

**ASSESSING THE APPLICATION OF RISK HANDLING
STRATEGIES IN PROJECT PLANNING BY BUILDING
CONTRACTORS IN TANZANIA**

Viana V. Mulokozi

**M.Sc. (Construction Economics and Management) Dissertation
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STRATEGIES IN PROJECT PLANNING BY BUILDING
CONTRACTORS IN TANZANIA**

By

Viana V. Mulokozi

**A Dissertation Submitted in Partial Fulfillment of the Requirements for the
Degree of Master of Science (Construction Economics and Management) of
Ardhi University**

**Ardhi University
November, 2017**

CERTIFICATION

The undersigned certify that have read and hereby recommend for acceptance by Ardhi University a dissertation entitled, *Assessing the Application of Risk Handling Strategies in Project Planning by Building Contractors in Tanzania* in fulfillment of the requirements for the degree of Master of Science (**Construction Economics and Management**) of Ardhi University.

.....
Dr. NTIYAKUNZE

(Supervisor)

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DECLARATION

AND

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DEDICATION

I dedicate this work to my lovely parents Mr. & Mrs. Mulokozi who have been the source of my inspiration and encouragement. Their encouragement made me give all it takes to finish what I had started. God bless you.

I also dedicate this work to my lovely husband Mr Festus Ndalama and to my beautiful daughter Cai Latoya Mbonimana.

ABSTRACT

In general little emphasis has been put on correlation between the risk handling strategies and project planning especially for contractors. Hence, this study aimed to assess of the application of the risk handling strategies in project planning by building contractors in Tanzania. The specific objectives were to examine the risk handling strategies applied in project planning in Tanzania, to assess as to what extent the strategies are used, to identify challenges faced in applying the strategies and to suggest measures that will enhance application of the strategies. Literature review defined key terms on project planning, building contractors and risk handling strategies. According to our research the population is divided into three strata which are:-High class (class 1, 2& 3), Medium class (class 4 & 5),Lower class (class 6 &7). Research approach used is the pragmatic approach (mixed approach) and the research design used is in case of descriptive and diagnostic research studies. The sampling design adopted was both stratified sampling and systematic sampling design under the complex random sampling (mixed sampling designs). Data collected through questionnaires and Interview. Questionnaire data collected was analyzed through SPSS (Version 20) and the interview data was analyzed through a deductive approach.

The findings revealed that, most contractors do not use the project managers for organizing and coordinating operation planning process while the rest few remaining use project managers; Building contractors experienced risks during project planning at a severe level. All strategies (avoid, transfer, mitigate and accept) are used by the building contractors. The order of preferred strategies by contractors in descending manner is transfer, mitigate, accept and avoid respectively. Risk handling strategies are used at a very low extent. Building contractors experienced challenges while applying risk handling strategies during project planning.

The study recommends that general framework of project planning and risk handling strategies should be formulated for reference in implementation by contractors in Tanzania. All contractors in Tanzania should involve project managers in project planning. Contractors should adhere to proper risk handling strategies to specific risks during project planning. More emphasis is needed to boost the application of Risk handling strategies during project planning. All suggested measures are very important and they should be used so as to improve the application of risk handling strategies during project planning.

Key words: Building Contractors, Project, Project Planning, Risk Handling Strategies.

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LIST OF ABBREVIATION

ARU	- Ardhi University
LP	- Least Preferred
MP	- Most Preferred
NB	- Nota Berne
NPA	- Not Preferred At All
SPSS	- Statistical Package for Social Sciences (Version 20)

CHAPTER ONE

GENERAL INTRODUCTION

1.1 Background

Construction planning is a fundamental and challenging activity in the management and execution of construction projects. It involves the choice of technology, the definition of work tasks, the estimation of the required resources and durations for individual tasks, and the identification of any interactions among the different work tasks (Malunde, 2015). A good construction plan is the basis for developing the budget and the schedule for work. Developing the construction plan is a critical task in the management of construction, even if the plan is not written or otherwise formally recorded. In addition to these technical aspects of construction planning, it may also be necessary to make organizational decisions about the relationships between project participants and even which organizations to include in a project.

Planning is one of those aspects that affect the outcome of various things in life. It is an orderly/ step by step proposal on how an end product or goal will be achieved and when it comes to construction, this starts the day the idea to put up a structure is conceived. The planning in construction phase entails determining the resources required for the project and should not only focus financial planning but also time, materials suppliers as well as human resource and equipment (Nalumansi, 2015).

The need for effective short term planning is great, since numerous factors exist which can be identified only after construction begins. These uncertainties mean that detailed work plans for individual crews can be completed only near the start of a specific job and can cover only a limited period of time (Laufer & Tucker, 2006).

There are three factors which have a significant effect on improving construction planning effectiveness; the first factor is increase in planning time prior to commencement of work on site, the second is the extent to which emphasis is placed on the determination of construction methods during construction planning and third is the frequency of revision of construction plans after commencement of work on site (Oluwoye, 2006).

Planning for the sake of planning is of no use. The value of planning lies in implementation. Progress is measured against planned targets and the schedule is corrected. If corrective action cannot bring the project within limits, the plan is modified. The project is kept on schedule within the budget through control function, which is as important, if not more important, than the initial plan. Hence a professional and effective planning and control system is a critical factor demanded for the success of construction projects (Ha, 1987)¹.

Construction production planning is a paramount preoccupation of contractors and the process is rapidly increasing in difficulty with a continuous loss in confidence by clients. Today, one of the difficult issues facing practitioners in planning is that of a continuous increase in the complexity of construction projects (Gidado, 2010).

There is growing concern over the failure of construction planning to achieve its goals in spite of the considerable resources allocated to it. Deficient planning techniques are commonly blamed for this state. Planning effective can be expected

¹ <https://hub.hku.hk/bitstream/10722/37253/1/FullText.pdf?accept=1>

only after management modifies planning policy and prevailing practices are fundamentally changed (Laufer & Tucker, 2006).

However, the choice of risk handling strategy should be aligned with unique project characteristics. Risk handling includes specific methods or strategies to deal with known risks. There is no correlation between the risk level and the best risk handling strategy, it varies on a case by case based with each risk issue or the case of mitigation that will exist (Conrow, 2003).

An effective risk management method can help to understand not only what kind of risks they encountered, but also how to manage these risks in different phases of a project. Owing to its increasing importance, risk management has been recognized as a necessity in most industries today, and a set of techniques have been developed to control the influences brought by potential risk (Schuyler, 2001).

Building construction sector is among the largest sectors in Tanzania that plays a big role in the growth and development of the country. This sector ranks among the largest industries together with the agriculture, manufacturing and services in terms of labour usage in Tanzania (Tanzania Construction Industry Policy, 2003).

In Tanzania there are over 7,000 registered contractors both local and foreign, out of which 3% are foreign and 97% are local (Contractors Registration Board, 2013). Despite the quest of the Tanzania construction Industry to remain competitive, it is faced with a number of challenges. Some of these challenges is the tendency of the Building Contractors in Tanzania to execute the projects beyond schedule with poor performance and cost overrun (Ministry of works 2003).

If the probability of a certain risk event is uncontrollable, then with the increasing possibility of taking the risk, the contractors' tendency of risk handling changes from actively transferring the risk to passively retaining the risk (Engineers, 2007).

1.2 Problem statement

Planning in construction projects helps in proper choice of technology, definition of work tasks, estimation of the required resources and durations for individual tasks, and identification of any interactions among the different work tasks. As well as improving working efficiency, calculation of project completion time, duration of specific activities, predict and calculate the cash flow (Malunde, 2015).

Many scholars around the globe for years have studied risk handling strategies from different perspectives and came with the findings that provide insights into how various projects characteristics and risk situation affect the choice of risk handling strategy (Fan, Lin, & Sheu, 2008). Unfortunately many construction firms fail to match and implement proper planning due to improper risk handling strategies; delays, cost overruns and poor quality which occur due to risk events lead to poor planning because no risk handling strategies being applied. Construction industry is experiencing low level of risk handling strategy in planning. Moreover, others explained that projects that are exposed to uncertain environments can be effectively controlled with the application of risk analysis during the planning stage (Dey, 1994). However the little emphasis has been put on correlation between the risk handling strategies and project planning especially for individual players in construction industry i.e. clients, consultant and contractors.

Hence, this study is aimed to assess the application of the risk handling strategies in project planning by building contractors in Tanzania. This study is delimited to Contractor's Operational planning at the post-contract stage of a building project.

1.3 Research Issue

I have been observing contractors in Tanzania and noticed that many fail to match and implement proper planning due to improper risk handling strategies. I propose that the general framework of a project planning and risk handling strategies can be formulated for reference in implementation by contractors in Tanzania. The contractor can use the framework as a general reference and guidance during project planning while considering the risk handling strategies.

1.4 Main Objective

To assess application of risk handling strategies in project planning by Building contractors in Tanzania.

1.5 Specific Objectives

- i. To examine the risk handling strategies applied in project planning at the post contract stage of a building project in Tanzania.
- ii. To assess as to what extent the risk handling strategies are used.
- iii. To identify challenges faced in applying the risk handling strategies.
- iv. To suggest measures that will enhance application of the risk handling strategies.

1.6 Research Questions

- i. What risk handling strategies are used in project planning at the post contract stage of a building project?
- ii. To what extent are the risk handling strategies used?
- iii. What are the challenges faced in applying the risk handling strategies?
- iv. What are the possible measures that will enhance application of the risk handling strategies?

1.7 Research Methodology

Research methodology refers to the path taken to find answers to research questions, or can be stated as the logical and systematic way of finding solution to the research problem and through research methodology, study on various steps adopted by a researcher in studying his research problem are taken into account. It involves sampling techniques and methods to be used for research methods, the area, and time of study, source of data, research design, sampling design and the work schedule for the study (Kothari, 2004).

The objectives of this research were met through literature search which enabled to understand the background of the study. The information required was how risk handling strategies are applied in project planning by building contractors focusing on building contractors based in Dar es Salaam. The main instruments used in collection of data were questionnaires and interviews.

1.7.1 Research Approach

There are several approaches for doing research and these include; quantitative, qualitative, pragmatic (mixed approach) and advocacy/participatory approach to research.

The pragmatic approach to science involves using the method which appears best suited to the research problem and not getting caught up in philosophical debates about which is the best approach. Pragmatic researchers therefore grant themselves the freedom to use any of the methods, techniques and procedures typically associated with quantitative or qualitative research. They recognize that every method has its limitations and that the different approaches can be complementary. They may also use different techniques at the same time or one after the other. For example, they might start with face-to-face interviews with several people or have a focus group and then use the findings to construct a questionnaire to measure attitudes in a large scale sample with the aim of carrying out statistical analysis. Depending on which measures have been used, the data collected is analyzed in the appropriate manner. However, it is sometimes possible to transform qualitative data into quantitative data and vice versa although transforming quantitative data into qualitative data is not very common. Being able to mix different approaches has the advantages of enabling triangulation. Triangulation is a common feature of mixed methods studies ² (Alzheimer, 2009).

² <http://www.alzheimer-europe.org/Research/Understanding-dementia-research/Types-of-research/The-four-main-approaches>

Therefore the study adopts the pragmatic approach (mixed approach) because it incorporates some elements of quantitative and qualitative approaches.

1.7.2 Research design

The research problem having been formulated in clear cut terms, the researcher prepared a research design, i.e., the conceptual structure within which research was conducted. The preparation of such a design facilitates research to be as efficient as possible yielding maximal information. In other words, the function of research design is to provide for the collection of relevant evidence with minimal expenditure of effort, time and money. But how all these can be achieved depends mainly on the research purpose. Research purposes may be grouped into four categories, viz., Exploration, Description, Diagnosis, and Experimentation (Kothari, 2004).

This study adopted descriptive and diagnostic research studies since the study aimed to find the prevalence situation of the project planning under risk and determine the frequency and get the overall picture of application of risk handling strategies in project planning by the building contractors.

Descriptive research studies are those studies which are concerned with describing the characteristics of a particular individual, or of a group, whereas diagnostic research studies determine the frequency with which something occurs or its association with something else (Kothari, 2004).

1.7.3 Population

The population and type depends upon the purpose of the research. This research focuses on contractors based in Dar es Salaam due to the fact that the location is convenient for the researcher to reach them easily.

1.7.4 Sampling Design

A sample design is a definite plan for obtaining a sample from a given population. It refers to the technique or the procedure the researcher would adopt in selecting items for the sample, sample design may as well lay down the number of items to be included in the sample i.e. the size of the sample. Sample design is determined before data are collected (Kothari, 2004).

This study adopts both stratified sampling and systematic sampling design under the complex random sampling (mixed sampling design).

1.7.5 Sample size

The total sample size is 46

1.7.6 Methods of Data Collection

The task of data collection begins after the research problem has been defined and research design/plan chalked out (Kothari, 1990).

There are two types of data collection namely, primary data and secondary data.

The researcher used both primary and secondary data on:

- i. Risk handling strategies applied in project planning in Tanzania.
- ii. What extent the strategies are used.
- iii. Challenges faced in applying the strategies.
- iv. Suggesting measures that will enhance application of the strategies.

1.7.7 Data Collection Tool

Primary data is collected from both questionnaire and interviews. Secondary data is obtained from documents such as past dissertations, library, books, journals and internet.

1.7.8 Data Analysis

This study adopts descriptive analysis because the research generates masses of data which have to be summarized in some way so that the reader has an idea of the typical values in the data and how they vary. The main type of descriptive analysis used in this research is “measures of central tendency”.

1.8 Significance of the study

The findings of this research seek to improve the successful delivering of projects by ensuring proper risk handling strategies in planning is taken into account. The problem of unsuccessful deliver of projects as a result of poor risk handling strategies in planning will be minimized.

This study's result and recommendations will contribute to the contractors' application of risk handling strategies during planning; the use of the general framework formulated as a reference and guidance during project planning while considering risk handling strategies. The research result will benefit building contractors in Tanzania, construction clients, and academic institutions.

1.9 Ethical consideration

All the respondents engaged in the study are assured of confidentiality, and none should be coerced, or unduly engaged in the study (Ibrahim, 2014).

The four ethical principles in research: truthfulness, thoroughness, objectivity, and relevance have been considered and the respondents engaged in the study are assured of confidentiality.

1.10 Theoretical framework

Review of the relevant literature in contractors' project planning behavior, the first subsection provides the basis for investigating the contractors' perception in planning. The second subsection reviews the concept of risk in planning then risk handling strategies are reviewed. Construction projects are oriented and designed, having specific requirement set by the customer/owner to be completed within fine duration and assigned budget (Rumane, 2016). Prabhakar and Ravichandran (2014) analyzed that; Construction planning is an important part of the overall management process. The planning and management includes organizing the work, executing the work, correlating plan and progress information and controlling the work, the three inter-related factors of time, money and quality need to be managed in a proper way. Completion of many of the projects nowadays is not in estimated duration. This will lead to an increase in overheads as well as various other factors. It will not only reduce the expected revenues but also will affect the reputation of the contractor. Planning aims at formulation of time based plan of action for coordinating various activities and resources to achieve specified objectives (Chitkara, 1998). What really happens in planning construction projects is considered by focusing on comparing

the responses of key stakeholders in the construction planning process (Johansen & Wilson, 2007). It is found that the three most common reasons for project failure are poor project planning, a weak business case, and a lack of top management involvement and support (Whittaker, 1993). Subarna (2013) stated that often project planning is done in a top-down manner without getting input from those on the ground. Risk is inherently present in all construction projects. Quite often, construction projects fail to achieve their time, quality, and budget goals. Alternative risk management strategies are suggested. Such strategies include: risk avoidance, risk transfer, risk retention, loss reduction, and risk prevention and insurance (Keith & Jamal, 1990). While the majority of risks may be owned by a member of the project team, any project stakeholder may be eligible to own a response. The key consideration is to determine who can make a difference to the risk (Hillson, 1999)

1.11 Conceptual framework

A conceptual model was developed to describe the quantitative relationships among all variables. A conceptual framework is constructed to define the relationship between risk handling strategy and relevant project characteristics.

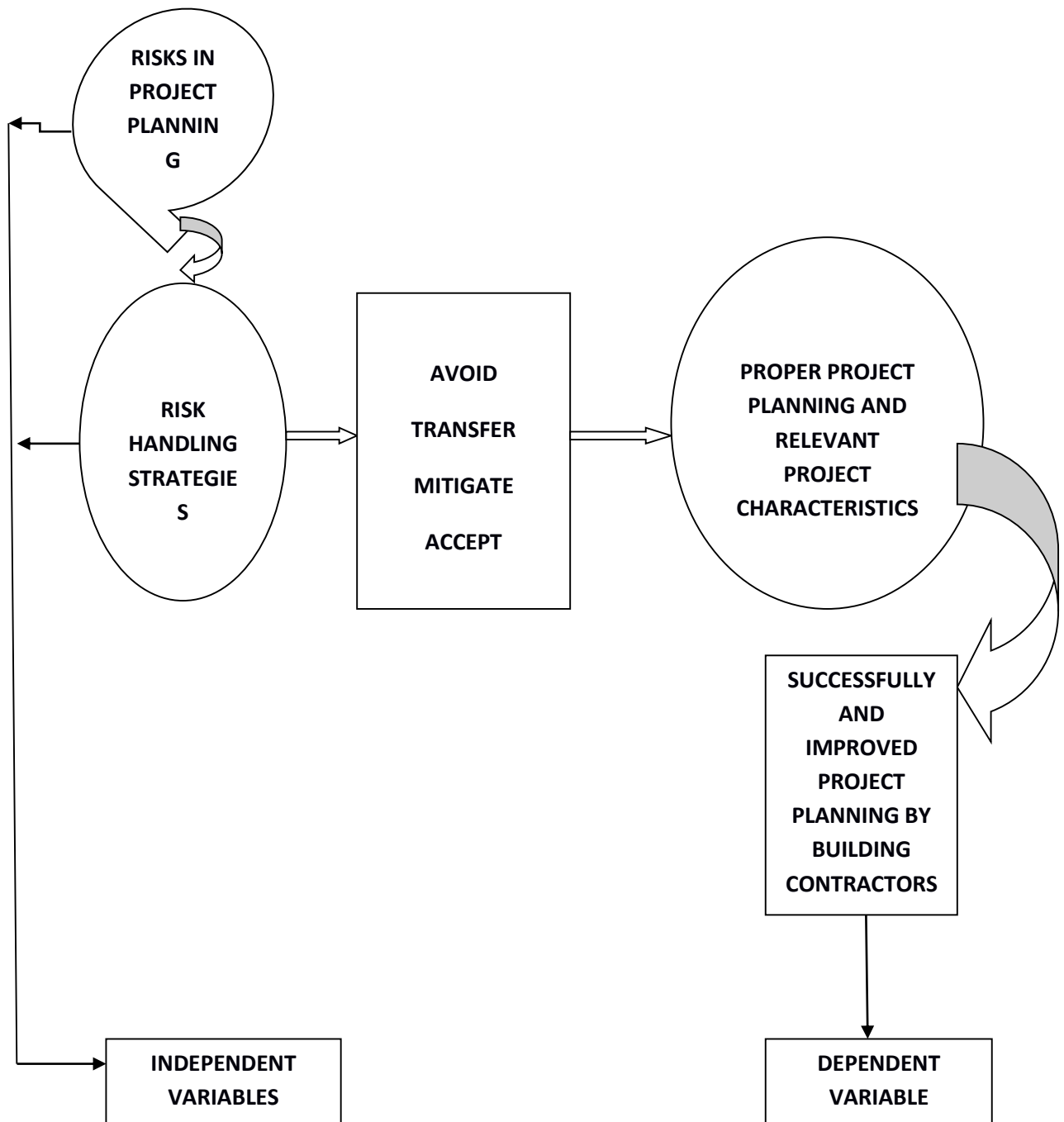


Figure 1.1: Research Paradigm illustrating researcher conceptual framework.

Assessing the application of risk handling strategies in project planning by building contractors in Tanzania

Source: Adapted from Dey (1994)

1.12 Chapter Summary

This chapter begins by giving the overall meaning of construction planning and overseeing the characteristics of a good construction plan, it explains the factors with significant effect on improving construction planning effectiveness as well as the failure of construction planning to achieve its goals. This chapter also reviews the risk handling strategies and effective risk management. Moreover, this chapter gives outlines on building construction sector as it is among the largest sectors in Tanzania that plays big role in the growth and development of the country.

The chapter also reviewed literatures in relation to its objectives, which include: examining the risk handling strategies applied in project planning in Tanzania, assessing as to what extent the strategies are used, to identify challenges faced in applying the strategies and suggesting measures that will enhance application of the strategies. The last part of the chapter explained this study's theoretical and conceptual framework.

CHAPTER TWO

LITERATURE REVIEW

2.1 Construction Industry in Tanzania

The construction Industry is a sector of economy that transforms various resources into constructed physical economic and social infrastructure necessary for socio-economic development. It embraces the process by which the said physical infrastructure are planned, designed, procured, constructed or produced, altered, repaired, maintained and demolished.

The construction industry plays an important role in the economy of developed countries like Tanzania. Given that it generates a substantial number of jobs in the industry is also of major importance. However labor informality impacts in a negative way in the construction sector as it is considered as one of the main obstacles of improvement of its qualities, the increase of its productivity and the introduction of technological innovations (ILO, 2001).

Change is inherent in construction work. For years the industry has had a very poor reputation for coping with the adverse effects of change, with many projects failing to meet deadlines and cost. Change cannot be eliminated, but by applying the principles of risk management, engineers are able to improve the effective management of this change (Smith *et al* 2009)

Since independence there have been a number of initiatives geared towards fostering the local construction Industry. Despite such interventions the state of local construction industry has remained poor. Performance constraints include inadequate

capacity of local contractors and consultants, inadequate public sector delivery capacity, corruption, erratic work opportunities, use of outdated technologies and practices, lack of effective supporting policies and poor state of the economy (National Construction Council, 2004).

The majority of enterprises in the construction industry in least developed countries (LDCs) are small with a few of them being in the medium category. It is said that, world-wide, small and medium enterprises (SMEs) account for 90% of all enterprises and over 99% in developing countries. They are mostly owned by indigenous people. In Tanzania, 86% of the 1091 registered local building contractors by January 2000 were small and of lower classes. They were capable of undertaking works of value less than Tshs. 250,000,000; of which 98% of them were local. On the other hand 74% of the registered 531 civil works were small contractors but capable of undertaking works of up to about Tshs. 375,000,000; of which 97% of them were local. To date, the trend is the same. Small and medium enterprises are a very diverse group, ranging from small establishments to medium sized units, scattered throughout the country. Small and medium enterprises are vital for ensuring diversity and flexibility of the economy responsible for the creation of employment and growth. They are the only firms willing and able to undertake the small, scattered projects, especially in rural areas, which are among the key components of development required to satisfy the basic needs of people such as housing, health facilities, sanitation and roads for geographical mobility.³

³https://tanzania.go.tz/egov_uploads/documents/Construction_Industry_Policy_sw.pdf

2.2.1 Project

Projects do not exist in isolation. They are initiated to fulfill a need or exploit an opportunity. The needs and opportunities exist before the project. They are products of the world at large. Projects are therefore heavily influenced by external factors and they also influence the world outside them to an extent that is largely but not entirely dependent upon the size of the project (Smith *et al* 2009).

Project is a mission, undertaken to create a unique facility, product or services within the specified scope, quality, time and costs. With the emerging global opportunities, projects cross geographical boundaries, corporate channels, traditional systems and cultural diversities. The knowledge areas needed to manage such projects comprise project management techniques, general management practices and technology-related subjects. The project management techniques of planning, scheduling and controlling are the tools and devices that bind the subject's knowledge areas. These techniques can be applied to all types of projects.

2.2.2 Features of Building Projects

Construction building projects that are classified as mega are characterized by large size, exhibit managerial challenges, adopt complex technologies and innovations, beset with varied delivery durations, and complex socio-political and organizational network of relationships. It is also suggested that project characteristics are essential to defining the contract packaging, delivery strategy, and planning for human resources, procurement, and management. Attributes of construction projects defined by the physical, organizational, and operational characteristics immensely influence its safety practices, planning, and management on construction sites (Kwofie, 2014).

2.3.1 Building Contractors

A building contractor is an individual who engages in the planning, developing and coordinating activities which coincide with the building of structures. The building contractor is the individual who oversees the construction and ensures that all necessary measures are taken to result in the completed finished product. The general responsibilities of a building contractor entail the individual planning and carrying through any and all pertinent activities relating to the construction of a dwelling, building or other structure. The building contractor carries out his/her duties by supervising employees, planning how the project will be carried out and completing the project in a manner which coincides with all laws, rules and regulations which may be in existence and correlate with construction (Exforsys, 2006).

2.3.2 Types of contractors

As stated by the Contractors Registration Board Tanzania, there are five types of contractors, namely:

- Building Contractors,
- Civil Works Contractors,
- Mechanical Contractors,
- Electrical Contractors
- Specialist Contractors.

The two main categories of contractors are Local Contractors and Foreign Contractors. Local Contracting firms are those whose majority shares are owned by

citizens of the United Republic of Tanzania. Firms not meeting these criteria will be registered as a foreign one.

2.3.3 Duties of a building contractor

The duties of a building contractor include implementing a plan on how to carry out the construction project. This extends anywhere from hiring workers to developing a step-by-step timeline that the project will follow from start to finish. Moreover, the building contractor is responsible for hiring, supervising and, and sometimes, firing employees who work on the specific project with the contractor. The building contractor must also be responsible to the payroll with regard to the workers and engage in payroll functions or hire someone to do so for the contractor. He should also ensure that he acquires all necessary licenses and permits from relevant entities so that the building project can begin. The building contractor is also responsible for obtaining materials for the project. Since construction projects cannot be completed without the necessary building materials, it is up to the contractor to acquire goods to build the structures. This involves various forms of correspondence with necessary material suppliers (Eshna, 2012).

As stated in Contractor's Registration Act of 1997, "Contractor" means either any person who for reward or other valuable consideration undertakes the construction, installation or erection, for any other person, of any structure situate below, on or above the ground or other work connected therewith, or the execution, for any other person, of any alteration, or otherwise to any structure or other work connected therewith, where such person undertakes to do any such work:

- i. Himself supplies the materials necessary for the work or is authorized to exercise control over the type, quality or the use of material supplied by any other person.
- ii. Himself supplies the labor necessary for the work or is authorized, on behalf of the person for whom the work is undertaken or any other person, to employ or select for employment workmen to assist him in the execution of the work.

2.4 Project Planning

Planning is the process of selecting a particular method and the order of work to be adopted for a project from all the possible ways and sequences in which it could be done. It essentially covers the aspects of 'What to do' and 'How to do it'. Planning establishes how and what work will be carried out, in what order and when and with what resources (Carmichael, 2006).

Construction planning is not an activity which is restricted to the period after the award of contract for construction. If problems arise during construction, re-planning is required (Hendrickson, 1998).

Managers will plan to different extents, even within the scope of only one construction project. There are three key stages of construction management planning;

- Pre-tender planning
- Pre-contract planning
- Operational planning (post-contract)

These reflect the various stages through which construction contractors' progress when seeking to win and then carry out construction works. When contractors are bidding for projects and developing their tender for the works, they undertake pre-tender planning. Once the projects have been won, contractors then initiate pre-contract planning, developing their pretender plan into a more detailed proposal prior to the works commencing on site. Once the contract has been agreed for the project, operational planning begins. The pre-contract plan is developed further into a plan for the operation or construction phase of a project (Sherratt, 2015).

There are two main levels of planning associated with construction projects as stated by Ibrahim (2014).

- Strategic Planning
- Operational planning

Strategic planning is the process by which leaders of an organization determine what it intends to be in the future and how it will get there. To put it another way, they develop a vision for the organization's future and determine the necessary priorities, procedures, and operations (strategies) to achieve that vision.⁴

Operational planning is a method statement and program of work. The method statement involves establishing a method statement for each activity that allows a detailed look at a project's resource requirements, which are not obvious at a strategic level. A program of works primarily represents the sequence in which the

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https://siteresources.worldbank.org/INTAFRREGTOPEIA/Resources/mosaica_10_steps.pdf

various activities should occur with their associated durations and resource requirements (Ibrahim, 2014).

This study is delimited to Contractor's Operational planning at the post-contract stage of a building project. The reason of delimiting to operational planning is due to the fact that it focuses in determining day to day activities that are necessary to achieve the long term goals of the organization. Operational plans outline the tactical activities that must occur to support the ongoing operations of the organization. They are more specific than strategic plans (Godman, 2006).

Operational planning is done by construction teams. They ask questions before making operational plan for the project such as:

- i. Will the operational plan meet the strategic planning target date?
- ii. Are sufficient construction resources and services available within the company to meet the project objectives?
- iii. What is the impact of the new project on the existing work load?
- iv. Where will we get the resources to handle any overload?
- v. What company policies may prevent the plan from meeting the target date?
- vi. Are usually long delivery equipment or materials involved?
- vii. Are the project concepts and design firmly established and ready to start the construction?
- viii. Is the original contracting plan still valid?
- ix. Will it be more economical to use a fast-track scheduling approach?

All these questions are answered in preparation of the construction master plan before detailed scheduling of the project.

The project plan is usually referred as to the plan of operation (POP). It should be designed to answer all questions that may arise during the planning, execution and evaluation of a project.

A construction project plan should address the following areas with regard to the project;

- i. The scope of the project i.e. time and cost. Within what time you want to complete your construction and working within what budget.
- ii. Objectives of the project. This explains what kind of structure are you setting up and what will be the necessary requirements needed to be put in place to ensure that the project meets its intended objectives. For example if the project is a hospital, road, school, mall etc.
- iii. Milestones. This explains activities or stages of the project that will signify substantial progress.
- iv. A work schedule and breakdown structure. Given the different tasks that make up the construction process, it is important to clearly indicate when each of these tasks will be carried out and the systematic sequence that different tasks will follow.
- v. Progress tracking. With respect to the schedule, one should be able to track the progress of the project based on actual output against planned output and determine whether the project is on course or lagging (Nalumansi, 2015).

In developing a construction plan, it is common to adopt a primary emphasis on either cost control or schedule control. Some projects are primarily divided into expense categories with associated costs, in this case construction planning is cost or expense oriented. Within the categories of expenditure, a distinction is made between costs incurred directly in the performance of an activity and indirectly for the accomplishment of the project.

For other projects, scheduling of work activities over time is critical and is emphasized in the planning process. In this case the planner ensures that the proper precedencies among activities are maintained and the efficient scheduling of the available resources prevails. Traditional scheduling procedures emphasize the maintenance of task precedences (resulting in critical path scheduling procedures) or efficient use of resources over time (resulting in job shop scheduling procedures). Finally, most complex projects require consideration of both cost and scheduling over time, so that planning, monitoring and record keeping must consider both dimensions (Hendrickson, 1998).

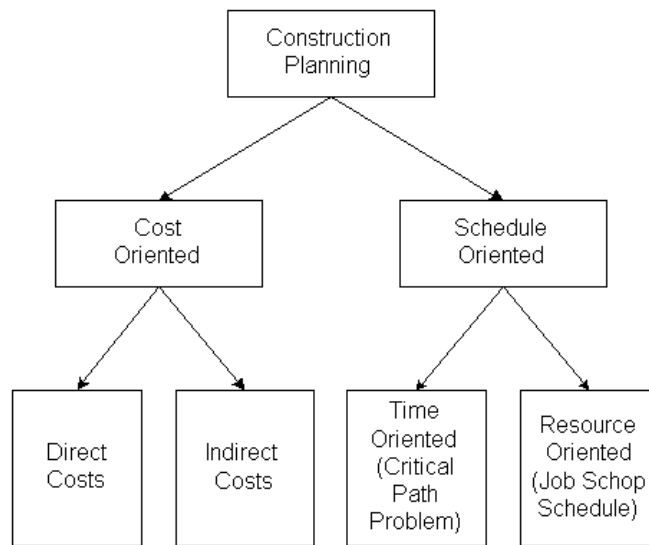


Figure 2.1: Alternative Emphases in Construction Planning

Source: (Hendrickson, Project Management for construction, 1998)

2.4.1 Four Major Aspects of Planning

The nature of planning can be understood by examining four aspects:

- i. Its contribution to purpose and objectives
- ii. Its importance in managerial task
- iii. Its pervasiveness
- iv. The efficiency Vs. effectiveness of plans

The contribution of plan to purpose and objectives: Every plan must contribute to the accomplishment of purpose of the organization. This concept derives from the nature of the organized enterprise which exists for the accomplishment of the group purpose⁵.

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The importance of planning to the managerial tasks: Planning precedes all other managerial tasks. (Organizing, staffing leading, motivating, controlling, budgeting and evaluating) It is unique as it involves setting of objectives.

The Pervasiveness: Planning is a function of all managers. If managers are not allowed to plan to a certain degree then they may not be able to function as manager. All managers plan- from chief executive to the first level supervisor⁶.

The efficiency vs. effectiveness of plans: A plan is said to be efficient if it achieves its purpose with minimizing cost. It is the contribution of the plan to the objectives. E.g. If cost is higher than the benefits, the plan is said to be inefficient. Effectiveness is the achievement of goals and objectives set out in the plan⁷.

Importance of construction project planning;

- i. Planning helps to minimize the cost by optimum utilization of available resources.
- ii. Planning reduces irrational approaches, duplication of works and inter departmental conflicts.
- iii. Planning encourages innovation and creativity among the construction managers.
- iv. Planning imparts competitive strength to the enterprise.

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http://www.zeepedia.com/read.php?planning_i_four_major_aspects_of_planning_types_of_plans_introduction_to_public_administration&b=47&c=18

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http://www.zeepedia.com/read.php?planning_i_four_major_aspects_of_planning_types_of_plans_introduction_to_public_administration&b=47&c=18

A critical element of the implementation of project plan is the request for proposal (RFP). A well written comprehensive RFP in which the project objectives, technology specifications, and desired schedule are clearly specified is essential to satisfactory project completion. The development of RFP requires a more detailed understanding of the site characteristics than was obtained during the initial site and risks assessments (National Research Council, 2001).

2.5 Risks in Project Planning

A risk is an uncertain event or set of circumstances that, should it occur, will have an effect on achievement of one or more objectives. Not all risks are negative. Some events (like finding an easier way to do an activity) or conditions (like lower prices of certain materials) can help your project. When this happens, we call it an opportunity but it's still handled just as a risk (Funston, 2007).

In construction projects, risks can be related to (Mar, 2013);

- i. Staff- if the contractor can't hire the staff soon enough or if they don't have right skills or if the member of the team leaves.
- ii. Organization/ Client- the risks can either be the client withdrawing from the contract etc.
- iii. Technical- the risks in this category can either be when the contractor can't get the equipment soon enough or if the equipment costs more than expected or if the methodology doesn't work.
- iv. External Suppliers- For example if they don't deliver on time
- v. Legal- risks in this category can happen when the legal agreements take longer than you think etc.

- vi. Financial
- vii. Political
- viii. Environmental
- ix. Contractual
- x. Cost
- xi. Schedule
- xii. Weather

Many potential risks may arise in the development, planning, and implementations of projects. Some of the common ones include funding and the management of stakeholders. If numerous stakeholders will be directly involved in the project, at least some political challenges will undoubtedly be encountered. Another frequent implementing challenge is the lack of communication among stakeholders, leadership and the implementation of a project manager (Dearman, 2015)

Businesses do not plan or make decisions with perfect information; they manage with the best information that's available. And in such uncertainty, no business can assume it is immune to failure. That's why organizations should build in a systematic means of placing uncertainty at the core of decision-making, looking at a wide range of causes and effects that could damage the company, and emboldening individuals to question assumptions at every level of the organization. Such an acknowledgement of risk does not make the enterprise risk-averse but makes it better prepared to deal with risk (Funston, 2007).

This rise of risk and uncertainty appears to be fueled by two major factors: speed and connectedness. In today's technology-enabled business environment, conditions

change rapidly, and organizations that don't anticipate or respond in time can easily find themselves losing their competitive edge, market share, or worse. Furthermore, in a global, connected economy, changes or trends that occur in one industry or region can have a nearly instantaneous impact on companies in other industries and regions. In this environment, no company's future is assured (Funston, 2007)

2.5.1 Potential types of risks during project planning include (Mar, 2013);

- i. Executive Support - Wavering, inconsistent or weak executive commitment is often a project planning biggest risk. This can be difficult (but not impossible) to document. Ask for specific commitments. Where you are denied you can document it as a risk.
- ii. Scope – The quality of your estimates dependencies and scope management. If an estimate is just a guess, that's a risk. Be sensitive to the comfort level of estimates. If your team is unsure about a particular estimate, you can document this as a risk.
- iii. Change Management - A continuous flow of complex change requests can escalate the complexity of your project plan and throw it off course. Change requests may lead to a perception that a project has failed because they continually add budget and time to the project. If requirements are missing items that are expected to come later, that's a risk.
- iv. Stakeholders - Stakeholders with a negative attitude towards a project plan may intentionally throw up roadblocks every step of the way. If you anticipate conflict or a lack of cooperation between stakeholders, document it as a risk.

- v. Resources & Team - Resource issues such as turnover and learning curves are common project planning risks. There's always a risk that your key experts will leave. If your team are inexperienced or need to acquire new skills, that's another risk.
- vi. Technical - The risk that components of your technology stack will be low quality. There are dozens of quality factors for technical components (e.g. stability, availability, scalability, usability, security, extensibility). It's a good idea to identify specific risks in components.
- vii. Integration - Whatever you're delivering needs to integrate with the processes, systems, organizations, culture and knowledge of the environment. Integration risks are common. If you need to integrate your project into a business process there's a risk that the process will be disrupted.
- viii. Communication - Invalid stakeholder expectations is a fundamental project risk. If the stakeholders think you're building an orange but you're building an apple — your project will fail. If stakeholders become disengaged (e.g. ignore project communications), that's a risk.
- ix. Requirements - Garbage in, garbage out. If requirements aren't feasible or are detached from business realities, your project plan may fail. Look at the feasibility, quality and completeness of requirements to identify risks. Look at whether requirements are possible to integrate with organizations, processes and systems.
- x. Decision Quality - Slow, low quality or ambiguous decisions are common risks.

- x. Quality - Quality and risk management are intertwined. You'll expect to have defects in your project plan. However, there's a risk that quality won't meet basic levels. Significant rework may trigger project failure. Identify quality related risks for process inputs and outputs.
- xi. Organizational - Organizational change (e.g. restructuring, mergers, and acquisitions) will throw your project plan off track. Think about the minimum stability that your products require launching. List potential organizational changes as risks.
- xii. External - External forces such as laws, regulations and markets. If your project plan touches compliance-sensitive processes regulatory change is a risk.

2.5.2 Other risks in current construction planning process include (S., 2013);

- i. An inadequate method for information gathering and management;
- ii. Insufficient training;
- iii. Misunderstanding of the nature of planning process;
- iv. Inadequate methods for planning coordination;
- v. The cumbersome work structure in planning practice.
- vi. Lack of focus- A business plan should focus on one goal to be effective.
- vii. Unrealistic expectations- One of the biggest problems in planning is using unrealistic expectations as the basis for your business program.
- viii. No buffers- A business plan of any kind should always have buffers to allow room for accidents and procedural mistakes.

Construction method planning is treated as a linear process and isolated from information and logistics management. “Planners usually receive a large amount of formal and informal communications with different formats, some of which are not relevant to their role. The quality of the information received is also often poor (i.e. incomplete design information). In order to deal with the uncertainty caused by insufficient information, guesses are frequently made in the planning process, which neither the initial planner, nor the downstream planner will later check. They are usually ignored and left until execution of the plan, when the problems reveal themselves.”⁸

2.5.3 Risks faced by contractors in project planning are categorized into (Carmichael, 2006);

- Government and
- Firm related ones.

Government related risks are those created either directly or indirectly by the government and this has a significant impact on the development of the industry. The most severe of these risks are; unfavorable business environment, a weak economy, corruption, lack of government patronage and patronage of foreign firms.

Firm related risks are those internal to the firm and within the firm’s control. These risks can inhibit the firms from developing core-capabilities from firm-specific resources. The most severe are lack of vision, lack of entrepreneurial skills, limited

⁸ <http://www.planningplanet.com/forums/planning-scheduling-programming-discussion/415335/re-problems-construction-planning-process>

technical expertise, limited trained manpower, lack of communication between various areas of business (Ibrahim, 2014).

2.6 Risk Handling Strategies

Construction companies work with risks on a daily basis. From project inception through to project completion, the handling of risks is an essential management task; for doing this, the use of clauses dedicated fully to mitigate, to reduce or to manage (risk responsibilities, risk transfer, risk share) risks are proposed by the contractors. These can be used to manage some of the uncertain events, which face a project (Maria-Sachez, 2005).

Risk handling is the choice of a proper strategy to reduce the likelihood of the occurrence of risks events and/or the magnitude of their negative impact. Research on risk handling should be done often, choose a risk handling strategy based on their experience or preference towards risk, with no consideration of project characteristics (e.g. project size, slack or technical complexity) and the associated financial implications. The choice of risk handling strategy should be aligned with unique project characteristics (Fan, Lin, & Sheu, 2008).

When you are planning your project, risks are still uncertain, they haven't happened yet. But eventually, some of the risks that you plan for do happen. There are four basic ways to handle risks⁹;

- **Avoid:** The best thing you can do with risk is to avoid it. If you can prevent it from happening it definitely won't affect your project. The easiest way to

^{9 9} <http://www.dbpmanagement.com/15/5-ways-to-manage-risk>

avoid risk is to walk away from the cliff, but that may not be an option on this project.

You can also change your plans completely to avoid the risk. This is a good strategy for when a risk has a potentially large impact on your project. For example, if January is when your company Finance team is busy doing the corporate accounts, putting them all through a training course in January to learn a new process isn't going to be a great idea. There's a risk that the accounts wouldn't get done. It's more likely, though, that there's a big risk to their ability to use the new process, since they will all be too busy in January to attend the training or to take it in even if they do go along to the workshops. Instead, it would be better to avoid January for training completely. Change the project plan and schedule the training for February when the bulk of the accounting work is over.

- Mitigate: If you can't avoid the risk you can mitigate it. This means taking some sort of action that will cause it to do as little damage to your project as possible.

Mitigating against a risk is also the easiest to understand and the easiest to implement. What mitigation means is that you limit the impact of a risk, so that if it does occur, the problem it creates is smaller and easier to fix e.g. providing training to the team.

- Transfer: One effective way to deal with risk is to pay someone else to accept it for you. The most common way to do this is to buy insurance.

Transference is a risk management strategy that isn't used very often and tends to be more common in projects where there are several parties.

Essentially, you transfer the impact and management of the risk to someone else.

- **Accept:** When you can't avoid, mitigate, or transfer a risk, then you have to accept it. But even when you accept a risk, at least you have looked at the alternatives and you know what will happen if it occurs. If you can't avoid the risk, and there is nothing you can do to reduce its impact, then accepting it is your only choice.

This is a good strategy to use for very small risks – risks that won't have much of an impact on your project if they happen and could be easily dealt with if or when they arise. It could take a lot of time to put together an alternative risk management strategy or take action to deal with the risk, so it's often a better use of your resources to do nothing for small risks.¹⁰

2.7 Risk Handling Strategies used in project planning

Most organizations attempting to manage their risks seem able to identify and assess them with reasonable success. The difficulty often comes when the next stage is reached – **planning** how to respond. This may however be the most important stage of the process, since the effectiveness of responses will directly determine whether risk exposure increases or decreases on the project (Hillson, 1999).

Over the long term, organizations that are able to see project planning in the context of risk, and that are able to incorporate a risk-intelligent perspective into their planning processes, will be most adept at managing risks and achieving sustained

¹⁰ <http://www.dbpmanagement.com/15/5-ways-to-manage-risk>

success. Risk intelligence is the ability to think and learn about outcomes. It is how an organization gathers, analyzes, applies, and learns from information. Risk intelligence requires effective systems, accurate data, and timely reporting, but it enables organizations both to exploit strategic opportunities and to protect their existing assets. (Funston, 2007).

The project manager is responsible for overcoming the difficulties encountered in guaranteeing that all planning processes are properly executed. To resolve the problems, the project manager should identify the events that have a negative impact on the successful completion of the project and develop explicit mitigating plans to accommodate them. In some areas, such as communications and quality, the project management community should develop better tools and techniques to support the project manager's efforts. In other areas, such as risk and cost, more emphasis should be placed on the training of functional managers in the use of the relevant tools and techniques. In other words, the functional manager also should get intensive but adapted project management training. The agent for such a fundamental change in the organizational culture can't be the project manager alone. It is essential that it be sponsored at a high level of the organization and even treated as a project by itself (Rad, 2002).

For businesses, the most common failure of imagination lies in not understanding or considering how the enterprise itself could fail to achieve and sustain revenue growth, how it could fail to improve its operating margins and the efficiency of its assets, or how it could fail to meet the expectations of its key stakeholders. Decision-makers who understand how the enterprise could fail can then decide whether to

accept the risk of failure and figure out how best to prevent it, more readily detect it, and possibly correct it. A capacity to imagine and then prevent failure must be built into the planning process. Organizations need to be intelligent about the risks they must take to gain and sustain competitive advantage (rewarded risks), as well as the risks they must avoid (unrewarded risks) to protect their existing assets (Funston, 2007).

A risk can be an event (like a snowstorm) or it can be a condition (like an important part being unavailable). Either way, it's something that may or may not happen ...but if it does, then it will force you to change the way you and your team work on the project (Watt, 2008).

The better you understand your organization and the risks that exist to planning the better off you'll be to address them. Although the risks and the methods of addressing them are numerous, following are a few ideas that might help (Robinson, 2005);

- Provide Leadership

The drive to conduct planning must be supported by the organization's leadership. This sends a strong signal of the level of importance of the process, which often improves the level of acceptance.

- Communicate

If there is uncertainty in the organization over planning, communicate what you are going to do, why you are doing it, how people will be involved in the process, and the expected timelines. As well, it is important to commit to provide updates on a

regular basis of how the process is going and what has been achieved. In the absence of information, people will make it up themselves. This communication process can take a variety of forms including meetings, newsletters, town hall forums, etc.

- Manage The Change Process

Development of the strategy is only the first step in the whole process. It is equally important to manage the change process for the implementation of your strategy. Effective change management will not eliminate all the concerns, but it will help keep them to a tolerable level and allow the organization to continue without significant loss of productivity.

- Reward Supportive Behavior

It's not enough to focus on the risks to planning. You should also reward behaviors that support planning. For example, in hearing about the start of a planning process, a unit head meets with her staff to discuss ideas on how they can backfill positions so as to allow as many staff as possible to participate in the planning process.

- No Time is Ever Perfect

No matter when you undertake planning, there will always be other initiatives going on or information that isn't available. Although planning is often positioned as though you are starting with a blank canvas, the reality is that you are not. As long as you can devote the time to strategy without the wheels falling off - get on with it. In the long term, your organization will be far better off getting on with the planning and associated changes that come of it than constantly putting it off for that elusive perfect time.

Once the risks have been identified, then the selection and application of strategies can be completed. Usually, various combinations of strategies will work together to address the identified risks, and it is not unusual to shift to other strategies as new risks become apparent, or more information accumulates on the risk profile of an activity.

The following table provides a guide to the general application of the various risk management strategies based on the assessed risk level:

Table 2.1: Guide to the general application of risk management strategies.

High Risk	Avoidance Transfer (contractual)
Medium Risk	Avoidance (if unacceptable risks) Mitigation Transfer (contractual, Insurance policy)
Low Risk	Acceptance

Source: (Wang & Chou, 2003)

To be effective, risk handling strategies must meet a number of important criteria. As such all responses (strategies) must be (Fan, Lin, & Sheu, 2008):

1. *Appropriate* – the correct level of response must be determined, based on the “size” of the risk. This ranges from a crisis response where the project cannot proceed without the risk being addressed, through to a “do nothing” response for minor risks. It is important not to spend inordinate amounts of time or effort developing inappropriate responses for minor risks, but also not to spend too little time considering how to respond to key risks.

2. *Affordable* – the cost-effectiveness of responses must be determined, so that the amount of time, effort and money spent on addressing the risk does not exceed the

available budget or the degree of risk exposure. Each risk response should have an agreed budget.

3. *Actionable* – an action window should be determined, defining the time within which responses need to be completed in order to address the risk. Some risks require immediate action, while others can safely be left until later.

4. *Achievable* – there is no point in describing responses which are not realistically achievable or feasible, either technically or within the scope of the respondent's capability and responsibility.

5. *Assessed* – all proposed responses must work! The effectiveness of a response is best determined by making a “post-response risk assessment” of the size of the risk assuming effective implementation of the response.

6. *Agreed* – the consensus and commitment of stakeholders should be obtained before agreeing responses.

7. *Allocated & Accepted*– each response should be owned and accepted to ensure a single point of responsibility and accountability for implementing the response.

Each proposed response should be tested against these seven criteria before it is accepted.

Having defined the characteristics of a good risk response, consideration can be given to the specifics of developing such responses. It is proposed that a two-stage approach should be followed, first defining the appropriate *strategy* for dealing with a particular risk, then designing *tactics* to implement the chosen strategy (Fan, Lin, & Sheu, 2008).

Once responses have been developed, each should be assigned to an owner. This is a vital step, as the response owner will be responsible for ensuring the effective implementation of the agreed response. They will also be accountable for performing the response (or ensuring that it is performed by others). It is advisable to involve response owners in developing or refining responses which they own. It is important to select the right owner for each risk response.

This is defined as “the party best placed to manage the risk effectively”. While the majority of risks may be owned by a member of the project team, any project stakeholder may be eligible to own a response. The key consideration is to determine who can make a difference to the risk (Hillson, 1999).

2.8 Challenges faced in applying Risk handling Strategies in Project planning

Whenever a risk response is implemented it will inevitably change the risk profile of the project. Clearly the response is designed to improve the situation, but this cannot be assumed. Sometimes implementation of a response may introduce more risk into the project than it removes.

Risks that arise as a direct result of implementing a response are termed *secondary risks* (Hillson, 1999). Despite a big progress in solving planning risks, more complex risks still remain hard and challenging for existing planners (Bartak, 2005).

There are a couple of challenges in terms of application of risk handling strategies (Hillson, 1999).

1. A lack of risk decision making structure and lack of accountability for risk decisions in an organization. Almost every business executive is comfortable with

risk decision making, however, in many cases the right people aren't making those decisions. In many cases, big risk decisions are being made too low in organizations, with people who aren't incentivized to make the right decisions for the organization.

Organizations need to develop a structure so that the important risk-based decisions are made by the right people, those who are accountable for the impacts – good or bad. This typically means some kind of risk governance structure that defines what decision making powers each level of the organization has and an oversight structure and escalation path for those risks that need monitored or managed higher up in the food chain.

2. A lack of risk -ware culture. In order to build a culture where project managers are willing to be transparent to their executives, the executives have to be careful to craft the kind of culture that fosters this transparency. Open dialogs about concerns, risks, and trade-offs necessary without “shooting the messenger” are often missing in organizations that lack effective risk management.

3. Implementing risk responses is usually not free. Each response could involve expenditure of additional time, cost or resource (Hillson, 1999).

In too many organizations, individuals who are responsible for planning don't have an integrated view of risk. When organizations set out to incorporate risk considerations into the planning process, a range of time horizons must be taken into account.

Identification and assessment of risk will be worthless unless responses can be developed and implemented which really make a difference in addressing identified risks. Yet risk response development is perhaps the weakest part of the risk process, and it is here that many organizations fail to gain the full benefits of project risk management (Hillson, 1999).

2.9 Improving application of Risk handling strategies in Project Planning

One of the most promising research directions is exploiting knowledge engineering techniques such as (re)formulating the project planning risks to be easier to solve for existing planners. In particular, it is possible to automatically gather knowledge from toy planning risks and exploit this knowledge when solving more complex planning risks (Bartak, 2005).

Clearly it is important that the organization should be prepared to spend the required time, money or effort in responding to identified risks, otherwise the process will be ineffective. An important part of a risk-aware culture is the acceptance that it is better to incur definite known cost now in order to avoid the possibility of variable or unknown cost in the future. However, the organization will require assurance that spend now is justified in order to remove exposure later. It is also important to be sure that the amount of expenditure is appropriate to the size of risk faced (Hillson, 1999).

Planning effectiveness can be expected only after management modifies planning policy and prevailing practices are fundamentally changed (Laufer & Tucker, 2006).

Once responses have been developed, each should be assigned to an owner. This is a vital step, as the response owner will be responsible for ensuring the effective implementation of the agreed response. When allocating owners, it is important to build and retain co-operation and consensus, seeking to avoid contractual wrangling or the placing of blame. The necessary resources should be provided to enable the response to be implemented, and the project manager should monitor the status of risk responses regularly, not abdicating responsibility to the response owner.

A risk manager or lead resource should be given authority to oversee the implementation and to ensure compliance with selected strategies on an on-going basis. If a risk management committee is struck, the risk manager would act as a lead resource¹¹

2.10 Chapter Summary

This chapter explained the general overview of construction industry in Tanzania and worldwide; the characteristics and composition of the industry. The chapter reviewed construction projects and features of building projects. It defined building contractors, types of building contractors as well as their duties in construction industry. This chapter also explained literature in terms of its objectives that are project planning as well as its importance. It defined risks in project planning and risk handling strategies applied in project panning. Challenges faced in applying the strategies as well as ways of improving application of risk handling strategies in project planning are also discussed in this chapter.

¹¹ <http://www.osbie.on.ca/risk-management/manual/Implement.aspx>

There is a gap in the existing research findings, many scholars around the globe for years have studied risk handling strategies from different perspectives and came with the findings that provide insights into how various projects characteristics and risk situation affect the choice of risk handling strategy. Others explained that Projects that are exposed to uncertain environments can be effectively controlled with the application of risk analysis during the planning stage. However little emphasis has been put on correlation between the risk handling strategies and project planning especially for individual players in construction industry i.e. clients, consultant and contractors. Hence, the researcher of this study has aimed to fill the gap by correlating risk handling strategies to project planning by building contractors.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

In this chapter the methodology and general procedures used in this study are explained. This includes research approach, research design which basically covers schemes, outlines or plans that are used to generate answers to research problems. This chapter includes a description of the research methodology adopted, such as population size, sampling design and sample size and data collection and analysis techniques

Research methodology is a way to systematically solve the research problems. It may be understood as a science of studying how research is done scientifically. In it we study the various steps that are generally adopted by the researcher in studying his research problem along with the logic behind them. All the means that is necessary for the researchers to design his methodology for his problem as the some may differ from problem to problem (Kumar, 2008).

Research methodology involves sampling techniques and methods to be used for research methods, the area, and time of study, source of data, research design, sampling design and the work schedule for the study (Kothari, 2004).

The objectives of this research were met through literature search which enabled to understand the background of the search. The information required was how risk handling strategies were applied in project planning by building contractors in which

it focuses on building contractors based in Dar es Salaam. The main instrument to be used in collection of data for the research was questionnaires and interviews.

3.1 Research Approach

These are plans and procedures for research that span the steps from broad assumptions to detailed methods of data collection, analysis and interpretation. The overall decision involves which approach should be used to study a topic. Informing this decision should be the philosophical assumptions the researcher brings to the study; procedures of inquiry called the research design and specific methods of data collection, analysis and interpretation.¹²

There are several approaches for doing research and these include; Quantitative approach to research, Qualitative approach to research, Pragmatic approach to research (mixed approach) and advocacy/participatory approach to research.

The pragmatic approach to science involves using the method which appears best suited to the research problem and not getting caught up in philosophical debates about which is the best approach. Pragmatic researchers therefore grant themselves the freedom to use any of the methods, techniques and procedures typically associated with quantitative or qualitative research. They recognize that every method has its limitations and that the different approaches can be complementary. They may also use different techniques at the same time or one after the other. For example, they might start with face-to-face interviews with several people or have a focus group and then use the findings to construct a questionnaire to measure

¹² <https://www.slideshare.net/grovervijayk/research-approach>

attitudes in a large scale sample with the aim of carrying out statistical analysis. Depending on which measures have been used, the data collected is analyzed in the appropriate manner. However, it is sometimes possible to transform qualitative data into quantitative data and vice versa although transforming quantitative data into qualitative data is not very common. Being able to mix different approaches has the advantages of enabling triangulation. Triangulation is a common feature of mixed methods studies ¹³ (Alzheimer, 2009).

Therefore the study adopts the pragmatic approach (mixed approach) because it incorporates all elements of quantitative and qualitative approach.

3.2 Research design

The research problem having been formulated in clear cut terms, the researcher will be required to prepare a research design, i.e., he will have to state the conceptual structure within which research would be conducted. The objective of this research is to assess application of risk handling strategies in project planning by the Building contractors in Tanzania; whereas it focuses on examining the risk handling strategies used in project planning, assessing as to what extent the strategies are used, identifying challenges faced in applying the strategies, and suggesting measures that will enhance application of the strategies.

Considering the aforementioned demands of the research objectives, the research is designed in three stages: carefully mapped out a circumstance, situation, or set of events to describe ideas about the research problems and the variables and issues

¹³ <http://www.alzheimer-europe.org/Research/Understanding-dementia-research/Types-of-research/The-four-main-approaches>

associated with the problems through an extensive literature review so as to see what is happening or what has happened(descriptive method); afterwards determining the frequency with which risks occur in association with project planning and the rate at which the risk handling strategies are applied (diagnostic research) and finally, followed up questionnaire (contractors) responses by searching written records and accounts of past happenings and events in contractors business dealings (contract execution).

The preparation of such a design facilitates research to be as efficient as possible yielding maximal information. In other words, the function of research design is to provide for the collection of relevant evidence with minimal expenditure of effort, time and money. But how all these can be achieved depends mainly on the research purpose. Research purposes may be grouped into four categories, viz., Exploration, Description, Diagnosis, and Experimentation (Kothari, 2004).

Descriptive research studies are those studies which are concerned with describing the characteristics of a particular individual, or of a group, whereas diagnostic research studies determine the frequency with which something occurs or its association with something else (Kothari, 2004).

Exploratory research is research conducted for a problem that has not been studied more clearly, establishes priorities, develops operational definitions and improve the final research design¹⁴. Experimental research is a systematic and scientific approach

¹⁴ https://en.wikipedia.org/wiki/Exploratory_research

to research in which the researcher manipulates one or more variables, and controls and measures any change in other variables.¹⁵

The study intends to find the prevalence situation of the project planning under risk and determine the frequency and get the overall picture of application of risk handling strategies in project planning by the building contractors. Therefore this study adopts descriptive and diagnostic research studies.

3.3 Population Size

The target population for the research comprises mainly of Tanzanian registered contractors from class one to class seven as specified by the Contractors registration board. The population size and type depends upon the purpose of the research. As used, the term population is then a collective one used to describe the quantity and type of cases in the study, whether they are events, objects or people. Population or universe must consist of all possible elements so that the researcher can generalize or apply the results of the study to groups beyond those being studied (Cargan, 2007)

Therefore this research focuses on building contractors based in Kinondoni area in Dar es Salaam due to the fact that the location is convenient for the researcher to reach them easily. Contractors work under project management system which will enable the researcher to get reliable and relevant information for the study.

¹⁵ <https://explorable.com/experimental-research>

Table 3.1: Distribution of Building contractors based in Dar es Salaam

BUILDING CONTRACTORS BASED IN DAR ES SALAAM		
	CLASS	TOTAL
1	One	3
2	Two	5
3	Three	3
4	Four	4
5	Five	10
6	Six	11
7	Seven	15

Source; CRB, (2016)

3.4 Sampling Design

A sample design is a definite plan for obtaining a sample from a given population. It refers to the technique or the procedure the researcher would adopt in selecting items for the sample, sample design may as well lay down the number of items to be included in the sample i.e. the size of the sample. Sample design is determined before data are collected (Kothari, 2004).

Systematic sampling can be used with stratified sampling; whereas by stratified sampling you start by first ensuring the overall population has distinct subpopulations, and then dividing population members into subgroups before sampling. Then, a systematic sampling technique is applied within each group. Combining systematic and stratified sampling techniques is appropriate only if

distinct groups exist within a population and the members of a group do not exhibit patterns that repeat with certain periodicity.¹⁶

This study adopts both stratified sampling and systematic sampling design under the complex random sampling (mixed sampling design).

Stratified sampling is used as a guarantee that the sample represents the specific subgroups or strata whereby the population is divided into different strata. According to our research the population is divided into three strata which are;

- High Class that comprises of class one, class two and class three contractors.
- Medium class that comprises of class four and class five contractors.
- Lower class that comprises of class six and class seven contractors.

Every item has an equal chance of inclusion in the sample. Systematic sampling is a random sampling technique which is frequently chosen by researchers for its simplicity and its periodic quality.

3.5 Sample size

The following are the procedures the researcher used to select the sample size using systematic sampling design.

- 1) Select the integer less than the total number of individuals in the population. The integer represents the first subject.
- 2) Decide how large the sample size should be:

¹⁶ <http://www.investopedia.com/ask/answers/060515/how-can-i-use-systematic-sampling-stratified-sampling.asp>

By using a population of 51, the confidence level of 95% and the margin of error of 5%; the size of the sample is 46.

- 3) Pick another integer which will serve as a constant difference between any two consecutive numbers. The integer is typically selected so that the researcher obtains the correct sample size.

Population = 51

Integer selected as first subject = 6

Another integer picked = 1

Therefore the members of the samples will be 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51.

TOTAL SAMPLE SIZE = 46

3.6 Types of Data

The task of data collection begins after the research problem has been defined and research design/plan chalked out (Kothari, 1990)

There are two types of data collection namely, primary data and secondary data.

3.6.1 Primary data

These are those which are collected afresh for the first time and thus happen to be original in character. Primary data is obtained through observation or through direct communication with respondents in one form or another through potential interviews (Kothari, 1990).

For the case of this research primary data was collected from Building contractors based in Dar es Salaam Kinondoni area. Primary data were collected through interviews and the use of questionnaires.

3.6.2 Secondary data

In this method, the nature of data collection work is merely that of compilation. Secondary data is neither collected directly by the user nor specifically for the user and is normally collected under conditions not known to the user. The researcher is to collect secondary data relating to previous dissertations, books, journals, and internet.

The researcher used both primary and secondary data on:

- i. Risk handling strategies used in project planning in Tanzania.
- ii. What extent the strategies are used.
- iii. Challenges faced in applying the strategies.
- iv. Suggesting measures that will enhance application of the strategies.

3.7 Data Collection Tool

The method of data collection was determined by the methods adopted for the research; descriptive and diagnostic (for both questionnaires and interviews). For descriptive and diagnostic methods; data were collected through interviews and questionnaires which are considered to be the most appropriate means to obtain data (information) for descriptive methods.

Primary data is collected from both questionnaire and interviews. Secondary data is obtained from documents such as past dissertations, library, books, journals and internet.

3.7.1 Questionnaires

A questionnaire is a document consisting of closed (forced choice) and/or open-ended structured questions covering research objectives, questions and variables. It may cover ordinal and/or nominal and independent, dependent and intervening variables, depending upon the research objectives, questions and hypotheses. The questionnaire is completed or filled by the respondent her/himself (Pawar, 2004)

The type of questionnaire used is that of closed ended structured questions covering research objectives, questions and variables. The questionnaires were administered by personally distributing them to respondents on certain occasions or certain locations and collecting it back then and there while others were sent and delivered via email.

The contractors' questionnaire consists of six sections (or parts; A, B, C, D, E and F) as provided in appendix. Part A consists of closed categorical questions about organizational information and information on respondents' position in the firm. Part B consists of close-ended questions to obtain information on the use of operational planning techniques also to understand about the respondents' knowledge on project planning. Part C consists of lists of risks during project planning with a 3 point severity rank scale, from **3-High risk** to **1- Low risk**. Part D describes risk handling strategies used in project planning whereby there is a table that provides a guide to the general application of the various risk handling strategies based on the assessed

risk level and the other table that consists of lists of risks during project planning with a 3 point severity rank scale of level of preference of each strategy, from **1- Most preferred** to **3- Not preferred at all**. Part E consists of challenges faced in applying risk handling strategies in project planning with a 4 point severity rank scale, from **4-Totally Agree** to **1- Totally Disagree**. Part F consists of ways of improving the application of risk handling strategies in project planning with a 4 point severity rank scale, from **4-Totally Agree** to **1- Totally Disagree**.

3.7.2 Interviews

The interview was done according to the objectives and questions of the study. The method used was structured interviews in which was conducted by employing an interview schedule. The interview schedule consists of a set of structured questions. It is almost like a questionnaire but the two fundamental differences between questionnaire and interview is that; questionnaire is self-administered and completed/filled by the respondent, and the interview schedule is completed/ filled by the interviewer by asking questions and writing responses of the respondent (Pawar, 2004).

Interview was conducted so as to get a rough picture of possible risks in project planning. This method gives an opportunity to observe body language, attitude and emotions which makes it effective as it reveals the real situation of the respondent. Interviews were used as a basis for developing the research questionnaires.

From the interview the researcher was able to get common risks; then the common risks were included in the questionnaire to test how severe they are so as to determine the appropriate risk handling strategies to be used.

A total of six interviewees' comprising high class contractors (2), Medium class contractors (2) and Low class contractors (2) were interviewed.

3.8 Data Analysis

This refers to examining what has been collected in survey or experiment and making deduction and inference. It involves uncovering underlying structures, extracting important variables, detecting any anomalies and testing any underlying assumption. It involves scrutinizing the acquired information and making inferences (Kombo & Tromp, 2006).

Data analysis is a process of computing certain indices or measures along with searching for patterns of relationship that exists between the data groups (Kothari, 2004). The method of data analysis was conducted using statistical package for social sciences (SPSS) (version 20) for data obtained from questionnaires.

Data analysis can be classified into two groups which are descriptive and inferential analysis.

This study adopts descriptive analysis because the research generates masses of data which have to be summarized in some way so that the reader has an idea of the typical values in the data and how they vary. The main type of descriptive analysis used in this research is "measures of central tendency".

3.9 Validity and Reliability Test

This study conducted validity and reliability test on the data obtained in the questionnaire and on the interviews.

Validity Test

The research satisfies both the content and construct validity test. Validity refers to the credibility or believability of the research¹⁷. This research used both systematic sampling and stratified sampling, where as you start ensuring overall population has distinct populations and the research is directed towards a defined group of respondents who are best able to respond to the research issues The construct validity test is concerned with a variable measurement instrument measuring particularly that which it is intended to measure (Ibrahim, 2014). Moreover the study questionnaires proved to be useful as they were able to measure all was intended to be measured and enabled the study to answer all its objectives.

Reliability Test

Reliability refers to the repeatability of findings¹⁸. The study used inter-rater technique for reliability test. The test-retest method assesses the external consistency of a test. This refers to the degree to which different raters give consistent estimates of the same behavior. Inter-rater reliability was used for interviews¹⁹. This test was satisfied by this study.

¹⁷ <http://psc.dss.ucdavis.edu/sommerb/sommerdemo/intro/validity.htm>

¹⁸ <http://psc.dss.ucdavis.edu/sommerb/sommerdemo/intro/validity.htm>

¹⁹ <https://www.simplypsychology.org/reliability.html>

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter presents analyses and interpretation of data collected. The analysis used literature review and questionnaire survey from the building contractors based in Dar es Salaam Tanzania. Literature review was used to identify risks in project planning, risk handling strategies used in project planning, challenges faced in applying risk handling strategies during project planning and ways to improve application of risk handling strategies in project planning. The questionnaire survey section covers information concerning: respondents' characteristics, responses to questionnaires, data presentation, analyses and interpretation.

4.2 Respondents Characteristics

The study shows that contractors were categorized into three groups by using stratified sampling method to form High class contractors that constituted class one, two and three; Medium class contractors that constituted class four and five; and lastly is the Low class contractors that constituted class six and seven as illustrated in Table 4.1 below.

Table 4.1: Respondents Characteristics

CATEGORY	POPULATION NUMBER AS PER KINONDONI AREA	PERCENTAGE
High class contractors (class one, two and three)	11	21.6%
Medium class contractors (class four and five)	14	27.5%
Low class contractors (class six and seven)	26	50.9%
TOTAL	51	100%

Source: Author, (2017)

4.3 Response to Questionnaires

This study administered questionnaires to building contractors based in Dar es Salaam. Table 4.2 below illustrates the distribution and the response rates according to the respondents' in the study area. A total of 46 questionnaires were distributed to the contractors and the following response rates were received.

Table 4.2: Respondents' Response Rates

CATEGORY	RETURNED (NO)	% RESPONSE RATE
High class contractors (class one, two and three)	8	17.4%
Medium class contractors (class four and five)	8	17.4%
Low class contractors (class six and seven)	7	15.2%

Source: Author, (2017)

Table 4.2 above shows that 46 questionnaires were distributed to contractors in the study area and this yielded response rates of 17.4%, 17.4% and 15.2% from High class category, Medium class category and Lower class category respectively

Using the formula for computing questionnaire successful rate (Ibrahim, 2014):

$$\begin{aligned} \text{Questionnaire success rate} &= \frac{(\text{Questionnaire received} \times 100)}{(\text{Questionnaires administered})} \\ &= \frac{(23 \times 100)}{46} \\ &= 50\% \end{aligned}$$

The study therefore recorded an overall questionnaire response rate of 50%.

4.4 Demographic Profiles of Respondents

4.4.1 Organization class of registration with Contractors Registration Board

Table 4.3: Class of registration with Contractors Registration Board

Class of Registration	Frequency	% of Frequency	Cumulative Percent
class one	4	17.4	17.4
class two	3	13.0	30.4
class three	1	4.3	34.8
class four	5	21.7	56.5
class five	3	13.0	69.6
class six	3	13.0	82.6
class seven	4	17.4	100.0
Total	23	100	

Source; Author, (2017)

Table 4.3 above shows the percentage distribution of contractors' class registration with the contractors' registration Board (CRB) here in Tanzania. Virtually 17.4% of the contractors are registered as class one contractors, 13% of the contractors are registered as class two contractors, 4.3% are registered as class three contractors, 21.7% are registered as class four contractors, 13% are registered as class five contractors, 13% are registered as class six contractors and 17.4% are registered as class seven contractors. This result revealed that more than half

(69.6%) of the contractors are High class and Medium class contractors and the rest 30.4% are Lower class contractors. The contractors from High class and Medium class are large contractors and that they handle large projects which involve project planning complexities and as such are more experienced to respond to this study enquiry. Although the Lower class contractors also have handled projects which involves project planning and they are also experienced to respond to this study enquiry.

4.4.2 Organization years of experience in Contracting Business

Table 4.4: Individual assessment of Organization years of experience in Contracting Business

		HIGH CLASS			MEDIUM CLASS			LOW CLASS		
Years of Registration	Mid Value (X)	F	%F	FX	F	%F	FX	F	%F	FX
Less than 5 yrs	2.5							3	42.9	7.5
5 to 10 years	7.5	3	37.5	22.5	3	37.5	22.5	2	28.6	15
10 to 15 years	12.5	3	37.5	37.5	5	62.5	62.5	2	28.6	25
Over 15 years	15	2	25	30						
TOTAL		8	100	90	8	100	85	7	100	47.5

Source; Author, (2017)

Where; F represents Frequency

Mean Years of Experience;

High class = $\Sigma FX / \Sigma F = 11.25$

Medium class = $\Sigma FX / \Sigma F = 10.63$

Low class = $\Sigma FX / \Sigma F = 6.79$

Table 4.4 above shows individual assessment of Organizations years of experience in contracting business. This table shows results of individual groups separately.

For higher class contractors the mean years of experience are 11.25 and more than 60% of the contractors have over 11 years of experience in construction industry. Medium class contractors have the mean years of experience of 10.63 where as more than 60% of contractors have more than 10 years of experience. Lower class contractors have the mean years of experience of 6.79 in which more than 50% of contractors have more than 5 years of experience.

Each individual group has at least more than 50% of its contractors who are above the mean years of experience which has been used as a central tendency and this shows that many respondents have enough experience to respond to the research enquiry.

Table 4.5: Combined assessment of Organization years of experience in Contracting business

Years of Registration	Mid Value (X)	Frequency (F)	% of Frequency	FX
less than 5 yrs	2.5	3	13.0	7.5
5 to 10 yrs	7.5	8	34.8	60
10 to 15 yrs	12.5	10	43.5	125
over 15 yrs	15	2	8.7	30
Total		23	100	222.5

Source; Author, (2017)

$$\text{Mean Years of Experience} = \frac{\sum FX}{\sum F} = 9.67$$

Table 4.5 shows combined representation of organization years of experience in contracting business. It reveals that more than 50% of the respondents have over ten years of experience in construction Industry, however, contractors over 5 years of experience are all considered to be useful in the research. The mean years of experience of all respondents' were found to be 9.67 years. This show the

respondents have enough experience to understand and respond to the research enquiry and thus ensures the validity of the data obtained from the respondents.

4.4.3 Contractors Respondent's position in the firm

Table 4.6: Individual assessment of Contractors' respondent's position in the firm.

Respondent's position	HIGH CLASS		MEDIUM CLASS		LOW CLASS	
	F	% F	F	%F	F	%F
Director	3	37.5	1	12.5	3	42.9
Project manager	1	12.5	3	37.5	2	28.6
Others	4	50	4	50	2	28.6
TOTAL	8		8		7	

Source; Author, (2017)

Where; F represents Frequency

Table 4.6 above shows the individual assessment of contractors' respondent's position in the firm, this was essential as it shows how each class was presented. The respondents were categorized into director, project manager and others (any other profession in construction industry). Results show that for higher class contractors, 37.5%, 12.5% and 50% of the respondents responded as directors, project manager and others respectively. For medium class contractors, 12.5%, 37.5% and 50% responded as director, project manager and others respectively. For lower class contractors, 42.9%, 28.6% and 28.6% responded as director, project manager and others respectively.

Table 4.7: Combined assessment of Contractors Respondent's position in the firm

Respondent's position	Frequency	% of Frequency
Director	7	30.4
Project manager	6	26.1
Others	10	43.5
Total	23	100

Source; Author, (2017)

Table 4.7 the researcher wanted to know respondent's position in the firm characteristics so as to draw the comparison among the respondents. Results show that 30.4% of the respondents were directors, 26.1% of the respondents were project managers and 43.5% of the respondents belonged to others (any other profession). This was done so as to weigh out and determine the consistency (agreement) in their opinions about this study as the position of the respondent will have an effect in answering the questions that followed.

From the results obtained, it shows that approximately all respondents' position groups are in the same level of frequency, no category is over 50%. Therefore the results obtained will be consistent and balanced.

4.5 Respondents' Project Planning Awareness

4.5.1 A person responsible for organizing and coordinating operational planning in the company

This category intends to oversee how the operational planning is done and who does the planning, this is essential as the position of a person in a company would affect ones way of planning.

Table 4.8: Individual assessment of a person responsible for organizing and coordinating operational planning

Category	HIGH CLASS		MEDIUM CLASS		LOW CLASS	
	F	% F	F	%F	F	%F
Chief executive/ Director	1	12.5	1	12.5	1	14.3
Contractors Project manager	2	25	2	25		
Others	5	62.5	5	62.5	6	85.7
TOTAL	8		8		7	

Source; Author, (2017)

Results show that for high class contractors, 12.5% use chief executive/ director, 25% use project managers and 62.5% use others for organizing and coordinating operational planning. For medium class contractors, 12.5% use chief executive/ director, 25% use project managers and 62.5% use others for organizing and coordinating operational planning. For low class contractors, 14.3% use chief executive/ director and 85.7% use others for organizing and coordinating operational planning in the firms.

Table 4.9: Combined assessment of Person responsible for organizing and coordinating operational planning

Category	Frequency	% of Frequency
Chief executive/ Director	3	13
Contractors project manager	4	17.4%
Others	16	69.6%
Total	23	100

Source; Author, (2017)

From the results in Table 4.9 above, respondents show that each company has its own strategy in assigning the person responsible for organizing and coordinating operational-planning.

From all the 23 contractors studied to determine people responsible for organizing and coordinating operation planning, results show that 13% are Directors, 69.6% are others (any other profession such as Quantity surveyors) and 17.4% are Project managers.

This study reveals that most contractors do not use the project managers for organizing and coordinating operation planning process while the few use project managers.

Organizations which have high structure and large workloads always opt for project managers but others do not hire project managers because of their small organizational structure purposely designed to reduce company overhead cost therefore this task is carried out by people who are not project managers.

This result conforms to Ibrahim, (2014) findings that responsibility of project planning in the contractors' organization should be headed by the contractors' project managers and not others. Contractors' organizations should provide all necessary resources that will enable the project manager to achieve project management success.

However, you can't say a project manager alone is sufficient to plan the project. In general everyone should participate in the planning process. Individuals involved include; project managers, Project management team, higher management (Directors), third party (sub-contractors) and others (Eshna, 2012)

4.5.2 Contribution of the operational plan to the accomplishment of purpose of the organization.

This category wants to determine how contractors perceive the contribution of operational planning to the accomplishment of the purpose of the organization.

Table 4.10: Individual assessment of contribution of operational plan to the accomplishment of purpose of the organization

Response	HIGH CLASS		MEDIUM CLASS		LOW CLASS	
	F	% F	F	%F	F	%F
Yes	6	75	5	62.5	6	85.7
No	2	25	3	37.5	1	14.3
TOTAL	8		8		7	

Source: Author, (2017)

The results above reveals that in high class 75% of the respondents perceive that operational plan contributes to the accomplishment of the purpose of the organization in a positive way while 25% do not agree. In medium class 62.5% of the respondents have positive perception of operational plan to the contribution of the accomplishment of the purpose of the organization while 37.5% do not agree. For low class 85.7% of the respondents agree that operational plan contributes to the accomplishment of the purpose of the organization while 14.3% do not agree. Among all classes, medium class has a large number of respondents who do not agree to the fact that operational plan is essential for the accomplishment of the purpose of the organization, this shows that in this class group many do not conform to project planning awareness.

Table 4.11: Combined assessment of Contribution of operational plan to the accomplishment of purpose of the organization

Response	Frequency	% of Frequency
Yes	17	73.9
No	6	26.1
Total	23	100

Source: Author, (2017)

Table 4.11 shows that 73.9% of the respondents agree that every operational plan must contribute to the accomplishment of purpose of the organization while 26.1% do not agree to this.

From the results, by examining whether or not the respondents agree to the contribution of the operational plan to the purpose and objectives in an organization, it shows that many are aware of the aspects of planning that in order to understand the nature of planning you have to examine its contribution to purpose and objectives in an organization.

Contractors should know that every operational plan is essential as they present highly detailed information specifically to direct people to perform the day to day tasks required in running the organization. This will enable them to be aware of project planning and its risks and to know the measures on how to handle those risks.

4.5.3 Awareness of the benefits of efficiency and effectiveness of operational plans.

This category intends to establish the awareness of the benefits of efficiency and effectiveness of operational plans and to oversee whether contractors are aware of this aspect of operational planning.

Table 4.12: Individual assessment of awareness of the benefits of efficiency and effectiveness of operational plans

	HIGH CLASS		MEDIUM CLASS		LOW CLASS	
	F	% F	F	%F	F	%F
Yes	6	75	5	62.5	7	100
No	2	25	3	37.5		
TOTAL	8		8		7	

Source: Author, (2017)

Results above reveal that 75% of high class contractors' respondents are aware of the benefits of efficiency and effectiveness of operational plans while 25% are not aware. 62.5% of medium class contractors are aware of the benefits of efficiency and effectiveness of operational plans while 37.5% are not aware and 100% of respondents from low class contractors are all aware of benefits of efficiency and effectiveness of operational plans.

Table 4.13: Combined assessment of Awareness of the benefits of efficiency and effectiveness of operational plans

	Frequency	% of Frequency
Yes	18	78.3
No	5	21.7
Total	23	100

Source; Author, (2017)

Table 4.13 shows that 78.3% of contractors' respondents are aware of the benefits of efficiency and effectiveness of operational plans while 21.7% are not aware of its benefits.

Efficiency and effectiveness are the aspects of planning where by efficiency deals with cost target while effectiveness deals with accomplishing goals and objectives set out in the plan.

From the results it shows that high percent of the contractors are aware of the benefits of these two aspects of planning, this is a good strategy as they will be able to achieve the purpose of the plan at a minimum cost by targeting on efficiency as well as achieving goals and objectives set out in the plan by targeting on effectiveness. This will enable them to be aware of project planning and its risks and to know the measures on how to handle those risks.

4.5.4 Alternative Emphases in Construction Planning

This intends to oversee the contractors focus while doing the operational planning; whether they focus on cost only, schedule only or both.

Table 4.14: Individual assessment on the focus of the firm while developing a construction plan

Category	HIGH CLASS		MEDIUM CLASS		LOW CLASS	
	F	% F	F	%F	F	%F
Focus on Cost only	1	12.5			3	42.9
Focus on Schedule of works only	2	25	1	12.5	1	14.3
Both Cost and Schedule of works	5	62.5	7	87.5	3	42.9
TOTAL	8		8		7	

Source: Author, (2017)

Results above reveal that, for high class contractors, 12.5% focus on cost only, 25% contractors focus on schedule of works only and 62.5% contractors focus on both cost and schedule of works. For medium class contractors, 12.5% contractors focus on schedule of works only and 87.5% contractors focus on both cost and schedule of works. For low class contractors, 42.9% focus on cost only, 14.3% contractors focus on schedule of works only and 42.9% contractors focus on both cost and schedule of works.

This shows that most contractors in all classes consider both cost and schedule of works while none of the medium class contractors consider cost only when developing a construction plan

Table 4.15: Combined assessment on the focus of the firm while developing a construction plan

Category	Frequency	% of Frequency
Focus on Cost only	4	17.4
Focus on Schedule of works only	4	17.4
Both Cost and Schedule of works	15	65.2
Total	23	100

Source; Author, (2017)

Table 4.15 shows that 17.4% of contractors focus on cost only, 17.4% of contractors focus on schedule of works only and 65.2% of contractors focus on both cost and schedule of works when developing a construction plan.

This result revealed that more than half (65%) of the contractors use both cost control and schedule of works during developing a construction plan. The benefits

from integration of schedule and cost information are particularly noticeable in materials control since delivery schedules are directly affected and bulk order discounts might be identified.

Cost oriented construction planning and control focuses upon the categories included in the final cost estimation. This focus is particular relevant for projects with few activities and considerable repetition.²⁰ Therefore the study also reveals that there are some few contractors (17.4%) who opt for cost oriented construction planning because their activities are small and of rather considerable repetition.

More generally, construction typically involves a deadline for work completion, so contractual agreements will force attention to schedules. Therefore other group of contractors (17.4%) opts only for schedule of works so as to meet the deadline for work completion. In this process, they forecast the time to complete particular activities.

4.6 Data Analyses for the Study Objectives

4.6.1 Objective 1: Risk handling strategies used in project planning in Tanzania.

Objective one aimed at examining the risk handling strategies used in project planning in Tanzania.

First of all, before examining risk handling strategies used by contractors in project planning, the researcher determined some potential risks during project planning and their level of severity. Literature review was used to determine the type of risks then an interview was done so as to know the risks that mostly occur. These risks were

²⁰ http://pmbook.ce.cmu.edu/12_Cost_Control,_Monitoring,_and_Accounting.html

then included in the questionnaire so as to determine their level of severity. These identified risks level of severity were then assessed by respondents.

4.6.1.1 Level of severity of risks during contractors' project planning in construction industry

This category intends to determine the intensity of risks that contractors face during project planning. This category is essential so as to make them aware of the intensity of risks and how to handle them.

Table 4.16: Level of Severity of Potential Risks during Project Planning

S/N	Potential risks during project planning	Mean	Std. Deviation	Ranking
1	Poor managerial Support (lack of decision makers in execution of plan, management that ignores reasoned words)	2.35	0.775	6
2	Estimate of time, cost and resource requirements is just a guess	2.39	0.722	5
3	Team members are inexperienced or having poor skills	2.48	0.730	2
4	Lack of / Poor Communication among team members	2.17	0.778	7
5	Low Decision Quality (Unclear decisions)	2.17	0.778	7
6	Organizational Change (re-structuring/merging of firm)	1.87	0.757	11
7	Inadequate method for Information gathering and management	2.17	0.778	7
8	Lack of planning knowledge	2.52	0.730	1
9	Misunderstanding nature of planning (Aspects of planning)	2.48	0.665	2
10	Lack of Focus on key project performance constraints	2.13	0.757	10
11	Unrealistic Expectations	2.48	0.665	2

Source; Author, (2017)

Table 4.16 shows the assessment of the level of severity of risks during contractors' project planning in Tanzania construction industry. The table shows weighted mean ranges of **(1.87 – 2.52)**. These results revealed that all the respondents' assessment were almost and above the score of 2 in the Likert scale. This shows that each of the respondents acknowledged that building contractors experienced risks during project planning at a severe level.

The 4 most severe risks during project planning are lack of planning knowledge (2.52), Unrealistic expectations (2.48), misunderstanding nature of planning (Aspects of planning) (2.48) and team members being inexperienced or having poor skills (2.48).

Other risks in the order of their severity include; Estimate of time, cost and resource requirements is just a guess (2.39), Poor managerial Support (lack of decision makers in execution of plan, management that ignores reasoned words) (2.35), Lack of / Poor Communication among team members (2.17), Low Decision Quality (Unclear decisions) (2.17), Inadequate method for Information gathering and management (2.17), Lack of Focus on key project performance constraints (2.13) and Organizational Change (re-structuring/ merging of firm) (1.87).

Also, the results of the respondents show low standard deviation values **(0.665 – 0.778)**, this shows that there is uniformity (consistency) in each of the contractors' respondents opinion.

4.6.1.2 Risk Handling Strategies Used in Project Planning by Building

Contractors in Tanzania

In this category the researcher examined the risk handling strategies used in project planning by building contractors in Tanzania by using the guidance of identified potential risks and their severity. The researcher examined particular strategies used in a certain type of risks and identified the ones that are most preferred to the ones least preferred.

The table below shows the results obtained from respondents' opinions expressed in percentage.

i. High Class Contractors

Table 4.17: Risk Handling Strategies used in Project Planning by High class contractors

S/N	RISKS IN PROJECT PLANNING	AVOID			TRANSFER			MITIGATE			ACCEPT		
		MP	LP	NPA	MP	LP	NPA	MP	LP	NPA	MP	LP	NPA
1	Poor managerial Support (lack of decision makers in execution of plan, management that ignores reasoned words)	50	0	50	50	25	25	25	62.5	12.5	37.5	50	12.5
2	Estimate of time, cost and resource requirements is just a guess	50	12.5	37.5	37.5	25	37.5	50	12.5	37.5	50	25	25
3	Team members are inexperienced or having poor skills	25	25	50	37.5	25	37.5	12.5	50	37.5	25	37.5	37.5
4	Lack of /Poor Communication among team members	37.5	25	37.5	25	37.5	37.5	37.5	25	37.5	62.5	25	12.5

S/N	RISKS IN PROJECT PLANNING	AVOID			TRANSFER			MITIGATE			ACCEPT		
		MP	LP	NPA	MP	LP	NPA	MP	LP	NPA	MP	LP	NPA
5	Low Decision Quality (Unclear decisions)	50	37.5	12.5	25	62.5	12.5	12.5	50	37.5	75	25	0
6	Organizational Change (re-structuring/merging of firm)	37.5	37.5	25	37.5	50	12.5	37.5	25	37.5	37.5	50	12.5
7	Inadequate method for Information gathering and management	25	25	50	50	37.5	12.5	12.5	37.5	50	37.5	62.5	0
8	Lack of planning knowledge	50	0	50	37.5	62.5	25	12.5	62.5	25	62.5	12.5	25
9	Misunderstanding nature of planning (Aspects of planning)	37.5	25	37.5	25	50	25	12.5	37.5	50	25	50	25
10	Lack of Focus on key project performance constraints	37.5	50	12.5	62.5	12.5	25	25	37.5	37.5	37.5	25	37.5
11	Unrealistic Expectations	37.5	25	37.5	25	50	25	12.5	37.5	50	25	50	25

Source; Author, (2017)

Where; MP = MOST PREFERRED
 LP = LEAST PREFERRED
 NPA = NOT PREFERRED AT ALL

Table 4.18: Summary of Risk Handling Strategies applied by High class contractors

S/N	RISKS IN PROJECT PLANNING	RISK HANDLING STRATEGIES		
		MOST PREFERRED	LEAST PREFERRED	NOT PREFERRED AT ALL
1	Poor managerial Support (lack of decision makers in execution of plan, management that ignores reasoned words)	Transfer	Mitigate	Avoid
2	Estimate of time, cost and resource requirements is just a guess	Mitigate	Transfer	Avoid
3	Team members are inexperienced or having poor skills	Transfer	Mitigate	Avoid
4	Lack of / Poor Communication among team members	Accept	Transfer	Avoid
5	Low Decision Quality (Unclear decisions)	Accept	Transfer	Mitigate
6	Organizational Change (re-structuring/merging of firm)	Avoid	Transfer Accept	Mitigate
7	Inadequate method for Information gathering and management	Transfer	Accept	Avoid Mitigate
8	Lack of planning knowledge	Accept	Transfer Mitigate	Avoid
9	Misunderstanding nature of planning (Aspects of planning)	Avoid	Transfer Accept	Mitigate
10	Lack of Focus on key project performance constraints	Transfer	Avoid	Mitigate Accept
11	Unrealistic Expectations	Avoid	Transfer Accept	Mitigate

Source; Author, (2017)

Discussion:

Organization response to these strategies;

The study reveals that the order of preferred strategies by high class contractors are transfer, accept, avoid and mitigate respectively.

Generally, most activities done by high class contractors have large financial impact therefore the most preferred strategy used is to **transfer** the risks to the third party e.g. by purchasing insurance, subcontracting and others. However, the strategy that happens to be not preferred at all often is to **avoid** because it is not easy to avoid the project as it has reached the post contract stage.

ii. Medium Class Contractors

Table 4.19: Risk Handling Strategies used in Project Planning by Medium class contractors

S/N	RISKS IN PROJECT PLANNING	AVOID			TRANSFER			MITIGATE			ACCEPT		
		MP	LP	NP A	MP	LP	NP A	MP	LP	NP A	MP	LP	NP A
1	Poor managerial Support (lack of decision makers in execution of plan, management that ignores reasoned words)	25	37.5	37.5	50	37.5	12.5	25	37.5	37.5	25	25	50
2	Estimate of time, cost and resource requirements is just a guess	25	25	50	50	37.5	12.5	12.5	50	37.5	25	37.5	37.5
3	Team members are inexperienced or having poor skills	12.5	37.5	50	50	25	25	50	25	25	37.5	37.5	25
4	Lack of /Poor Communication among team members	12.5	0	87.5	37.5	50	12.5	25	62.5	12.5	37.5	50	12.5
5	Low Decision Quality (Unclear decisions)	37.5	25	37.5	50	12.5	37.5	25	62.5	12.5	25	37.5	37.5

S/N	RISKS IN PROJECT PLANNING	AVOID			TRANSFER			MITIGATE			ACCEPT		
		MP	LP	NP A	MP	LP	NP A	MP	LP	NP A	MP	LP	NP A
6	Organizational Change (re-structuring/merging of firm)	25	25	50	37.5	37.5	25	25	37.5	37.5	25	50	25
7	Inadequate method for Information gathering and management	12.5	37.5	50	50	25	25	25	37.5	37.5	37.5	50	12.5
8	Lack of planning knowledge	12.5	25	62.5	37.5	25	37.5	25	50	25	37.5	25	37.5
9	Misunderstanding nature of planning (Aspects of planning)	37.5	12.5	50	50	12.5	37.5	37.5	50	12.5	25	37.5	37.5
10	Lack of Focus on key project performance constraints	25	25	50	75	0	25	25	12.5	62.5	25	37.5	37.5
11	Unrealistic Expectations	12.5	50	37.5	50	25	25	25	37.5	37.5	37.5	0	62.5

Source; Author, (2017)

Where; MP = MOST PREFERRED

LP = LEAST PREFERRED

NPA = NOT PREFERRED AT ALL

Table 4.20: Summary of Risk Handling Strategies applied by Medium class contractors

S/N	RISKS IN PROJECT PLANNING	RISK HANDLING STRATEGIES		
		MOST PREFERRED	LEAST PREFERRED	NOT PREFERRED AT ALL
1	Poor managerial Support (lack of decision makers in execution of plan, management that ignores reasoned words)	Transfer	Avoid Mitigate	Accept
2	Estimate of time, cost and resource requirements is just a guess	Transfer	Mitigate	Avoid
3	Team members are inexperienced or having poor skills	Transfer Mitigate	Accept	Avoid
4	Lack of / Poor Communication among team members	Transfer Accept	Mitigate	Avoid
5	Low Decision Quality (Unclear decisions)	Transfer	Mitigate	Avoid Accept
6	Organizational Change (re-structuring/ merging of firm)	Transfer	Accept	Avoid
7	Inadequate method for Information gathering and management	Transfer	Accept	Avoid
8	Lack of planning knowledge	Transfer Accept	Mitigate	Avoid
9	Misunderstanding nature of planning (Aspects of planning)	Transfer	Mitigate	Avoid
10	Lack of Focus on key project performance constraints	Transfer	Accept	Mitigate
11	Unrealistic Expectations	Transfer	Avoid	Accept

Source; Author, (2017)

Discussion:**Organization response to these strategies;**

The study reveals that the order of preferred strategies by medium class contractors are transfer, mitigate, accept and avoid respectively.

Generally, activities done by medium class contractors have also large financial impact therefore the most preferred strategy used is to **transfer** the risks to the third party and there are activities with a high likelihood of occurring, but financial impact is small therefore they use mitigation to handle risks that might occur during project planning. However, the strategy that happens to be not preferred at all often is to **avoid** because it is not easy to avoid the project as it has reached the post contract stage.

iii. Low Class Contractors

Table 4.21: Risk Handling Strategies used in Project Planning by Low class contractors

S/N	RISKS IN PROJECT PLANNING	AVOID			TRANSFER			MITIGATE			ACCEPT		
		MP	LP	NPA	MP	LP	NPA	MP	LP	NPA	MP	LP	NPA
1	Poor managerial Support (lack of decision makers in execution of plan, management that ignores reasoned words)	0	42.9	57.1	42.9	42.9	14.3	28.6	28.6	42.9	42.9	42.9	14.3
2	Estimate of time, cost and resource requirements is just a guess	28.6	42.9	28.6	28.6	57.1	14.3	14.3	42.9	42.9	42.9	14.3	42.9
3	Team members are inexperienced or having poor skills	42.9	28.6	28.6	28.6	28.6	42.9	28.6	57.1	14.3	14.3	42.9	42.9
4	Lack of /Poor Communication among team members	28.6	42.9	28.6	28.6	57.1	14.3	14.3	57.1	28.6	28.6	42.9	28.6

S/N	RISKS IN PROJECT PLANNING	AVOID			TRANSFER			MITIGATE			ACCEPT		
		MP	LP	NPA	MP	LP	NPA	MP	LP	NPA	MP	LP	NPA
5	Low Decision Quality (Unclear decisions)	42.9	42.9	14.3	28.6	42.9	28.6	57.1	42.9	0	42.9	42.9	14.3
6	Organizational Change (re-structuring/merging of firm)	28.6	28.6	42.9	42.9	14.3	42.9	57.1	28.6	14.3	28.6	71.4	0
7	Inadequate method for Information gathering and management	14.3	42.9	42.9	42.9	28.6	28.9	0	57.1	42.9	28.6	57.1	14.3
8	Lack of planning knowledge	14.3	14.3	71.4	28.6	28.6	42.9	28.6	28.6	42.9	28.6	57.1	14.3
9	Misunderstanding nature of planning (Aspects of planning)	28.6	28.6	42.9	14.3	57.1	28.6	71.4	0	28.6	28.6	42.9	28.6
10	Lack of Focus on key project performance constraints	14.3	85.7	0	42.9	42.9	14.3	0	85.7	14.3	28.6	57.1	14.3
11	Unrealistic Expectations	42.9	28.6	28.6	14.3	28.6	57.1	42.9	14.3	42.9	14.3	28.6	57.1

Source; Author, (2017)

Where; MP = MOST PREFERRED

LP = LEAST PREFERRED

NPA = NOT PREFERRED AT ALL

Table 4.22: Summary of Risk Handling Strategies applied by Low class contractors

S/N	RISKS IN PROJECT PLANNING	RISK HANDLING STRATEGIES		
		MOST PREFERRED	LEAST PREFERRED	NOT PREFERRED AT ALL
1	Poor managerial Support (lack of decision makers in execution of plan, management that ignores reasoned words)	Transfer Accept		Avoid
2	Estimate of time, cost and resource requirements is just a guess	Accept	Transfer	Mitigate
3	Team members are inexperienced or having poor skills	Avoid	Mitigate	Transfer Accept
4	Lack of / Poor Communication among team members	Accept	Transfer Mitigate	Avoid
5	Low Decision Quality (Unclear decisions)	Mitigate	Avoid Accept	Transfer
6	Organizational Change (re-structuring/ merging of firm)	Mitigate	Accept	Avoid Transfer
7	Inadequate method for Information gathering and management	Transfer	Accept Mitigate	Avoid
8	Lack of planning knowledge	Transfer Mitigate	Accept	Avoid
9	Misunderstanding nature of planning (Aspects of planning)	Mitigate	Transfer	Avoid
10	Lack of Focus on key project performance constraints	Transfer	Mitigate Avoid	Accept
11	Unrealistic Expectations	Mitigate	Avoid	Transfer Accept

Source; Author, (2017)

Discussion:**Organization response to these strategies;**

The study reveals that the order of preferred strategies by low class contractors is mitigate, transfer, accept and avoid respectively.

Generally, activities done by low class contractors have a high likelihood of occurring, but financial impact is small therefore they use **mitigation** to handle risks that might occur during project planning. However, the strategy that happens to be not preferred at all is to **avoid** because it is not easy to avoid the project as it has reached the post contract stage.

Table 4.23: Combined Results of Risk Handling Strategies used in Project

Planning

S/N	RISKS IN PROJECT PLANNING	AVOID			TRANSFER			MITIGATE			ACCEPT		
		MP	LP	NPA	MP	LP	NPA	MP	LP	NPA	MP	LP	NPA
1	Poor managerial Support (lack of decision makers in execution of plan, management that ignores reasoned words)	26.1	26.1	47.8	47.8	34.8	17.4	26.1	43.5	39.1	34.8	39.1	26.1
2	Estimate of time, cost and resource requirements is just a guess	34.8	26.1	39.1	39.1	39.1	21.7	26.1	34.8	39.1	39.1	26.1	34.8
3	Team members are inexperienced or having poor skills	26.1	30.4	43.5	39.1	26.1	34.8	30.4	43.5	26.1	26.1	39.1	34.8
4	Lack of /Poor Communication among team members	26.1	21.7	52.2	30.4	47.8	21.7	26.1	47.8	26.1	43.3	39.1	17.4

S/N	RISKS IN PROJECT PLANNING	AVOID			TRANSFER			MITIGATE			ACCEPT		
		MP	LP	NPA	MP	LP	NPA	MP	LP	NPA	MP	LP	NPA
5	Low Decision Quality (Unclear decisions)	43.5	34.8	21.7	34.8	39.1	26.1	30.4	52.2	17.4	47.8	34.8	17.4
6	Organizational Change (re-structuring/merging of firm)	30.4	30.4	39.1	39.1	34.8	26.1	39.1	30.4	30.4	30.4	56.5	13.0
7	Inadequate method for Information gathering and management	17.4	34.8	47.8	47.8	30.4	21.7	13.0	43.5	43.5	34.8	56.5	8.7
8	Lack of planning knowledge	26.1	13.0	60.9	34.8	34.8	30.4	21.7	47.8	30.4	43.5	30.4	26.1
9	Misunderstanding nature of planning (Aspects of planning)	34.8	17.4	47.8	30.4	34.8	34.8	43.5	30.4	26.1	39.1	26.1	34.8
10	Lack of Focus on key project performance constraints	26.1	52.2	21.7	60.9	17.4	21.7	17.4	43.5	39.1	30.4	39.1	30.4
11	Unrealistic Expectations	30.4	34.8	34.8	30.4	34.8	34.8	26.1	30.4	43.5	26.1	26.1	47.8

Source; Author, (2017)

Where; MP = MOST PREFERRED

LP = LEAST PREFERRED

NPA = NOT PREFERRED AT ALL

From table 4.23 more detailed information was obtained by summarizing the results shown in the table. The researcher chose the strategy with the highest percentage in each category (most preferred, least preferred and not preferred at all); the strategy

with the highest percentage was then considered to be the most applied in a specific category. The results were summarized and tabulated as shown in table 4.24 below;

Table 4.24: Summary of Risk Handling Strategies applied by Contractors to risks in project planning

S/N	RISKS IN PROJECT PLANNING	RISK HANDLING STRATEGIES		
		MOST PREFERRED	LEAST PREFERRED	NOT PREFERRED AT ALL
1	Poor managerial Support (lack of decision makers in execution of plan, management that ignores reasoned words)	Transfer	Mitigate	Avoid
2	Estimate of time, cost and resource requirements is just a guess	Transfer	Transfer	Avoid Mitigate
3	Team members are inexperienced or having poor skills	Transfer	Mitigate	Avoid
4	Lack of / Poor Communication among team members	Accept	Transfer Mitigate	Avoid
5	Low Decision Quality (Unclear decisions)	Accept	Mitigate	Transfer
6	Organizational Change (re-structuring/merging of firm)	Transfer Mitigate	Accept	Avoid
7	Inadequate method for Information gathering and management	Transfer	Accept	Avoid
8	Lack of planning knowledge	Accept	Mitigate	Avoid
9	Misunderstanding nature of planning (Aspects of planning)	Mitigate	Transfer	Avoid
10	Lack of Focus on key project performance constraints	Transfer	Avoid	Mitigate
11	Unrealistic Expectations	Avoid Transfer	Avoid Transfer	Accept

Source; Author, (2017)

Discussion;

Table 4.24 shows the risks in project planning and the applied strategies to each risk.

The study reveals that all strategies (avoid, transfer, mitigate and accept) are used by

the building contractors and each depending on the type of risk as well as the severity of each risk.

The following are the risks and their preferred risk handling strategies as established from the study.

NB: The suggested methods are as per the context of findings; other ways can be used to handle the same type of risk using the same risk handling strategy.

- i. Risk of Poor managerial Support (lack of decision makers in execution of plan and management that ignores reasoned words). The most preferred risk handling strategy is *transfer*. Example; the planning team opt to transfer the management of risks to the management its self. The other preferred risk handling strategy is *mitigating*. Example; by involving and reminding the management for their support in decision making.
- ii. Risk of the estimate of time, cost and resource requirements is just a guess. The most preferred strategy is risk *transfer*. Example by entering into a contract with subcontractor to perform a specific task..
- iii. Risk of are inexperienced team members or having poor skills. The most preferred strategy is risk *transfer*. Example; the project manager may choose the different team to perform the planning process. Other strategy used in this type of risk is *mitigating*. Example; the team members may be provided with training.

- iv. Risk of Lack of / Poor Communication among team members. The most preferred strategy is to *accept* the risk. Example; the project manager should be aware that this might happen and decides to deal with it if it does. Project manager should communicate with the team on what they are going to do, why they are doing it, how people will be involved in the process, and the expected timelines. The other strategies preferred are *Transfer* by choosing the different team to perform the planning process or to *mitigate* by providing updates on regular bases on what is going to happen and let the team members to learn and understand each other so as to easier communication among themselves.
- v. Risk of Low Decision Quality (Unclear decisions). The most preferred strategy is to *accept* the risk. Example; Accepting the risk and deal with it once it occurs by determining the causes of low decision quality and then framing the decisions appropriately. The other preferred strategy is to *mitigate*. Example; the impact of the risk can be limited by involving the right people in the right way and make sure their skills align with the task.
- vi. Risk of Organizational Change (re-structuring/ merging of firm). The most preferred strategies are to *Transfer and Mitigating* the risks. Example; this can be done by transferring the risk through involving the organization management and making it guide the planning team through the organizational change by expanding communication channels between the organization managers and the planning team. Also this type

of risk can be mitigated through making the team members to push harder and work smarter as well as asking them for commitment. The other preferred strategy is *acceptance*. Whereby, the team members in the planning project should be prepared for change.

- vii. Risk of Inadequate method for Information gathering and management. The most preferred strategy is *transfer*. Example; using contractual claims. Also the client should be involved by providing all the information in his/her possession that pertains to the site and any other information that could be reasonably obtained. The other preferred strategy is *acceptance*. Example; Contractors and their counsel should accept that this might happen and decide to deal with it when it does by carefully evaluating their contracts, the information available to them, and the scope and timing of any requests for information, before deciding to stop work under a contract.
- viii. Risk of Lack of planning knowledge. The most preferred strategy is *acceptance*. Example; in case of lack of planning knowledge the planning team should make sure that it obtains necessary and the needed knowledge to perform the planning process. There should be no room for avoiding the task rather to face it. The other preferred strategy is to *mitigate*. Example; the project manager should ensure that the planning team gets enough training so as to gain more knowledge in planning.
- ix. Risk of Misunderstanding nature of planning (Aspects of planning). The most preferred strategy is to *mitigate*. Example; Limiting the impact of the risk by providing training to the planning team so as to make them

aware of the aspects of planning and understand the nature of the planning process. The other preferred strategy is to *transfer*. Example; the project manager should involve the senior management in the planning process because the senior management has full and detailed strategic plan if the organization. This will enable the project planning team understand fully the nature of planning of their organization.

- x. Risk of Lack of Focus on key project performance constraints. The most preferred strategy is to *transfer*. Example; when the contractor's planning team lack focus on the project constraints which are schedule, cost and scope; they should then transfer the management of risk by entering into contract with other party e.g. subcontractor so as to perform the task. The other preferred strategy is to *avoid*. Example; the contractor's project planning team should completely remove the task by not dealing with it so as to avoid the risk.
- xi. Risk of Unrealistic Expectations. The most preferred strategy is to *avoid*. Example; when the project planning team does not have realistic expectations, the best way is to remove the task completely so as to avoid making the company to undergo loss. The other preferred strategy is to *transfer*. Example; the contactors may have unrealistic expectations that every task should be perfect and planned accordingly, this is one of the biggest risks and can be handled by involving an insurance company which will take care of all uncertainties that might occur.

Generally:**Overall organization response to these strategies;**

The study reveals that the order of preferred strategies by contractors in descending manner is transfer, mitigate, accept and avoid respectively.

They **transfer** the risks to the third party so as to reduce the impact; they do this because construction projects have large financial impact.

They **mitigate** the risks when there are activities with a high likelihood of occurring, but financial impact is small therefore they use management control systems to reduce the risk of potential loss.

They **accept** the risks when the cost to mitigate risk is higher than cost to bear the risk.

However, the strategy that happens to be not preferred at all often is **avoid** because it is not easy to avoid the project as it has reached the post contract stage.

4.6.2 Objective 2: To assess the extent to which Risk Handling strategies are used.

Objective 2 aimed at assessing the extent to which Risk Handling strategies are used. Refer to table 4.23 which depicts the extent to which each of the strategy is used expressed in terms of percentage. By using the results obtained from table 4.24, the values of percent are placed against the proposed risk handling strategies so as to assess the extent to which these strategies are used. The table below shows the extent to which each of the strategy is used as expressed in terms of percentage.

Table 4.25: Assessing the extent to which Risk Handling Strategies are used

S/N	RISKS IN PROJECT PLANNING	EXTENT OF USAGE IN PERCENTAGE	
		MOST PREFERRED	LEAST PREFERRED
1	Poor managerial Support (lack of decision makers in execution of plan, management that ignores reasoned words)	Transfer = 47.8%	Mitigate = 43.5%
2	Estimate of time, cost and resource requirements is just a guess	Transfer = 34.8%	
3	Team members are inexperienced or having poor skills	Transfer = 39.1%	Mitigate = 43.5%
4	Lack of / Poor Communication among team members	Accept = 43.5%	Transfer = 47.8% Mitigate = 47.8%
5	Low Decision Quality (Unclear decisions)	Accept = 47.8%	Mitigate = 52.2%
6	Organizational Change (re-structuring/merging of firm)	Transfer = 39.1% Mitigate = 39.1%	Accept = 56.5%
7	Inadequate method for Information gathering and management	Transfer = 47.8%	Accept = 56.5%
8	Lack of planning knowledge	Accept = 43.5%	Mitigate = 47.8%
9	Misunderstanding nature of planning (Aspects of planning)	Mitigate = 43.5%	Transfer = 34.8%
10	Lack of Focus on key project performance constraints	Transfer = 60.9%	Avoid = 52.2%
11	Unrealistic Expectations	Avoid = 30.4% Transfer = 30.4%	Avoid = 34.8% Transfer = 34.8%

Source; Author, (2017)

Discussion;

Results above reveal that its obvious that the risk handling strategies are used but at a very low extent because most values shown are below the average value of 50%. This show that contractors apply strategies to handle risks that occur during project planning but the application of these strategies is not enough and hence more emphasize is needed to have a high extent of their usage.

Also from table 4.25 the strategies have been assessed to determine the number of times they have appeared to be used in various risks. This was done by counting them and the number of occurrence are shown below;

- xii. Transfer appeared 10 times
- xiii. Mitigate appeared 7 times
- xiv. Accept appeared 6 times
- xv. Avoid appeared 3 times

This reveals that transfer is the most used risk handling strategy followed by mitigation, acceptance and lastly avoidance which appears to the least used risk handling strategy during project planning.

Moreover further observations have been made by using the means obtained from the level of preferences (1= Most preferred, 2 = Least preferred and 3 = Not preferred at all) and results revealed that Transfer is the most preferred strategy having an average mean score of **1.87** while Avoidance is the least preferred strategy having an average mean score of **2.12**. These results are displayed in table 4.26.

To sum up, all these observations reveal that even though risk handling strategies are used in project planning by building contractors in Tanzania, still their application is at low level and hence there should be an increase in their extent of usage.

However, risk transfer appears to be the most considered applied risk handling strategy while risk avoidance is the least considered risk handling strategy to be applied.

Table 4.26: Extent to which Risk Handling Strategies are used

S/N	RISKS IN PROJECT PLANNING	MEAN			
		AVOID	TRANSFER	MITIGATE	ACCEPT
1	Poor managerial Support (lack of decision makers in execution of plan, management that ignores reasoned words)	2.22	1.70	2.04	1.91
2	Estimate of time, cost and resource requirements is just a guess	2.04	1.83	2.13	2.15
3	Team members are inexperienced or having poor skills	2.17	1.96	1.96	2.09
4	Lack of / Poor Communication among team members	2.26	1.91	2.00	1.74
5	Low Decision Quality (Unclear decisions)	1.78	1.91	1.71	1.70
6	Organizational Change (re-structuring/ merging of firm)	2.09	1.87	1.91	1.83
7	Inadequate method for Information gathering and management	2.30	1.74	2.30	1.74
8	Lack of planning knowledge	2.35	1.96	1.09	2.15
9	Misunderstanding nature of planning (Aspects of planning)	2.13	2.04	1.83	2.10
10	Lack of Focus on key project performance constraints	1.96	1.61	2.22	2.00
11	Unrealistic Expectations	2.04	2.04	2.17	2.22
	AVERAGE	2.12	1.87	1.94	1.97

Source; Author, (2017)

4.6.3 Objective 3: Challenges faced in applying the strategies.

Objective 3 aimed at identifying challenges faced in applying risk handling strategies during contractors' project planning in Tanzania construction industry. Literature review was done so as to identify possible challenges encountered in application of the strategies whenever risks arise during project planning. The identified challenges level of severity and agreement were then assessed by the respondents.

Table 4.27: Individual assessment on challenges faced in application of the strategies

S/N	CHALLENGES	HIGH CLASS			MEDIUM CLASS			LOW CLASS		
		Mean	Std. Deviation	Ranking	Mean	Std. Deviation	Ranking	Mean	Std. Deviation	Ranking
1	Sometimes implementation of a risk handling strategy may introduce more risk into the project than it removes	2.25	1.035	4	3.13	0.835	2	3.00	0.00	3
2	A lack of risk decision making structure and lack of accountability for risk decisions in an organization	3.13	0.991	2	3.13	0.835	2	3.29	0.488	2
3	A lack of risk - ware culture.	3.13	0.991	2	3.13	0.835	2	2.71	0.951	4
4	Each strategy could involve expenditure of additional time, cost or resource	3.36	0.518	1	3.13	0.354	1	3.43	0.535	1

Source; Author, (2017)

Results above show challenges faced in applying risk handling strategies during contractors' project planning in Tanzania construction industry by assessing high class, medium class and low class contractors separately. Table 4.27 shows weighted mean ranges of (2.25 – 3.36), (3.13 -3.13) and (2.71 – 3.43) for high class contractors, medium class contractors and low class contractors respectively.

By looking at each category separately, results revealed in each category all the respondents' assessment were almost and above the score of 3 in the Likert scale. This shows that each of the respondents acknowledged that building contractors experienced challenges while applying risk handling strategies during project planning.

However, the results of each of the respondents standard deviation show low values of (0.518 – 1.035), (0.354 – 0.835) and (0.00 – 0.951) for high class contractors, medium class contractors and low class contractors respectively, this shows that there is uniformity (consistency) in each of the contractors' respondents opinion. This confirms that all contractors in planning of building projects acknowledged that all the assessed challenges are definitely experienced.

Table 4.28: Combined results on Challenges faced in applying the strategies

S/N	CHALLENGES	Mean	Std. Deviation	Ranking
1	Sometimes implementation of a risk handling strategy may introduce more risk into the project than it removes	2.78	0.850	4
2	A lack of risk decision making structure and lack of accountability for risk decisions in an organization	3.17	0.778	2
3	A lack of risk -ware culture.	3.00	0.905	3
4	Each strategy could involve expenditure of additional time, cost or resource	3.30	0.470	1

Source; Author, (2017)

Table 4.28 identifies the challenges faced in applying risk handling strategies during contractors' project planning in Tanzania construction industry. The table shows weighted mean ranges of **(2.78 – 3.30)**. These results revealed that all the respondents' assessment were almost and above the score of 3 in the Likert scale. This shows that each of the respondents acknowledged that building contractors experienced challenges while applying risk handling strategies during project planning.

The severity of challenges were ranked in descending order and these are; Each strategy could involve expenditure of additional time, cost or resource (3.30), Lack of risk decision making structure and lack of accountability for risk decisions in an organization (3.17), Lack of risk -ware culture (3.00) and Sometimes implementation of a risk handling strategy may introduce more risk into the project than it removes (2.78).

Moreover, the results of each of the respondents standard deviation show low values **(0.470– 0.905)**, this means that there is uniformity (consistency) in each of the contractors' respondents opinion. This confirms that all contractors in planning of building projects acknowledged that all the assessed challenges are definitely experienced.

4.6.4 Objective 4: Measures that will enhance application of the strategies

Objective 4 aimed at identifying suggested measures that will enhance application of risk handling strategies during project planning. This study used a thorough literature search to identify measures to enhance application of risk handling strategies and requested respondents to assess their level of importance in attaining the enhancement of application of the strategies.

Table 4.29: Individual results of Suggested measures to enhance application of Risk Handling strategies

	CHALLENGES	HIGH CLASS		MEDIUM CLASS		LOW CLASS	
		Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
1	The organization should be prepared to spend the required time, money or effort in responding to identified risks	3.50	0.535	3.25	0.463	3.00	0.577
2	It is important to be sure that the amount of expenditure is appropriate to the size of risk	3.13	0.641	3.13	0.641	3.43	0.535
3	Once strategies have been developed, each should be assigned to an owner for ensuring the effective implementation of the agreed response.	2.75	1.165	3.13	0.835	1.86	1.069
4	It is important to build and retain co-operation and consensus, seeking to avoid contractual wrangling or the placing of blame	3.00	0.756	3.25	0.707	3.00	0.816
5	The necessary resources should be provided to enable the strategies to be applied	3.13	0.835	3.25	0.463	3.00	0.816
6	The project manager should monitor the status of risk handling strategies regularly	3.38	0.518	3.50	0.535	2.86	1.069

Results show the suggested measures that will enhance application of risk handling strategies during project planning by assessing high class, medium class and low class contractors separately. The table shows weighted mean ranges of (2.75 – 3.50), (3.13 -3.50) and (1.86 – 3.43) for high class contractors, medium class contractors and low class contractors respectively.

By looking at each category separately, results revealed in high class and medium class category respondents' assessment were almost and above the score of 3 in the Likert scale, this shows that each of the respondents acknowledged that building contractors concur to the suggested measures to improve the application of risk handling strategies.

However, the results of each of the respondents standard deviation show low values of (0.518 – 1.165), (0.463 – 0.835) and (0.535 – 1.069) for high class contractors, medium class contractors and low class contractors respectively, this shows that there is uniformity (consistency) in each of the contractors' respondents opinion.

Table 4.30: Combined results to show Suggested measures to enhance application of Risk Handling strategies

S/N	SUGGESTED MEASURES	Mean	Std. Deviation	Ranking
1	The organization should be prepared to spend the required time, money or effort in responding to identified risks	3.26	0.541	1
2	It is important to be sure that the amount of expenditure is appropriate to the size of risk	3.22	0.600	3
3	Once strategies have been developed, each should be assigned to an owner for ensuring the effective implementation of the agreed response.	2.61	1.118	6
4	It is important to build and retain co-operation and consensus, seeking to avoid contractual wrangling or the placing of blame	3.09	0.733	5
5	The necessary resources should be provided to enable the strategies to be applied.	3.13	0.694	4
6	The project manager should monitor the status of risk handling strategies regularly	3.26	0.752	1

Source; Author, (2017)

Table 4.30 shows the suggested measures that will enhance application of risk handling strategies during project planning. The table shows weighted mean ranges of (2.61 – 3.26) and these results revealed that all the respondents' assessment were almost and above the score of 3 in the Likert scale. This shows that each of the respondents agreed to the suggested measures and that if considered they will enhance and improve the application of risk handling strategies during the planning of projects.

The measures established ranked in descending order are; The project manager should monitor the status of risk handling strategies regularly (3.26); The organization should be prepared to spend the required time, money or effort in responding to identified risks (3.26); It is important to be sure that the amount of expenditure is appropriate to the size of risk (3.22); The necessary resources should be provided to enable the strategies to be applied (3.13); It is important to build and retain co-operation and consensus, seeking to avoid contractual wrangling or the placing of blame (3.09); and Once strategies have been developed, each should be assigned to an owner for ensuring the effective implementation of the agreed response (2.61).

Moreover, the results of each of the respondents standard deviation show low values (**0.541– 1.118**), this shows that there is uniformity (consistency) in each of the contractors' respondents opinion. This confirms that all suggested measures are very important and they should be used so as to improve the application of risk handling strategies during project planning.

4.7 Chapter Summary

This chapter explained the overall data analysis and its presentation. The chapter showed the respondents' characteristics, response to questionnaires; demographic profiles of respondents, contractor's respondents' position in the firms as well as it analyzed the objectives of the study and discussed the findings. The mode of presenting data used was the tables.

4.7.1 Summary of findings

This study presents the following as summary of its key findings;

- i. Table 4.16 shows the assessment of the level of severity of risks during contractors' project planning in Tanzania construction industry. The 4 most severe risks during project planning are; lack of planning knowledge, Unrealistic expectations, misunderstanding nature of planning (Aspects of planning) and team members being inexperienced or having poor skills. Other risks in order of their severity include; Estimate of time, cost and resource requirements is just a guess, Poor managerial Support (lack of decision makers in execution of plan, management that ignores reasoned words), Lack of / Poor Communication among team members, Low Decision Quality (Unclear decisions), Inadequate method for Information gathering and management, Lack of Focus on key project performance constraints and Organizational Change (re-structuring/ merging of firm).
- ii. The preferred strategies by contractors in descending order are transfer, mitigate, accept and avoid respectively. They **transfer** the risks to the third party so as to reduce the impact; they do this because construction projects have large financial impact. They **mitigate** the risks when there are activities with a high likelihood of occurring, but financial impact is small therefore they use management control systems to reduce the risk of potential loss. They **accept** the risks when the cost to mitigate risk is higher than cost to bear the risk. However, the strategy that happens to be not preferred at all often is **avoid** because it is not easy to avoid the project as it has reached the post contract stage.

- iii. Study reveals that transfer is the most used risk handling strategy followed by mitigation, acceptance and lastly avoidance which appears to be the least used risk handling strategy during project planning.
- iv. The severity of challenges faced in applying risk handling strategies in project planning were ranked in descending order and these are; Each strategy could involve expenditure of additional time, cost or resource, Lack of risk decision making structure and lack of accountability for risk decisions in an organization, Lack of risk -aware culture and Sometimes implementation of a risk handling strategy may introduce more risk into the project than it removes.
- v. The measures that will enhance application of the strategies ranked in descending order are; The project manager should monitor the status of risk handling strategies regularly The organization should be prepared to spend the required time, money or effort in responding to identified risks; It is important to be sure that the amount of expenditure is appropriate to the size of risk; The necessary resources should be provided to enable the strategies to be applied; It is important to build and retain co-operation and consensus, seeking to avoid contractual wrangling or the placing of blame; and Once strategies have been developed, each should be assigned to an owner for ensuring the effective implementation of the agreed response.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter is concerned with the results that have been revealed from the previous chapter on issues related to this study. This study aimed at assessing the application of risk handling strategies in project planning by building contractors in Tanzania. The study set four objectives to achieve its aim. The study objectives determine the data collection methods and analysis used. The data analyzed were subsequently interpreted in line with the study objectives. This study used a pragmatic approach (mixed approach) because it incorporates all elements of qualitative and quantitative approach. The research design adopted is descriptive and diagnostic research studies. The study objectives were To examine risk handling strategies applied in project planning in Tanzania; To assess as to what extent the strategies are used; To identify challenges faced in applying the strategies; To suggest measures that will enhance application of the strategies. This study was able to achieve its stated objectives

5.3 Conclusion

This study used literature review, interviews and questionnaire survey methods to attain its aim of assessing the application of risk handling strategies on project planning building the building contractors in Tanzania and to formulate a general framework of a project planning and risk handling strategies for reference in implementation by contractors in Tanzania. The study concludes that; Most contractors do not use project managers for organizing and coordinating operation planning process and only few use project managers. However, many contractors are

aware of the aspects of planning. The nature of planning can be understood by examining four aspect of planning which include; its contribution to purposes and objectives; its importance in managerial tasks; its pervasiveness; and the efficiency vs. effectiveness of plans. Moreover, more than half (65%) of the contractors use both cost control and schedule of works during developing a construction plan.

5.3.1 Objective 1: Risk handling strategies used in project planning by building contractors in Tanzania

- Building contractors experienced risks during project planning at a severe level.
- All strategies (avoid, transfer, mitigate and accept) are used by the building contractors and each depending on the type of risk as well as the severity of each risk.
- The order of preferred strategies by contractors in descending manner is transfer, mitigate, accept and avoid respectively.

5.3.2 Objective 2: To assess the extent to which risk handling strategies are used.

- Risk handling strategies are used at a very low extent. Observations reveal that even though risk handling strategies are used in project planning by building contractors in Tanzania, still their application is at low level and hence there should be an increase in their extent of usage. Although contractors apply strategies to handle risks that occur during project planning but the application of these strategies is not enough.

- Transfer is the most used risk handling strategy followed by mitigation, acceptance and lastly avoidance which appears to be the least used risk handling strategy during project planning.

5.3.3 Objective 3: Challenges faced in applying the strategies.

- Building contractors experienced challenges while applying risk handling strategies during project planning. The highest challenge is each strategy could involve expenditure of additional time, cost or resource.

5.3.4 Objective 4: Measures that will enhance application of the strategies.

- Suggested measures and that if considered they will enhance and improve the application of risk handling strategies during the planning of projects.

5.4 Recommendations

- General framework of project planning and Risk handling strategies should be formulated for reference in implementation by contractors in Tanzania.
- All contractors in Tanzania should involve project managers in project planning and they should be provided with all necessary resources that will enable them plan projects at minimum risks.
- Contractors should consider operational planning as it is essential for day to day tasks required in running the organization.
- Contractors should focus on aspects of planning and its benefits.
- Contractors should adhere to proper risk handling strategies to specific risks during project planning.
- More emphasis is needed to boost the application of Risk handling strategies during project planning because recently they are used at a lower extent.

- Due to many risks occurring during project planning, contractors should adhere to the challenges faced while applying the strategies so as to know what measures to be taken in order to avoid them.
- Contractor should concentrate on measures to be taken to avoid the challenges while applying the risk handling strategies and thus will reduce the impact of risks during project planning.
- All suggested measures are very important and they should be used so as to improve the application of risk handling strategies during project planning.

5.4.1 General framework of project planning and Risk handling strategies formulated for reference in implementation by contractors in Tanzania.

From the study findings a recommended general framework has been established. This framework can be used by the contractor as a general reference and guidance during project planning while considering risk handling strategies.

Table 4.31: The Project Planning and Risk Handling Strategy Framework

RISK HANDLING STRATEGY	RESPONSE	MEASURES
Transfer	Transfer the risks to the third party so as to reduce the impact; they do this because construction projects have large financial impact.	<ul style="list-style-type: none"> • Entering into a contract with subcontractor to perform a specific task. • The project manager may choose a different team to perform the planning process. • The project manager should involve the senior management in the planning process because the senior management has full and detailed strategic plan Of the organization. This will enable the project planning team understand fully the nature of planning of their organization.
Mitigate	Mitigate the risks when there are activities with a high likelihood of occurring, but financial impact is small therefore they use management control systems to reduce the risk of potential loss.	<ul style="list-style-type: none"> • The project manager should ensure that the planning team gets enough training so as to gain more knowledge in planning. • The impact of the risk can be limited by involving the right people in the right way and make sure their skills align with the task.
Accept	Accept the risks when the cost to mitigate risk is higher than cost to bear the risk	<ul style="list-style-type: none"> • Contractors and their counsel should accept that the risk might happen and decide to deal with it when it does by carefully evaluating their contracts, the information available to them, and the scope and timing of any requests for information, before deciding to stop work under a contract. • In case of lack of planning knowledge the planning team should make sure that it obtains necessary and the needed knowledge to perform the planning process. There should be no room for avoiding the task rather to face it.
Avoid	<p>Strategy that happens to be not preferred at all is avoid because it is not easy to avoid the project as it has reached the post contract stage.</p> <p>NB: It is not easy to avoid the project as it has reached the post contract stage.</p>	<ul style="list-style-type: none"> • The contractor's project planning team should completely remove the task by not dealing with it so as to avoid the risk. • When the project planning team does not have realistic expectations, the best way is to remove the task completely so as to avoid making the company to undergo loss.

Source; Author, (2017).

5.5 Recommendations for Further Studies

From this study, application of risk handling strategies in project planning by building contractors were assessed and recognized. However the area of concern that could not be studied appropriately in the course of this work, hence is worthy of further study is; Factors that accelerates application of a risk handling strategy most frequently compared to the other in project planning.

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APPENDICES

Appendix 1: Questionnaire Cover Letter.

**ARDHI UNIVERSITY
SCHOOL OF ARCHITECTURE CONSTRUCTION ECONOMICS AND
MANAGEMENT
DEPARTMENT OF BUILDING ECONOMICS**

March, 2017.

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

***ASSESSMENT OF APPLICATION OF RISK HANDLING STRATEGIES IN
PROJECT PLANNING BY BUILDING CONTRACTORS IN TANZANIA***

I am a Postgraduate student conducting a research on the above subject area. The research is for meeting the requirement for the degree of Masters of Science in Construction Economics and Management at Ardhi University, Dar es Salaam. The research aims at formulating a framework of a project planning and risk handling strategies for reference in implementation by contractors in Tanzania.

Kindly respond to the attached questionnaire by completing it. By cooperating to respond to the questionnaire, you are making a significant contribution to the construction industry as well as to the economic growth of Tanzania.

I assure you that the information you provide will be treated with the utmost confidentiality and will only be used as an empirical data to enhance the reliability of the research. Your prompt response will be highly appreciated.

Thanking you in anticipation of your cooperation.

Yours Sincerely,

MULOKOZI, VIANA VEDASTUS

Registration Number: HD/T.830/2015

Department of Building Economics

School of Architecture Construction Economics and Management

Ardhi University

DAR ES SALAAM

Appendix 2: Questionnaire for building contractors.

Kindly put a tick (√) in the blank next to the selected response and fill in the blanks where necessary.

A: ORGANISATIONAL

1. Kindly indicate your firm's class of registration with CRB

- | | |
|--------------------|-------------------|
| a) Class One () | b) Class Two () |
| c) Class Three () | d) Class Four () |
| e) Class Five () | f) Class Six () |
| g) Class Seven () | |

2. How long has your firm been in construction business?

- | | |
|--------------------------|---------------------|
| a) Less than 5 years () | b) 5-10years () |
| c) 10-15 years () | d) Over 15years () |

3. What is your position in the firm?

- | | |
|----------------------------|-------|
| a) Director () | |
| b) Project manager () | |
| c) Others (please specify) | |

B: PROJECT PLANNING

4. Once the contract has been agreed for the project, operational planning begins. In your firm who is responsible for organizing and coordinating operational planning?

- a) Chief Executive/ Director ()
- b) Contractors project manager ()
- c) Others (kindly specify)

5. Do you agree that every operational plan must contribute to the accomplishment of purpose of the organization?

- a) Yes ()
- b) No ()

6. Efficiency and effectiveness of operational plans is one of the major aspects of planning, are you aware of their benefits?

- a) Yes ()
- b) No ()

7. What does your firm focus on while developing a construction plan?

- a) Focus on Cost ()
- b) Focus on Schedule of works ()
- c) Both Cost and Schedule of works ()

C: RISKS DURING PROJECT PLANNING

8. The table below (**Table 1**) is a list of few *Potential types of risks during project planning*. Kindly tick (✓) a number in the place where you agree with in the **rank scale** to rank the level of severity of each of the risks during contractors' project planning in construction industry.

Please rank the level of severity on the *three-point-scale* provided:

Rank Scale: 3-High Risk (H)

2- Medium Risk (M)

1. Low Risk (L)

S/N	RISKS IN PROJECT PLANNING	Rank Scale		
		H	M	L
1	Poor managerial Support (lack of decision makers in execution of plan, management that ignores reasoned words)	3	2	1
2	Estimate of time, cost and resource requirements is just a guess	3	2	1
3	Team members are inexperienced or having poor skills	3	2	1
4	Lack of / Poor Communication among team members	3	2	1
5	Low Decision Quality (Unclear decisions)	3	2	1
6	Organizational Change (re-structuring/ merging of firm)	3	2	1
7	Inadequate method for Information gathering and management	3	2	1
8	Lack of planning knowledge	3	2	1
9	Misunderstanding nature of planning (Aspects of planning)	3	2	1
10	Lack of Focus on key project performance constraints	3	2	1
11	Unrealistic Expectations	3	2	1

Table 1

D: RISKS HANDLING STRATEGIES USED IN PROJECT PLANNING

RISK HANDLING STRATEGY
<ul style="list-style-type: none"> • Avoidance (You remove the task/ event completely to avoid the risk)
<ul style="list-style-type: none"> • Transfer (You transfer the impact and management of the risk to someone else) E.g. contractual, Insurance Policy
<ul style="list-style-type: none"> • Mitigation (you limit the impact of a risk, so that if it does occur, the problem it creates is smaller and easier to fix.) e.g. provide training
<ul style="list-style-type: none"> • Acceptance (You simply accept that it might happen and decide to deal with it if it does.)

Table 2.

9. The above *table 2* provides a guide to the general application of the various risk handling strategies based on the assessed risk level:

Below (*table 3*) is a list of *Potential types of risks during project planning*, please **rank** the **level of preference of each strategy** by using the *three-point-scale* **provided:**

Rank Scale: 1-Most Preferred

2- Least Preferred

3- Not preferred at all

NB: Two strategies can have the same preferences.

S/N	RISKS IN PROJECT PLANNING	RISK HANDLING STRATEGY			
		AVOID	TRANSFER	MITIGATE	ACCEPT
1	Poor managerial Support (lack of decision makers in execution of plan, management that ignores reasoned words)				
2	Estimate of time, cost and resource requirements is just a guess				
3	Team members are inexperienced or having poor skills				
4	Lack of / Poor Communication among team members				
5	Low Decision Quality (Unclear decisions)				
6	Organizational Change (re-structuring/ merging of firm)				
7	Inadequate method for Information gathering and management				
8	Lack of planning knowledge				
9	Misunderstanding nature of planning (Aspects of planning)				
10	Lack of Focus on key project performance constraints				
11	Unrealistic Expectations				

Table 3.

E: CHALLENGES IN APPLYING RISK HANDLING STRATEGIES IN PROJECT PLANNING.

10. Next to each *challenge in the application of risk handling strategies in project planning* listed below, tick (✓) a number on each of the **rank scale** to rank the level of agreement.

Kindly rank the level of agreement on the *four-point-scale* provided:

Rank Scale: 4- Totally Agree (TA); 3- Agree (A);

2- Disagree (DA)

1- Totally Disagree (TD)

S/N	CHALLENGES IN APPLYING RISK HANDLING STRATEGIES IN PROJECT PLANNING	Ranking Scale			
		TA	A	DA	TD
1	Sometimes implementation of a risk handling strategy may introduce more risk into the project than it removes	4	3	2	1
2	A lack of risk decision making structure and lack of accountability for risk decisions in an organization	4	3	2	1
3	A lack of risk -ware culture.	4	3	2	1
4	Each strategy could involve expenditure of additional time, cost or resource	4	3	2	1

Table 4.

**F: IMPROVING THE APPLICATION OF RISK HANDLING STRATEGIES
IN PROJECT [PLANNING**

11. Next to each *improvement in the application of risk handling strategies in project planning* listed below, tick (✓) a number on each of the **rank scale** to rank the level of agreement.

Kindly rank the level of agreement on the *four-point-scale* provided:

Rank Scale: 4- Totally Agree (TA); 3- Agree (A);

2- Disagree (DA)

1- Totally Disagree (TD)

S/N	IMPROVING THE APPLICATION OF RISK HANDLING STRATEGIES IN PROJECT PLANNING	Ranking Scale			
		TA	A	DA	TD
1	The organization should be prepared to spend the required time, money or effort in responding to identified risks	4	3	2	1
2	It is important to be sure that the amount of expenditure is appropriate to the size of risk	4	3	2	1
3	Once strategies have been developed, each should be assigned to an owner for ensuring the effective implementation of the agreed response.	4	3	2	1
4	It is important to build and retain co-operation and consensus, seeking to avoid contractual wrangling or the placing of blame	4	3	2	1
5	The necessary resources should be provided to enable the strategies to be applied.	4	3	2	1
6	The project manager should monitor the status of risk handling strategies regularly	4	3	2	1

Table 5.

THANK YOU FOR YOUR COOPERATION.

Appendix 3: Interview Guide.

The following questions are designed to obtain information from Building Contractors on matters concerning risks faced during project planning.

1. Name of Interviewer.....
2. Place of interview.....
3. Date of interview.....
4. Name of Company.....
5. Class of registration at Contractors registration Board (CRB).....
6. What do you see as the most occurring risks that your company encounters during project planning?
-
-
7. Below are various risks listed, kindly respond with ‘agree’ to the risk that had already occurred in your company during project planning process.
 - i. Risk of poor Executive Support
 - ii. Risk of poor Scope
 - iii. Risk of poor Management
 - iv. Risk of stakeholders with a negative attitude towards a project plan.
 - v. Risk of poor Resources & Team.
 - vi. Technical risks.
 - vii. Risk of poor Integration
 - viii. Risk of poor Communication
 - ix. Risk of poor requirements.
 - x. Risk of low Decision Quality