failures; another form of failure is that where a project is physically completed but outside the parameters of time cost and quality.

Project Management: The application of tools and techniques towards the accomplishment of a project within time, cost and quality constraints. Project management looks at the entire management of a project. Emphasis is on the managerial as opposed to the technical aspects encountered on a project.

Finance: The funds required to cater for the entire project or developmental cost.

Consultants: These are the "technical" consultants on a project and include the architect, quantity surveyor, civil/structural engineer and the electrical/mechanical (services) engineer.

Contractor: Includes the main contractor, sub-contractors and specialist service providers.

1.11 Organisation of the Study

Chapter one contains the Introduction of the topic. Included is a Global, African and Kenyan perspective on the influence of the construction industry on the economy. Insight into the research problem, the study objectives, scope of the study, its limitations and assumptions upheld as well as the operational definition of terms are all a part of this chapter.

Chapter two contains the Literature Review on the factors that influence the successful completion of property developments, namely, project management, finance, consultants and contractor.

Chapter three contains the Research Design and Methodology to be undertaken in the study. This includes identification of the target population, sampling method and data collection instruments to be used and how the data is to be analyzed.

Chapter four contains Data Analysis, Presentation and Interpretation. The collected data from the research instruments is analyzed, presented and interpreted in a comprehensive manner.

Chapter five contains the Summary of Findings, Discussions, Conclusions and Recommendations. The findings of the study are summarized alongside the study objectives. Conclusions are drawn from the study and recommendations for action drawn from the same.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Nguyen et al (2004) in his study on project critical success factors in large construction projects in Vietnam, came up with 5 critical success factors, namely: competent project manager, adequate funding until project completion, multidisciplinary/competent project team, commitment to project and availability of resources. Similar factors were cited by Arslan and Kivrak (2008), Salleh (2009) and Fugar and Agyakwah-Baah (2010). In our study, we have broken down the factors into 4: Project Management, Finance, Consultants and Contractor.

2.2 Project Management

2.2.1 Time, cost and quality

Project Management is the application of a collection of tools and techniques (such as the CPM and matrix organization) to direct the use of diverse resources toward the accomplishment of a unique, complex, one-time task within time, cost and quality constraints. Each task requires a particular mix of these tools and techniques structured to the task environment and life cycle (from conception to completion) of the task (Atkinson, 1999). According to Nwachukwu, Echeme and Okoli (2010), achieving successful completion in the building development process is the major function of project management. The answer to project success, failure, abandonment, and collapse of building construction lies in efficient project management. Building construction projects must be made to succeed because its execution often involves substantial funds. The loss through failure or abandonment has a crippling effect on the capabilities of the investors, the financiers and for the fact that scarce resources are tied down for a long time as opportunity cost for its alternative uses. The project may also be the only future hope of the client and therefore expect nothing but success.

Nwachukwu et al (2010), termed a project to be successfully complete if it passed four success test criteria i.e. the time criterion – completed on time; the cost or money criterion – completed within budget; the effectiveness criterion – completed in accordance with the original set performance and quality standards; and client's satisfaction criterion – accepted by the intended users or clients whether the client is internal or from outside the organization. The above success

criteria call for successful project implementation by the utilization of proven management techniques of planning, organizing, directing and control. The issues on life cycle management, time management, conflict resolution and management, networking, contracts management, project choice and project quality are the key factors that contribute to project success.

Efficient project management is very important. The strategies for successful completion in any building project are implemented in the management of the Project Time, Cost, Quality and Material management using project life cycle concept. Project management is believed to be justified as a means of avoiding the ills inherent in the construction and production sectors of the economy and for which reasons most projects fail and or abandoned. The project managers role arises from the need for a technical expert to take charge, control of events on the project implementation process, someone who understands the intricacies of co-ordinating, controlling, organizing and directing the efforts and activities of the professional team and the contractors as well as dealing with the physical problems of the implementation process with the needs in the decision making process. The success of any project implementation process in the construction industry in the public and private sectors depend largely on the project manager's concept on staff appointments and control, strict monitoring of time, cost, material, quality and environmental constraints.

2.2.2 The Project Life Cycle

The Project Life Cycle consists of four distinct phases: conceptualization, planning, execution/implementation and termination phases. Each of these phases should be carried out in sequence. The conceptualization phase has to do with choosing a project from among alternatives. The planning phase has to do with the setting of benchmarks with reference to time, cost and quality. The general rule of thumb is the more time you spend in the planning stage, the less time you spend in the implementation stage. Schwalbe (2009), looks at time planning management as that process that leads to the generation of a milestone list, a network diagram, the activity resource requirements, the activity duration estimates and a project schedule. The critical path analysis is an invaluable project management tool that determines the shortest time in which a project can be completed. The critical task items are tasks that must be completed and it is by focusing on the completion of these tasks that time can be managed. Cost management has to do with ensuring that a project is completed within an approved budget.

The implementation has to do with the controlling of a project. According to Cleland and Ireland (2007), control is the process of monitoring, evaluating and comparing results with actual results to determine the progress toward project cost, schedule and technical performance objectives. Regularly scheduled and conducted project reviews are held throughout the project implementation. Monitoring and feedback refer to building project control system or processes by which at each stage of the implementation, key personnel receive feedback on how the project is comparing or conforming to initial projections in time management, cost, quality and materials. If necessary corrective action is effected. It may take the form of replanning, reallocation of resources or changing the manner in which the project is organized or managed.

According to Vasilescu (2009), construction projects are complex human endeavours that entail extensive planning and tight control if they are to be successful. In any industry and in any country of the Globe, they have always posed difficult challenges to the project teams and project stakeholders, challenges such as: costs overrun, delays in project delivery, quality control and profitability. Overriding costs are especially risky since they can trigger a whole array of new problems, such as delays in project delivery, the impossibility of attracting supplementary financial support, quality concerns and finally, project failure. As a result, project planning and monitoring are the most important stages in the project development cycle. Nwachukwu (2011) pointed out the need for adequate communication channels are extremely important in creating an atmosphere for successful implementation of a building project. Communication could best be described as the life wire of any project implementation success. There should be prompt communication to the building or project mission, good information flow amongst the project team, constant consultation with the client, getting feedback from other stakeholders, maintaining constant consultation with the client, sensitizing him with every issue that will enable him to accept the product after execution.

2.2.3 Risk Management

Risk management is a crucial tool in project management. According to Windapo and Martins (2010), it is one of those ideas that sense that a logical, consistent and disciplined approach to the future's uncertainties will allow us to live with them prudently and productively, avoiding unnecessary waste of resources. The economical, political, environmental, social, cultural and financial environment in which the project is operated increase the uncertain outcomes which the

risk management concept essentially attempts to predict and avert. As a result of this, risk management is gradually becoming an integral part of the project architecture. Identifying and mitigating project risks are crucial steps in managing successful projects (Carbone and Tippet, 2004). Risk identification is the most important step in the risk management process and involves the identification of risks that threaten the outcome (time, cost, schedule or deliverables) of the project (Herman, Getz and Michael, 2003). Various tools and techniques are available to assist the risk identification process. These include documentation reviews; information gathering using techniques such as brainstorming, Delphi technique and interviewing. Other techniques are the Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis which includes checklist analysis, assumption analysis and diagramming technique.

Effectively managing risk can assist the project manager to mitigate against both known and unanticipated risks on projects. Failure to perform effective risk management can cause projects to exceed budget, fall behind schedule, miss critical performance targets, or exhibit any combination of these troubles. Datta and Mukerjee (2001) stated that "successful project completion depends to a great extent on the early identification of immediate risks." Risk management properly utilized can greatly reduce risks on a project, create team ownership in risk planning, and act as a resource for future projects in terms of knowledge management and lessons learned. Vasilescu (2009), adds that as we identify risks we should also determine their degrees. The risks should also be profiled across the project development stages. According to Ford (2002), risk management also supports the quantification and valuation of uncertainty in construction projects as an important area of research. Based on this work, practitioners are advised to identify the sources and characteristics of uncertainty in their projects and incorporate that understanding into project management. Continuing to improve the understanding of how contingency management practices impact performance can facilitate the design of strategies that improve construction project performance.

2.2.4 The Project Manager

Ford (2002) also pointed out that project managers use budgets to satisfy multiple objectives such as cost control, short durations, and high quality. Contingency funds are included in project budgets to manage risk and achieve project goals. Understanding how managers use budget

contingencies requires a dynamic information processing model. Construction project performance is frequently measured in cost, time, and the value of the constructed facility. A traditional approach to managing multiple objectives applies a zero-sum-gain perspective. In this approach trade-off decisions are used. Accepting increased costs to reduce project durations by paying for overtime is perhaps the most common application of a zero-sum-gain approach to managing construction projects. But this perspective forces managers to choose among lower cost projects, shorter project durations, or better facilities and contrasts sharply with their desire to satisfy all three of these project objectives. Project managers seek tools and strategies that can simultaneously improve project performance in multiple dimensions. Project budgets are one of the most important and widely used project management tools. Project complexity and the inherent uncertainty of the financial performance of constructed facilities, development funding, and the control of costs and schedules make exact budget needs impossible to forecast accurately. These same characteristics also cause projects to deviate from plans. Therefore, contingency funds are included in development budgets to provide managers with the flexibility required to address uncertainties and deviations that threaten achieving objectives.

Nwachukwu (2011) summarized a project managers role to include that of coordinating and supervising all aspects of the work program and ensuring that quality is maintained; ensuring that works or various activities are completed on time and at the right budget; liaison with all the parties involved in the project including the developer and the development team; directing and controlling the contractors and sub contractors to curb the excesses, wastage, delay and unnecessary foot dragging; advising on design and cost, and with his experience in value management or engineering analyses he is able to attain set goals without sacrificing standards and quality; advising on taxation and legal matters taking percussion in ensuring that the project meets the budget; site assembling and procurement of professionally acceptable feasibility studies; determining type of funding arrangement, negotiating for funds and procure funds for the project execution in line with feasibility studies; monitoring cash flow during period of construction and making adjustment where necessary; creating a cordial working environment among consultants, contractors and every other worker on site.

It is evidence that the role of a project manager cannot be exhausted, but his role can be seen primarily as that of reducing the client's (developers) problems and increase his control over the

project in terms of the accuracy of the clients brief, the various options open to him, budgeting and programming of works. The project manager acts as a shock-absorber to the client, and as a catalyst to the development team. He is the engine that gives life to the development process, the fulcrum that gives leverage to success of the entire project. He may not be a magician, but he possesses scientific tools and techniques that make things work like magic. Arslan et al (2008) in his study observed that manager characteristics were considered as one of the main important factors to a projects success. Leadership was considered as the most important factor. Communication is also an essential subject in today's business environment. Lack of communication skills can cause serious problems in coordination of works.

2.3 Availability of Finance

2.3.1Importance of Finances

Finance is an integral factor that leads to project success. Failure to access project funds results in time delays and even abandonment. Financial difficulties have been identified as the first major factor causing delay in construction projects in Malaysia (Alaghbari, Mukmin and Samad, 2007). In this study, the inability of developers to honour payments on time was determined by all respondents as the major factor that causes delays in building construction projects. The same conclusion was arrived at in a similar study aimed at determining the causes of delays in construction projects in Ghana by Fugar and Agyakwah-Baah (2010). Grosskopf (2005), pointed out that new developers in the market in an effort to break into the market, use "rule of thumb" markups instead of carefully calculated pricing that allows them to generate sustainable profit or are unaware of their "break-even" point, leaving them with insufficient volume and subsequent gross profit to cover their costs. Birnbaum (2004) stated that acquiring land and maintaining liquidity are the two key success factors in the property construction industry.

Those that are able to formulate a competitive and profitable pricing strategy may still fall prey to the "capitalization trap," where working capital and line of credit are insufficient to meet current liabilities and complete what otherwise would have been a profitable job. Over capitalization, or the under utilization of favorable credit terms and debt leverage strands limited cashflow and reduces return-on-investment. Other pitfalls include an inadequate understanding of the time value of money, allowing the contractor to make poor investment and financing decisions. Arslan, (2008) observed that the availability of cash flow is highly essential in

projects. In his survey he discovered that the majority of the respondents considered control of cash flow as the most important sub-factor of financial conditions. According to Nesan, (2011) the 'line of credit' mechanism predominates construction financing. Other forms of credit such as mortgages and transaction loans also exist. The commonality among all these credit support mechanisms is that all of them are collateral intensive and the banks unfailingly scrutinize the capital adequacy of the company that seeks funds.

2.3.2 Project Finance

Project finance is a non recourse type, asset based financing of an economically separable capital investment project. The lenders in this case look primarily into the cash flow from the project as their source of funds to service the loans and provide a return on the equity being invested in the project (Finnerty, 1996). The distinguishing feature of project financing from conventional financing is that unlike conventional financing the lenders do not have recourse to the entire portfolio of assets of the project sponsor. The financier instead relies only upon the cash flow of that specific project. It becomes possible for the lenders to take on high risk in project financing that incorporates appropriate risk assessment and risk transfer.

Vasilescu (2009), states that project finance, doesn't simply mean "financing of a project"; rather, it is a mix of financial and business engineering. Basically, project financing involves non-recourse financing of the development and construction of a particular project in which the lender looks principally to the revenues expected to be generated by the project for the repayment of its loan and to the assets of the project as collateral for its loan rather than to the general credit of the project sponsor. Very often, a complex construction project is carried out by a separate business entity called special purpose vehicle (SPV) established by a parent company (project sponsor) with the main aim of insulating the financial health of the sponsor from any possible project failure. They usually have a limited life-span; they cease to exist once the project is accomplished and fully functional. Since these entities are cost-centers rather than profit centers, credit analysis does not normally take into account their financial standing. The rationale for establishing an SPV responsible for project development is double-fold: in case the project fails, the Sponsor (parent company) will not be heavily affected; conversely, if the Sponsor encounters financial troubles at some point in time, the project can still continue. Thus, construction project development usually requires a specific business model.

Variants of project finance do exist in models wherein the lenders have a limited recourse to the asset portfolio of the project sponsor. In any project finance model the terms of the debt and equity securities are tailored to the cash flow characteristics of the project. Project financing which is an outcome of extensive risk analysis and transfer has contractual agreements put in place such that the revenue generated by the asset is paid back to the lenders. It then follows that non-recourse financing can be secured if sufficient risk analysis and transfer or insurance is carried out on a project by project basis.

Assuming that such extensive risk analysis and transfer can be done, the non-recourse funding to a developer will imply assets taking shape in the form of lien rights that the bank will come in possession of funding the project. The cash flow of the construction project will serve the loan and similar loans can be successively drawn under the same arrangement for a particular project to fund the cash requirement of the developer throughout the project. However various other risks such as diversion of cash flow, cost overrun, non-payment of suppliers, and the credit risk of the bank all necessitate a formal contractual structure. This is mitigated through the recognition of the banker by the developer and the contractor as the "Third party beneficiary" in the project. As the model is heavily dependent upon the non-recourse or limited recourse financing by the bank, the banker should have the right/privilege to operate or control the income generated by its investment. The major financial institutions involved in project financing of property developments in Kenya are the Kenya Commercial Bank (Savings and Loan), Housing Finance, Co-operative Bank of Kenya and Shelter Afrique. Other banks such as Equity bank, I&M bank, First Community Bank and others have also ventured into this lucrative area of financing even though it is not a part of their core competencies.

2.3.3 Equity Financing

Funding for projects can also come in the form of equity through individuals, private equity funds and real estate trusts. According to Waithaka (2011), the Capital Markets Authority is in the process of legalizing Real Estate Investment Trusts in Kenya. Real Estate Investment Trusts (REITs) are investment vehicles to enable flow of funds from investors to the real estate sector of the economy (Lee, et al, 2006). Kane (2001) points out that equity money is risk averse and will

generally commit to fund no sooner than the meeting and fulfilling of certain obligations: when all project land and other development rights have been secured; building permits, zoning, and other entitlements are in place; tax abatements have been granted; environmental reviews have been completed; and, in instances where a project is to be fully or partially preleased or presold, the applicable leasing and sale thresholds have been achieved. However, in order to get to this stage of readiness in a project a developer must fund considerable predevelopment expenses on his own, including deposits or option payments on land and development rights contracts, architectural and other consultancy/professional fees for plans and legal fees for permits, entitlements, marketing costs and project contracts.

2.4 Competence of Consultants

We refer to the "technical" consultants. The term technical is used so as to differentiate them from other consultants such as project managers who deal more with the managerial aspects of a project. The "technical" elements in a project refer to the tangible elements. The technical consultants constitute the Architect, Quantity Surveyor, Civil/Structural Engineer, and the Mechanical/Electrical (Services) Engineer. Each of these consultants' deals with different technical aspects but none can do without the other.

2.4.1Drawings and designs

In normal practice it is the architects drawings and designs that are used to generate the civil/structural as well as the services (plumbing and electrical) drawings and designs and subsequently the bills of quantities which produce the construction cost. The drawings and designs embody the concept of a project. The aesthetic features and structural soundness of a building are essential aspects of drawings and designs. The collapse of buildings usually occurs due to either poor design, bad workmanship or both. Gichuhi (2012) points out that the Kasarani building that collapsed in February 2012 and the other that collapsed in Mlolongo in June 2012 both collapsed due to wrong column and beam design and poor foundation design respectively. The cause for the project failure lay squarely in the hands of the consultants.

2.4.2 Supervision

It is also a fundamental duty of the consultants to supervise the project throughout the implementation phase so as to ensure that the completed project is exactly the same as the

design, both from a physical as well as a functional perspective. There is a lot of interaction that goes on amongst these consultants during the design as well as the implementation phase of the project. Communication, collaboration and co-ordination are necessary tenets for project success. Due diligence should be exercised in the hiring of the technical consultants. The importance of the due diligence is well captured in the conditions that are to be met by a developer in order to qualify for construction financing. Project lenders like Housing Finance as pointed out in their website (http://www.housing.co.ke/index.php/projects) insist that the consultants should attach their company profiles which should contain history of projects in which they have worked/consulted, valid practicing licenses, among other things. The consultants' competence is gauged on the above. Technology in today's project developments plays a vital role when it comes to project completion success. The hiring of consultants well versed with building technology knowledge is highly recommended. According to Sebastian (2011), issues such as budget overruns, delays, and sub-optimal quality in terms of flexibility, end-user's dissatisfaction, and energy inefficiency can be countered using technology. Technology improves communication and co-ordination between the actors involved in the different phases of a building project.

2.4.3 Technology

The processes for extraction, interpretation, and communication of complex design information from drawings and documents are often time-consuming and difficult. Advanced visualization technologies, like 4D planning have tremendous potential to increase the communication efficiency and interpretation ability of the project team members. However, their use as an effective communication tool is still limited and not fully explored. Building Information Modeling (BIM) offers an integrated solution to the above mentioned problems. Therefore, BIM is increasingly used as an ICT support in complex building projects. Technology such as BIM improves on efficiency and the collaboration between the developer, all the consultants and the contractor. BIM comprises ICT frameworks and tools that can support the integrated collaboration on a project. BIM is a digital representation of physical and functional characteristics of a facility. As such it serves as a shared knowledge resource. BIM in its ultimate form, as a shared digital representation founded on open standards for interoperability, can

become a virtual information model to be handed from the design team to the contractor and subcontractors and then to the client (Sebastian et al, 2009).

BIM is not the same as the earlier known computer aided design (CAD). BIM goes further than an application to generate digital (2D or 3D) drawings (Bratton, 2009). BIM is an integrated model in which all process and product information is combined, stored, elaborated, and interactively distributed to all relevant building actors. BIM develops and evolves as the project progresses. Using BIM, the proposed design and engineering solutions can be measured against the client's requirements and expected project performance. In summary, BIM is a virtual replica of the project that is accessible to all team members that improves on communication and collaboration during construction and keeps the developer fully involved and updated on the project progress.

2.5 Competence of Contractors

According to Nachukwu (2011), contractors and sub-contractors are individuals or firms that undertake to perform required construction work in return for a contract price. Contractors may be categorized as prime contractors and subcontractors. Prime contractors have a contractual relationship with the owner, whereas subcontractors have a contractual relationship with the prime contractor or with another subcontractor. General contractors are prime contractors who contract to perform specified work, possibly excluding some specialty items such as electrical and mechanical work that the owners desire to contract directly with the specialty contractors. As pointed out by Hobbs (1997), in most projects the contractor has little or no involvement until the bidding phase, and then the construction phase itself. By the end of the final design phase contract documents should have been prepared. The essence of the contractor's contractual responsibilities includes the furnishing of the labor, materials, and equipment and related services (the work) for a contract price and within the contract time.

2.5.1 Time and cost

It is important that the contractor's independent duties not be confused with those of the project manager and the technical consultants. Duplicating the responsibilities, by either shifting or reassigning the contractor's responsibilities to the other project team members does not serve the goals or objectives of the owner. It usually results in confusion or ambiguity that ultimately leads

to disputes, claims, or litigation. The cooperation and assistance of the developer, the contractor, and the entire project team is critical to the success of the project. But the bottom line for the contractor is the ability and willingness to assume and to fulfill the independent duties for furnishing the work in accordance with the requirement of the contract documents within the contract price, contract time and at the desired quality. As an indication of the impact contractors have on successful project completion, Fugar (2010) in his study ranked issues relating to the contractor such as the underestimation of the time completion, underestimation of the construction costs and poor scheduling of materials as the second most important factor leading to delays in construction projects. Contractors play an integral role in the successful completion of projects. If they cannot perform their independent roles efficiently regardless of the competency of the project team, project success would be unattainable.

2.5.2 Quality

Joseph (2011) pointed out that some building contractors are reputable and very good at their trade, some, however, are not. Developers at times enter into agreements with builders and tradesmen, without carrying out a cursory check. Even more alarming is the fact that some transactions are carried out without proper written agreements. It goes without saying that situations like these can quickly develop into potential nightmares if they are not handled correctly from the outset. Verbal agreements, it should be stressed, provide very limited means for seeking redress against shoddy, overpriced work or even fraud. Carrying out checks to investigate the building contractor's reputation and quality of work is paramount.

Appropriate due diligence includes searches to check for solvency and licensing issues. Confer with other developers the contractor has worked for previously, other consultants they have worked with, visit projects they have completed or are still building and ensure that they are currently not over-committed or over-burdened with too many projects beyond their capacity. It is only after the satisfactory fulfillment of the above that a contractor should be engaged. Failure to appoint a competent contractor is a probable cause of collapsing buildings in this industry. The building that came down along the Langata Southern by-pass opposite Carnivore in 2011 collapsed due to the use of poor quality sand on the beams and the columns by the contractor (Gichuhi, 2012). Such shoddy works would not have been carried out by a competent contractor.

Nesan (2011), pointed out that the following should be verified: contractors' technical capability to do the job and past experience in doing similar jobs or project; contractors' balance sheet; adequacy of working capital; financial standing of the contractor's owner; tender make up to ensure that the price quoted by the contractor is in the same range as others.

2.6 Conceptual framework

This study is guided by the following conceptual framework

Independent variables **intervening variables** **Dependent variables**

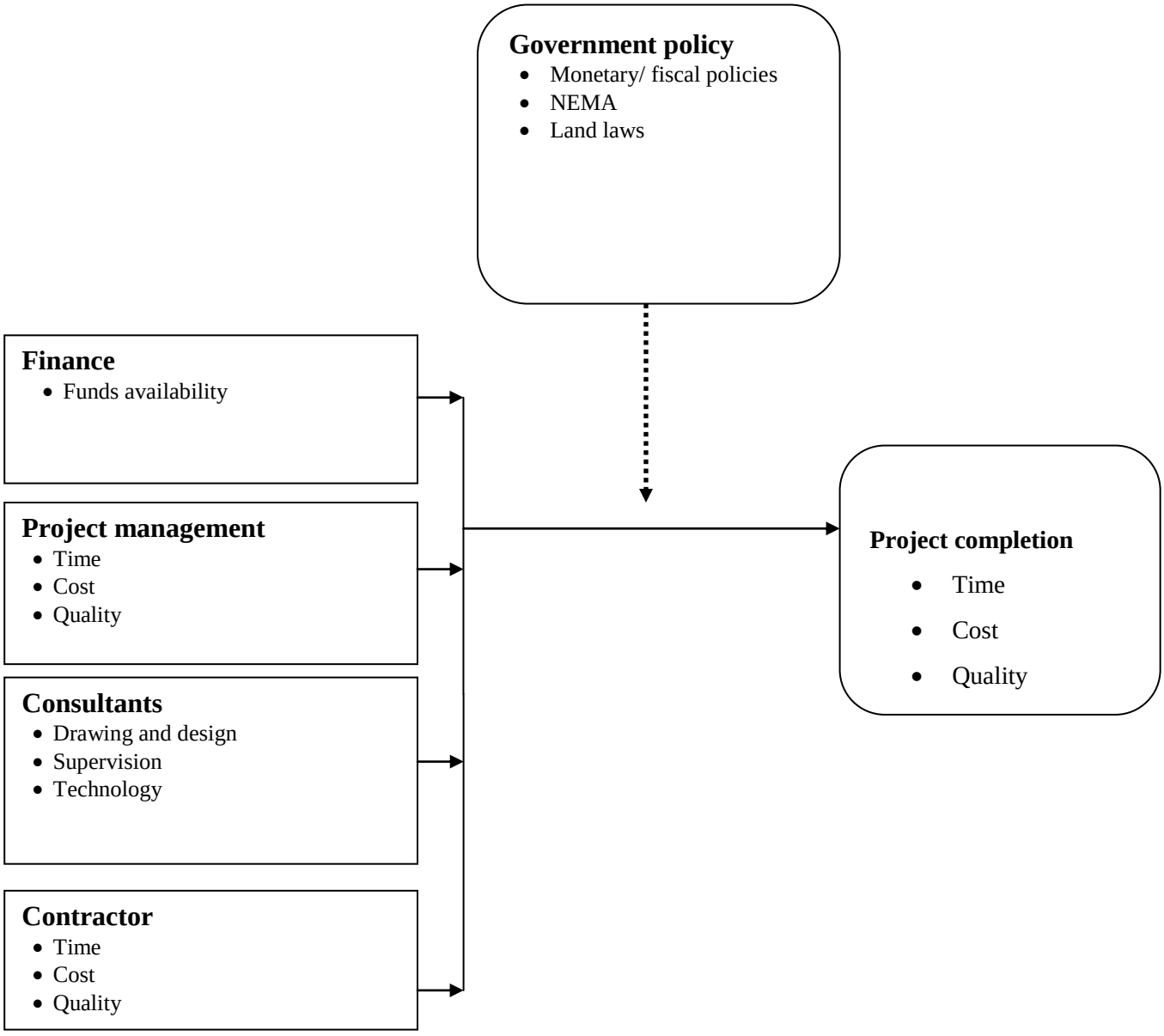

Figure 2.1: Conceptual Framework

2.7 Summary and research gap

Nguyen et al (2004), Arslan and Kivrak (2008), Salleh (2009), Fugar and Agyakwah-Baah (2010), in their studies study on project critical success factors in large construction projects in Vietnam, came up with 5 critical success factors, namely: competent project manager, adequate funding until project completion, multidisciplinary/competent project team, commitment to project and availability of resources. But these are not the only factors which should be considered in construction since there are many other which also contribute to the completion of the project. According to Nwachukwu, Echeme and Okoli (2010), Fugar and Agyakwah-Baah (2010),Grosskopf (2005), achieving successful completion in the building development process is the major function of project management. Schwalbe (2009), looks at time planning management as that process that leads to the generation of a milestone list, a network diagram, the activity resource requirements, the activity duration estimates and a project schedule. In addition to this study project completion does not only depend on the time factor only but there are other basic factors that aids to its completion.

In the study the researcher addressed the four variables that aids in successful project completion that include finance, project management, consultants and contractors. This study was mainly based in the African context specifically Nairobi County in Kenya where the other researchers did not base their facts.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter outlines the methodology that used to meet the objectives of the study. It discusses the research design, the target population, the sample size and sampling techniques, data collection instruments, validity and reliability of instruments, data collection procedure and data processing and analysis techniques.

3.2 Research Design

According to Brown, Askew, Baker, Denvir and Millet (1998), research design provides the glue that holds the research project together. It constitutes the blue print for the collection, measurement and analysis of data (Kothari, 2003). This study was a descriptive survey that attempts to establish the associations between variables and the research question. A case study design was adopted so as to try and bring out deeper insights and better understanding of the issues under study. The study applied both quantitative and qualitative methods of data analysis.

3.3 Target Population

The target population is that population with certain characteristics that the researcher was study and from whom the results can be generalized. The target population was 32 individuals working for the four large project development firms. The respondents comprised directors or general managers, mid-level managers and site supervisors.

3.4 Sample and Sampling Procedure

The researcher used multistage sampling. The initial sampling was purposive sampling. According to Mack, Woodsong, MacQueen, Guest and Namey (2005), purposive sampling groups participants according to preselected criteria relevant to a research question. According to Fraenkel and Wallen (2008), on occasion, based on previous knowledge of the population and the specific purpose of the research, investigators use personal judgment to select a sample. The

second stage of sampling was stratification. The sample was stratified based on the portfolio of responsibilities handled by the different respondents ranging from top management, mid management and operations. The table below shows the strata distribution.

Table 3.1: Sampling Frame

Strata	Population	Percentage of Population
Top Management	4	12.5%
Mid-level Management	12	37.5%
Site Supervisors	16	50.0%
Total	**32**	**100.0%**

3.5 Research Instrument

Primary and secondary data sources used to collect data. Primary data collected using both questionnaires and interview schedules. Questionnaires were administered to all the respondents. Different questionnaires were administered to the different strata. The questionnaires contained both open and closed ended questions. Interviews were held with mid level management with a view to getting in depth answers to some of the salient issues. Secondary data sources was include requirements for project finance from banks, minutes of site meetings, project gnat charts; works progress and project close out reports.

3.6 Instrument Validity

Validity is the degree to which results obtained from the analysis of the data actually represent the phenomenon under study (Mugenda and Mugenda, 1999). Validity is concerned with whether the instrument measures what it is intended to measure. To enhance the validity the researcher reviewed by a panel of experts made up of University of Nairobi supervisors and lecturers.

3.7 Instrument Reliability

Reliability refers to the consistency of the scores obtained. According to Fraenkel and Wallen (2008), in relation to reliability, you assess how consistent the scores were for each individual from one administration of an instrument to another and from one set of items to another. Reliability of the instrument was tested using the test-retest technique. The researcher conducted

a pilot study on Jelimar Developers Limited who are a fairly large property development firm and are easily accessible to the researcher. This firm is not among the sample chosen for the research. The questionnaires and interview was be administered or pilot tested to one respondent in top management, three in mid-level management and four at site supervision level. After a time lapse of one week, the same instruments were re-administered to the same respondents. The answers from both tests were compared to look for consistency. Based on the outcome, questions was be reworded, introduced or deleted to ensure that they are stated clearly and have the same meaning to all respondents.

3.8 Data Collection

The researcher called the Chief Executives or other person in top management to inform them of the study and seek their permission to conduct the same. The researcher also requested to be provided with the contacts, both email and mobile phone contacts of those to be interviewed. Thereafter the researcher called these respondents and follow up with an email forwarding the questionnaire as an attachment. The researcher proposed to collect the completed questionnaires seven days after the dispatch date. The interviews with the top management were made via phone appointment preferably within the 7 days to collection of the questionnaires. Secondary data was collected at the point of collecting the questionnaires from the mid-level managers.

3.9 Data Analysis

Data analysis is the process of bringing order, structure and interpretation to the mass of data collected (Marshall and Rossman, 1999). After collection of the data, the researcher ensured that it is complete, accurate and uniform. Accumulated data was reduced to a manageable size and summarized where necessary. Qualitative and quantitative approaches were both used to analyze the data. Qualitative data derived from the interviews, questionnaires and the secondary data sources were presented in the form of descriptive narratives and quotes. The Statistical Package for Social Sciences (SPSS) was used to run descriptive analysis to produce frequency distributions and percentages. Correlation and regression was used to establish the correlation coefficient (r) between time and cost as elements that measure performance.

Table 3.2: Operational Definition of Variables

OBJECTIVES	VARIABLES	INDICATORS	MEASUREMENT SCALE	TYPE OF ANALYSIS	TOOLS OF ANALYSIS
To determine the influence of project management on project success.	Time	- Use of work programs/ schedule - Determining the critical path - Working within budget	Nominal/Ordinal	Frequency/ Standard Deviation/ Correlation	Descriptive/ Content Analysis
	Cost	- Maintaining prescribed standards - Identifying and mitigating risks - Factoring a contingency in the	Nominal/Ordinal	Frequency/ Standard Deviation/ Correlation Frequency	Descriptive/ Content Analysis
To determine the influence of finance on project success.	Cash flow/ Funds availability	- Securing adequate funds for the project development	Nominal/Ordinal	Frequency	Descriptive/ Content Analysis
To determine the influence of consultants' competence on project success.	Drawings and Designs	- The building should be structurally sound	Nominal/Ordinal	Frequency	Descriptive/ Content Analysis
	Supervision	- Consultants should carry out regular site visits - Quicker turnaround time in producing drawings and clarification of details to the team			

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

The purpose of the study was to determine the factors influencing project completion in the housing construction industry. Specifically, the study investigated the influence of project management, finance, consultants and contractors on project completion in the housing construction industry in Kenya.

4.2 Questionnaire Return Rate

The target population was 32 individuals working for the four large project development firms. The respondents comprised directors or general managers, mid-level managers and site supervisors. A sample size of 32 respondents was used whereby only 27 filled and returned questionnaires. To this end, an 84.4% was attained. According to Mugenda and Mugenda (1999), a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and over is excellent. It therefore goes that the study registered an excellent response rate. The findings are as presented in Table 4.1.

Table 4.1: Response Rate

Questionnaires	**Frequency**	**Percent (%)**
Returned	27	84.4
Unreturned	5	15.6
Distributed	**32**	**100.0**

4.3 Demographic information

Respondents were required to indicate their responses on various demographic aspects ranging from: Gender, age, duration of work, academic qualification, and the estimated value of project undertaken. The study findings are presented in the following sub sections.

4.3.1 Gender of the respondents

The study findings in Table 4.2 shows the gender of the respondents

Table 4.2: Gender of the respondents

Demographic aspect	Top Management		Middle Level Management		Site Supervisors	
Gender	Frequency	Percent	Frequency	Percent	Frequency	Percent
Male	2	67	7	70	12	86
Female	1	33	3	30	2	14
Total	3	100	10	100	14	100

The study established that 67% and 33% of top managers were male and female respectively, 70% and 30% of middle level managers were male and female respectively while 86% and 14% of the site supervisors were male female respectively.

4.3.2 Age of the respondents

The study findings in Table 4.3 shows the age of the respondents

Table 4.3 : Age of the respondents

Demographic aspect	Top Management		Middle Level Management		Site Supervisors	
Age (years)	Frequency	Percent	Frequency	Percent	Frequency	Percent
20 or less	0	0	0	0	0	0
21-30	0	0	4	40	5	36
31-40	1	33	5	50	7	50
41-50	2	67	1	10	2	14
51-60	0	0	0	0	0	0
Above 60	0	0	0	0	0	0
Total	3	100	10	100	14	100

From the study findings in table 5, majority (67%) of top managers were aged between 41-50 years while 50% of middle-level managers were aged between 31-40 years and majority (50%) of site supervisors were aged between 31-40 years.

4.3.3 Experience

The study findings in Table 4.4 shows the duration of work of the respondents

4.4 : Experience

Demographic aspect	Top Management		Middle Level Management		Site Supervisors	
Duration of work	Frequency	Percent	Frequency	Percent	Frequency	Percent
< 5	1	33.3	4	40	4	29
6-10 Years	1	33.3	5	50	7	50
> 10 Years	1	33.3	1	10	3	21
Total	3	99.9	10	100	14	100

The study established that 33.3% of the top managers had each worked for periods of less than 5 years, between 6-10 years and over 10 years respectively. Majority **(**50%) of the middle level management and site supervisors had worked for a period of between 6-10 years which is long enough for the respondents to acquire the relevant experience to comment on the aspects under study.

4.3.4 Academic qualification

The study findings in Table 4.5 shows the academic qualification of the respondents

Table 4.5: Academic qualification

Demographic aspect	Top Management		Middle Level Management		Site Supervisors	
Academic qualification	Frequency	Percent	Frequency	Percent	Frequency	Percent
Certificate	0	0	0	0	1	7
Diploma	0	0	2	20	9	64
Advanced Diploma	1	33	3	30	4	29
Bachelors	2	67	5	50	0	0
Masters	0	0	0	0	0	0
PHD	0	0	0	0	0	0
Total	3	100	10	100	14	100

Majority (67% and 50%) of the top managers and the middle level managers had attained bachelor degrees while majority (64%) of the site supervisors had attained diploma level of education. The respondents were well educated and were in a position to provide the relevant information to the study objectives.

4.3.5 Estimated Value of projects undertaken

The study findings in Table 4.6 show the estimated Value of projects undertaken.

Table 4.6: Estimated Value of projects undertaken

Demographic aspects	Top Management		Middle Level Management	
Estimated Value of projects	Frequency	Percent	Frequency	Percent
< 250 million	0	0%	0	0%
251-500 million	0	0%	0	0%
501-750 million	0	0%	0	0%
751- million-1 billion	3	100%	3	100%
Total	3	100%	3	100%

The study established that projects undertaken were valued between 750M -1 billion as indicated by all the top and middle level managers.

4.4 The influence of project management on project completion.

The first objective of the study was to establish the influence of project management on project completion. In this regard, the respondents were asked whether project management influences successful completion of property development project. Table 4.7 shows the findings of the study.

Table 4.7: Influences of project management on project completion

	Top Management		Middle Level Management		Site Supervisors	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Yes	2	67	9	90	13	86
No	1	33	1	10	1	14
Total	3	100	10	100	14	100

Majority of the respondents (67% of top managers, 90% of middle level managers and 86% of site supervisors) indicated that project management influence successful completion of property development projects.

The respondents were further asked to rate the importance of the following targets of project management on the completion of property development project. The response was rated on a five point scale on which 1 = not at all important and 5 = very important. Mean and standard deviation was calculated as shown in table below.

Table 4.8: Importance of project management targets

	Mean (x)	Standard Deviation (S.D)
Completion of a project on time	4.412	0.1265
Completion of a project within budget	4.556	0.1308
Ensuring right quality of works or workmanship	4.318	0.01274
Risk management	4.052	0.0416

From the study finding in Table 4.8, majority of the respondents indicated that the following targets of project management are very important on the completion of property development project completion of a project on time (x=4.412, S.D=0.1265), completion of a project within budget (x=4.556, S.D=0.1308), ensuring right quality of works or workmanship (x=4.318, S.D=0.01274), risk management (x=4.052, S.D= 0.0416).

The study evaluated various aspects as pertains to project management and project completion. The respondents agreed that project managers were assigned to development projects in their organizations; project managers in their organizations were from within their organizations; completion of development projects on time in organizations is very critical; project managers used program schedules such as Gantt charts were used in organizations; project manager compared the actual time taken for project completion with scheduled timeliness fortnightly. Further the respondents were categorical that critical paths were used to enhance time management. Finally, the findings revealed that respondents were categorical that it was important to complete development projects in time.

The study sought to know on the measures taken when project works are deviating from the planned time schedules during the implementation stage. The indicated results were that, technical reviews involving comparison between documentation and the actual project should be reviewed which determines deviation that occurs. All relevant documents must be as complete and accurate as possible to ensure that work will conform to expressed software engineering standards, gauging the scope of project based on the delivery deadline, and schedule to be followed closely during all development stages.

The study also found of paramount importance to establish the measures taken when the quality of works begins to vary from the set or prescribed standards during project implementation. The listed measures listed by the respondents was that member of the team who most experienced in a particular facet of the development tools needs to instruct those who are not as well versed that is each member of the team should watch and see areas where another team member is weak. Also if one of the members is weak in a particular area it should be brought to the attention by that member, to the other members.

Further, the respondents were asked to list some of the ways used in risk identification. The respondents indicated that first you should have a checklist that is sources of risks, flow chart to make understand the causes and effects of risks and also you can conduct and interview so that to discuss with parties involved who are capable of identifying risks. Also further the respondents clearly indicated that this risks should be mitigated through reviewing the overall exposure to risk, throughout the life of a project, actions to mitigate risks must be changed or revisited to the project business case and also assumptions must be considered, if circumstances alter. The respondents were also required to indicate on how they manage project conflicts. The responses were that you can confront, compromise, smoothing a conflict, you can force, or avoid a conflict. On the enhancement of communication amongst the project team members, some of the listed tactics included, project fact sheet, filing systems ,work breakdown structure, resource breakdown structure, project charter, organization breakdown structure (OBS), and performance reporting.

Majority of the respondents compared the actual costs with the budgeted costs at different stages of the construction fortnightly. They further indicated that they factored a contingency amount in their budgets estimated at between 11-15%. From the findings of the study it was clearly revealed that majority indicated very importance hence quality increases level of satisfaction to the person consuming the commodity.

4.5 The influence of finance on project completion.

The second objective of the study was to establish the influence of finance on project completion. The respondents were asked whether finance influences successful completion of property development project. Table 4.9 shows the findings of the study.

Table 4.9: Influences of finance on project completion

	Top Management		Middle Level Management		Site Supervisors	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Yes	3	100	8	80	13	93
No	0	0	2	20	1	7
Total	3	100	10	100	14	100

Majority of the respondents (100% of top managers, 80% of middle level managers and 93% of site supervisors) indicated that finance influence successful completion of property development projects.

The respondents were further asked to rate the importance of availability of adequate fund on the completion of property development project. The response was rated on a five point scale on which 1 = not at all important and 5 = very important. Mean and standard deviation was calculated as shown in table 4.10 below.

Table 4.10: Importance of fund availability on project completion

	Mean (x)	Standard Deviation (S.D)

Availability of adequate fund	4.592	0.0678

From the study findings in table 4.10, majority of the respondents said that of availability of adequate fund is very important in the completion of property development project (x=4.592, S.D=0.0678). The research findings further revealed that majority of the respondents were of the opinion that their organizations considered it important to engage a competent team of financial managers to ensure successful completion of property development projects.

4.6 The influence of consultants on project completion.

The third objective of the study was to establish the influence of consultants on project completion. The respondents were asked whether consultants influence successful completion of property development project. Table 4.11 shows the findings of the study.

Table 4.11: Influence of consultants on project completion

	Top Management		Middle Level Management		Site Supervisors	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Yes	3	100	9	90	12	86
No	0	0	1	10	2	14
Total	3	100	10	100	14	100

Majority of the respondents (100% of top managers, 90% of middle level managers and 86% of site supervisors) indicated that consultants influence successful completion of property development projects.

The respondents were further asked to rate the importance of engaging a competent team of consultants (architects, quantity surveyors, engineers) on property development project. The response was rated on a five point scale on which 1 = not at all important and 5 = very important. Mean and standard deviation was calculated as shown in table below.

Table 4.12 Importance of engaging a competent team of consultants

	Mean	Standard Deviation
The importance of engaging a competent team of consultants (architects, quantity surveyors, engineers) on a project	4.401	0.2432

Majority of the respondents stated that engaging a competent team of consultants (architects, quantity surveyors, engineers) is very on a on property development project (x=4.401, S.D=0.2432). The respondents indicated that engaging a competent team of consultants is important because they are the ones who extract, interpret, and communicate complex design information from drawings and documents which saves time in a project.

4.7 The influence of contractors on project completion.

The fourth objective of the study was to establish the influence of contractors on project completion. The respondents were asked whether contractors influence successful completion of property development project. Table 4.13 shows the findings of the study.

Table 4.13 : Influence of contractors on project completion

	Top Management		Middle Level Management		Site Supervisors	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Yes	2	67	9	90	13	93
No	1	33	1	10	1	7
Total	3	100	10	100	14	100

From the study findings in table 15, majority of the respondents (67% of top managers, 90% of middle level managers and 93% of site supervisors) indicated that contractors influence successful completion of property development projects.

Besides, the respondents were asked to rate the importance of hiring a competent contractor in the construction of a property development project. The response was rated on a five point scale

on which 1 = not at all important and 5 = very important. Mean and standard deviation was calculated as shown in table below.

Table 4.14: Importance of hiring a competent contractor

	Mean	Standard Deviation
The importance of hiring a competent contractor in the construction of a property development project	4.535	0.1674

Majority of the respondents indicated that hiring a competent contractor in the construction of a property development project is very important (x=4.535, S.D=0.1674). These contractors were mainly sourced internally and sometimes externally as need arose.

4.8 Additional Factors influencing project completion

The respondent were further required to indicate other factors within a firms control other than the mentioned which also influenced successful completion of property development project. The indicated factors included: Land procedures and control at the land ministry, Lawyer competence and service delivery, staff follow up skills on duty allocation, Marketing, proper procurement and teamwork in the project.

The respondents listed factors such as teamwork of both internal and external consultants and contractors, constant communication on the status of the project in reference to the scope, risk assessment and control, conflict management and negotiations, time management, and resource management marketing. The participant's factors such as time management, materials for construction, team work and cooperation among the consultants and contractors are also important in completion of a project.

4.9 Correlation Analysis

The study used Karl Pearson's coefficient of correlation in order to quantify the strength of the relationship between the variables. The Pearson product-moment correlation coefficient determines the strength of a linear association between two variables and is denoted by *r* which

can take a range of values from +1 to -1. A value of 0 indicates that there is no association between the two variables. A value greater than 0 indicates a positive association, that is, as the value of one variable increases so does the value of the other variable. A value less than 0 indicates a negative association, that is, as the value of one variable increases the value of the other variable decreases.

The Pearson's coefficient was used to verify the existence or non-existence of linear correlation between the budgeted cost and the actual cost as well as between the target completion time and the actual completion time for the projects. The findings are presented as follows;

Table 4.15: Correlation Matrix Budgeted and Actual Cost

		Actual Cost
Budgeted Cost	r value	.35**

** Correlation is significant at the 0.05 level

At 95% confidence interval the study findings revealed that there is a weak relationship between budgeted cost and actual cost of successful completion of property development projects at 35%. This implies that the actual costs incurred were greater than the budgeted costs. This could be attributable to fluctuation in price of commodities used in the construction industry due to fluctuations in inflation rates.

Table 4.16: Correlation Matrix for targeted and Actual Time

		Actual completion time
Target completion time	r value	.26**

** Correlation is significant at the 0.05 level

At 95% confidence interval the study findings revealed that there is a weak relationship between target completion time and actual completion time of successful completion of property development projects at 26%. This implies that majority of projects in the property development industry were completed later in time after expiry of their targeted completion timelines. This could be attributable to prevailing political conditions in the country and labor laws which regulate the industry.

4.10 Regression Analysis

The research study wanted to determine the factors influencing project completion in the housing construction industry.

Where

$Y = a + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + £$

$B_1 – \beta_4$ are correlation coefficients

Y= Successful completion of development projects

X_1= Project management influence

X_2= Availability of finance

X_3= Consultants influence

X_4= Contractors influence

Table 4.17: Regression Coefficients

	Unstandardized Coefficients		Standardized Coefficients		
	B	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	4.441	6.358	.521	0.562	.029
Project management influence	.799	.232	.258	1.289	.016
Availability of Finance	.253	.244	.323	1.039	.047
Consultants influence	.136	.232	.157	.587	.043
Contractors influence	.147	.358	.172	.410	.049

$Y= 4.441 + 0.799X_1 + 0.253X_2 + 0.136X_3 + 0.147X_4$

From Table 20 it was evident that at 95% confidence level, the variables produce statistically significant values for this study ($p < 0.05$). The results of the regression equation above shows that for a 1- point increase in the independent variables, successful completion of development projects is predicted to increase by 4.441, given that all the other factors are held constant.

Table 4.18: Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.852	.727	.398	.95469

The research findings indicated that there was a very strong positive relationship (R= 0.852) between the variables. The study also revealed that 72.7% of successful completion of property

development projects could be explained by the factors under study. From this study it is evident that at 95% confidence level, the variables produce statistically significant values and can be relied on explain to successful completion of development projects as shown in Table 4.18.

Table 4.19 : Analysis of Variance (ANOVA)

	Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Regression	1.518	27	.138	.746	.003
Residual	.185	1	.185		
Total	1.702	28			

Table 4.19 reveals that the composite effect of the four factors is statistically significant. This is revealed by the low p vales (0.003) i.e. less than 0.05 and high F values.

CHAPTER FIVE

SUMMARY, DISCUSSIONS, CONCLUSIONS & RECOMMENDATIONS

5.1 Introduction

In summary, the researcher administered 32 questionnaires but managed to obtain 27 completed questionnaires which represented a response rate of 84.4%. The questionnaire contained questions that addressed the objectives of the study.

5.2 Summary of the Study Findings

The main objective of the study was to analyze factors influencing project completion in the housing construction industry. The findings are summarized in the following subsections:

In regard to the influence of project management on project completion, the study established that project management influence successful completion of property development projects. The following targets of project management are very important on the completion of property development project completion of a project on time, completion of a project within budget, ensuring right quality of works or workmanship, risk management. Completion of development projects on time in organizations is very critical and project managers use program schedules such as Gantt charts.

The study established finance play an important role in successful completion of property development projects. The availability of adequate fund is very important in the completion of property development project. The research findings further revealed that majority of the respondents were of the opinion that their organizations considered it important to engage a competent team of financial managers to ensure successful completion of property development projects.

Consultants influence successful completion of property development projects. Engaging a competent team of consultants (architects, quantity surveyors and engineers) is very important in ensuring that a project is successfully completed. The engagement of a competent team of consultants is important because they are the ones who extract, interpret, and communicate complex design information from drawings and documents which saves time in a project. The study further established that contractors influence successful completion of property

development projects. Hiring a competent contractor facilitates successful completion of a property development project. The contractors are mainly sourced internally and sometimes externally as need arise.

5.3 Discussion

The main objective of the study was to analyze factors influencing project completion in the housing construction industry. The study investigated the influence of project management, finance, consultants and contractors on project completion.

The study established that project management influence successful completion of property development projects as noted where majority of the respondents (67% of top managers, 90% of middle level managers and 86% of site supervisors) indicated that project management influence successful completion of property development projects. The following targets of project management are very important on the completion of property development project completion of a project on time, completion of a project within budget (Mean=4.55), ensuring right quality of works or workmanship (Mean=4.318), risk management (Mean=4.05). Completion of development projects on time in organizations is very critical and project managers use program schedules such as Gantt charts. Project manager compared the actual time taken for project completion with scheduled timeliness fortnightly. The study established that critical paths are used to enhance time management.

The study findings is in tandem with Nwachukwu, Echeme and Okoli (2010) who argue that for a project to be successfully complete, it passed four success test criteria i.e. the time criterion – completed on time; the cost or money criterion – completed within budget the effectiveness criterion – completed in accordance with the original set performance and quality standards; and client's satisfaction criterion – accepted by the intended users or clients whether the client is internal or from outside the organization. The study established that technical reviews involving comparison between documentation and the actual project determine deviation that occurs in the project. All relevant documents must be as complete and accurate as possible to ensure that work will conform to expressed software engineering standards, gauging the scope of project based on the delivery deadline, and schedule to be followed closely during all development stages.

When the quality of works begins to vary from the set or prescribed standards during project implementation, member of the team who most experienced in a particular facet of the development tools needs to instruct those who are not as well versed. That is each member of the team should watch and see areas where another team member is weak. Also if one of the members is weak in a particular area it should be brought to the attention by that member, to the other members.

According to Nwachukwu (2011), a project manager should be appointed early enough in the project life cycle to handle the management from inception to completion. Every building development must have a resident project manager and not one project manager handling the management of more than one project at a time for an organization, for this will create loopholes in realizing the development goal. This ensures consistency and quality.

Nwachukwu (2011) went further to state that the managerial functions of a project should be clearly separated from the technical functions of the design team. The owners of development firms many a time opt to engage architects in dual role – that of project architect and project manager. Most architects are not trained on project management which is very much a managerial function. Our study confirmed this – only 67% of top management considers project management to influence project completion. The developers probably look at project managers as just another cost centre due to their intangible function on a project.

Risk identification involves having a checklist on the sources of risks, flow chart to make understand the causes and effects of risks and also you can conduct and interview so that to discuss with parties involved who are capable of identifying risks. Risks should be mitigated through reviewing the overall exposure to risk, throughout the life of a project, actions to mitigate risks must be changed or revisited to the project business case and also assumptions must be considered, if circumstances alter.

Management of conflict by managers is important in the completion of project. Project managers can manage conflict through confrontation, compromise, smoothing a conflict and avoiding conflicts. On the enhancement of communication amongst the project team members, some of the listed tactics included, project fact sheet, filing systems ,work breakdown structure, resource

breakdown structure, project charter, organization breakdown structure (OBS), and performance reporting.

The managers facilitate successful completion of projects by comparing the actual costs with the budgeted costs at different stages of the construction fortnightly. Nwachukwu, Echeme and Okoli (2010) argue that achieving successful completion in the building development process is the major function of project management. The answer to project success, failure, abandonment, and collapse of building construction lies in efficient project management. Similarly, Schwalbe (2009) looks at time planning management as that process that leads to the generation of a milestone list, a network diagram, the activity resource requirements, the activity duration estimates and a project schedule.

In regard to the influence of finance on project completion, the study established finance play an important role in successful completion of property development projects, noted where majority of the respondents (100% of top managers, 80% of middle level managers and 93% of site supervisors) indicated the significance of finance influence on successful completion of property development projects. Further, majority of the respondents said that of availability of adequate fund is very important in the completion of property development project (Mean=4.592). According to Alaghbari, Mukmin and Samad, (2007), finance is an integral factor that leads to project success. Failure to access project funds results in time delays and even abandonment. Financial difficulties have been identified as the first major factor causing delay in construction. The availability of adequate fund is very important in the completion of property development project. The research findings further revealed that majority of the respondents were of the opinion that their organizations considered it important to engage a competent team of financial managers to ensure successful completion of property development projects. Arslan (2008) observed that the availability of cash flow is highly essential in projects. In his survey he discovered that the majority of the respondents considered control of cash flow as the most important sub-factor of financial conditions.

Finance is one of the most important factors influencing project success according to Brinbaum associates (http://www.birnbaumassociates.com/key-success-factors.htm). According to them, in the real estate development industry, acquiring land and maintaining liquidity are the two key success factors. If every other factor concerning the business of the development company is just

average, but the land is well located and the firm maintains adequate liquidity, the company will do well. Not that the developer shouldn't attempt to deliver a well-constructed product with good financing. He should. But nothing is a greater determinant of success than having, or not having, the right piece of land, and remaining in a liquid position. The focus on finance mirrors the rating given to the influence of finance on project completion by top management, 100%.

Consultants influence successful completion of property development projects. Thus, majority of the respondents (100% of top managers, 90% of middle level managers and 86% of site supervisors) indicated that consultants influence successful completion of property development projects. Engaging a competent team of consultants (architects, quantity surveyors and engineers) is very important in ensuring that a project is successfully completed. The engagement of a competent team of consultants is important because they are the ones who extract, interpret, and communicate complex design information from drawings and documents which saves time in a project. Project should have both internal and external consultant. The study established that to a great extent an in-house team of consultants was used and to some extent external consultants were outsourced as need arose. These consultants visited the project site on a weekly basis or as need arose. Gichuhi (2012) points out that it is also a fundamental duty of the consultants to supervise the project throughout the implementation phase so as to ensure that the completed project is exactly the same as the design, both from a physical as well as a functional perspective. The hiring of consultants well versed with building technology knowledge is highly recommended (Sebastian 2011).

The study established that contractors influence successful completion of property development projects. Majority of the respondents (67% of top managers, 90% of middle level managers and 93% of site supervisors) indicated that contractors influence successful completion of property development projects. Further, majority indicated that hiring a competent contractor in the construction of a property development project is very important (mean=4.535). Hiring a competent contractor facilitates successful completion of a property development project. The contractors are mainly sourced internally and sometimes externally as need arise. Hobbs (1997) argued that it is important that the contractor’s independent duties not be confused with those of the project manager and the technical consultants. Duplicating the responsibilities, by either shifting or reassigning the contractor’s responsibilities to the other project team members does

not serve the goals or objectives of the owner. Hobbs (1997) further state that the cooperation and assistance of the developer, the contractor, and the entire project team is critical to the success of the project. Similarly Fugar (2010) posits that contractors play an integral role in the successful completion of projects. If they cannot perform their independent roles efficiently regardless of the competency of the project team, project success would be unattainable.

At 95% confidence interval the study findings revealed a weak relationship between budgeted cost and actual cost of successful completion of property development projects at 35% implying that the actual costs incurred are greater than the budgeted costs. Further, there is a weak relationship between target completion time and actual completion time of successful completion of property development projects at 26%, implying that majority of projects in the property development industry were completed later in time after expiry of their targeted completion timelines. According to Piney (2000), the structure and timing of financial provision may impose certain constraints on the design and scheduling of the project. This may be simply because all the funding for the project is not yet in place and/or the risk is too great to commit even the design costs of a project that may not receive a grant. This all has to do with poor project planning.

5.4 Conclusion

From the foregoing findings and discussions, the study concludes that project management practices are important in a successful completion of property development projects. Successful completion of a property development projects depends on ensuring property development project is carried out within the stipulated time frame, ensuring right quality of works or workmanship and proper risk management. An effective project management practice ensures that technical reviews involving comparison between documentation and the actual project determine deviation that occurs in the project. Documents must be as complete and accurate as possible to ensure that work will conform to expressed software engineering standards, gauging the scope of project based on the delivery deadline, and schedule to be followed closely during all development stages. Other aspects of project management that influence completion of property development projects include conflict management and effective communication.

Further, availability of funds influences completion of property development projects. Adequacy of funds plays an important role in successful completion of property development projects. The

availability of adequate fund is very important in the completion of property development project. It is important to engage a competent team of financial managers and good financial management practices to ensure successful completion of property development projects.

In addition, completion of property development projects is influenced by the qualifications of consultants and contractors. Consultants influence successful completion of property development projects. Engaging a competent team of consultants (architects, quantity surveyors and engineers) is very important in ensuring that a project is successfully completed. Similarly, hiring a competent contractor facilitates successful completion of a property development project. The engagement of a competent team of consultants is important because they are the ones who extract, interpret, and communicate complex design information from drawings and documents which saves time in a project.

Besides project management, finance, consultants and contractors, project completion is influenced by the following factors: land procedures and control at the land ministry, Lawyer competence and service delivery, staff follow up skills on duty allocation, marketing, and proper procurement. Other factors include teamwork among internal and external consultants and contractors, constant communication on the status of the project in reference to the scope, risk assessment and control, conflict management and negotiations, time management, and resource management marketing, good time management, and effective management of materials for construction.

Recommendations

The study made the following recommendations;

1. Development firms and financiers should allocate enough time and resources during project preparation, to ensure that adequate field investigation are conducted, appropriate and up to date information is gathered, specification are prepared, scope is well defined, good estimates on material are made, adequate project analysis is done, and linkages in projects activities are identified.

2. Developers and financiers should undertake detailed implementation planning covering aspects such as physical work, time plan, input resources, inter-linkages, organization and management systems, output generation, and cost planning. Adequate resource plan and its

linkage with time plan are crucial. The implicit resource requirements (manpower, materials, money etc.).

3. Collaborative approach or team building between the developers, project managers and consultants on a project will help in adopting innovative management techniques, value engineering in order to be more efficient and effective.

4. Developers should take project managers and other consultants on board early on a project. Their continuity should be ensured from inception through the implementation so that they will provide effective link between the client and the contractor. The project manager must appreciate the environment of development projects, maintain flexibility, and be competent to analyze the nature of associated problems and their diverse effects on the success of the project, and address these promptly.

5. Development firms should adopt modern risk management tools like International Project Risk Management (IPRA) for identification, assessment, analysis of impact, and management. Policy makers should help developers mitigate risks through the creation of policies – reducing interest rates on construction loans and mortgages, making insurance premiums affordable, blacklisting rogue consultants, among others. Academicians should use their strength in research to develop more advanced tools that can be used in risk identification and mitigation.

5.6 Suggestions for Future Research

The study was base in an urban set up and therefore generalizations cannot extend to rural areas. Further research should consider factors influencing project completion in the housing construction industry in both rural and urban areas.

The study was focused on the internal factors affecting a firm. Research on the effect of extraneous factors such as economic factors (interest rates and economic growth), political/legal factors (land laws), among others on project completion should also be studied.

It would be interesting to execute a more detailed qualitative research in order to answer in detail how each of the factors influences project completion in the housing construction industry.

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APPENDIX I: LETTER OF INTRODUCTION

RE: Introduction

Dear Sir/Madam,

I am a post graduate student from the School of Continuing and Distance Education, University of Nairobi. I am carrying out a study for my research paper titled, "Factors influencing project completion in the housing construction industry"

In order to achieve this objective, I have designed a questionnaire for collecting information. You have been selected to participate in this study. I kindly therefore request you to provide answers to the questions asked. Your response will be treated with strict confidentiality and will be used for research purpose only.

Thank you and Kind regards

Yours faithfully,

_____

KAMOTHO JAMES MWAI

UNIVERSITY OF NAIROBI

APPENDIX II: TOP MANAGEMENT QUESTIONNAIRE

SECTION A: GENERAL INFORMATION

1. Gender

Male [ ] Female [ ]

2. Age bracket

< 20 years [ ] 21-30 years [ ] 31-40 years [ ] 41-50 years [ ] 51-60 years [ ]
> 60 years [ ]

3. Marital status

Single [ ] Married [ ]

4. For how many years have you worked in the property development industry?

< 5 years [ ] 6-10 years [ ] > 10 years [ ]

5. What are your academic qualifications? (Tick the appropriate box and specify the area of specialization in the space provided next to it)

Certificate [ ] Diploma [ ] Advanced Diploma [ ] Bachelors [ ] Masters [ ] PHD [ ]

6. For how many years has your firm been involved in the property development industry?

< 5 years [ ] 6-10 years [ ] > 10 years [ ]

7. What is the estimate total value of the projects undertaken by your firm to date? (in Kshs)

< 250 million [ ] 251-500 million [ ] 501-750 million [ ] 751 million-1 billion [ ]
> 1 billion [ ]

8. Does project management influence the successful completion of a property development project?

Yes [ ] No [ ]

9. Does the availability of finance influence the successful completion of a property development project?

Yes [ ] No [ ]

10. Does the competence of consultants, that is, architects, quantity surveyors and engineers influence the successful completion of a property development project?

Yes [ ] No [ ]

11. Does the competence of contractors influence the successful completion of a property development project?

Yes [ ] No [ ]

12. Which other factors within a firms control other than those mentioned above influence the successful completion of property development projects?

_____

_____

_____

_____

_____

_____

SECTION B: PROJECT MANAGEMENT

1. (a) Are project manager(s) assigned to the development projects?

Yes [ ] No [ ]

(b) If the answer above is "yes", is the project manager from within or outside the organization?

Within [ ] Outside [ ]

2. Is it important to complete a development project in time?

Yes [ ] No [ ]

3. Rank the importance of completing a project on time using a scale of 1-5, where 1 = not at all important and 5 = very important. Tick the selected scale.

1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 [ ]

4. (a) Do you use work programs/schedules such as Gantt charts on your projects?

Yes [ ] No [ ]

(b) If "yes", how often do you compare the actual time taken with the planned/scheduled timelines on project works?

Daily [ ] Weekly [ ] Fortnightly [ ] Monthly [ ] Quarterly [ ] Semi-annually [ ] Annually [ ]

5. (a) Do you establish the "critical path" in your projects?

Yes [ ] No [ ]

(b) If "yes", do you use the critical path to enhance time management?

Yes [ ] No [ ]

6. Is it important is it to complete a development project within budget?

Yes [ ] No [ ]

7. Rank the importance of completing a project within budget using a scale of 1-5, where 1 = not at all important and 5 = very important. Tick the selected scale.

1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 [ ]

8. (a) Do you compare the actual costs with the budgeted costs at different stages of the construction?

Yes [ ] No [ ]

(b) How often do you monitor the actual costs with the budgeted costs on project works?

Daily [ ] Weekly [ ] Fortnightly [ ] Monthly [ ] Quarterly [ ] Semi-annually [ ] Annually [ ]

9. Is quality of works or worlmanship important on a project?

Yes [ ] No [ ]

10. Rank the importance of quality of works or workmanship using a scale of 1-5, where 1 = not at all important and 5 = very important. Tick the selected scale.

1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 [ ]

11. How often do you monitor quality on a project?

Daily [ ] Weekly [ ] Fortnightly [ ] Monthly [ ] Quarterly [ ] Semi-annually [ ] Annually [ ]

12. Is risk management important on a project?

Yes [ ] No [ ]

13. Rank the importance of "risk management" using a scale of 1-5, where 1 = not at all important and 5 = very important. Tick the selected scale.

1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 [ ]

14. (a) Do you factor a contingency amount in the budget?

Yes [ ] No [ ]

(b) If yes, what percentage of the contract sum is factored in as a contingency?

1-5% [ ] 6-10% [ ] 11-15% [ ] 16-20% [ ] 21-25% [ ] 26-30% [ ] 31-35% [ ]

36-40 [ ]

SECTION C: FINANCE

1. Is it important to have adequate funds to finance a property development project?

Yes [ ] No [ ]

2. Rank the importance of "availability of finance" using a scale of 1-5, where 1 = very important and 5 = not at all important. Tick the selected scale.

1 [ ] 2[ ] 3[ ] 4 [ ] 5 [ ]

3. (a) How do you finance your projects?

Equity [ ] Debt [ ] Mix of both [ ]

(b) If a "mix of both", what percentage of the financing is procured through debt?

0-20% [ ] 21-40% [ ] 41-60% [ ] 61-80% [ ] 81-100% [ ]

4. (a) Have you ever heard of REITs (Real Estate Development Trusts)?

Yes [ ] No [ ]

(b) If yes, do you plan on using REITs as a financing option in the near future?

Yes [ ] No [ ]

SECTION D: CONSULTANTS

1. Is it important to engage a competent team of consultants (architects, quantity surveyors, engineers) on a project?

Yes [ ] No [ ]

2. Rank the importance of "engaging competent consultants" using a scale of 1-5, where 1 = not at all important and 5 = very important. Tick the selected scale.

1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 [ ]

3. Do have your own team of in-house consultants or do you outsource consultants?

In-house [ ] Outsource [ ] Mix of both [ ]

4. How often are the consultants meant to visit the site to monitor progress?

Daily [ ] Weekly [ ] Fortnightly [ ] Monthly [ ] Quarterly [ ] Semi-annually [ ] Annually [ ]

5. (a) Have you ever heard of BIM (Building Information Modeling)?

Yes [ ] No [ ]

(b) Do your consultants use BIM?

Yes [ ] No [ ]

SECTION E: CONTRACTOR

1. Is it important to hire a competent contractor in the construction of a property development project?

Yes [ ] No [ ]

2. Rank the importance of "contractor" using a scale of 1-5, where 1 = not at all important and 5 = very important. Tick the selected scale.

1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 [ ]

3. Do you use an in-house contractor to construct your projects or do you outsource for contractors?

In-house [ ] Outsource [ ] Mix of both [ ]

APPENDIX III: MID-LEVEL MANAGEMENT QUESTIONNAIRE

SECTION A: GENERAL INFORMATION

13. Gender

Male [ ] Female [ ]

14. Age bracket

< 20 years [ ] 21-30 years [ ] 31-40 years [ ] 41-50 years [ ] 51-60 years [ ]
> 60 years [ ]

15. Marital status

Single [ ] Married [ ]

16. For how many years have you worked in the property development industry?

< 5 years [ ] 6-10 years [ ] > 10 years [ ]

17. What are your academic qualifications? (Tick the appropriate box and specify the area of specialization in the space provided next to it)

Certificate [ ] Diploma [ ] Advanced Diploma [ ] Bachelors [ ] Masters [ ] PHD [ ]

18. For how many years has your firm been involved in the property development industry?

< 5 years [ ] 6-10 years [ ] > 10 years [ ]

19. What is the estimate total value of the projects undertaken by your firm to date? (in Kshs)

< 250 million [ ] 251-500 million [ ] 501-750 million [ ] 751 million-1 billion [ ]
> 1 billion [ ]

20. Does project management influence the successful completion of a property development project?

Yes [ ] No [ ]

21. Does the availability of finance influence the successful completion of a property development project?

Yes [ ] No [ ]

22. Does the competence of consultants, that is, architects, quantity surveyors and engineers influence the successful completion of a property development project?

Yes [ ] No [ ]

23. Does the competence of contractors influence the successful completion of a property development project?

Yes [ ] No [ ]

24. Which other factors within a firms control other than those mentioned above influence the successful completion of property development projects?

_____

_____

_____

_____

_____

_____

SECTION B: PROJECT MANAGEMENT

15. (a) Are project manager(s) assigned to the development projects?

Yes [ ] No [ ]

(c) If the answer above is "yes", is the project manager from within or outside the organization?

Within [ ] Outside [ ]

16. Is it important to complete a development project in time?

Yes [ ] No [ ]

17. Rank the importance of completing a project on time using a scale of 1-5, where 1 = not at all important and 5 = very important. Tick the selected scale.

1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 [ ]

18. (a) Do you use work programs/schedules such as Gantt charts on your projects?

Yes [ ] No [ ]

(b) If "yes", how often do you compare the actual time taken with the planned/scheduled timelines on project works?

Daily [ ] Weekly [ ] Fortnightly [ ] Monthly [ ] Quarterly [ ] Semi-annually [ ] Annually [ ]

19. (a) Do you establish the "critical path" in your projects?

Yes [ ] No [ ]

(c) If "yes", do you use the critical path to enhance time management?

Yes [ ] No [ ]

20. Is it important is it to complete a development project within budget?

Yes [ ] No [ ]

21. Rank the importance of completing a project within budget using a scale of 1-5, where 1 = not at all important and 5 = very important. Tick the selected scale.

1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 [ ]

22. (a) Do you compare the actual costs with the budgeted costs at different stages of the construction?

Yes [ ] No [ ]

(b) How often do you monitor the actual costs with the budgeted costs on project works?

Daily [ ] Weekly [ ] Fortnightly [ ] Monthly [ ] Quarterly [ ] Semi-annually [ ] Annually [ ]

23. Is quality of works or workmanship important on a project?

Yes [ ] No [ ]

24. Rank the importance of quality of works or workmanship using a scale of 1-5, where 1 = not at all important and 5 = very important. Tick the selected scale.

1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 [ ]

25. How often do you monitor quality on a project?

Daily [ ] Weekly [ ] Fortnightly [ ] Monthly [ ] Quarterly [ ] Semi-annually [ ] Annually [ ]

26. Is risk management important on a project?

Yes [ ] No [ ]

27. Rank the importance of "risk management" using a scale of 1-5, where 1 = not at all important and 5 = very important. Tick the selected scale.

1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 [ ]

28. (a) Do you factor a contingency amount in the budget?

Yes [ ] No [ ]

(b) If yes, what percentage of the contract sum is factored in as a contingency?

1-5% [ ] 6-10% [ ] 11-15% [ ] 16-20% [ ] 21-25% [ ] 26-30% [ ] 31-35% [ ]

36-40 [ ]

SECTION C: FINANCE

1. Is it important to have adequate funds to finance a property development project?

Yes [ ] No [ ]

2. Rank the importance of "availability of finance" using a scale of 1-5, where 1 = not at all important and 5 = very important. Tick the selected scale.

1 [ ] 2[ ] 3[ ] 4 [ ] 5 [ ]

3. (a) How do you finance your projects?

Equity [ ] Debt [ ] Mix of both [ ]

(b) If a "mix of both", what percentage of the financing is procured through debt?

0-20% [ ] 21-40% [ ] 41-60% [ ] 61-80% [ ] 81-100% [ ]

4. (a) Have you ever heard of REITs (Real Estate Development Trusts)?

Yes [ ] No [ ]

(b) If yes, do you plan on using REITs as a financing option in the near future?

Yes [ ] No [ ]

SECTION D: CONSULTANTS

1. Is it important to engage a competent team of consultants (architects, quantity surveyors, engineers) on a project?

Yes [ ] No [ ]

2. Rank the importance of "engaging competent consultants" using a scale of 1-5, where 1 = not at all important and 5 = very important. Tick the selected scale.

1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 [ ]

3. Do have your own team of in-house consultants or do you outsource consultants?

In-house [ ] Outsource [ ] Mix of both [ ]

4. How often are the consultants meant to visit the site to monitor progress?

Daily [ ] Weekly [ ] Fortnightly [ ] Monthly [ ] Quarterly [ ] Semi-annually [ ] Annually [ ]

5. (a) Have you ever heard of BIM (Building Information Modeling)?

Yes [ ] No [ ]

(b) Do your consultants use BIM?

Yes [ ] No [ ]

SECTION E: CONTRACTOR

1. Is it important to hire a competent contractor in the construction of a property development project?

Yes [ ] No [ ]

2. Rank the importance of "contractor" using a scale of 1-5, where 1 = not at all important and 5 = very important. Tick the selected scale.

1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 [ ]

3. Do you use an in-house contractor to construct your projects or do you outsource for contractors?

In-house [ ] Outsource [ ] Mix of both [ ]

APPENDIX IV: SITE SUPERVISORS QUESTIONNAIRE

SECTION A: GENERAL INFORMATION

25. Gender

[ ] Male [ ] Female

26. Age bracket

[ ] < 20 years [ ] 21-30 years [ ] 31-40 years [ ] 41-50 years [ ] 51-60 years [ ] > 60 years

27. Marital status

[ ] Single [ ] Married

28. For how many years have you worked in the property development industry?

[ ] < 5 years [ ] 6-10 years [ ] > 10 years

29. What are your academic qualifications? (Tick the appropriate box and specify the area of specialization in the space provided next to it)

[ ] Certificate _____

[ ] Diploma _____

[ ] Advanced Diploma _____

[ ] Bachelors _____

[ ] Masters _____

Other _____What, in brief, is your definition of a successfully completed project?

_____

_____

_____

_____

_____

_____

30. Does project management influence the successful completion of a property development project?

[ ] Yes [ ] No

31. Does the availability of finance influence the successful completion of a property development project?

[ ] Yes [ ] No

32. Do consultants, that is architects, quantity surveyors and engineers influence the successful completion of a property development project?

[ ] Yes [ ] No

33. Do contractors influence the successful completion of a property development project?

[ ] Yes [ ] No

34. Which other factors within a firms control influence the successful completion of property development projects?

_____

_____

_____

_____

_____

_____

35. As the site supervisor, briefly state your primary role(s).

_____

_____

_____

_____

_____

_____

_____

SECTION B: PROJECT MANAGEMENT

Are project manager(s) assigned to the development projects?

[ ] Yes [ ] No

2. How important is it to complete a development project in time? Rank the importance of "time" using a scale of 1-5, where 1 = not at all important and 5 = very important.

[1] [2] [3] [4] [5]

3. Do you use work programs/schedules on your projects?

[ ] Yes [ ]No

4. Do you understand the concept of the "critical path"?

[ ] Yes [ ] No

5. Do you use the critical path to enhance time management?

[ ] Yes [ ] No

6. How often do you monitor the works, that is, compare the actual time taken with the planned timelines on project works?

[ ] Daily [ ] Weekly [ ] Fortnightly [ ] Monthly [ ] Quarterly [ ] Semi-annually [ ] Annually

7. How important is it to complete a development project within budget? Rank the importance of "cost" using a scale of 1-5, where 1 = not at all important and 5 = very important.

[1] [2] [3] [4] [5]

8. How often do you compare the actual costs with the budget on project works?

[ ] Daily [ ] Weekly [ ] Fortnightly [ ] Monthly [ ] Quarterly [ ] Semi-annually [ ] Annually

9. How important is quality on a project? Rank the importance of "quality" using a scale of 1-5, where 1 = not at all important and 5 = very important.

[1] [2] [3] [4] [5]

10. How often do you monitor quality on project works?

[ ] Daily [ ] Weekly [ ] Fortnightly [ ] Monthly [ ] Quarterly [ ] Semi-annually [ ] Annually

Any other (please specify)

_____

_____

To who do you present your monitoring report?

_____

_____

_____

SECTION C: FINANCE

1. How important is it to have adequate funds to finance a property development project? Rank the importance of "finance" using a scale of 1-5, where 1 = very important and 5 = not at all important.

[1] [2] [3] [4] [5]

[ ] Yes [ ] No

SECTION D: CONSULTANTS

1. How important is to engage a competent team of consultants (architects, quantity surveyors, engineers) on a project? Rank the importance of "consultants" using a scale of 1-5, where 1 = not at all important and 5 = very important.

[1] [2] [3] [4] [5]

How often do consultants visit the site?

[ ] Daily [ ] Weekly [ ] Fortnightly [ ] Monthly [ ] Quarterly [ ] Semi-annually [ ] Annually

Any other (please specify)

_____

Do you know how to use BIM (Building Information Modeling)?

[ ] Yes [ ] No

SECTION E: CONTRACTOR

1. How important is it to hire a competent contractor in the construction of a property development project? Rank the importance of "contractor" using a scale of 1-5, where 1 = not at all important and 5 = very important.

[1] [2] [3] [4] [5]

APPENDIX V: INTERVIEW GUIDE WITH MID LEVEL MANAGEMANT

1. What measures are taken if you find that the project works are deviating from the planned time schedules during the implementation stage?
2. What measures are taken when variances between the actual and budgeted costs arise during project implementation?
3. What measures are taken when the quality of the works begins to vary from the set or prescribed standards during project implementation?
4. How do you identify potential risks and how do you mitigate against them?
5. How do you manage conflict on projects?
6. How do you enhance communication amongst the project team members?