

**KWAME NKURUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY,**

**KUMASI, GHANA**

**KNUST**

**Decision-Making Practices of construction firms in Accra Ghana**

**By**

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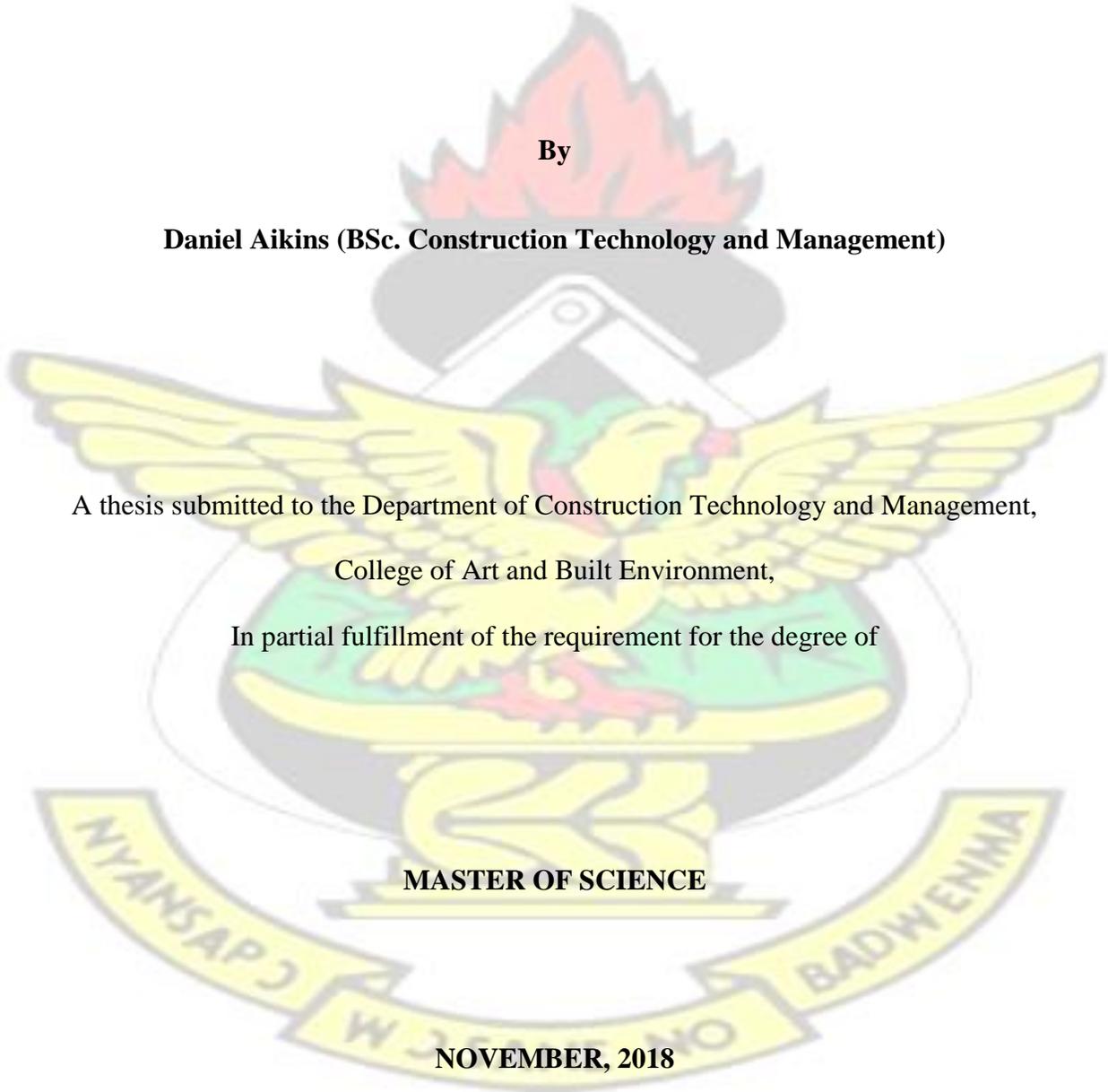
A thesis submitted to the Department of Construction Technology and Management,

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**MASTER OF SCIENCE**

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## DECLARATION

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contain no material previous published or written by another person nor material previous published or written by another person nor material which to a substantial extent has been accepted for the award of any other degree or diploma at Kwame Nkrumah University of science and Technology, Kumasi or any other educational institution, except where due acknowledgment is made in the thesis.

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## **ABSTRACT**

Decision-making is critical in any industry and the construction industry is not exempt from this, since the construction process requires many decisions to be made. In terms of strategic decision as well, these companies need to make them so that they can remain competitive in the industry. Therefore, this study was to determine the decision-making practices of construction firms in Ghana, and the objectives included identifying the decisions making practices and the factors, which influenced these decision-making practices. Identifying these would help in proffering recommendations for the best practices in decision-making. Previous works were reviewed to help establish gaps in the area of decision-making. The research relied on a quantitative strategy that allowed for the use of questionnaires to elicit data from respondents made up of building contractors and other construction professionals from firms within the industry using the census sampling. Based on the analysis of the data that is the use of mean score ranking it was revealed that the characteristics of strategic decision-making associated with construction firms focused on their long term organizational objectives and projects, management of firm resources and maintaining their competitive advantage. Their decision-making processes were influenced by certain internal and external factors, and the most significant among them included their implementation plans, past decisions and cognitive biases. It was recommended that decisionmaking processes should be collective, and that there be relevant training for the managers who have to make such strategic decisions for the construction firms. The firms should also have regular internal training for all personnel to aid them in making these strategic decisions and also adhering to them so they can be achieved.

**Keywords:** Decision-Making, Construction firms, Strategic decision, Training, Ghana.

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**LIST OF ABBREVIATIONS**

ABCECG – Association of Building and Civil Engineering Contractors of Ghana

CEO – Chief Executive Officer

MWRWH – Ministry of Water Resources, Works and Housing

RPD – Recognition-Primed Decision

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## DEDICATION

This work is dedicated to my family, and most especially my wife and children

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## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 BACKGROUND TO THE STUDY**

The Merriam-Webster Dictionary (2018) states that a decision is a determination that is arrived at after some consideration is done, or a choice made between competing alternatives in a situation where there is uncertainty. Kahneman et al., (2000) state that decision-making is a process which is undertaken often to solve a problem, and it is concluded when a suitable solution is found. When trying to make a good decision, a person must weigh the positives and negatives of each option, and consider all the alternatives. For effective decision making, a person must be able to forecast the outcome of each option as well, and based on all these items, determine which option is the best for that particular situation. Decision making requires an individual or group to identify and choose alternatives based on a myriad of factors, such as values, beliefs and even simple preferences.

Kahneman and Tversky (2000) note that the decision making process for any person or group can be categorized under three processes, as psychological, cognitive or normative. The psychological processes require the decision makers to examine the individual decisions they have to make in the context of the needs, preferences and values that are sought. The cognitive process is often seen as continuous and relies on an interaction with the environment, while the normative process requires the analysis of individual decisions which are concerned with the logic of decision making (Kahneman & Tversky, 2000).

Armstrong (2001) notes that for the decision-making process, there must be certain characteristics identified, and these include the establishment of objectives, and their classification in order of importance, development of alternative actions, evaluating all actions to determine the best to meet objectives and final decision also evaluated for any side effects. However with all these processes

there exist also specific techniques that are applied by different organizations and in different industries to the decision-making process. The decision-making techniques include the consensus decision making process, voting based, Delphi method, Democracy, Participative and Decision engineering (Hall et al., 2007). These techniques often relate to decision making processes at the organizational level, but decisions taken at the individual level can also be taken using the strategies such as the decisional balance sheet, simple prioritization, satisficing, acquiesce and anti-authoritarianism.

Decision making is important for any organization because it allows for the implementation of the managerial function such as planning, organizing, directing and controlling operations in the company. Successful decision making also allows for a measurement of managerial performance function, as well as allowing the organization to meet its set targets.

As noted above, the decision making process is important to any organization, and the construction sector is not exempt from this. The construction process for any project involves many decisions from the design stage to the handing over of the project to the client, and there are numerous professionals that are involved. Decisions often do not also take one simple strategy since conditions for any construction project are diverse. Different professionals will also have to take decisions which will affect a single project in diverse ways also.

The construction industry in Ghana is a very important one since it provides the necessary infrastructure base for development. The industry also is a major contributor to Gross Domestic Product (GDP), with a 5.7% contribution for the year 2016 (Construct Ghana, 2016). The Ghanaian population also is growing at about 2% per annum (Ghana Statistical Service, 2017) and as such this will pose a greater challenge to existing infrastructure. The country also has a housing deficit of about 1.7 million houses (World Bank, 2015) which will have to be met, and these all go to indicate the importance of the construction industry to Ghana. With this importance therefore, it

goes to reason that the kind of decisions that are made in the industry are most efficient and effective, going to ensure that the industry is able to perform at highest output levels and with the highest level of quality.

## **1.2 PROBLEM STATEMENT**

The client, as the owner of the project is the ultimate decision maker on the project; however, the project team has to make decisions that satisfy the client expectations in terms of project cost, time and quality. Inability to meet these client expectations are often a result of decisions taken which ultimately result in that. The construction team often has many of its decisions to make from the design to the construction stage, though the design stage decisions are mostly directed by the client. How the project moves from design to construction stage till final completion is often reliant on the decisions of the building contractor and other construction professionals (Alsendi, 2015). Decisions relating to the use of limited resources, project time management, construction strategies, risk management and a myriad of other all come in. Appreciation of the benefits and risks associated with any decision made is critical to the development of the project. Risks cannot be eliminated entirely and it is important to ensure that there is a certain level of appreciation of these risks and decisions made on mitigating them (Alsendi, 2015).

These decisions ultimately fall under strategic management decisions which are made at the top level in the construction companies. These strategic management decisions relate to the whole environment within which the construction companies operate and the use of resources to achieve set targets (Juneja, 2018). Strategic management decisions have major resource propositions, related to their harmonization, range of activities the company is involved in and most often complex in nature. However, challenges exist with strategic decision making for most firms because most managers who are tasked with making these decisions are not fully aware of the

changing behavior of clients they work with as well as the dynamism of the construction industry projects. Some also are not able to manage the client influence on project execution, as well as the implications for the successful execution of the project. The issues raised therefore with strategic management decision-making have to do with how well managers understand their roles and implications of their decisions both for the firm and the project at hand. Strategic decision making for these construction firms also raises the issue of management of client and organizational expectations, as well as dealing with the changing environment within which they operate. How exactly can the construction companies overcome these to maximize the effectiveness of their decisions and operations.

### **1.3 RESEARCH QUESTIONS**

To be able to reach viable and credible conclusions for the study the following questions have to be asked, and they include

- I. What are the various decision making practices of Ghanaian construction firms?
- II. What factors influence the decision making practices of Ghanaian construction firms?
- III. What recommendations can be made for best practices in decision making for Ghanaian construction firms

### **1.4 AIM OF THE STUDY**

The aim of this research is to determine the decision making practices of construction firms in Ghana

### **1.5 OBJECTIVES OF THE STUDY**

With the research questions asked above the following objectives are developed from them;

- I. To identify the various decision making practices of Ghanaian construction firms, and
- II. To identify the factors that influence the decision making practices of Ghanaian construction firms
- III. To make recommendations for best practices in decision making for Ghanaian construction firms

### **1.6 SIGNIFICANCE OF THE STUDY**

Decision making in any industry is very relevant to the success or otherwise of the companies that exist within the industry. Decisions have far reaching effects on the short, medium and long terms future of any company, and the construction industry is not excluded. For an industry that is riddled with inefficiencies related to construction time deliver, cost overruns, poor performance and quality management, it is important that decisions that are taken, and that the factors that influence these decision making practices are most effective. As such there is the hope that the findings of this study will be beneficial for construction companies in the decision-making processes as they can apply more strategic analysis to it. The construction companies can develop decision-making policies for internal application to the operation of the companies as well as decisions taken regarding the execution of a project. Consequences related to poor decision-making for these companies can be greatly minimized, and the negative impact on projects such as time delays, cost overruns and poor performance can also be minimized.

### **1.7 SCOPE OF THE STUDY**

Construction companies are required to make several decisions regarding their projects and operations of their companies, but with respect to this study the focus will mainly be on strategic management decision-making processes. In that regard as well, the study will limit its scope to the

roles that are required to make decisions regarding project design, construction processes and management of projects, the communication and reporting structures required for making decisions, tools and finally the methods for evaluating the effectiveness of decisions made. The study targeted both construction companies and consulting firms. Construction companies targeted were in the D1 and D2 categories, due to the volume of works that they undertake. All companies to be targeted will be located in the Greater Accra region.

### **1.8 RESEARCH METHODOLOGY**

The research methodology for this study was basically a cross sectional survey with a quantitative approach. The research will be concentrated in one geographical setting in Ghana: The Accra Metropolitan Area of the Greater Accra region. The study will focus its attention largely on construction companies in the D1 and D2 categories, and construction professionals. It will apply structured questionnaires to gather relevant data from respondents as listed above. The questionnaires will be made simple and easy to understand in order to ensure maximum responses from the respondents. Secondary sources of information such as international journals and Government Policy documents as well as reports on decision making also will serve as important sources of data. Such documents will be subjected to critical documentary analysis in order to elicit their meaning. The primary data collected will be analyzed with descriptive statistics such as frequencies, percentages and with pictorial charts such as bar and pie chart for clarity of interpretation. The Likert scale data also will be analyzed and presented using mean score analysis.

### **1.9 ORGANIZATION OF THE STUDY**

The structure of the thesis is sectioned into five chapters as follows:

Chapter one is the “Introduction to the Research”, and presents the background information to the research and gives the problem statement as well. The research questions, research aim, objectives, and scope are all contained in this chapter. Chapter two is the “literature review” and provides an extended coverage on earlier works. The review explores the relations between various aspects of literature for linkage. Chapter three is the “research methodology” describes the various approaches that are applied to arrive at the research conclusions. The data collection method as well as analysis tools are discussed. Chapter four is the “data analysis and discussion of results” and it presents the quantitative analysis of data and discusses the results in relation to the research objectives. Chapter five is the “Conclusion and Recommendations” section and it wraps up the whole research by reviewing the main contributions of the research to knowledge. The recommendations and limitations of the study are also outlined. Indicators to future research directions are also clearly defined.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 INTRODUCTION**

The literature review of a study is to provide information on already published worked related to the study. It surveys books, journals, articles and any relevant source or authority on the topic of the study. The literature review helps the researcher to conduct a critical evaluation of existing knowledge on the subject matter and guide the drawing of conclusions. This literature review shall provide definitions of key terms, review related works and then delve into information on the specific objectives of the study.

## **2.2 DEFINITION OF KEY TERMS**

### **2.2.1 Decision**

The Merriam-Webster Dictionary (2018) states that a decision is a determination that is arrived at after some consideration is done, or a choice made between competing alternatives in a situation where there is uncertainty.

The Cambridge English dictionary (2018) also defines a decision as the act of making up one's mind about something after the consideration of many different factors. In the estimate of a situation it refers to the clear and concise statement of a line of action to be followed by an individual or group.

### **2.2.2 Decision-making**

The Oxford Advanced Learner's Dictionary (2018) defines decision-making as the process of decision about something important, especially in a group of people or organization.

Trewtha and Newport (1982) define decision making as involving the selection of a course of action from among two or more possible alternatives in order to arrive at a solution for a given problem. Decision making is often done by a comity of professionals to ensure that an organization is able to function at its optimum level, and it is a continuous process within an organization to ensure that the day to day functioning is effective and efficient.

Decision making is the process of selecting from among several options to achieve the desired result (Eisenfuhr, 2011). There are three important elements in this definition. First of all, you need to select various options for decision making. Second, the decision making process is a process that involves multiple last choices in alternatives. Finally, the "desirable outcome" in the definition means a purpose or a goal as a result of a mental activity committed by the decision maker to the ultimate decision.

## **2.3 DECISION MAKING THEORIES**

There have been many different decision making theories developed by different researchers, and they have all been explained below;

### **2.3.1 The Rational Model**

The vision of a rational manager is based on a decision maker (economic person) who is reasonably and appropriately informed, as stated in the mid-century neoclassical microeconomic theory. The steps associated with the rational method, as Simon (1977) gave. Intelligence: find ways to make decisions, Design: invent, develop and analyze possible behaviors, Option: select the procedure available and Review: evaluation of past decisions.

The perfect case rational model uses the decision making analysis is used as a tool to validate the selection made. An option with the greatest benefit (or the maximum subjective benefit expected) is chosen. Using such a rational model, the manager assumes it. Know all the possible options, know the result of the implementation of each alternative plan, careful prioritization of these results and it is possible to compare effects and calculate what priority is given.

### **2.3.2 Bounded Rationality**

The "satisficing" in the vision of this model is mainly focused on the limited rationality of Simmons (1979), in the realization that the manager is not necessarily rational, has all the information, the decision is not always optimal. Chase et al. (1998) note that "Reasonable human behavior is characterized by two scissor sheets, which are the structure of the work environment and the computer capacity of the performer". It is possible to cut these scissors and place the space of the problem in a smaller area. Limited rationality is characterized by search and compliance activities.

Options are searched and evaluated in order. If the selection meets the specified implicitly or explicitly specified minimum criteria, it is said that they are "satisfied" and the search ends. The search can be facilitated by specifying the regularity in the task environment.

Simon was much appreciated by the theory of limited rationality, but describes (reasonably) rational behavior. For this reason, many researchers at Huber: tan (1981) and Das and Teng (1999) do not distinguish the completeness and limited rationality of the classification decision model.

### **2.3.3 The Incrementalist View**

This is a decision making model where the decision takes a gradual process to be finalized. The decision maker has to constantly review the decision being made and determine at each stage whether the decision is right or not. After the review at each stage the decision maker can make relevant changes (Lindblom, 1959),

### **2.3.4 The Organizational Procedures View**

This decision making model focuses on an organization wide decision making policy that is followed for making all types of decisions in the organization. With this strategy managers need to constantly refer to the practices and procedures already set out for making decisions and constantly refine them where the need arises. The review cannot be done unless there is an organization wide agreement for the changes to be made (Krabuanrat and Phelps, 1998)

### **2.3.5 The Political View**

Instead of a reasonable process, the decision-making process depends on the participant's agenda. The decision-making process never ends, but it is still a continuous process. The influence is deliberately exhausted as a result of greater self-interest. The union is determined by self-interest, it is not good for the entire organization.

### **2.3.6 The Garbage Can Model**

This is similar to the organizational model, and it requires different actors and players to be involved in the decision making process. The decision makers consider all the problems associated with the factor under consideration and a final decision is only made when the problems are eliminated bit by bit until it is problem free. This is a tedious and long process but it is also inclusive and ensures that the decision can be easily accepted (Cohen et al., 1972).

### **2.3.7 The Individual Differences Perspective**

The individualistic perspective takes into consideration the individual decision making strategies of different leaders in an organization. The leaders make decisions based on their individual experiences, leadership style, methods and strategies for drawing conclusions for problems. This model however is not very popular because most organizations do not focus on the individual's perspectives in making the decision (Keen and Scott Morton, 1978)

### **2.3.8 Naturalistic Decision Making**

Discrete participation in naturalistic decisions is a decision model based on the confessions of Klein (1998). Klein discovered and analyzed more than 600 life and death decisions, including firefighters, nurses and soldiers.

The central role of the APR model lies in the ability of the decision maker to identify a situation similar to previous experience. Part of what is seen as an appropriate goal of the situation and above all as important. Policymakers also recognize the working methods that are likely to succeed. The course of action is evaluated by mental simulation, in which the decision maker visualizes the implementation of the action.

### **2.3.9 The Multi-Perspectives Approach**

Mitroff and Linstone (1993) suggest the multitude of decision-making processes as an attempt to "penetrate" all possible perspectives on a problem. It is based on the concept of unlimited thought by Churchman (1971), which presents a problem. Different perspectives show class perspectives as technical, organizational or individual. Analytical models that collect data as a basis for understanding the system in the technical perspective. Several analysts or modeling projects would like to present different technical perspectives. Therefore, you get more than one technical view of a system. In order to grasp the organizational and individual perspectives, the largest possible number of interested parties and interested circles should be studied. Therefore, data collection should follow the "in-sweep" approach and, in particular, data from organizational and technical perspectives should be improved in many ways and in many sources.

## **2.4 TYPES OF DECISION-MAKING**

There are different types of decisions that are taken either at the individual or organizational level, and these types of decisions are driven by different factors. However, generally, they are categorized into three main groups, namely;

### **2.4.1 Decisions on whether**

This is a decision that means yes or no. The project manager can still recruit other team members or not, there is no reason for this decision and you have to decide before other options appear. If this is the case, you need an alternative to the amount you need, a specialization and any other option. In making such a decision, the technology of SMEs is the most appropriate as it has advantages and disadvantages (Harris, 2009).

### **2.4.2 Decisions on which**

In such a decision, it is necessary to choose between two or more alternatives that measure the most likely or most suitable conditions for success. An example of such a decision is that the investor decides on the various alternatives that the brand or product places. Different methods are used for this decision as they affect both the type of decision maker and the nature of the decision (Harris, 2009).

### **2.4.3 Conditional or contingent decisions**

This has already been done under certain conditions. This will make it easier for a legislator to take action as soon as these conditions are met. A good example is the team captain, who said: "I am determined to win more team members, if we can get the project" (Harris, 2009).

## **2.5 THE DECISION MAKING PROCESS**

Many studies have been conducted on the decision-making progress in many different fields, and the consensus has been drawn on the seven step process as the standard. These include the following:

### **2.5.1 Identifying the Problem**

Effective decision makers are well aware of the importance of correctly identifying the problem and understanding the problematic situation. Kepner and Tregoe (2005) developed a problem analysis method, which indicates that the first step in decision making, problem identification, is the most important step. According to these authors, the quality of the decision has a good definition of the problem. His method indicates that it is often easier to define the problem than it is. In addition, the problem - and its solution - is hierarchical in relation to other problems in order to clarify its relative significance. The last step is to look for cause and effect relationships. In

summary, the problem analysis method includes: (1) problem identification, (2) problem definition and (3) problem priority and (4) cause and effect experiment (Kepner and Tregoe, 2005). The problem identification process requires monitoring of the internal and external environment for issues that deserve special attention (Verschaffel, 2011).

### **2.5.2 Gather relevant information**

Collect some pertinent information before you make your decision: what information is needed, the best sources of information, and how to get it. This step involves both internal and external “work.” Some information is internal: you’ll seek it through a process of self-assessment. Other information is external: you find it online, in books, from other people, and from other sources.

### **2.5.3 Generating Alternatives**

Once the problem occurs, the second step of the decision making process is to create an alternative to the problem. In developing these solutions, the manager must first determine the objectives of the decision. Ideally, leaders should do as much as possible to make sure that the options are relatively different, ie they are not similar. The scope of choice is limited by the importance of the decision, the cost and the value of the additional information needed to evaluate the possibility and the number of people affected by the decision (Zopounidis, 2011). The reason for the investigation and selection period depends on the evaluation cost of the supplementary program (Narayanan, 2005). An improved solution must always be greater than the cost of further evaluation. The larger the number of people who have problems, the greater the chances, but the organization will be a long-term and difficult choice (Ehrgott, 2011). However, given the complex problems affecting many people, it is often necessary to compromise certain problems. Human interests can not be measured in dollars and cents (Schoenfeld, 2011).

#### **2.5.4 Evaluating Alternatives**

The third step in the decision process is to evaluate each alternative generated in the previous step. When assessing alternatives, managers should ask the following three questions: (1) Is the alternative feasible? (2) Is this a satisfactory alternative? (3) What is the impact on people? (Grant, 2011). The first question, if the alternative is feasible, simply means: can it be done? The second question concerns the degree of satisfaction of the alternative, i.e. To what extent the problem has been solved. The third issue concerns the impact of alternatives on employees or employees of the company that have an impact on decision making. For those who have to bear the consequences of the decision, the chosen alternatives should be acceptable. Failure to comply with this condition is the most likely cause of failure in the decision-making process to resolve the problem (Hastie, 2010). Therefore, managers should be very interested in the acceptability of the proposed alternative. On the one hand, if implemented with enthusiasm and determination, even a slow solution to this problem can be effective. On the other hand, technically correct alternatives can fail if they are implemented in half.

#### **2.5.5 Choosing an alternative**

When the manager evaluates all the options, he has to choose the best option. There are several options in the evaluation phase, but in most cases more than two remain valid. One approach is to choose an acceptable choice that is feasible and acceptable to a working group (Gilboa, 2011). As most situations do not require such decisions (Mendel, 2011) there must be consideration of the ground of judgment.

#### **2.5.6 Implementing the chosen alternative**

After selecting the option, the manager is asked to make the decision. Common sense can fail if misused. Therefore, it makes sense to consider some suggestions for successful implementation

(Ahmed, 2011). To clarify the selection, you should pay attention to the following important points. The leader should be aware that the choices made are clearly understood managers should encourage the acceptance of alternative means as an indispensable activity. Managers need to provide the resources needed to make this possible and the leader must draw up a work plan. Managers must clearly demonstrate their responsibility

### **2.5.7 Evaluating the decision**

The final step in the decision process is to evaluate the effectiveness of decision-making. If the decision is made and the desired result is not achieved, there are a number of reasons, including misidentification of the problem, inadequate assessment and/or misapplication of alternatives.

Among these possible causes of the most common and most serious mistake is insufficient to determine the problem. If the problem is incorrect, the chosen and executed choices will not give the desired result.

Evaluation is important because decision making is a continuous process and a waiting time. Decision making does not end when the leader decides to vote "yes" or "no". This assessment provides the administrator with information to activate a new decision cycle. Decision-making will fail to provide a new analysis of the problem, the evaluation of alternatives and the selection of new opportunities. Many experts claim that a number of alternative test results in a number of important issues can be solved, and all a modest improvement (Hicks, 2005). Evaluation is part of the decision-making process that determines whether a new decision should be made.

## **2.6 DECISION MAKING TOOLS**

As identified above, decision making is not a mere function to be taken lightly, especially when it is a complex decision with many other viable alternatives. It becomes more important for the decision maker to have a scientific or other reliable tool to aid the decision making process.

### **2.6.1 The Kepner Tregoe Matrix**

This matrix focuses on the decision-making process by choosing the best options, and relies on the following process; situational analysis, problem analysis, decision analysis and analysis of potential problems (Newton et al., 2016).

It should be noted that the "optimal" choice does not necessarily mean the perfect choice. There will always be a limited number of factors in business to be the best option, taking into account the objectives of available opportunities. Although the Kepner-Tregoe Matrix can be very complex depending on the number of decision-making factors, the model is based on four steps. Step 1: situation analysis: prepare the situation, describe the problems and select the address. Step 2: analyze the problem in order to be able to determine the reasons, Step 3 – Identify all the alternatives needed to take the decision and Step 4 - Analysis of potential problems: we look for the best alternatives to the negative consequences and recommend the proposed measures to minimize the risks.

### **2.6.2 Decision Matrix Analysis**

The Model, The Decision Matrix Assessment is perfect because decision makers can consider to make their own decision matrix. This may be the organizational needs and ways of knowing (Newton et al., 2016). The manufacturer of the decision, analysts systematically identify the performance-related values, analysis, analysis is a list of row and column values. You can use it to make decisions based on multiple criteria and limit the list of options to your choices and it is

helpful to study the importance of each factor by looking at some determinants. For example, if the test and reference have X rows and Y columns as a result matrix, there is an X option. Each dot is awarded a score and the score for each score is added. Mole was improved in relation to the relative importance of a relative.

### **2.6.3 The Analytic Hierarchy Process**

The analysis hierarchy process tool has three important levels: objective, standard and options. It may not be easier than other models, but it seems to be the best option available (Newton et al., 2016). The process of analytical hierarchy applies a mathematical approach to decision making. The analytical hierarchy process has three levels: the objective, the norm and the options. Select an objective and set it to 1,000. Everything below the goal is 1,000. Choose the selection criteria and emphasize that the sum of all the criteria is 1,000. All potential opportunities you can do are listed as options to evaluate the qualified criteria. Using the points and the starting weight of each option you enter, you can get a score for each option that helps you determine the winner.

### **2.6.4 Pareto Analysis**

The Pareto principle, 80:20 rule, defines this analysis. The key is to choose the right action, most of the results you want without doing all the work. This is a useful strategy to prioritize tasks, to solve the problem for the first time, that same task is solved, which corresponds to the largest number of problems (Newton et al., 2016).

Step 1: know the result: Make a list of questions that you are willing to pay. Step two: Arrange the cases connecting 'cause' problem all this is the main problem that leads to the existence of the problem. Step 3: Checking for Problems: Check the list of problems with a rating between you and its meaning. Step 4: Inquire about your list and find problems that need to be resolved, and I think it will be the same solution.

### **2.6.5 The Futures Wheel**

The correct decision can be made and with a greater ease. The instrument was developed and favors the future management of potential judgments and focused on when the decisions are made.

A lot has been said on arrival and they will keep the supervision unit on track (Newton et al., 2016).

In the future for the graphical wheel visualization method between direct and indirect consequences of a particular change or development and it is in the middle of the term to describe the change that is on the page. It can also be directly as a result of the change that we are associated with the change. All people who are on the first level of the direct foreign consequences of the others follow and are connected to the first degree. The result is usually a series of connections, and the use of connecting lines to visualize the consequences of a mutagenic interaction. In the future, it may help to develop concepts for a possible conscious change that will provide a perspective for the future.

## **2.7 STRATEGIC MANAGEMENT DECISION**

This is a decision-making process where a company plans for its long term future by taking into consideration its long term goals and a longer term vision (Gartenstein, 2018). This strategic decision making is significant because if the company is able to properly define its long term goals properly then it can align its short term goals to fit this. Three key components that need to take into consideration during strategic decision making are the mission and vision, long term and short term goals.

### **2.7.1 Mission and vision**

Strategic decision-making should start with a clear idea of your company's mission and vision -- the reasons you exist as a business. Your business may be dedicated to providing environmental

solutions, or you may simply want to make as much money as possible. Either way, if you know what you want over the long term, you'll be better positioned to infuse these aims and principles into your daily decisions. Start by writing your mission and your vision. This statement can be as simple or complex as you wish, depending on the degree of formality you use in your everyday business decisions as you run your company. Even if your mission is only one sentence -- the act of thinking about and articulating this sentence will help you develop a better idea of what you want. Having this written statement will also enable you to communicate your long-term vision to your employees and to other stakeholders, to get them on board with the strategic decisions you make (Gartenstein, 2018).

### **2.7.2 Long-Term Goals**

Long-term goals are the concrete embodiment of your mission and vision. A vision is an idea, and long-term goals are expressions of how these ideas play out -- with milestones and real-world objectives. These goals are critical to the strategic decision-making process, because they guide your choices, and provide measurable and quantifiable ways to assess whether you are successfully aligning your company's direction with the values you've articulated to guide your business (Gartenstein, 2018).

### **2.7.3 Short-Term Goals**

It is easy to lose sight of the strategic decision-making process when you're focusing on short-term goals and decisions that concern day-to-day activities and issues. Short-term goals and decisions usually relate to immediate needs, such as improving cash flow so that you can cover outstanding bills. Despite the immediacy and urgency of these goals, your strategic decision-making process should still enable you to precede with an eye toward both your vision and your longer-term objectives (Gartenstein, 2018).

## **2.8 CHARACTERISTICS OF STRATEGIC MANAGEMENT DECISION MAKING**

Strategic management decision making is critical to an organization's survival, and in taking such decisions certain characteristics need to be identified.

### **2.8.1 Major resource allocation**

Strategic management decisions in most cases deal with how the company's resources are applied to either meeting of internal short or long term goals, or allocation to projects undertaken by the company. Top management members of the company are often tasked with this resource allocation function, and in most construction companies that operate in Ghana, this may be left entirely to the CEO of the construction company, in consultation with senior staff. The company has to apply historical data on previous resource allocations to advice on current and future allocations of resources (Juneja, 2018).

### **2.8.2 Harmonize organizational resource capabilities**

Companies need to organize their various resource capabilities often on an annual basis, by determining how much resource is available, the expectation of resources for the year and any possible shortfalls there may be. With all these in mind the company can make the necessary allocations for the most optimum use. It is same with regards to the execution of a project, where resources are not unlimited. There needs to be a determination of where the resources will be best used, and this is a strategic management function (Oliver, 1997).

### **2.8.3 Deal with a wide variety of organizational / project functions**

Most construction companies have different divisions which work in tandem to meet overall organizational short and long term goals. These departments do not work in isolation and are

significant arms of the company, even if they may have their heads leading them. They will require direction from the top management on how their individual functions will affect the achievement of the short and long term goals of the company. For a construction company that seeks to scale up its quantity surveying division to undertake other private jobs, such a decision will have to be made at the management level for the company (Papadakis, 1998).

#### **2.8.4 Deal with long term activities**

Strategic management decision making is different from other decisions taken in the organization in that there is a greater focus on the long term when these decisions are taken. Strategic management decisions are the affect the long term growth or direction of the organization, and are often taken after long consultations among management members for the company. For a construction company that wishes to be upgraded from a D3 to D2 classification there needs to be a long effort on the part of management in terms of skills development, improvement in human resource, upgrading tools and equipment and many other activities that do not happen in one day (Papadakis, 1998).

#### **2.8.5 Decisions made with environmental impact as a concern**

Environmental footprint and impact of the operations of companies has become a major concern in the modern era, as many companies are expected to maintain a green footprint to be able to win certain projects or win funding to undertake projects. As such a decision to maintain a green footprint as a construction company will have to come at the management level, since it will require the commitment of resources (Oliver 1997).

### **2.8.6 Impact operational strategies**

Companies need to study the prevailing market or industry conditions in order to develop business and operational strategies to remain profitable and competitive. The construction industry in Ghana is very competitive, with many companies struggling to win projects to sustain them year after year. Without proper operational strategies to sustain the company it will collapse, as continually happens with construction companies which do not have proper operational strategies. Most are owned wholly by the CEO who unilaterally takes decisions on operations and the use of earnings (Juneja, 2018).

### **2.8.7 Concerned with long term advantage**

As noted above, companies undertake various operational strategies to ensure that they remain profitable and competitive. Long term competitiveness is important in any industry, and even more so for the construction industry, where projects often have to be bid on with several other companies with the hopes of winning. If a company is continually unable to win bids for projects then it will soon go out of business. It will therefore fall on the management of the company to determine exactly how to structure the company's operations to take advantage of good times, and still remain viable even in hard times (Papadakis, 1998).

## **2.9 FACTORS WHICH INFLUENCE DECISION MAKING PRACTICES**

The decision making process as identified is a complex one, which requires necessary thought and planning put to every strategic management decision that is taken. However, decisions are not taken in a vacuum and certain factors may influence the type of decision that is taken, either for better or for a negative outcome. Such factors include;

### **2.9.1 Indecisiveness**

Indecisiveness comes into play in the decision making process because there may be different alternative solutions that need to be evaluated to make a final determination, and results may not be entirely known. In such a scenario the management may have to make assumptions to develop a reasonable framework to make the decision (Dietrich, 2010).

### **2.9.2 Procrastination**

This is defined as the avoidance of undertaking an action until the very last minute in most cases (Clear et al., 2018). With regards to decision making, it is the delay in taking a decision that is needed until the last minute, and this may be attributed to different factors. For some managers, the decision may be postponed because of uncertainty with the outcomes, or may be delayed to see if a situation that requires the decision changes. However, procrastinating on taking a decision serves no positive purpose for a company.

### **2.9.3 Failure to identify root problems**

The decision making process, as identified previously in the literature, requires the identification of the problem so the solutions can be determined. However the whole decision making process may be derailed when the identification of the root problems is flawed. It stands to reason that if the problem is not properly identified then it may be difficult to make a decision on how to solve it.

### **2.9.4 Inexperience in making the right decision**

Inexperience is one of the major factors that also affects the decision-making process for most companies, and leads to challenges that affect their operations or projects (Shah and Oppenheimer, 2008). The decision making process itself is difficult enough and whoever is in charge of making

the decisions must have the relevant knowledge and experience with the subject matter to be able to make a decision. If a construction company wishes to determine the cost as against the benefits of investing in new plant, then that decision will have to be made by someone with accounting experience.

### **2.9.5 Deficient method for analyzing information sources**

Cooper (2016) also wrote that where the method for analyzing information relating to the decision to be made is deficient, then it is possible to arrive at the wrong decision by management. Several tools for making decisions were identified in the literature and though they all are to help the decision maker make the right decision, their mode of operation are different, and are to analyze different types of data. Where the wrong method is selected it without a clear understanding of the information to be analyzed then it may lead to the wrong decision being made.

### **2.9.6 Lack of adequate implementation and evaluation plan**

The decision making process also includes an implementation plan, as well as an evaluation plan to determine that the decision made actually served the right purpose. Where the implementation plan as well as its evaluation are flawed it can lead to the wrong outcomes for decisions made, and the managers may not be able to clearly determine the source of the challenge. As much as possible it is important that the implementation and evaluation plans are also thoroughly thought out and planned (Cooper, 2016).

### **2.9.7 Heuristics used**

Heuristics refer to the framework developed by a company which allow for the making of decisions in a quick and easy manner. In most cases companies develop these frameworks for their managers as a guide to ensure that their decisions can follow a certain pattern that is easy to replicate.

However, where the heuristics used are deficient then it can also impact negatively the kind of decision that will be made. Companies therefore need to clearly evaluate their heuristics before installing them as a guide for managers to follow in decision making (West et al., 2008).

### **2.9.8 Past experiences in making decisions**

Juliussen et al., (2005) posit that past experiences can certainly influence the decisions that people make. They note that where a past decision resulted in a positive outcome then it is more likely that the decision maker will follow the same method. However a decision maker will avoid a decision framework which in the past resulted in negative outcomes. It is however highly deficient to base future decisions solely on past outcomes, since prevailing conditions may evolve over time.

### **2.9.9 Cognitive biases**

These are the thinking patterns based on observations and generalizations that may lead to memory errors, inaccurate judgements and faulty logic. These biases include beliefs, dependence on prior knowledge and hindsight. Though their influence on the decision to be made is significant, it is important to eliminate these biases as much as possible. For decisions that affect the management of a company it is important to eliminate cognitive biases from the process since personal opinions and feelings do not necessary form operational policy (West et al., 2008).

### **2.9.10 Escalation of commitments**

Escalation of commitments refer to the amount of time and other resources that are committed to a particular decision that needs to be made, and where a manager is committed to a decision it is likely that they will be more willing to invest more resources. For instance, a construction company will commit more resources to the bidding of a project that it sees as having a high chance of winning, as compared to one that there is a lower chance of winning (Juliussen et al., 2005).

### **2.9.11 Sunk outcomes**

Sunk outcomes refer to unrecoverable costs or resources related to previous decisions made. The level of these sunk cost can influence how much a company will be willing to invest in a new decision which may follow the same line or have similar outcomes. Though prevailing conditions may certainly change over time, some managers may still refer to past outcomes of decisions as motivation to avoid certain new decisions (de Bruin et al., 2007).

## **CHAPTER THREE RESEARCH METHODOLOGY**

### **3.1 INTRODUCTION**

The section describes in details approaches, research processes, methods, principles, procedures and the research instrument used to gather the needed information for the study (Gray et al., 2007). It describes the method used for data collection, selection of the sample size, how information would be collected from the survey for the research work, how the data would be handled and its presentation to achieve the objectives set for the study. The research has taken the form of a literature review and coupled with a questionnaire survey.

### **3.2 RESEARCH APPROACH**

According Creswell (1998) a research design is a procedure for collecting, analyzing, interpreting and reporting data in research studies. The research methodology adopted in the study was the quantitative strategy. The study utilized a research approach, which involved quantitative data collection through structured questionnaire to solicit information from the target respondents. The target population for the study comprised building contractors and other construction professionals

working in various construction companies operating in the Greater Accra region in Ghana. The sample for the research was designated using the census sampling approach.

### **3.3 SOURCES OF DATA**

Data for the study was collected from two sources, primary and secondary sources of information.

#### **3.3.1 Primary data**

The primary data is one of the most reliable and credible ways used to gather information for researches. The instrument implored under this section to gather first-hand information was mainly questionnaire as it provides information quickly and cheaply. The primary data was collected from construction firms in the D1, D2 and D3 categories who were targeted purposely.

#### **3.3.2 Secondary source of information**

Further information for the study was obtained from related secondary sources or published documents such as academic periodicals, textbooks, publications, magazines, research journals, past dissertations, articles and other relevant documents available in libraries and or from government departments. The internet resources were also used to obtain supplementary information relevant to the study.

### **3.4 RESEARCH INSTRUMENT**

The research instrument selected for this study was the questionnaire. A questionnaire is set of questions submitted to individuals to discover statistically valuable information around an assumed theme (Merriam-Webster's Online Dictionary, 2015). A questionnaire survey is a cost effective way to involve a large number of people in the process in order to achieve better results (McQueen and Knussen, 2002). Closed structured questions were designed to collect information from the

target respondents. The answers were limited to a fixed set of responses where the respondents ticked the category that best described the situation. It was collectively administered to target respondents. The questionnaire was designed in line with the aims and objectives that were to be achieved at the end of the study. Relevant literature also offered additional help. The questionnaire was mainly designed for the building contractors working in the Greater Accra region of Ghana.

The first part dealt with the demographics of the respondents with respect to their professional background, the number of years of experience. The background information was imperative in order to ascertain the likely reliability and credibility of the data. The second part contained questions on the decision making practices of construction firms in Ghana while the third part also contained questions on the factors that influenced the decision making practices of construction firms in Ghana. For effective and efficient assessment of the set objectives, a likert rating scale was developed to help extract the appropriate ratings and the respondents were asked to rate on a five-point Likert scale (Durdyev and Mbachu, 2011). Likert scale generally includes an equal number of positively and negatively phrased statements, all of which employed the same response scale and are randomly distributed throughout the questionnaire (Cheung, 2005). Numerical scores of 1 to 5 ratings were assigned to some statements in accordance to the direction of the statements.

### **3.5 RESEARCH POPULATION AND SAMPLING TECHNIQUE**

#### **3.5.1 Research population**

The research population may be defined as the totality of a well-defined collection of individuals or objects that have a common, binding characteristics or traits. The research targeted building contractors in the various classifications in Ghana. The Ministry of Water Resources, Works and Housing (MWRWH) classifies building contractors on the following basis;

D1 – Jobs valued over \$500,000

D2 – Jobs valued between \$250,000 and \$500,000

D3 – Jobs valued between \$75,000 and \$250,000

The study targeted the Greater Accra region because of its mix of residential, commercial and industrial properties (Ghana Statistical Service, 2010) which cost ranges fell within the classifications of contractors, thus giving ample confidence in selecting suitable construction companies with the relevant experience. The Association of Building and Civil Engineering Contractors of Ghana (ABCECG) published its most recent list of members 2017, showing a membership of 1286. However, only 135 were classified as D1, D2 and D3 operating in the Greater Accra region and in good standing.

### **3.5.2 Sampling and Sample size**

Sampling is a procedure of choosing a proportion of populace to signify the entire populace, as well as the results from the selected sample represent the rest in the group. The designated sample must consequently, have comparable appearances or attributes to the populace in the research to allow generalization of the outcomes to characterize the population (Burns and Groove, 2001). Since the population size was relatively small, the study applied the census survey to target the whole population. The census sampling is a technique that allows the researcher to target all members of a relatively small population size so that sampling error can be eliminated, this was because the population of the respondents were small so the decision to collect data from all of them. Therefore one questionnaire each was sent to the companies identified for the study.

### **3.6 DATA ANALYSIS PROCEDURE**

The responses from the questionnaires using the Statistical Package for Social Science (IBM SPSS Statistics 22) analyzed the data as frequencies and percentages. The responses were then presented with the use of descriptive statistics and mean score analysis. The descriptive statistics allows data to be presented in a simplified format using tally tables and charts. Mean score indexing allowing for a mean score to be determined based on the volume of scores a particular factor receives as against a predetermined limiting factor.

## **CHAPTER FOUR**

### **DATA ANALYSIS AND DISCUSSION OF RESULTS**

#### **4.1 INTRODUCTION**

The purpose of this chapter is to provide a detailed analysis of the data collected using the research instrument, the structured questionnaire, and discuss the results against what has been identified in the literature. In total of 135 questionnaires were distributed, with one to each firm, and 100 were successfully collected from the respondents. The analysis is presented in two major sections, with the first section presenting the demographic characteristics and the second section will cover the objectives of the study.

#### **4.2 DEMOGRAPHIC CHARACTERISTICS**

The demographic characteristics of the respondents shows critical information on their education, qualifications, experience and opinions in relation to the study objectives so as to determine that their responses are actually credible and reliable enough to draw conclusions from. Each of the 135 firms was given one questionnaire, without any specific direction as to who could provide the

responses. Thus the firms were given the prerogative to select who they deemed as appropriate to provide responses.

**Table 4.1 summarizes the demographic characteristics below.**

<b>FACTOR</b>	<b>FREQUENCY</b>	<b>PERCENTAGE</b>
<b>Professional designation of respondent</b>		
Building contractor	16	16%
Engineer	17	17%
Quantity surveyor	31	31%
Architect	3	3%
Project Manager	24	24%
Supervisor	9	9%
<b>TOTAL</b>	<b>100</b>	<b>100%</b>
<b>Highest educational qualification of respondents</b>		
PhD	0	0%
Masters	34	34%
Bachelor's Degree	59	59%
Higher National Diploma	7	7%
Technical Diploma	0	0%
<b>TOTAL</b>	<b>100</b>	<b>100%</b>
<b>Length of time working with company</b>		
Less than a year	0	0%
1 – 3 years	9	9%
4 – 6 years	19	19%
7 – 10 years	47	47%
Above 10 years	25	25%
<b>TOTAL</b>	<b>100</b>	<b>100%</b>

<b>Length of time working in the construction industry</b>		
Less than a year	0	0%
1 – 5 years	2	2%
6 – 10 years	18	18%
11 – 15 years	49	49%
16 – 20 years	11	11%
Over 20 years	20	20%
<b>TOTAL</b>	100	100%
<b>Number of projects worked on at Works Department</b>		
1 – 5 projects	0	0%
6 – 10 projects	0	0%
11 – 15 projects	9	9%
16 – 20 projects	11	11%
21 – 25 projects	29	29%
Above 25 projects	51	51%
<b>TOTAL</b>	100	100%
<b>Awareness of Strategic decision making</b>		
YES	100	100%
NO	0	0%
<b>TOTAL</b>	100	100%
<b>Decision maker in respondent's company</b>		
CEO	69	69%
Management team	31	31%
Entire workforce	0	0%
External body	0	0%

<b>TOTAL</b>	100	100%
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**Source:Field Survey 2018** Table 4.1 above gives the demographic characteristics of the respondents for the study, and it details their educational background and work experience on decision making by construction firms. The table begins with the professional designation of the respondents, which is included to determine the respondents are actually professionals working in the construction industry. The data shows that 31% of the respondents are quantity surveyors, 24% are project managers, 17% engineers, 16% building contractors, 9% supervisors and 3% architects. Thus this shows a clear and fair representation of construction professionals that form the respondents. The next step is to also determine the level of education that the respondents have had, as this is also important because the level of education can give an indication of how much knowledge they have received regarding the construction industry, and their level of appreciation of the concepts stated in the questionnaire. 93% of the respondents had at least a Bachelor's degree with the highest being the Masters Degree. The remaining 7% of respondents also had a Higher National Diploma. Therefore this also gives some confidence that the respondents have enough education to be able to provide relevant and credible responses to the questions stated.

The next step in the demographic data is to get a measure of the level of experience of the respondents, and this is done by determining the number of years the respondents have worked in their respective companies and in the construction industry overall, as well as the number of projects they have been involved in within the construction industry. 91% of the respondents had worked with their respective companies at least 4 years, with the remaining 9% having worked with their companies at least a year to three years. In terms of their work within the construction industry, 98% of the respondents indicated that they had at least 6 years' worth of experience and going as high as more than 20 years' experience for about 20% of respondents. In terms of the

number of projects that the respondents had actually worked on, it was also shown that all had worked on more than 10 projects, with 51% having worked on more than 25 projects. This data certainly shows that the respondents are quite experienced in the construction industry and as such have certainly gained enough relevant experience in relation to decision making of construction firms. They can be fully relied on to provide credible data to inform the conclusions that will be drawn by the study.

Going on to the question of the knowledge of the respondents on strategic decision making 100% of them show that they are actually aware of what it is, and in also determining who the decision makers are in their individual companies the responses show that 69% of the respondents say the CEO makes decisions while 31% say the decision is made by a management team. This thus also gives assurance that they respondents quite understand the requirements of their knowledge and experience with regards to this study, and can adequately provide the responses.

#### **4.3 DECISION-MAKING PRACTICES OF CONSTRUCTION FIRMS IN GHANA**

The first objective of this study is to identify the decision making practices of construction firms in Ghana, and to do this the study applied a two stage process, with the first stage determining the level of association the construction companies have with the characteristics of strategic management decisions, and the second stage determining the significant decision making approaches that are used by the construction firms. The first step was for the respondents to show the level of association, whether low or high, to strategic decision making practices and tables 4.2 and 4.3 give a summary of the responses.

**Table 4.2 Mean score of level of association construction companies have with characteristics of strategic management decisions**

	N	Mean	Std. Deviation	Std. Error Mean
They have major resource propositions for the organization and projects	100	3.78	.856	.086
Harmonizing organizational resource capabilities	100	3.92	.892	.089
Decisions deal with a wide variety of organizational or project activities	100	4.11	.548	.055
Deal with long term activities for the company or projects	100	4.06	.635	.064
Decisions are made with environmental impact as a concern	100	3.48	.931	.093
Impact the operational strategies that the organization applies	100	4.03	.681	.068
Are concerned with achieving long-term advantages for the company	100	4.23	.501	.050

**Source: Field Survey 2018**

**Table 4.3 Summary of Mean score of level of association construction companies have with characteristics of strategic management decisions**

FACTOR	MEAN SCORE	RANKING
Are concerned with achieving long-term advantages for the company	4.23	1
Decisions deal with a wide variety of organizational or project activities	4.11	2
Deal with long term activities for the company or projects	4.06	3
Impact the operational strategies that the organization applies	4.03	4
Harmonizing organizational resource capabilities	3.92	5
They have major resource propositions for the organization and projects	3.78	6
Decisions are made with environmental impact as a concern	3.48	7

**Source: Field Survey 2018**

Tables 4.2 and 4.3 above give an analysis and summary respectively of the level of association that the construction companies have with various characteristics of strategic decision making. These strategies, as identified by the literature are standard practices associated with strategic decision making the world over, and therefore is important to get perspectives as relate to the Ghanaian construction industry. Respondents were to rank the level of association on a scale of 1 to 5 with 1 representing low association and 5 representing high association. With the mean score analysis of the 5-point Likert scale only mean score values above the neutral point of 3.00. From table 4.3 it can be seen that all seven characteristics were ranked to have high to very high association with the construction industry in Ghana.

Most significant among them is the concern with achieving long term advantages for the construction companies, as identified also by Papadakis (1998). Long term competitiveness is important in any industry, and even more so for the construction industry, where projects often have to be bid on with several other companies with the hopes of winning. If a company is continually unable to win bids for projects then it will soon go out of business. It will therefore fall on the management of the company to determine exactly how to structure the company's operations to take advantage of good times, and still remain viable even in hard times. Decisions deal with a wide variety of organizational or project activities, and this was the next ranked characteristic with high association to the construction companies in Ghana (Gartenstein, 2018). Most construction companies have different divisions which work in tandem to meet overall organizational short and long term goals. These departments do not work in isolation and are significant arms of the company, even if they may have their heads leading them. They will require direction from the top management on how their individual functions will affect the achievement of the short and long term goals of the company.

The respondents next ranked that strategic decision making deals with long term activities for the company or projects (Papadakis, 1998). Strategic management decision making is different from other decisions taken in the organization in that there is a greater focus on the long term when these decisions are taken. Strategic management decisions are the affect the long term growth or direction of the organization, and are often taken after long consultations among management members for the company.

Also considered significant for the construction industry strategic decision making process is that decision affect the operational strategies that the organization applies. The construction industry in Ghana is very competitive, with many companies struggling to win projects to sustain them year after year. Without proper operational strategies to sustain the company it will collapse, as continually happens with construction companies which do have proper operational strategies (Juneja, 2018). Harmonizing organizational resource capabilities is another significant characteristic of strategic decision making with high association to the Ghanaian construction industry. Companies need to organize their various resource capabilities often on an annual basis, by determining how much resource is available, the expectation of resources for the year and any possible shortfalls there may be. With all these in mind the company can make the necessary allocations for the most optimum use (Oliver, 1997).

Strategic decision making also has significant resource propositions for the organization and projects, and this is true for the Ghanaian construction industry which is very competitive, and as such requires companies to clearly define in an efficient and effective way how their resources will be used. Top management members of the company are often tasked with this resource allocation function, and in most construction companies that operate in Ghana, this may be left entirely to the CEO of the construction company, in consultation with senior staff. The company has to apply

historical data on previous resource allocations to advice on current and future allocations of resources (Juneja, 2018).

Finally, the environmental impact of strategic decision making has become more and more important in many industries, and for the construction industry this is even more significant because it is one of the industries that impacts and pollutes the environment the most. Construction companies are now regularly required to define their environmental impact footprint when bidding for projects, and present environmental impact assessment in procurement documents. As such a decision to maintain a green footprint as a construction company will have to come at the management level, since it will require the commitment of resources (Oliver, 1997).

With the association level of the construction companies to the various characteristics of strategic decision making concluded, the next step is to evaluate how important the various decision making approaches are to the construction companies. The literature identified three significant approaches, being the rational/classic approach, bounded rationality approach and retrospective decision approach. The core principles of these approaches, as identified in the literature, were presented to the study respondents to rank on a 5-point Likert scale to show the level of importance. Tables 4.4 and 4.5 give a summary of the responses for the rational / classic approach.

**Table 4.4 Mean score of importance of decision making approaches to construction firms in Ghana – Rational / Classic Approach**

	N	Mean	Std. Deviation	Std. Error Mean
Problems are clear	100	4.09	.588	.059
Objectives are clear	100	3.78	.825	.083
People agree on criteria and weights	100	2.89	1.021	.102
All alternatives are known	100	3.67	.869	.087

All consequences are anticipated	100	3.95	.789	.079
Decisions are rational	100	4.15	.524	.052
Decisions making is not biased in recognizing problems	100	4.25	.501	.050
All relevant information is processed	100	4.13	.536	.054

Source: Field Survey 2018

**Table 4.5 Summary of Mean score of importance of decision making approaches to construction firms in Ghana – Rational / Classic Approach**

FACTOR	MEAN SCORE	RANKING
Decisions making is not biased in recognizing problems	4.25	1
Decisions are rational	4.15	2
All relevant information is processed	4.13	3
Problems are clear	4.09	4
All consequences are anticipated	3.95	5
Objectives are clear	3.78	6
All alternatives are known	3.67	7
People agree on criteria and weights	2.89	8
<b>AVERAGE MEAN VALUE</b>	<b>3.86</b>	

Source: Field Survey 2018

The first decision making approach identified by the study is the rational / classic approach to decision making. The rational manager view assumes a rational and completely informed decisionmaker (economic man) as described by neoclassical microeconomic theory around the middle of the previous century (Simon, 1977). The characteristics of this approach were ranked by the respondents on the 5-point Likert scale to show the most important, and as already noted, only factors with mean scores above the neutral point of 3.00 are considered significant for the study. From the summary table above it can be seen that seven out of the eight core principles of the classic / rational decision making approach were deemed important to the construction companies,

with the most important being that decision making is not biased in recognizing problems. This is a very significant assertion because biases in decision making can often skew the decision making process and bring about the wrong outcomes. As noted by Schoenfeld (2011), though decisions have to be made by compromising on certain positions and stands, this cannot be done through biases towards one decision approach of the other. Rationality is very critical in the decisions that are made, in the sense that they should be clear and understandable to anyone who reviews the decision or is affected by it. There should be a clear and rational thought process that goes into making the final decision.

It is also important in the rational decision making process that all important information to the process is analyzed and included in making the final decision. As part of the decision making process it is important to collect some pertinent information before you make your decision: what information is needed, the best sources of information, and how to get it. This step involves both internal and external work. Some information is internal: you'll seek it through a process of selfassessment. Other information is external: it is online, in books, from other people, and from other sources (Verschaffel, 2011). Clarity in identifying the problem also goes a long way to ensure that the right decision is taken. Effective decision makers are keenly aware of the importance of properly identifying the problem and understanding the problem situation. Kepner and Tregoe (2005) developed a method of problem analysis that suggests that the first step in decision making, identifying the problem, is the most important step. According to these authors, providing a good definition of the problem affects the quality of the decision.

Another core principle of the rational / classic decision making process is that all possible outcomes are anticipated. In developing these alternative outcomes, managers first must specify the goals that they hope to achieve through their decision. Ideally, the manager should seek to generate as

many alternatives as possible and should attempt to ensure that the alternatives are relatively diverse, that is, not highly similar to one another. The extent of the search for alternatives is limited by the importance of the decision, the cost and value of additional information needed to evaluate alternatives, and the number of people affected by the decision (Zopounidis, 2011). Respondents finally ranked that objectives are made clear and alternatives known, as have been explained already. However, respondents did not consider it significant in the rational / classic approach for people to agree to criteria and weights, and this may be because decisions are often limited to the CEO or a small management team in most construction companies.

Next is the bounded rationality approach, which is explained, according to Simon, as quoted by Chase et al. (1998), that “human rational behavior is shaped by a scissors whose two blades are the structure of task environments and the computational capabilities of the actor.” These scissors cut the problem space into a much smaller area that is feasible to search. Bounded rationality is characterized by the activities of searching and satisficing. The three core principles were also presented to the study respondents to rank on a scale of 1 to 5 to show the level of importance to the construction companies, and tables 4.6 and 4.7 summarize the results.

**Table 4.6 Mean score of importance of decision making approaches to construction firms in**

**Ghana – Bounded Rationality Approach**

	N	Mean	Std. Deviation	Std. Error Mean
Sequential attention to alternative solutions	100	3.73	.941	.094
Heuristic approach	100	2.49	1.030	.103
Satisficing	100	2.82	1.048	.105

**Source: Field Survey 2018**

**Table 4.7 Summary of Mean score of importance of decision making approaches to construction firms in Ghana – Bounded Rationality Approach**

FACTOR	MEAN SCORE	RANKING
Sequential attention to alternative solutions	3.73	1
Satisficing	2.82	2
Heuristic approach	2.49	3
<b>AVERAGE MEAN VALUE</b>	<b>3.01</b>	

**Source: Field Survey 2018**

Tables 4.6 and 4.7 above give the analysis and ranking of the core principles of the bounded rationality approach to decision making and their importance to the construction companies. The principles were ranked on a 5-point Likert scale with 1 showing least importance and 5 showing highest importance.

From the table only one principle scores a mean value above the neutral point 3.00, which is the sequential attention given to all alternative solutions in the decision making process. Alternatives are searched for and evaluated sequentially. If an alternative satisfies certain implicitly or explicitly stated minimum criteria, it is said to “satisfice” and the search is terminated. The process of searching might be made easier by the identification of regularities in the task environment (Das and Teng, 1999). Satisficing is also a core principle of the bounded rationality approach, which says that the decision maker decides to pursue a course of action which will satisfy the minimum requirements for achieving a certain goal. However, respondents did not consider this to be an important principle for decision making by construction companies, and this may be because they always seeks to achieve the best results with any decision, and as such will not choose the path of least requirement for the best results (Chand, 2018). The heuristic approach under the bounded rationality also seeks to pursue a path for achieving a goal which does not guarantee optimal

results, perfect or logical solutions, but rather sufficient for meeting an immediate need (Huber, 1981). This was also not ranked highly as a decision making principles to the construction companies the understanding is in line with why satisficing was also not selected.

Finally the principles for the retrospective approach decision approach were also presented to the study respondents to determine their level of importance to construction companies in Ghana in their decision making process. This model does not follow a rational plan and is also biased in its process, and that the decision makers only try to rationalize their choices after the decision has been made. The principles of the retrospective decision approach are purely to seek justification for a decision already made through scientific vigor, and the decision maker hopes that through this his decision will be seen as reasoned and rational (Chand, 2018). The results of the analysis of respondents' answers are presented in tables 4.8 and 4.9.

**Table 4.8 Mean score of importance of decision making approaches to construction firms in Ghana – Retrospective Decision Approach**

	N	Mean	Std. Deviation	Std. Error Mean
Rationalization of prior choices	100	3.81	.829	.083
Justification of decision made	100	4.07	.637	.064
Best decision made after application of several other options	100	3.92	.748	.075
Scientific process to establish a decision	100	3.64	.897	.089

Source: Field Survey 2018

**Table 4.9 Summary of Mean score of importance of decision making approaches to construction firms in Ghana – Retrospective Decision Approach**

FACTOR	MEAN SCORE	RANKING
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Justification of decision made	4.07	1
Best decision made after application of several other options	3.92	2
Rationalization of prior choices	3.81	3
Scientific process to establish a decision	3.64	4
<b>AVERAGE MEAN VALUE</b>	<b>3.86</b>	

**Source: Field Survey 2018**

Tables 4.8 and 4.9 give the analysis and summary respectively of the importance ranking for the retrospective decision approach for construction companies. As with the previous decision making approaches they were ranked on a 5 point scale, with 1 representing least importance and 5 representing highest importance to construction companies. As noted already, only factors with mean scores above the median mark of 3.00 will be considered significant for the study.

From the table it can be seen that all four identified principles of the retrospective decision process were identified as significant by the respondents. Respondents ranked the justification of the decision made as the most significant principle of this approach to decision makers in the construction companies. This is important because the justification of the decision validates it and ensures that it is followed by all who are affected by it. Justification is therefore not limited to the decision maker alone but also to the other members of the company who have to work with the decision. This justification can take many different forms but Chand (2018) adds that it often takes a scientific process to show that the intuitive decision made is credible.

Though the retrospective decision making process may be seen as biased towards the intuition and cognitive perspectives, the best decision made after application of several other options. The manager selects what he believes to be the best decision and then measures its pros and cons against

other options perceived as less desirable. This process however is purely done to justify that the selected decision is actually the best but if in that process another option is found to be more viable then the manager can choose that option as a fall back option (Chand, 2018). Respondents finally showed what has been identified already, that there is a rationalization of prior choices and a scientific approach is used to make the justification legitimate. In evaluating an alternative, managers must ask the following three questions: (1) Is the alternative feasible? (2) Is it a satisfactory alternative? (3) What impact will it have on people? (Grant, 2011). The first question, whether the alternative is feasible, simply means: Can it be done? The second question concerns the extent to which the alternative is satisfactory, that is, the extent to which it addresses the problem. The third question addresses the impact of an alternative on the company personnel or those the decision will impact. Scientific processes that are applied in this case may include The Kepner Tregoe Matrix, Decision Matrix Analysis, The Analytic Hierarchy Process and Pareto Analysis.

With the three approaches identified it is important to determine which of the approaches is most significant to the construction companies, so an average of all the mean scores was determined for each approach. For the rational / classic approach the mean was 3.86, for the bounded rational approach the mean was 3.01 and finally for the retrospective decision approach the mean was 3.86. This basic analysis shows that on the whole all three approaches passed the median point and as such are considered applicable to decision making by the construction companies. However the most important approaches to the construction companies are the rational / classic approach and the retrospective decision approach.

#### 4.4 FACTORS THAT INFLUENCE THE DECISION MAKING PRACTICES OF GHANAIAAN CONSTRUCTION FIRMS

The next objective of this study is to identify the factors that influence the decision making practices of the Ghanaian construction firms. The first objective of the study has already identified the decision making practices of the construction companies and the approaches which are most important to them, and it is important that the factors which may influence these practices are also identified. The literature identified different factors which are recognizable as affecting decision making processes in different industries and these were also presented to respondents through the study questionnaire to rank on a significance scale of 1 to 5, with 1 representing least significance and 5 representing most significance. Tables 4.10 and 4.11 give the summary of the analysis.

**Table 4.10 Mean score of factors influencing decision making practices of Ghanaian construction firms**

	N	Mean	Std. Deviation	Std. Error Mean
Indecisiveness	100	2.87	1.007	.101
Procrastination	100	3.09	.926	.093
Failure to identify root problem	100	3.44	.849	.085
Failure to assess the reliability of informational sources	100	2.74	1.023	.102
Inexperience in making the right decision	100	2.94	.991	.099
Method for analyzing informational sources may be deficient	100	3.58	.822	.082

Lack of adequate implementation and evaluation plan for decisions	100	3.91	.773	.077
Heuristics used	100	2.39	1.059	.106
Past experiences in making decisions	100	3.76	.813	.081
Cognitive biases	100	3.83	.790	.079
Escalation of commitments	100	2.64	1.037	.104
Sunk outcomes	100	3.17	.901	.090

Source: Field Survey 2018

**Table 4.11 Summary of Mean score of factors influencing decision making practices of Ghanaian construction firms**

FACTOR	MEAN SCORE	RANKING
Lack of adequate implementation and evaluation plan for decisions	3.91	1
Cognitive biases	3.83	2
Past experiences in making decisions	3.76	3
Method for analyzing informational sources may be deficient	3.58	4
Failure to identify root problem	3.44	5
Sunk outcomes	3.17	6
Procrastination	3.09	7
Inexperience in making the right decision	2.94	8
Indecisiveness	2.87	9
Failure to assess the reliability of informational sources	2.74	10
Escalation of commitments	2.64	11

Heuristics used	2.39	12
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**Source: Field Survey 2018**

Tables 4.10 and 4.11 give the summary of analysis and ranking of the data collected from respondents on the factors which affect the decision making practices of construction firms in Ghana. As noted above these factors were identified in the literature and then presented here to the study respondents to rank on a significance scale of 1 to 5, and factors with mean scores above the median point of 3.00 are considered significant for this study.

From the table, out of the twelve identified factors seven were ranked above the median point and as such deemed as significant for the construction companies. The table 4.11 shows that of the twelve identified factors influencing decision making among construction firms, seven were ranked above the median point of 3.00, and the highest ranked of these is the lack of adequate implementation and evaluation plan for decisions. The decision making process also includes an implementation plan, as well as an evaluation plan to determine that the decision made actually served the right purpose. Where the implementation plan as well as its evaluation are flawed it can lead to the wrong outcomes for decisions made, and the managers may not be able to clearly determine the source of the challenge (Cooper, 2016). Next ranked are the cognitive biases which influence the decision making process. These are the thinking patterns based on observations and generalizations that may lead to memory errors, inaccurate judgements and faulty logic. These biases include beliefs, dependence on prior knowledge and hindsight. Though their influence on the decision to be made is significant, it is important to eliminate these biases as much as possible (West et al., 2008).

Respondents also noted that past experiences can certainly influence the decision making process. Juliusson et al. (2005) posit that past experiences can certainly influence the decisions that people

make. They note that where a past decision resulted in a positive outcome then it is more likely that the decision maker will follow the same method. However a decision maker will avoid a decision framework which in the past resulted in negative outcomes. It is however highly deficient to base future decisions solely on past outcomes. The method for analyzing informational sources may be deficient in the decision making process. Cooper (2016) wrote that where the method for analyzing information relating to the decision to be made is deficient, then it is possible to arrive at the wrong decision by management. Where the wrong method is selected it without a clear understanding of the information to be analyzed then it may lead to the wrong decision being made. Identifying the root of a problem is very important in the decision making process and where this is done wrongly it can also impact the process. The whole decision making process may be derailed when the identification of the root problems is flawed. It stands to reason that if the problem is not properly identified then it may be difficult to make a decision on how to solve it. Also highly significant is the factor of sunk outcomes in the decision making process. Sunk outcomes refer to unrecoverable costs or resources related to previous decisions made. The level of these sunk cost can influence how much a company will be willing to invest in a new decision which may follow the same line or have similar outcomes. Though prevailing conditions may certainly change over time, some managers may still refer to past outcomes of decisions as motivation to avoid certain new decisions (de Bruin et al., 2007). The final significant factor identified as affecting decision making among construction firms is procrastination. This is defined as the avoidance of undertaking an action until the very last minute in most cases (Clear et al., 2018). With regards to decision making, it is the delay in taking a decision that is needed until the last minute, and this may be attributed to different factors. For some managers, the decision may be postponed because of uncertainty with the outcomes, or may be delayed to see if a situation that requires the decision changes.

## CHAPTER FIVE

### SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

#### 5.1 INTRODUCTION

The final chapter of the study is to provide a summary on the findings which were made in the fourth chapter, and thereby draw conclusions in relation to the research objectives and make relevant recommendations. The objectives of the study included the following:

- I. To identify the various decision making practices of Ghanaian construction firms, and
- II. To explore the factors that influence the decision making practices of Ghanaian construction firms
- III. To make recommendations for best practices in decision making for Ghanaian construction firms

#### 5.2 SUMMARY OF FINDINGS

The findings made in relation to the stated objectives of the study include the following:

##### 5.2.1 Identify the various decision making practices of Ghanaian construction firms

The most significant characteristics of decision making associated with the construction industry include concern with achieving long term advantages and dealing with wide organizational and project activities. Also significant are the dealings with long term company objectives and operational strategies, harmonizing company resources and finally the environmental impact of these decisions. With the significant strategic decision making characteristics identified the next was to determine which of the decision making approaches were most significant also to construction companies. It was found that for the construction firms, rational / classic approach,

retrospective decision approach and the bounded rational approach were the most significant in that order.

### **5.2.2 Explore the factors that influence the decision making practices of Ghanaian construction firms**

A total of twelve factors were identified which affect the decision making process in the literature, and these were also presented to the study respondents to rank on the bases of how significant they are to influencing their decision making process. Of the twelve factors identified seven of them were shown to have a significant influence on the decision making process of construction firms and included lack of adequate implementation and evaluation plan for decisions and cognitive biases. The rest were found to include the influence of past experiences, wrong methods for analyzing information, failure to identify root problems, sunk outcomes and procrastination.

### **5.2.3 Make recommendations for best practices in decision making for Ghanaian construction firms**

Construction companies need to develop policies on different decision scenarios that affect their operations and competitiveness in the industry, and as well, they need to invest in their managerial capacities, which can influence their decision-making capabilities. Strategic decision-making is significant in any industry because it is the difference between survival and collapse for any firm and where necessary the companies can widen the depth of knowledge relied on to make decisions.

## **5.3 CONCLUSIONS**

Based on the findings made in the study the following conclusion could be drawn based on the objectives set out in the study. The aim of the study was to explore the decision making practices of construction firms in Ghana, and the first objective was to identify the decision making practices

of construction firms in Ghana. Based on the findings from the study it can be concluded that there is ample knowledge among the construction professional about strategic management decisions and how they affect company operations and projects. With regards to the characteristics of strategic decision making which are associated with the construction firms it can also be concluded that the construction firms identify with those that deal with their long term organizational objectives and projects, management of firm resources and ensuring that they can maintain their competitive advantage in the construction industry. However in making decisions related to the firm operations and projects the construction firms often have to rely on rational decision making processes with require structure decisions, with all options and information fully understood. However, the decision making processes can also take a more intuitive process where decisions are made and justified afterwards.

The decision making process can however be influenced by certain internal and external factors for these construction firms, and the most significant of these relate to implementation plans, past decisions and cognitive biases as well as the wrong identification of problems and wrong methods for evaluating decisions.

#### **5.4 RECOMMENDATIONS**

Based on the findings and conclusions drawn for the study it is important that construction companies develop policies on different decision scenarios that affect their operations and competitiveness in the industry. Managers and decision makers need to invest in their managerial capacities which can influence their decision making capabilities. Strategic decision making is significant in any industry because it is the difference between survival and collapse for any firm, and where necessary the companies can widen the depth of knowledge relied on to make decisions.

## REFERENCES

Ahmed, P. K. (2011). *Innovative management: Context, strategies, systems, and processes*. Upper

Saddle River, NJ: Prentice Hall.

Alsendi, M. A. Y. (2015) Studying the effect of decision making on delayed construction projects.

Submitted thesis; The George Washington University, Manama, Kingdom of Bahrain

Armstrong, J. S. (2001) "Role playing: a method to forecast decisions". In Armstrong, Jon Scott:

Principles of forecasting: a handbook for researchers and practitioners. International series

in operations research & management science. Boston, MA: Kluwer Academic Publishers.

pp. 15–30. doi: 10.1007/978-0-306-47630-3\_2. ISBN 0792379306.

Burns, N., & Grove, S. (2001). *The practice of nursing research: conduct, critique and utilization*.

Philadelphia, Pennsylvania: W.B. Saunders.

Cambridge English dictionary (2018) Definition of decision-making, Available from

<https://www.cambridgedictionary.com/definition/decision/> [Accessed on 27/07/18]

Chase V. M., Hertwig R. & Gigerenzer G. (1998) Visions of rationality, Trends in Cognitive

Sciences, 2(6), pp. 206–214.

Cheung K. K. T. (2005). Development and Testing of a Method for Forecasting Prices of Multi

Storey Buildings during the Early Design Stage: The Storey Enclosure Revisited, PhD

Thesis, Queensland University of Technology.

Churchman C. W. (1971), *The design of inquiring systems: Basic concepts of systems and*

*organization*, Basic Books Inc., Ney York (NY).

Clear, T. R., Reisig, M. D., & Cole, G. F. (2018). *American corrections*. Cengage Learning.

Cohen M. D., March J. G. & Olsen J. P. (1972) A garbage can model of organizational choice,

reprinted in:

Construct Ghana (2016) Construction industry – Economic contributor [Online] Available from <https://www.constructghana.com/construction-industry-economic-contributor/> [Accessed on 28/06/18].

Cooper, T. (Ed.). (2016). *Longer lasting products: alternatives to the throwaway society*. CRC Press.

Creswell, J.W. (1998). *Qualitative Inquiry and Research Design: Choosing among Five Traditions*, Sage, Thousand Oaks, CA

Das, T. K., & Teng, B. S. (1999). Cognitive biases and strategic decision processes: An integrative perspective. *Journal of Management Studies*, 36(6), 757-778.

de Bruin, W., Parker, A. M., & Fischhoff, B. (2007). Individual differences in adult decisionmaking competence. *Journal of personality and social psychology*, 92(5), 938.

Dietrich, C. (2010). Decision making: factors that influence decision making, heuristics used, and decision outcomes. *Inquiries Journal*, 2(02).

Durdyev, S. and Mbachu, J. (2011). On-site labour productivity of New Zealand construction industry: Key constraints and improvement measures, *Journal of Construction Economics and Building* 11 (3): 18-33.

Eisenfuhr, F. (2011). *Decision making*. New York, NY: Springer.

Ehrgott, M. (2011). *Trends in multiple criteria decision analysis*. New York, NY: Springer.

Fagbenle, O. I., Adeyemi, A. Y., & Adesanya, D. A. (2004), The impact of nonfinancial incentives on bricklayers' productivity in Nigeria, *Construction Management and Economics*, 22(9), 899-911.

Ghana Statistical Service (2017) Ghana population statistics [Online]

<https://www.statsghana.gov.gh/> [Accessed on 28/06/18]

Gilboa, I (2011). *Rational choice*. Cambridge, MA: MIT Press

Gray, H. M., Gray, K., and Wegner, D. M. (2007) 'Dimensions of mind perception' *Science*, 315, 619

Grant, R. (2011). *Contemporary strategy analysis*. New York, NY: Wiley

Hall, C. C., Ariss, L. and Todorov, A. (2007). "The illusion of knowledge: when more information reduces accuracy and increases confidence" (PDF). *Organizational Behavior and Human Decision Processes*. 103 (2): 277–290.

Harris, A. (2009). Attributions and institutional processing: How focal concerns guide decisionmaking in the juvenile court. *Race and Social Problems*, 1(4), 243-256.

Hastie, R. (2010). *Rational choice in an uncertain world: The psychology of judgment and decision making*. Thousand Oaks, CA: Sage.

Hicks, M. J. (2005). *Problem solving and decision making: Hard, soft, and creative approaches*. Belmont, CA: Cengage Learning

Huber, G. P. (1981) The nature of organisational decision making and the design of decision support systems, *Management Information Systems Quarterly*.

Gartenstein, D. (2018). Importance of Ethics in Accounting & Financial Decision Making; <http://yourbusiness.azcentral.com/importance-ethics-accounting-financial-decisionmaking-4394.html>. (accessed 5/23/2018).

Juliusson, E. Á., Karlsson, N., & Gärling, T. (2005). Weighing the past and the future in decision making. *European Journal of Cognitive Psychology*, 17(4), 561-575.

Juneja, B. (2018) Construction industry statistics in Ghana: [Online] Available from <http://www.statsghana.gov.gh/docfiles/2010phc/>

Kahneman, D. and Tversky, A. (2000) *Choices, values, and frames*. New York; Cambridge,

UK: *Russell Sage Foundation; Cambridge University Press.*

p. 211. ISBN 0521621720. OCLC 42934579.

- Keen, P. G. W. & Scott, M. S. (1978) *Decision support systems: An organizational perspective*, Addison-Wesley, Reading (MA).
- Kepner, C. H., & Tregoe, B. B. (2005). *The new rational manager* (rev. ed.). New York, NY: Kepner-Tregoe.
- Klein, G. (1998) *Sources of power: How people make decisions*, MIT Press, Cambridge (MA).
- Krabuanrat K. & Phelps R. (1998) Heuristics and rationality in strategic decision making: An exploratory study, *Journal of Business Research*, 41, pp. 83–93
- Kumar, R. (2005). *Research Methodology: A step-by-step guide for beginners*, South Melbourne: Longman
- Lindblom C.W. (1959) The science of muddling through, *Public Administration Review*, 19(2), pp. 79–88.
- March, J. G. (1988) *Decisions and Organizations*, Basil Blackwell, Oxford.
- McQueen, R. A. and Knussen, C. (2002). *Research Methods for Social Science: A Practical Introduction*. Harlow, Prentice Hall.
- Mendel, J. (2011). *Perceptual computing: Aiding people in making subjective judgments*. New York, NY: Wiley.
- Merriam-Webster's Online Dictionary (2015) "Questionnaire," /www.merriam-webster.com/dictionary/questionnaire (accessed 2018, July, 24)
- Merriam Webster Dictionary (2018) Definition of decision [Online] Available from <https://www.merriamwebster.com/decision/> [Accessed on 28/06/18]
- Merriam-Webster Dictionary (2018) Definition of decision, [Online] Available from <https://www.merriamwebster.com/definition/decision/> [Accessed on 27/07/18]

- Mitroff, I. I. & Linstone, H. A. (1993) *The unbounded mind*, Oxford University Press, New York (NY).
- Narayanan, M. P. (2005). *Finance for strategic decision making: What non-financial managers need to know*. New York, NY: Wiley.
- Newton, P., Miller, D. C., Byenkya, M. A. A., & Agrawal, A. (2016). Who are forest-dependent people? A taxonomy to aid livelihood and land use decision-making in forested regions. *Land Use Policy*, 57, 388-395.
- Oliver, C. (1997). Sustainable competitive advantage: combining institutional and resource-based views. *Strategic management journal*, 18(9), 697-713.
- Oxford Advanced Learner's Dictionary (2018) Definition of decision making, Available from <https://www.oxforddictionary.com/definition/decision/> [Accessed on 27/07/18]
- Oxford Business Group (2017) Ghana's construction sector continues to be a major engine for growth. [Online] Available from <https://www.oxfordbusinessgroup.com/overview/momentum-construction-sector-ghana/> [Accessed on 28/06/18]
- Papadakis, V. M. (1998) Strategic Decision-Making Processes: The Role of Management and Context. *Strategic Management Journal*, 19 (2), 115 – 147
- Robert Harris. (2009). Introduction to decision making, [Online] Available from <http://www.virtualsalt.com/crebook5.htm> 2 edition
- Schoenfeld, A. H. (2011). *How we think: A theory of goal-oriented decision making and its educational applications*. New York, NY: Routledge.
- Shah, A. K., & Oppenheimer, D. M. (2008). Heuristics made easy: An effort-reduction framework. *Psychological bulletin*, 134(2), 207.

Simon, H. A. (1977) *The new science of management decision*, 2nd Edition, Prentice Hall, Englewood Cliffs (NJ).

Simon, H. A. (1979) Rational decision making in business organizations, *American Economic Review*, 69(4), pp. 493–513.

The Business Dictionary (2018) Definition of decision [Online] Available from <https://www.businessdictionary.com/decision/> [Accessed on 28/06/18]

The Business Dictionary (2018) Definition of decision-making [Online] Available from <https://www.businessdictionary.com/decision-making/> [Accessed on 28/06/18]

Trewtha, K and Newport, D. (1982) Definition of decision-making. [Online] Available from <https://www.smallbusiness.chron.com/examples-qualitative-methods/> Accessed on 08.03.18

Verschaffel, L. (2011). *Use of external representations in reasoning and problem solving: Analysis and improvement*. New York, NY: Taylor & Francis.

West, R. F., Toplak, M. E., & Stanovich, K. E. (2008). Heuristics and biases as measures of critical thinking: Associations with cognitive ability and thinking dispositions. *Journal of Educational Psychology*, 100(4), 930.

World Bank (2015) *Stocktaking of the housing sector in Sub-Saharan Africa – Summary Report*

Zopounidis, C. (2011). *Multiple criteria decision aiding*. New York, NY: Nova Science Publishers.

## APPENDIX

### Appendix 1

**KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY**

## RESEARCH QUESTIONNAIRE

### DECISION-MAKING PRACTICES OF CONSTRUCTION FIRMS IN GHANA

Dear Sir / Madam,

This questionnaire seeks to elicit information from staff of construction companies and consultancies as part of a research on the above topic, for the award of an MSc in Construction Management. The expectation is that your participation in this study will bring solutions to strategic decision-making in the construction industry.

All information provided will be treated with confidentiality.

Thank you for your cooperation.

Sincerely,

(Researcher)

**Kindly tick that which applies to you**

#### SECTION A – DEMOGRAPHIC DATA

1. Please your professional designation in the construction industry

- A. Building contractor [  ]
- B. Engineer [  ]
- C. Quantity surveyor [  ]
- D. Architect [  ]
- E. Project Manager [  ]
- F. Other .....

2. What is your highest educational qualification?

- A. PHD [  ]
- B. Masters [  ]
- C. Bachelor's Degree [  ]

D. Higher National Diploma [ ]

E. Technical Diploma [ ]

F. Other .....

3. How long have you worked in the construction industry?

A. Less than a year [ ]

B. 1 – 5 years [ ]

C. 6 – 10 years [ ]

D. 11 – 15 years [ ]

E. 16 – 20 years [ ]

F. Above 20 years [ ]

4. How many construction projects have you worked on in the industry?

A. 1 – 5 projects [ ]

B. 6 – 10 projects [ ]

C. 11 – 15 projects [ ]

D. 16 – 20 projects [ ]

E. 21 – 25 projects [ ]

F. Above 25 projects [ ]

5. Are you aware of the concept of Strategic Decision Making?

A. YES [ ]

B. NO [ ]

6. Who is in charge of making Strategic Management Decisions in your company?

A. CEO [ ]

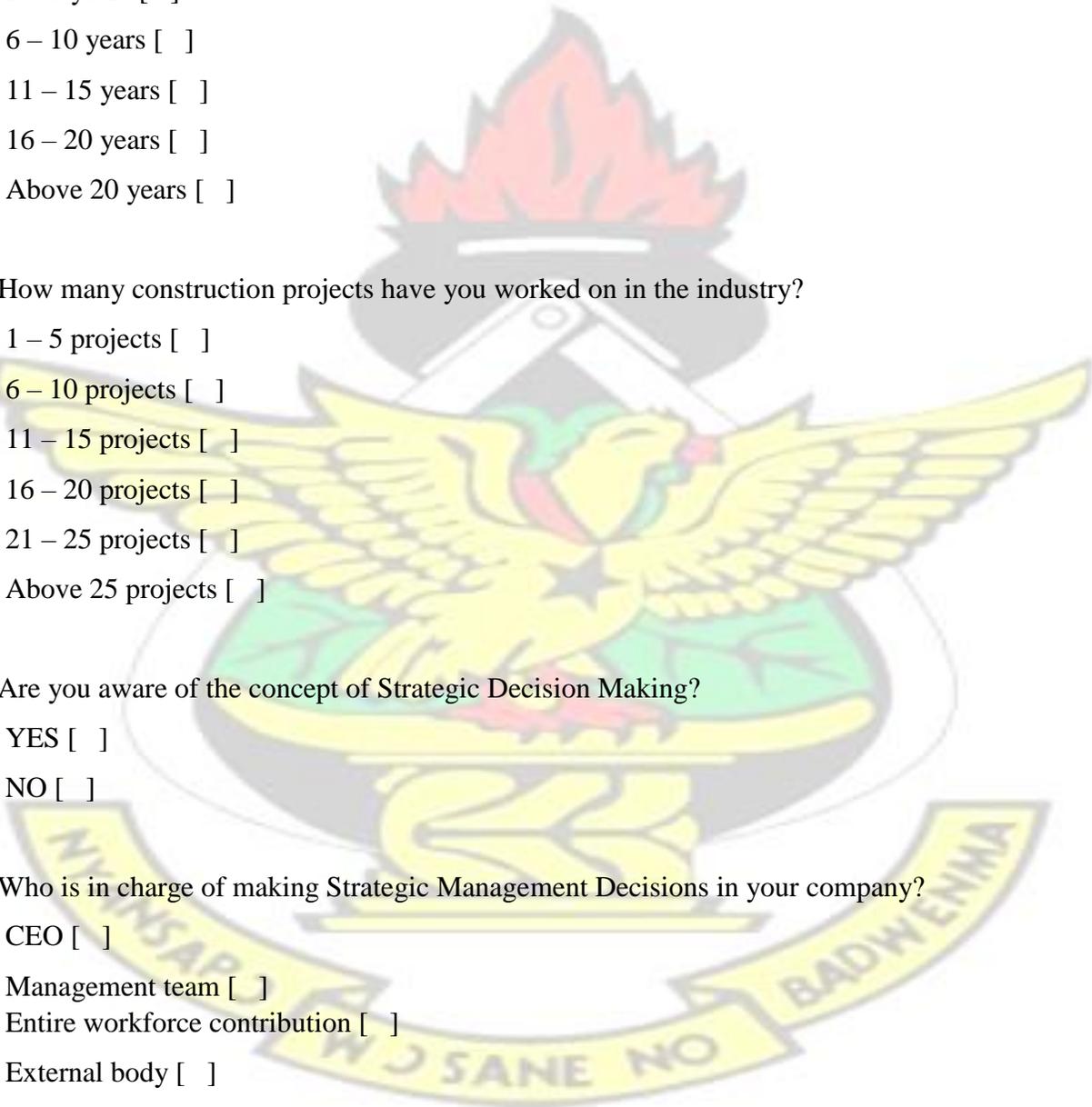
B. Management team [ ]

C. Entire workforce contribution [ ]

D. External body [ ]

E. Other.....

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## SECTION B – DECISION-MAKING PRACTICES OF CONSTRUCTION FIRMS IN GHANA

This section of the questionnaire is to determine the decision-making practices of construction firms in Ghana, in relation to strategic management decision-making. The first part identifies the characteristics of strategic decision-making as relates to construction companies, and the second part deals with the decision making practices that the companies rely on.

7. Please rank on a scale of 1 – 5 the association the construction companies in Ghana have with the following characteristics of strategic management decision-making. Please use the scale 1 – No association, 2 – Low Association, 3 – Neutral, 4 – High Association, 5 – Very High Association.

	1	2	3	4	5
They have major resource propositions for the organization and projects					
Harmonizing organizational resource capabilities					
Decisions deal with a wide variety of organizational or project activities					
Deal with long term activities for the company or projects					
Decisions are made with environmental impact as a concern					
Impact the operational strategies that the organization applies					
Are concerned with achieving long-term advantages for the company					

8. Please indicate on the scale of 1 – 5 how important the following approaches to decision making are to the construction companies in Ghana. Please rank on the scale 1 – Not Important, 2 – Less Important, 3 – Neutral, 4 – Important, 5 – Very Important

<b>Rational / Classic Approach</b>	1	2	3	4	5
Problems are clear					
Objectives are clear					
People agree on criteria and weights					

All alternatives are known					
All consequences are anticipated					
Decisions are rational					
Decisions making is not biased in recognizing problems					
All relevant information is processed					

<b>Bounded Rationality Approach</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Sequential attention to alternative solutions					
Heuristic approach					
Satisficing					

<b>Retrospective Decision Model</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Rationalization of prior choices					
Justification of decision made					
Best decision made after application of several other options					
Scientific process to establish a decision					

### **SECTION C - FACTORS THAT INFLUENCE THE DECISION MAKING PRACTICES OF GHANAIAN CONSTRUCTION FIRMS**

This section of the questionnaire is to determine the factors that influence the decision making practices of Ghanaian construction firms.

9. Please rank on the scale of 1 – 5 how significant the following factors which affect the decision making practices are to Ghanaian construction companies. The scale is 1 – Not Significant, 2 – Less Significant, 3 – Neutral, 4 – Significant, 5 – Very Significant.

<b>Retrospective Decision Model</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Indecisiveness					
Procrastination					
Failure to identify root problem					
Failure to assess the reliability of informational sources					
Inexperience in making the right decision					

Method for analyzing informational sources may be deficient					
Lack of adequate implementation and evaluation plan for decisions					
Heuristics used					
Past experiences in making decisions					
Cognitive biases					
Escalation of commitments					
Sunk outcomes					

## APPENDICES

### Appendix 1

#### KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

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E. Other.....

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Justification of decision made					
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Scientific process to establish a decision					

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Past experiences in making decisions					
Cognitive biases					
Escalation of commitments					
Sunk outcomes					

