CHAPTER ONE

INTRODUCTION

1.1 Background of Study

Total Quality Management (TQM) is considered as an approach of continuous improvement in all quality aspects of the whole processes, goods, services and employees within the firm, and it aims at adding value to the delivered products to customers through continuous development of firms' processes and systems (Hill, 2008). It is a philosophy of continuous organizational development through the employment of customer satisfaction and by basing it on the permanent workers' contributions in order to improve goods, services and processes (AL-Asiri, 2004). Prajogo (2005), asserted that TQM is a process to enhance flexibility, effectiveness, and firm competitiveness to meet customers' needs and expectations. If correctly applied, it will assist a construction company in improving its performance

Quality has been an important issue for organizations for many years. The early focus on quality evolved from inspection to quality control and later to quality assurance, according to Dale (1999, cited by Soltan, 2006), during the 1990s, TQM evolved as a common term among organizations in different parts of the world. TQM has developed in many countries into a holistic framework (e.g. National quality or internationally recognized awards such as the Deming award, Malcolm Baldrige National Quality Award-MBNQA and European Foundation for Quality Management EFQM) aimed at helping organizations achieve excellent performance particularly in customer and business results. TQM is one of the most important management innovations of the 20th century, and it has probably had more influence on contemporary management practices than any other management movement. In fact, the principles of TQM is

related to competitiveness of enterprises gained and main purpose is high efficiency, product and market differentiation, high quality, low cost and achieve the high competitiveness power (Yatkin, 2004).

Since Nigeria attained independence in 1960, considerable efforts have been directed towards industrial development. The initial efforts were government-led through the vehicle of large industry, but lately, emphasis has shifted to Small and Medium Scale Enterprises (SMEs) following the lessons learnt from the success of SMEs in the economic growth of Asian countries (Ojo, 2003). The importance of SMEs in a developing economy like Nigeria can be enormous because Nigeria‘s economy is dominated by SMEs in agricultural, construction, manufacturing, commerce and industry, services, trading. They play a significant role in both developed and developing economies. Statistics has shown that SMEs contribute over 55% of Gross Domestic Product (GDP) and over 65% of total employment in developed economies and it also play a significant role by contributing 60% of GDP and over 70% of total employment in developing economies (Small and Medium Scale Enterprises Development Agency of Nigeria, 2012, Moriam, Mukaila and Hameedat 2015). It is against this background that one needs to emphasize the desirability of doing all that is possible to enhance the orderly growth and development of SMEs in Nigeria. Small and medium scale construction firms (SMCFs) are not left as they are also part of the SMEs sector.

There is no generally accepted definition of small or medium businesses because the classification of businesses into large, medium or small scale is a subjective and premised on different value judgement (Ekpenyong, 1997). The definition aims at setting some limits (lower and upper) that will assist in achieving the set purpose. Such limits can be in terms of level of

capitalization, sales volume, and number of employees. Abdullah, Bilau, Enegbuma, Ajagbe, Ali and Bustani, (2012) highlighted that over time in Nigeria, the government has used various definitions and criteria in identifying what is referred to as Small and medium firms. At certain point in time, it used investment in machinery and equipment and working capital at another time, the capital cost and turnover were also used (Umar, 2008). The National Association of Small and Medium Scale Enterprise (NASME) defines a small sized firm as an organization with less than 100 employees and an annual turnover of ₦500 million. The Central Bank of Nigeria defines SMCFs as an enterprise with an asset base of ₦200 million excluding land and working capital with staff employed by the firm not less than 10 and not more than 300 (Kelly, 2006). The definition of MSMEs in Nigeria as contained in the National Policy on Micro, Small and Medium Enterprises (SMEDAN, 2007) is adopted in this study which states that Micro enterprises has less than 10 employees or Less than ₦5 million assets excluding land and buildings, small enterprises has between 10 to 49 employees or 5 to less than ₦50 million assets excluding land and buildings, that Medium enterprises 50 to 199 employees or ₦50 to ₦500 million assets excluding land and buildings.

SMCFs are mostly indigenous firms, however they do not perform as expected. Multinational and large construction firms though few in number, operate on a large scale and execute the majority of contracts in Nigeria; in contrast, indigenous contractors considerably outnumber their multinational counterparts and operate on small and medium scales, but they are responsible for a very small proportion of the value of contracts executed in Nigeria (Ogunpola, 1984; Olateju, 1991; Samuel, 1999 and Idoro, 2004). This implies that a large number of registered SMCF's services have not been adequately utilized on the delivery of capital projects by the client.

Shittu (1997) surmised that the combination of the small and medium construction firms make up 90 percent of the total registered contractors in Nigeria. Unfortunately, they have not played the significant and crucial role they are expected to play in Nigeria's economic growth, development and industry (Basil, 2005).Idoro (2010) opined that multinational and large construction firms have however continued to succeed in Nigeria as the preferred type of Construction Company. Idoro (2010) also discovered that Nigerian clients give expatriate contractors preference over their indigenous counterparts in the award of contracts because they perceive the performance of the former is better than the latter in work quality standards. In the context of construction project, contractor performance is usually considered as a significant contributor to client satisfaction. Performance is therefore key for any contractor to survive. The challenge before indigenous contractors is to determine the way in which the confidence of clients can be gained and their impression of these contractors can be reversed. One of such ways is the application of Total Quality management. It is increasingly been adopted by construction companies as an initiative to solve quality problems and to meet the needs of the final customer (Kanji & Wong, 1998 as cited in Hoonakker, 2010). The major findings from a study by Aniagbaoso (2014) shows that multinationals take TQM seriously because it is what makes their brand unique and different from any other brand in the market. And the quality of their product affects the demand of their products. For SMCFs to be able to compete effectively, they need to adopt some of the practices of their multinational and large counterparts, especially those practices that are very prominent in giving them a competitive advantage. According to Faihan (2013), one of such practices is TQM. Pheng and Teo (2004) believed that the benefits of higher customer satisfaction, better quality products and higher market are often obtained following the adoption of TQM by construction companies. Although the interest and the need to implement

TQM continue to be high among large organisations, small organisations are still lacking behind in TQM implementation (Hansson, 2002).

TQM has become one of the most successful practices in helping companies enhance competitiveness and prosperity through ensuring sustainable growth (Osayawe and McAndrew, 2005). TQM focuses on the process of improvement, customer and supplier involvement and training and education in an effort to achieve customer's satisfaction, cost effectiveness and defect-free work and it provides culture and climate essentials for innovation and for technology advancement (David and Murat,1997) . When TQM is fully applied in small and medium construction firms as an improvement tool, it will increase their profit level, increase the level of employment, and expand their business, innovation and overall development of the economy in Nigeria.

This issue is crucial because the majority of firms in the construction industry are small firms (Riza, 2015). Therefore, it is important to focus improvement efforts on TQM of small organisations so that the overall industry performance may be improved. The desires of all beneficiaries such as stakeholders, customers (internal and external) to attain success in the construction industry are not enough to achieve the desired quality. TQM has become one of the most successful practices in helping companies enhance competitiveness and prosperity through ensuring sustainable growth, (Osayawe and McAndrew, 2005). As such, all parties should be involved in implementation of TQM in other to effectively improve the construction industry in proper and methodological way.

1.2 Statement of the Problem

Over the years, SMCFs in Nigeria have recorded a low level of participation and have often been sidelined in large scale construction activities (Nnadi and Alintah-Abel, 2015). They have not had a fair share of major construction activities in the country, as they are often awarded to multinational or large contractors whom are considered more technically and managerially more superior and efficient in funds acquisition and project execution. According to Eze and Okpala (2015), Obasanjo (2002) in his address at the commissioning of the headquarters of Small and Medium Development Agency of Nigeria (SMEDAN) in Abuja noted that there was a great disconnection between the SMEs and the large companies in Nigeria, pointing out that the multinational companies dominated business in the country even in the area of finished products. This is a dolorous situation that calls for deep and sober reflection.

Seaver (2001) affirms that successful companies need to meet their customer expectations through superior implementation of their quality policies, however currently many customers are still not satisfied with the quality of constructed projects. Construction materials sometimes do not meet specified standards and this also leads to subordinate quality on projects. Past studies have reported that the application of quality management practices in SMCFs helps them to sharpen their market focus, use their material and human resources more efficiently and improve their competitive position in the market (Ahire and Golhar 1996). However, compared with large organisations, SMCFs have been slow to adopt the quality management tool such as TQM (Ghobadian and Gallear, 1996). A study by Ahire, Golhar and Waller (1996), in which 500 firms that considered themselves as practising QM, approximately half of which were SMEs, showed that one-third experienced benefits while the other two thirds had failed.

Akintunde (2003) stated that the lack of technical competence, deficiency in managerial skills, poor financial management and slow adaptation to modern innovation on the part of the small and medium contractors are some of the reasons for employing large contractors in Nigeria. Idoro and Akande–Subar (2008) compared client assessment of the quality performance of SMCFs and large contractors in Nigeria. The results indicated that the quality of materials used for construction and the standard of workmanship of large contractors are better than those of small and medium counterparts while the magnitude of defective work and the amount of retention fee spent to rectify defects that occur during defect liability period are higher in projects executed by small and medium scale contractors than those of large contractors. Furthermore, Oke and Falemu (2009) investigated the effects of poor quality materials and workmanship on building collapse. The study showed that the quality of materials and standard of workmanship used by small and medium contractors in Nigerian is not satisfactory and that the problem lies in the use of substandard materials supplied to site and inefficient supervision of workmen.

Tunji-Olayeni *et al*., (2017) noted that poor construction leads to rework. Oyewobi *et al*. (2011) discovered that cost of rework was about 5% of the total cost of construction. All these problems have resulted into substantial increases observed in the cost of construction projects. According to Mbachu and Nkado (2004), this substantial increase has negative implications for major stakeholders in the industry which includes loss of client confidence in consultants, added investment risks, inability to deliver value to clients, and disinvestment in the construction industry; thereby undermining the viability and sustainability of construction firms and the construction industry at large.

The level of quality of construction works in Nigeria is becoming alarming. The high level of dilapidation and deterioration of roads and other construction infrastructural facilities seen in South-East zone could be attributed to abysmal performance of construction project management (Ubani , Korocha and Emeribe ,2015).Some public buildings in south-east like some of millellium intervention projects, TET Fund projects, state universal basic education boards' projects etc are facing quality problems, in some cases; notably cracks. The poor quality has led to poor finishings, early maintenance, rework or abandonment. Similarly, south-east federal roads are 32,100km out of which 26,500km are paved (CBN, 2003). Some of such roads include Owerri-Onitsha, Abakaliki-Enugu, Enugu-Onitsha, 9th Mile-Otukpa, Umuahia-Bende roads etc. it has been observed that most of the roads are in bad shape due to many factors, including poor construction. One begin to question the quality level of those works. Ndefo (2012) stated the causes of road failure and some of them include poor design and construction, poor maintenance culture, poor highway facilities, poor laboratory and in-situ test on site, use of low quality materials, poor workmanship, or supervision, low knowledge base, no local standard of practice inadequate sanctions for highway failures and not co-opting local professional bodies in highway design, construction and maintenance. All these factors listed anchor on various factors of total quality management. This means that total quality management is key for quality and sustainable projects.

With the construction opportunities that are available because of the state of construction work, small and medium construction firms have more chances to survive. To be competitive in today's market, it is essential for small and medium scale construction firms to provide more consistent quality and value to their owners/customers. Interest in quality issues has been on the rise as firms come to realize that providing better quality leads to lower costs, reduction in

appraisals and failure costs, and a higher market share. Within the past decade, the process of achieving quality improvement has become a priority for many organizations. Recent evidence also suggests that more and more corporations and organizations tend to recognize the importance and necessity of quality improvement if they are to survive in today's domestic and worldwide competition. (Mohammad and Anshul, 2014)

Many authors and researchers have conducted studies on the theories and implementation of TQM in different industries such as manufacturing and services, while few have focused on the construction industry. However, presently, study on how the Small and medium construction firms in Nigeria could be strengthened using TQM as a tool have not been conducted in sufficient details especially in the South-Eastern part of Nigeria thus the need for this study has become very crucial.

1.3 Aim and Objectives the Study

The aim of this research is to develop a total quality management model for small and medium scale construction firms in South-East Nigeria for competitive advantage and effective service delivery.

The research Objectives include:

1. To examine the perception of the concept of total quality management by small and medium construction firms in South-East Nigeria;
2. To evaluate the current level of total quality management implementation in small and medium scale construction firms in South-East Nigeria;
3. To determine the Critical Success Factors of total quality management and their impact on small and medium firms' strategies for success in South-East Nigeria;

4. To identify the relationship between implementation of total quality management and Competitive advantage;
5. To identify significant impact of small and medium construction firms' strategies on competitive advantages in South-East Nigeria;

1.4 Research Questions

1. What are the perceptions of the concept of TQM by small and medium construction firms in South-East Nigeria?
2. What is the current level of TQM implementation in SMCFs in South-East Nigeria?
3. What are the critical success factors of TQM and their impact SMCFs' strategies for success in South-East Nigeria?
4. What are the relationship between implementation of TQM and Competitive advantage?
5. Is there significant impact between SMCFs' strategies and competitive advantages in South-East Nigeria?

1.5 Research Hypotheses

i. H_0: The level of implementation of TQM in SMCFs in South-East Nigeria is not low.
ii. H_0: Critical success factors of TQM does not significantly affect companies' strategies in South-East Nigeria.
iii. H_0: There is no significant relationship between implementation of TQM and competitive advantage in South-East Nigeria.
iv. H_0: There is no significant impact between companies' strategies and competitive advantages in South-East Nigeria.

1.6 Scope and Delimitation

The research focused on developing an effective TQM model for SMCFs in South-East of Nigeria. The study holistically reviewed the concepts, principles, tools and techniques of TQM as well as comparison of different existing TQM frameworks and models such as the Deming Prize, MBNQA and EQA and other scholarly frameworks to understand the most common critical success factors (CSFs) for the construction sector aimed at achieving quality and efficiency within the SMCFs. After that, the research established a general TQM model to be implemented.

Furthermore it studied the level of awareness and implementation of TQM by both SMCFs in South-East, Nigeria. It equally examined the effect of implementation of TQM company strategies and competitive advantages in south-east, Nigeria. The study assessed the state of some of the projects executed by some of those construction firms. Due to increase in construction firms in South-East and accessibility, the study covered only Small and Medium Construction firms who participated in executing government contracts in South-East states of Nigeria. The states include: Abia, Ebonyi and Enugu.

The clients under study include the state governments who awarded the contracts to the construction firms. In addition, Small and Medium Construction Scale Firms who are registered in South-East states will make up the target group.

1.7 Significance of the Study

TQM has become one of the most successful practices in helping companies enhance competitiveness and prosperity through ensuring sustainable growth (Osayawe and McAndrew,

2005). The effective implementation of TQM will also increase customer satisfaction with the service offerings (Omachonu and Ross, 1994).

The primary aim of every research is to contribute and update the existing knowledge on the subject under study. This research therefore is to be used by SMCFs in south-east Nigeria since the findings will provide knowledge of the significant of practicing TQM, so as to improve organizational strategies and competitive advantages. Policy makers can access necessary information that may be required to set up guidelines, rules and procedures that will regulate the practice, rules and procedures that will regulate the practice of Total Quality Management in the SMCFs in south-east Nigeria, to enhance competitive advantages.

The findings of this research ought to create theory in practice by providing information on the dimensions of total quality management practices that may be adopted as benchmarks and references by professionals and academicians.

Furthermore, the model that will be generated will not only help the SMCFs in Nigeria but can be applied in other developing countries where they have similar environment.

1.8 Limitations of the Study

The following limitations were encountered by the researcher in the cause of this research:

(i) This research work is limited to south-east Nigeria and therefore lacks generalization.

(ii) This research work focuses on limited variables in order to measure competitive advantage. There could be more variables used to measure and evaluate competitive advantage.

(iii) The small and medium construction firms that made up the population were limited to those who had registered with the South-East government between 2017 to 2018.

(iv) There was the problem of data collection from offices due to excessive bureaucratic bottlenecks of the public sector and 'official secret syndrome', especially concerning the registered firms in their various states. During the oral interviews, there was also lack of co-operation of some staff of small and medium construction firms who failed to understand the purpose of the research. They became either sceptical or reluctant and suspicious when questions on quality issues were asked, especially when it concerns the management of their firms. This would have affected the work, however to overcome it, an introductory letter was drafted by the researcher's school introducing the researcher as their student and indicated that it was for academic purposes. In addition the respondents were told that they can be anonymous if desired. This helped in reducing their fears and made them to be more relaxed in realising information.

(v) Having less access to customers of firms was another limitation for this study. A few firms generously agreed to contact and ask questions from their customers that the researcher will like to express profound gratitude to them

(vi) There was also limited publication and empirical researches on development of total quality management for small and medium construction firms, especially in developing country like Nigeria. Most publications and researches focused on general total quality management model in construction industry as a whole, and do not specifically address the small and medium construction firms.

(vii) Due to the fact that the research was simultaneously conducted at Abia, Ebonyi and Enugu respectively, more personnel (research assistants) were needed to administer the questionnaires, which gave rise to some financial constraints and delays. Some questionnaires were lost in the hands of the respondents, though they were replaced.

1.9 Assumptions of the Study

According to Leedy and Ormrod, (2010), assumptions are conditions that are taken for granted. The underlying assumption was therefore made and held constant in carrying out this research. That is; there is need for small and medium construction firms in South-East Nigeria to require and operate a TQM model for competitive advantage and effective service delivery.

1.10 Area of Study

The study was carried out in South-East region of Nigeria.

South-Eastern Nigeria was one of the initial 12 states created during the Nigerian Civil War, which later broke into the present Akwa Ibom State and Cross River States respectively. South-East became the name of one of the six geo-political zones in the country in the 1990s consisting of Abia State, Anambra State, Ebonyi State, Enugu State and Imo State. The local language in this region is Igbo.

According to Igbokwe (2007), South-East region is located between latitudes 04^0 30'N and 07^0 30'N and longitude 06^0 45'É and 08^0 45'E. The region is bounded in the North-West by Kogi and Benue States, in the North-East by Cross River State, in the South by Akwa Ibom and Rivers States and in the west by Delta State as shown in Figure 1.1. The area is well drained.

The notable rivers and streams that are found in the zone include the Niger, Imo, Nike Lake, Anambra, Idemili, Njaba, Oguta Lake, Nkisi, Ezu, Oji etc. These States have fairly good sub-soil strata except Ebonyi which shows clay stratification. Enugu state exhibits a coal sub strata but with gravelly laterite to topsoil up to a depth of about 5 meters. Anambra, Abia and Imo States exhibit quality sub-base foundation soil for buildings and other construction work.

Abia State lies within approximately latitudes 4° 40' and 6° 14' north and longitudes 7° 10' and 8° east. The State is located east of Imo State and shares common boundaries with Anambra, Enugu and Ebonyi States to the North-West, North and North-East respectively. To the East and South-East, it is bounded by Cross River and Akwa Ibom States and by Rivers State to the South. It occupies a landmass of 5,834km^2. Abia State comprises of seventeen Local Government Areas. It has heavy rainfall of about 2,400mm per year between April to October, and the most important rivers in the state are the Imo and Aba rivers that flow into the Atlantic Ocean.

Abia is not just an oil producing state though; it also adds a rich agricultural importance to the economy of Nigeria with crops like yam, maize, potatoes, rice, cashew, plantain and cassava. Abia State experiences a high annual rainfall (about 2000 mm mean/year) with corresponding high discharge of water as runoff that encourages soil erosion. It has a peak period between July and September. Rainfall events have been found to be highly correlated to erosion in all the representative land surface types (Jimoh, 2005).With a temperature of about 21^{0}c, the climate is humid tropical type and is characterized by wet and dry seasons. The capital is Umuahia, although the major commercial activities happen in Aba.

Anambra State is located between latitudes 05^{0}40'N and 07^0 10'N and longitudes 06^{0}35'E and 07^{0}20'E. It is bounded on both Western and Eastern sides by latitudes 6^{0}35' and 7^{0}30' feast respectively. The State is in the tropical zone of Nigeria, with two distinct seasons, dry and rainy seasons from December to April and May to October. While annual precipitation ranges from 1500mm to 2000mm rainfall with July as the rainiest month (Umenweke, 2000). The dry season is characterized by heavy down pours accompanied by thunder storms, heavy flooding, soil

leaching, extensive sheet outwash, ground infiltration and percolation. On the other hand, the dry season is characterized by extensive aridity and a lot of particulates generation (high temperatures and low humidity).

According to Umenweke (2000), humidity is relatively high between 65-80 percent throughout the year; daily temperatures up to 25^0c are recorded on very hot days in January and March. It lies within the rain forest belt of Nigeria. In the south, the area is bounded by mangrove swamp forest, and in the north, by savannah grassland. According to the 2006 National Population Census (NPC), the state had a total population of 4,055, 048 with an average density of 837.10/km^2 and the state is made up of twenty one local governments. The State shares boundaries with Delta State, Rivers State, Kogi State Imo State and Enugu State. (Figure 1:1).

Ebonyi State was among the new additions made by the then Military Head of State, Gen. Sani Abacha in 1996. Ebonyi is primarily agricultural and stands out as a leading producer of rice, yam, potatoes, maize, beans and cassava. Apart from agriculture, the state also has deposits of crude oil and natural gas.

The area is 5,533km2 and the population is 1,739,136 (2005 est). The tropical climate of the state is broadly of two seasons which are the rainy season between April and October and dry season between November and March. The annual rainfall varies from 2,000mm in the southern areas to 1,150mm in the northern areas. The state enjoys luxuriant vegetation with high forest zone (rain forest) in the south and sub-savannah forest in the northern fringe. .it's capital is Abakiliki and there are nine major first languages spoken in Ebonyi State. These languages are all sub-groups of the Igbo language spoken by all Igbo people of south-eastern Nigeria.

Enugu State is located between 5° 53'N to 7° 05'N of the equator and longitude 6° 46'E to 7° 52'E of the Greenwich meridian and the state has an area of 7, 627.20km2. Enugu state has good soil – land and climatic conditions all year round, sitting at about 233 meters above sea level, and the soil is well – drained during its rainy seasons. The mean temperature in Enugu state in the hottest month of February is about 87.16° F (30.64° C), while the lowest temperatures occur in the month of November, reaching 60.54^0 F (15.86^0C). The lowest rainfall is about 0.16 cubic a centimeter is normal in February while the highest is about 35.7 cubic centimeters in July. The state is made up of seventeen local governments.

Imo State is located in the South-Eastern region of Nigeria and is one of the 36 States of the Federation, with Owerri as its capital and largest city. It lies between latitude 4°45'N and 5°50'N, longitude 6°35'E and 7°30'E, and covers approximately 5,529.17 km2 area with a Population of 2,938,708 (IMSG,2008). The State derives its name from Imo River, which takes its course from the Okigwe/Awka upland. Imo State is located between the lower River Niger and the upper and middle Imo River in the Southeastern part of the country.

The climate of Imo State is humid, semi-hot equatorial type. The State experiences heavy rainfall, with an average annual rainfall of 2000- 2400 mm/yr and an average number of 152 rain/ days particularly during the rainy seasons (April–October) the superficial rainfall distribution is bimodal, with peaks in July and September and a two weeks break in August. The rainy season begins in March and lasts till October or early November. Rainfall is often at its maximum at night and during the early morning hours. The higher annual rainfall depths and rainfall days encourages large volumes of runoff. However, variations occur in rainfall amount

from year to year, usually between 1,990 mm and 2,200mm. Relative humidity oscillates between 75% and 90% between the Dry and Rainy seasons.

Temperatures are similar all over the State; the hottest months are January to March, with the mean annual temperature above 20°C. It has twenty seven local governments.

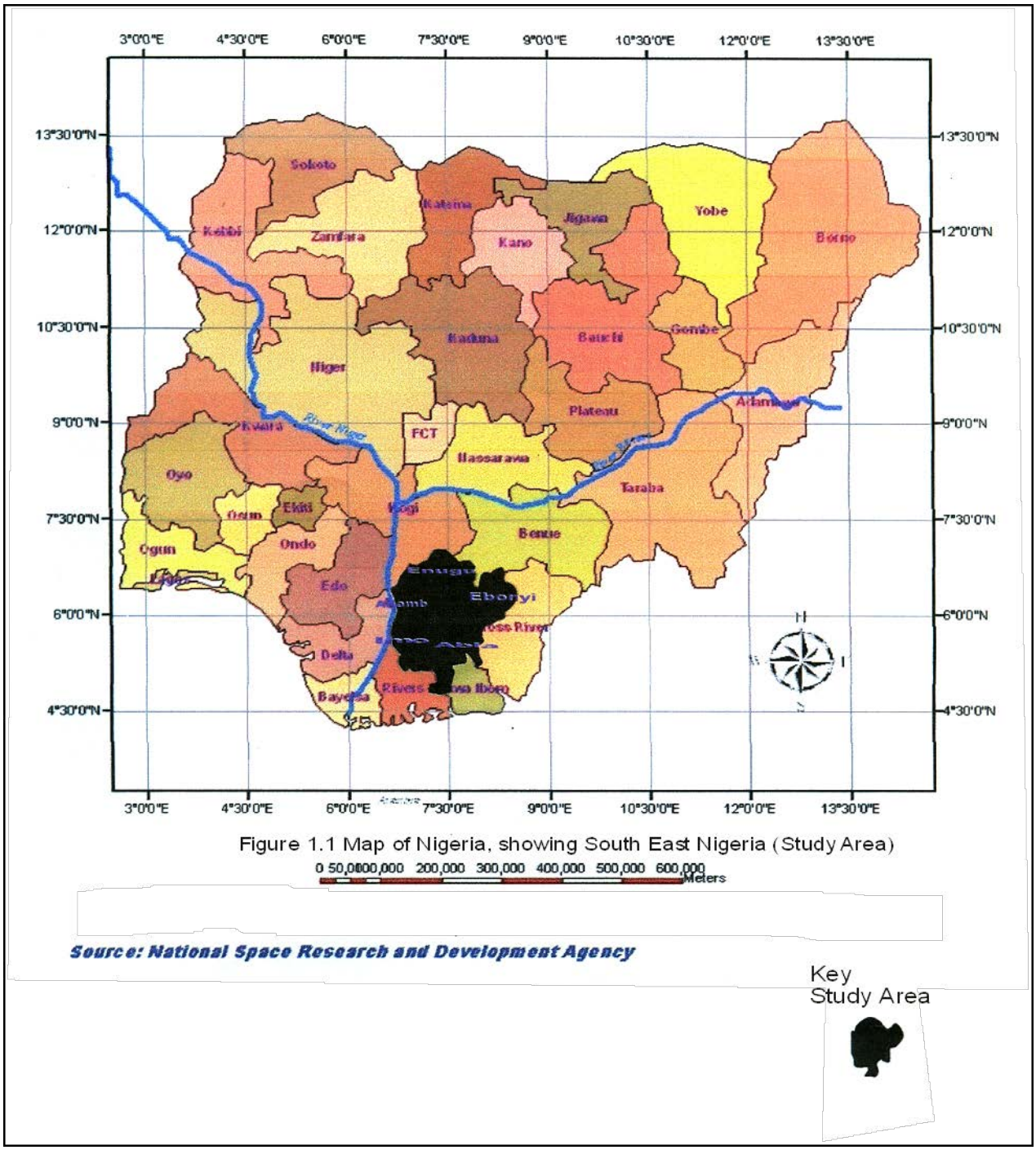

Figure 1.1 Map of Nigeria, showing South East Nigeria (Study Area)

0 50,000 100,000 200,000 300,000 400,000 500,000 600,000 Meters

Source: National Space Research and Development Agency

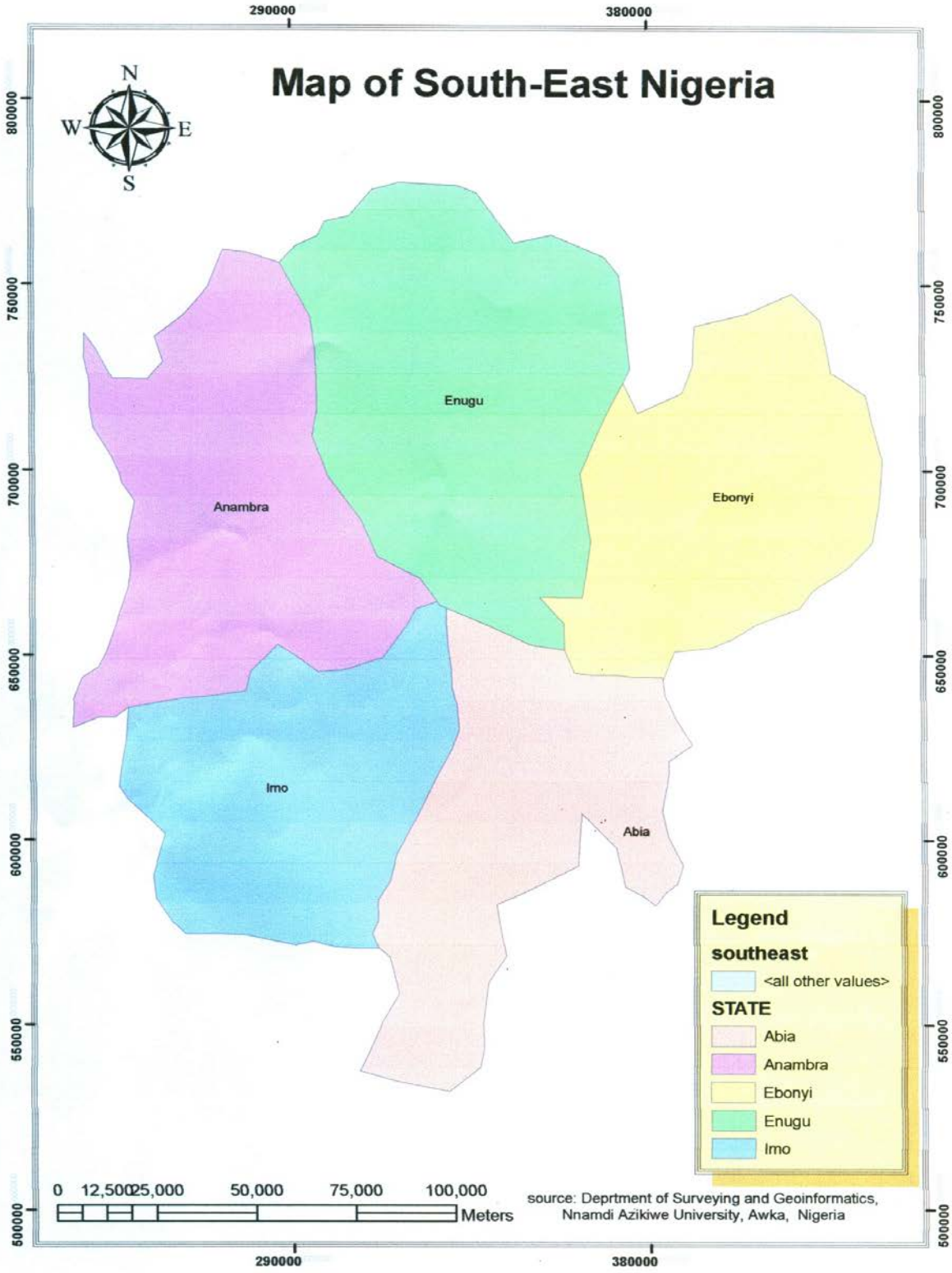

Figure: 1.2 Map of South-East Nigeria the five states studied
Source: Department of Surveying and Geoinformatics
Nnamdi Azikiwe University, Awka, Nigeria

1.11 Dissertation Structure:

This thesis is structured into six chapters**.** Each chapter has sub heads in them which helps break them down to understandable progressive units. A graphical representation of the content of each chapter is set out as follows:

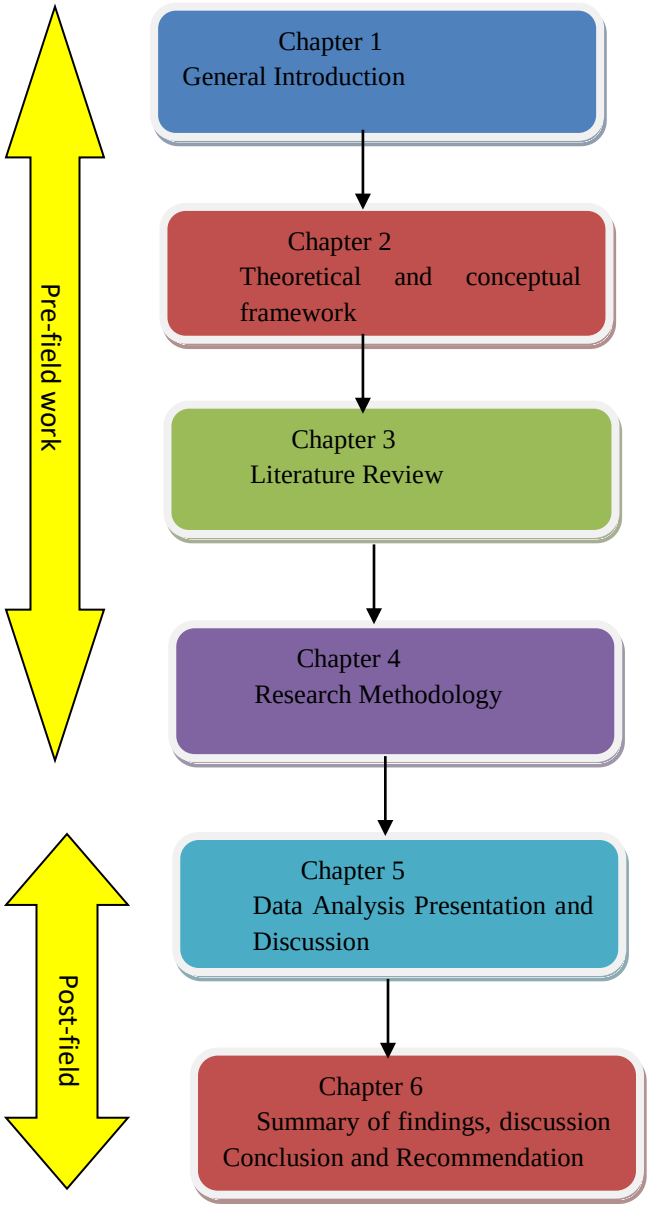

Figure 1.3 Graphical representation of the thesis structure
Source: Researcher (2017)

Chapter 1: It includes the general introduction, background information about the study, statement of the problem, aim and objectives of the study, research questions, scope of the study, significance of the study, and the limitation of the study.

Chapter 2: It reviews the theoretical framework which is anchored on the TQM theories, System theory, Company Competitiveness theory and conceptual framework.

Chapter 3: This chapter summarises the current state of knowledge by reviewing previous relevant literatures in the fields of evolution of TQM, The implementation of TQM in the construction industry were reviewed and the critical success factors of TQM and SWOT analysis of SMCFs in Nigeria analysed. It continues the literature review by appreciating the interrelationship between SMCF, TQM and Competitive Advantage. A comparison of quality gurus such as Deming, Juran, and Crosby and quality awards (the Deming Prize, MBNQA, EQA, Pride in Job and Charter Mark awards) were discussed to understand the TQM requirements and critique. The chapter ended up identifying the gaps of the study.

Chapter 4: It includes the methodology applied for the conduct of the research and the underlying concepts for the choice of the research instruments. The chapter evaluates the various philosophical constructs and research paradigms and then justifies its philosophical position and methodology. The chapter concludes by describing the research design, data collection instruments and consequent validity.

Chapter 5: This chapter presents the results of the study as well as data analysed, and the interpretation of the analysed data. It also provides conclusiveness in relation to the hypotheses.

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Furthermore, the chapter provided a discussion of the findings from the analysis of critical success factors of different models. The inadequacies of existing models were explored with particular emphasis on the contribution to SMCFs. A model was created for SMCFs in South-East Nigeria.

Chapter 6: It presents an overview of the research, the summary of findings, conclusions and recommendations. Consideration is also given to the research limitations, contribution to knowledge and areas for further research on this topic

CHAPTER TWO

THEORETICAL AND CONCEPTUAL FRAMEWORK

2.1 Introduction

This chapter presents the perspectives that are central to the conduct of this research. It therefore introduces the variables of the research and the general framework for data analysis chosen study and the factors that are deemed relevant or important to the identified research problem. For the purpose of this study it was necessary for a theoretical framework to be determined so that the relations between all the variables would be defined and the relationship between them, understood. In formulating a theoretical framework it is necessary to appreciate that a framework of any study is a structure that can hold or support a theory of a research work. It presents the theory which explains why the problem under that study exists (Palm, 2007). Thus, the theoretical framework is but a theory that serves as a basis for conducting research. It also assists in the development of a conceptual model of how one makes logical sense of the relationship among variables or factors that have been identified as significant to the problem under investigation (Okolie, 2011).

2.2 Location of the Theoretical Framework

Organizations are dynamic systems of adaptation and evolution that contain multiple parts, which interact with one another and the environment. The ability of organizations to change rapidly in response to intra and inter relationships is at the heart of an adaptive organisation (Brown and Eisenhardt, 1997). It is becoming increasingly important for organizations (Company) to gain competitive advantage by being able to manage and survive change (Cao and McHugh, 2005). This were centered on system and TQM theories through which organizational

change process will be fruitfully examined. Systems and TQM theories are two valuable perspectives that can equip organizational leaders with the requisite knowledge and understanding of how to respond and adapt to the uncertainties and demands of global change. Competitiveness is created at the firm level, but that it is partly derived from a systemic context and emerges from complex patterns of interactions between government, enterprises and other actors, and will therefore exhibit different forms in each society (Meyer-Stamer, 1995).

Figure 2.1 shows a graphical illustration of the theoretical framework for this research.

Theoretical framework

Figure 2.1 The position of the Theoretical framework

2.3 Theories

To be able to understand the theoretical framework, it important to discuss the theories and the relationship among the variables.

2.3.1 Systems theory

System theory is a concept that originated from biology, economics and engineering, which explores principles and laws that can be generalized across various systems (Yoon and Kuchinke, 2005; Alter, 2007; Dubrovsky, 2004). It is an interdisciplinary theory about every system in nature, in society and in many scientific domains as well as a framework with which we can investigate phenomena from a holistic approach (Capra, 1997).

A system is a set of two or more elements where: the behavior of each element has an effect on the behavior of the whole; the behavior of the elements and their effects of the whole are interdependent; and while subgroups of the elements all have an effect on the behavior of the whole, none has an independent effect on it (Skyttner, 1996). In other words, a system comprises of subsystems whose inter-relationships and interdependence move toward equilibrium within the larger system (Martinelli, 2001, Steele, 2003).

The three major pioneers are Kenneth Boulding, Daniel Katz and Robert Kahn. Boulding arranged systems in a hierarchy of complexity (Marttinelli, 2001; Bausch, 2002). His general framework can be applied to managerial systems but keeping in mind that any level incorporates characteristics from all the previous levels. Daniel Katz and Robert Kahn collaboratively viewed organizations as comprising of patterns of behavioral events. These patterns are interdependent, cyclical, consistent over time, and must be understood in terms of their interaction with each other, and with the external environment. They were the first to introduce the concept of input-throughput-out in describing organizational environments (Capps and Hazen, 2002).Since this theory considers the input- throughput-out component and their interactions both within themselves and with the external environment, the elements of purpose, people, structure, techniques and information must be coordinated and integrated by the managerial system, in order to maximize value for the organisation. System theory can be focused on knowledge, value, quality, environment, relationships, adaptation, and complexity in other to be applied in management and construction.

An open system consists of three essential elements. An organisation receives resources such as equipment, natural resources and the work of employees, referred to as **inputs**. The inputs are transformed called **throughputs** and then yield product and services called **outputs**. Outputs are

realised to the environment. Feedback loops are also an important feature of the open system. They provide information to the organisation by connecting the output to the input. A negative feedback loop indicates that there is a problem that should be corrected. For example the failure of a product design indicated by the need to recall the product. A positive loophole can identify the output that has worked well. For example a successful marketing campaigns that yield high sales.

2.3.1.1 Major concepts of systems theory

Kast and Rosenzweig (1972) have identified several key concepts or tenets system theory.

I. Open to environment: This is the concept of open systems. As explained earlier, closed systems are characterized by a greater degree of certainty because they have no ability to import energy from the environment to counteract the build-up of entropy. Open systems can import energy from their environment and, therefore, can grow and change over time.

II. Teleology or Purpose: The second concept is idea that behavior in systems is teleological or purposeful. The system being studied is said to have a goal. This may appear to be a fairly trivial and obvious statement. However, upon reflection you may appreciate that a goal is not something internal or is intrinsic to a system. Rather, it is something that is ascribed by the person who is studying the phenomena as a system.

III. Interrelated subsystems: The third major concept of systems theory is the notion of a system as a set of interrelated subsystems. This is a defining concept of any system and, as stated earlier, it captures the idea that the behaviour of the whole is greater than the sum of its parts. Holism or gestalt means we must focus on the interrelationships between parts and linkages to understand systems. It warns system

designers of unintended consequences if they fail to appreciate the linkages and focus exclusively on the parts.

IV. Input-transformation-output process: The fourth concept is that a system is a constant process of taking inputs and transforming them into outputs. The inputs are acquired from the environment and the output goes back into the environment in a constant exchange. For example, a business firm imports inputs such as raw materials and labor, transforms them into goods and services, and delivers this output to its customers. Both suppliers and customers are part of its external environment.

V. Feedback: The fifth key concept is the notion of feedback. Feedback is what allows a system to attain its desired or steady state. There are two types of feedback loops. The first is called negative or error-control feedback in which information on which the system reacts is one that is after the fact or after errors have occurred. The system uses information on small errors to take corrective actions. The other is called feed forward control. It is anticipatory in nature. The system anticipates what might occur and takes corrective action before the disturbances can affect the system. Thermostats use feedback information. Keeping a spacecraft on its trajectory requires feed forward control. Trajectory corrections have to take place before the spacecraft gets off its course.

VI. Homeostasis: The six concept of system theory is the concept of homeostasis which refers to the ability of a system to achieve a state of dynamic equilibrium. That is, unlike simple classical mechanics. Servo mechanisms like a thermostat, the system does not return to its original state. Rather, it returns to a state that maximizes its

chances of survival and growth. This state may or may not be the state from which the system initially started.

VII. Equifinality: The final tenet is the concept of equifinality. This is defined as the ability of a system to attain the same final result from many different initial conditions. That is, systems exhibit a many-one behavior on which the system can find the same end-state from many different initial starting positions. Equifinality can be likened to a situation in which many different people shoot at a target from different positions all bullets find the bull's eye.

2.3.1.2 *Implication to the study*

There are several important implications of applying the system theory to small and medium construction firms. First, applying **Open to environment** means that we view small and medium construction firms much like biological organisms that exist in a constant commerce with their environment. If an organization is an open system in constant commerce with its environment, then it follows that the environment will be very important in determining and explaining its behaviour and controlling its fortunes. The implication is that a study of small and medium construction firms must begin by understanding and characterizing an organization's environment. Organizational environments can be benign (few threats) or uncertain and dynamic (rapid change). Effective management control systems must meet the needs of their environment. Next is the concept of Teleological, on which the purpose of Management control is to achieve strategic objectives and to avoid unintended consequences. When management control is applied in the firms, they exhibit teleological or purposeful behaviour.

Interrelated subsystems suggests that we should view small and medium construction firms as comprising of many interrelated components. Some of these may be structural components such as information, authority delegation, and so on. Others may be behavioural or cultural factors such as motivating behaviour or building the right values. These systems are interrelated which means that we must design each one recognizing its impact on the other components. The concept of input-transformation-output and Feedback links the small and medium scale construction firms to the environment. The firms obtain inputs from their environment, transform them into outputs. An organisation receives resources such as equipment, natural resources and the work of employees, referred to as **inputs**. The inputs are transformed called **throughputs** and then yield product and services called **outputs**. Outputs are realised to the environment. Feedback loops are also an important feature of the open system. They provide information to the organisation by connecting the output to the input. A negative feedback loop indicates that there is a problem that should be corrected. For example the failure of a product design indicated by the need to recall the product. A positive loophole can identify the output that has worked well. For example a successful marketing campaigns that yield high sales.

The **concept of homeostasis** in the area of management control means that the system is not looking for a steady equilibrium. Rather it is seeking an improved state. Continuous improvement rather than maintenance of status quo becomes a key issue in the firms. They must continually scan their environment and improve their operations in order to maximize their chances of long run survival and finally, is the concept of equifinality. The usefulness of this concept of equifinality for small and medium construction firms is that it keeps the designer from looking for a one best way to do things. It recognizes that many different methods can lead to the same end result. The **concept of equifinality** sensitizes a designer or contractor to look for

solutions anywhere in the system and introduce change where it will be most likely to be effective in attaining the goals of the organization. For example, the productivity of a worker is affected not simply by how a task is designed; it is also affected social environment in which he or she works. Increase in worker productivity, therefore, can be accomplished by redesigning the task or by redesigning the social system within the worker is operating.

2.3.2 TQM theories

2.3.2.1 *Walter A. Shewhart's philosophy*

Walter A. Shewhart (1891-1967) who is regarded as the father of contemporary quality control, identified problems which existed in production and linked them with the rejection of a product by the customer, Shewhart established the cycle for learning and improvement as in Figure (2.2) – the quality management concept and tool. Moreover, the AT&T Company in Chicago is the first company which utilised quality concepts for product improvement.

Walter Shewhart in the USA during the 1920s and with the Bell Laboratories paid attention to the TQM concept through statistical process control (SPC). The design of the plan-do-check-act cycle was the scientific method to improve the work process. In addition to this Shewhart's concern was to develop a system to measure variables in production. His early work on the statistical control processes and the control chart established a foundation for the quality of management movement.

Shewhart's emphasis on the need for statistical analysis to create an adequate understanding of work processes was clearly seminal for grasping the essence and causes of variation, both controlled and uncontrolled, (Bank, 1992 in Twaissi, 2008).

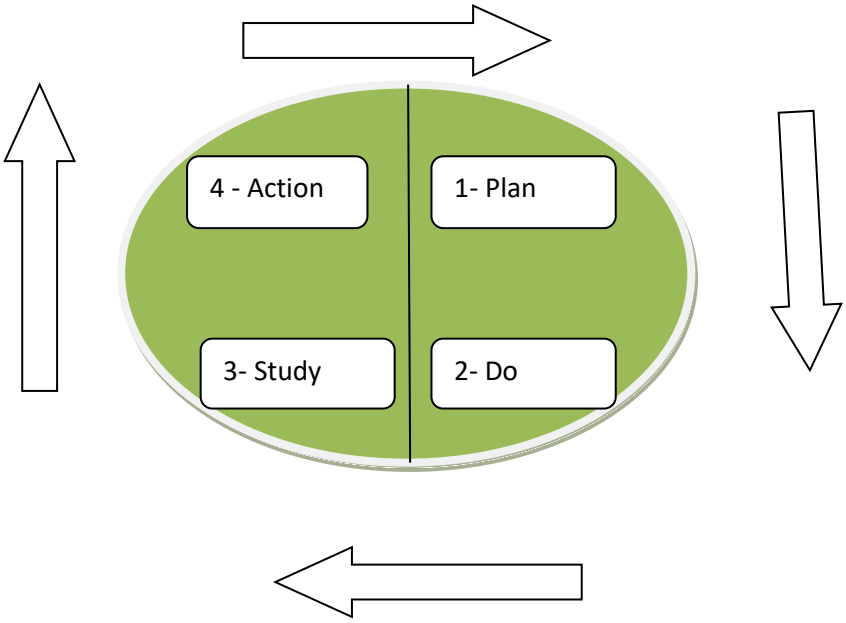


Figure 2.2: The PDSA Cycle

Source: Ahmed (2010)

2.3.2.2 *Deming's philosophy*

Dr W. Edwards Deming is the most widely known of all the quality gurus. He gained fame by teaching the Japanese the concepts and techniques of quality that facilitated to rebuild their economy and modified the performance of whole sectors after the Second World War and was awarded Japan's highest Imperial honour, the Second Order of the Sacred Treasure in 1960. In the USA, he is recognised in the annual Deming Prize award.

Deming's major philosophy is quality improvement through statistical control and reduction in variability. He explained that "statistical control does not imply the absence of defective items. It is a state of random variation in which the limits of variation are predictable". According to Deming, many companies waste time and money looking for causes of chance or random variation in attempting to solve quality problems without using statistical methods. He advocates

the use of statistics to measure performance in all areas, not just conformance to product or service specifications. Deming recognised "special" and "common" causes in variability. Special causes are assignable to individual machines or operators, and common causes are those shared by operations and are the responsibility of management. Statistical Process Control (SPC) charts were the main technique put forward by Deming to identify common and special causes. He also formulated a systematic approach to problem solving. The PDCA cycle has four main components: to plan, to do, to check and to carry out action

The theoretical essence of the Deming management method concerns the creation of an organisational system that fosters cooperation and learning and facilitates the implementation of process management practices. This in turn leads not only to continuous improvement of processes, products, services, but also to employee fulfillment, both of which are critical to customer satisfaction and ultimately, to firm survival. (Anderson *et al*., 1994 in Lawrence 2000)

Deming stated "Quality should be aimed at the needs of the customer, present and future". According to Deming, the foundation of quality management is reducing the variation in products and then improving the average. His management philosophy improved from observing how the Japanese mixed their teachings on quality control with Japanese culture to create a huge economic kingdom.

Deming, (1986) proposed 14 points as the principles of TQM, Rungtusanatham, Jeffrey and Bin Wu (2003), stated that these 14 points should provide a cure for the “seven deadly diseases” and help organisations to overcome the obstacles to producing and delivering high quality products and services.

Oakland (1994) the 14 points include:

1. Create constancy of purpose for improvement of product and service.

2. Adopt the new philosophy: Mistakes and negativism are unacceptable.

3. Cease dependence on mass inspection.

4. End the practice of awarding business on price tag alone.

5. Improve constantly and forever the system of production and service

6. Institute training. Teach workers to do their jobs.

7. Institute leadership. Help people to do a better job.

8. Drive out fear.

9. Break down barriers between staff areas.

10. Eliminate slogans, exhortations, and targets for the workforce.

11. Eliminate numerical quotas.

12. Remove barriers to pride of workmanship.

13. Institute a vigorous program of education and retraining. Stress teamwork and statistical technique.

14. Take action to accomplish the transformation.

2.3.2.3 *Feigenbaum's philosophy*

Armand V. Feigenbaum was the first who proposed the total approaches to quality issues. His philosophy was that quality is not implemented in a particular area, but must be implemented in

totality for all management levels of the organisation. He defined total quality as an effective system to ensure production and service at the most economical levels that allow customer satisfaction. According to Ahmed (2010), Feigenbaum emphasises Total Quality Control, his philosophy being:

a) Set quality standards;
b) Appraise conformance to standards;
c) Act when conditions are not met; and,
d) Plan to make improvements

This control process is more suitable for TQM, as it includes the improvement dimension. However, it does not incorporate the TQM culture, nor does it stress customer satisfaction and management responsibility.

2.3.2.4 *Juran's philosophy*

J.M. Juran's definition of quality is "fitness for use" which attained widespread although not universal acceptance. Together with Deming, he pioneered the bulk of the quality initiatives in Japan. However, unlike Deming, Juran focused on the role of top and middle management in achieving quality. He concluded that the bulk of quality problems are the responsibility of management and hence they are responsible for the success of quality management.

He developed the Quality Trilogy comprising Quality Planning, Quality Control and Quality Improvement. The Quality Trilogy is best understood from the Juran Trilogy shown in Figure 2.3:

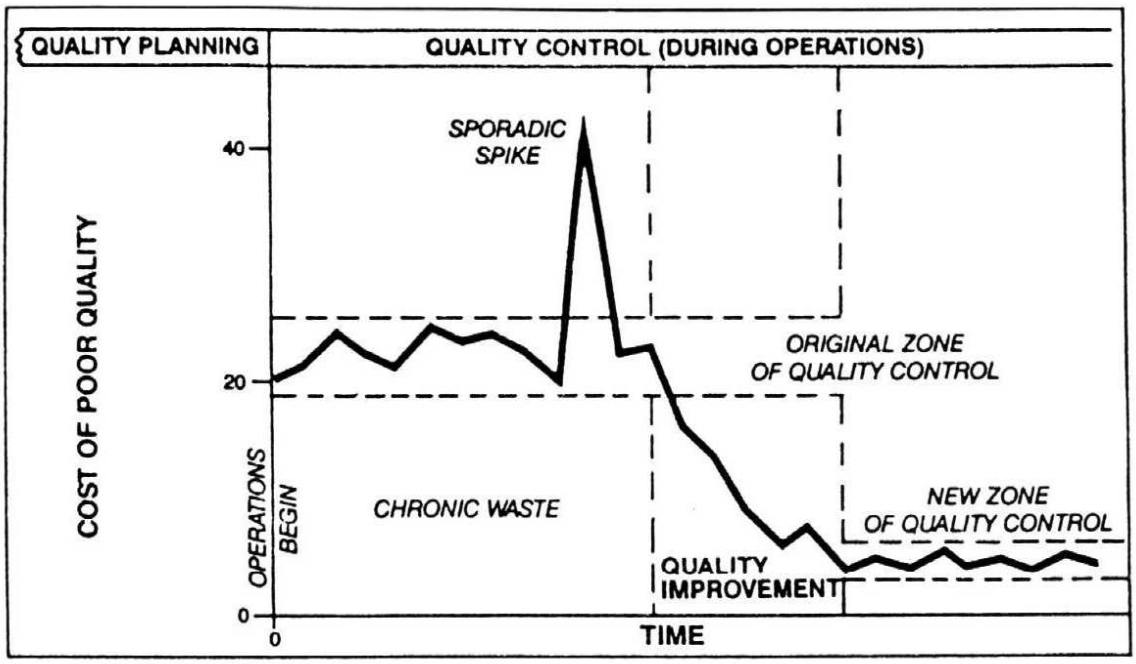


Figure 2.3: The Juran Trilogy
Source: Juran (1988)

According to Juran (1988), the quality trilogy consists of three basic managerial processes through which the management of an organisation can achieve quality:

a) Quality planning provides the operating forces with the means of producing products that meet consumer needs;

b) Quality improvement is based on looking for opportunities to improve quality before problems arise; and,

c) Quality control emphasises the prevention of quality problems and the correction of defects to create a product that is free from deficiencies.

2.3.2.5 *Crosby's philosophy*

Philip B. Crosby an American consultant is best known for his concept of Zero Defects. This is the attitude of defect prevention and involves doing the "right job right the first time". He is commonly criticised for his statement "Quality is free" by people who are not aware of the second part of the statement, which in its totality reads as: "Quality is free but it is not a gift" (Crosby, 1980).

Crosby's TQM philosophy is contained in his 4 absolutes:

a) The definition of quality is conformance to requirements (not "goodness" or "elegance");

b) The system of quality is prevention (not appraisal);

c) The only performance standard is Zero Defects (not "that's close enough"); and,

d) The measure of quality is the price of non-conformance (not indices).

The Crosby's approach described the measurement of the Cost of Quality (COQ), which includes any costs that are attributable to achieving quality and focuses on the price of both conformance and non-conformance. According to Crosby, price of conformance represents about 3-4 percent of sales in well-run companies, and on the other hand, the price of non-conformance represents between 20-35 percent.

2.3.2.6 *Ishikawa's philosophy*

Ishikawa is the best known of the Japanese contributors to quality management. The main focus of his work was the use of statistical techniques to improve quality in Japanese industry and his greatest achievement was the successful introduction of Quality Control Circles (QCCs) into Japan. QCCs usually consist of a small number of volunteers from one unit of an organisation

who investigate problems, collect data to identify their cause, and implement solutions to eliminate them and improve quality. The circle can be led by any person, whether supervisor or worker. Regular meetings are held to discuss how their task can be done more effectively and efficiently, and difficulties and issues are raised and change proposals suggested. Where possible, the circles proceed to implement their own ideas. Management is approached only when they unable to proceed because of a lack of resources or authority.

He paid attention to statistical tools, used in organisations, describing these tools as "indispensable for quality control" (Bank, 1992), and consisting of: Pareto chart, Cause and effect diagram (Ishikawa diagram), Scatter diagram 'Histogram, Check sheet, Control chart ,Stratification. This is known as the Ishikawa's 7 tools.

He developed the Ishikawa Cause and Effect Diagram, also known as the "Fishbone Diagram". This technique is used for analysing the likely causes of a known effect. The diagram identifies, sorts and documents the potential causes of a problem so that relationships between the causes can be analysed. To construct a Fishbone Diagram, one must begin by placing the problem on the right hand side toward the head of the fish. Then place the potential causes of the problem on the "bones" that stem off of the spine of the fish. . Ishikawa felt that the 'Fishbone' diagram was a key tool to be used by workers for problem solving in Quality Control (QC) circles. Ishikawa felt strongly about the proper use of problem solving tools in the improvement of quality. His concept of the Quality Control (QC) circle was to bring production workers, maintenance, design engineers and managers together in organized meetings to solve problems. The quality control circles were critical in the complete root-cause analysis of any problem.

A basic cause and effect diagram is shown in Figure 2.4, illustrating how the technique should help to pinpoint (in this case) the cause of the effect, which is poor quality. According to Peter (2001) Dale believes that cause and effect diagrams are best suited to situations where there is one problem and the possible causes are hierarchical in nature. The benefits of cause and effect diagrams are their usefulness in ordering possible causes under generic headings and for patterns or trends to be identified.

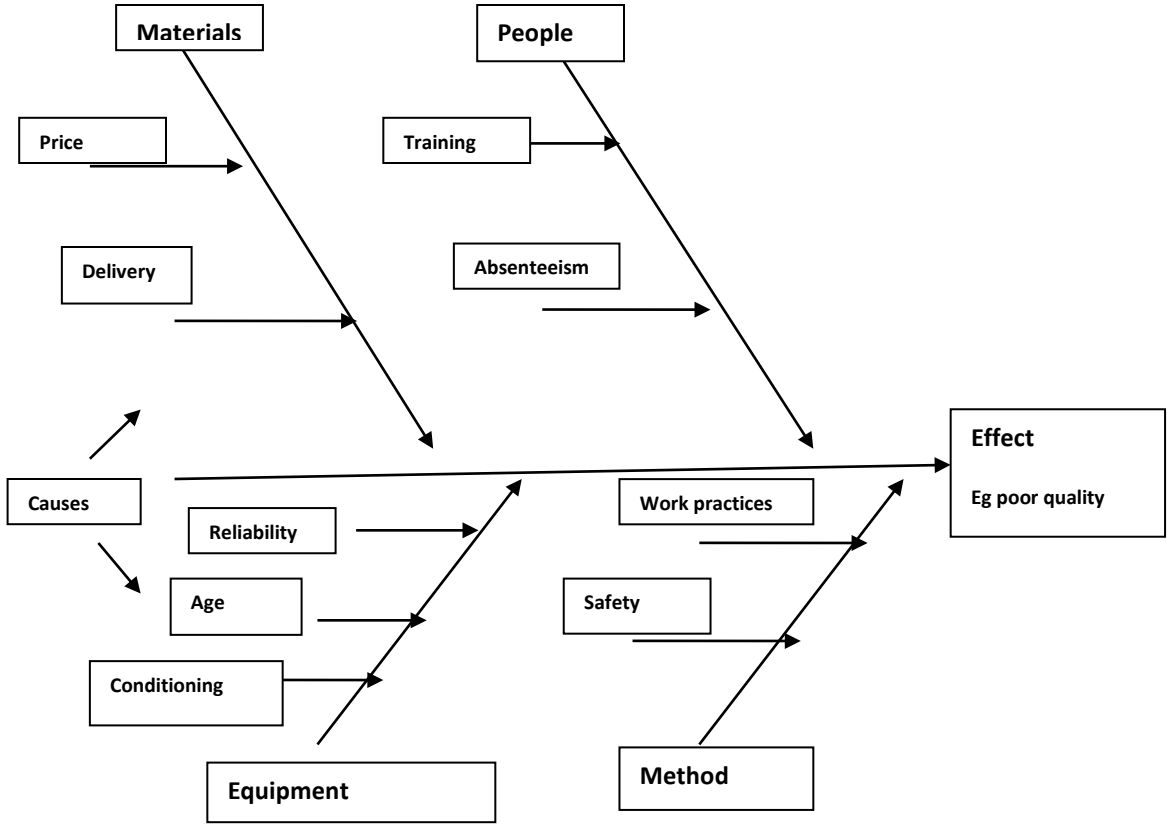


Figure 2.4: Example of a cause and effect diagram

Source: Peter (2001)

2.3.2.7 *Summary of the ideas of the gurus*

The works of six quality gurus, namely, Walter, Deming, Juran, Crosby, Feigenbaum and Ishikawa show that each has his own definition of quality and approach regarding how a company is to achieve TQM. These are based on their professional backgrounds and interests.

Although their personal perspectives and approaches read differently, they share a common emphasis. This emphasis is the continuous improvement of work processes, systems, and management to meet customer requirements (Tenner and Toro, 1992). Ghobadian and Speller (1994) identified these common emphases as:

i. The importance of controlling the process and not the products;
ii. The controlling of the human process is as vital, if not more so, than controlling the technical process;
iii. Quality is the responsibility of top management;
iv. Management must foster the participation of the workforce to develop a quality culture;
v. The importance of education and training for changing attitudes and enhancing competence;
vi. The need for an emphasis on prevention of defects, not inspection after the event;
vii. Quality improvement is a process built up over time and not an instant cure;
viii. Functional integration is an important ingredient of TQM; and,
ix. Quality is a company-wide activity.

The term “quality” for Deming means "Continuous improvement" and the target is Zero defect. Juran argues that for quality to improve, short term "sporadic" or long term "chronic" problems must be resolved, and the cost of quality includes both conformance and non-conformance. Crosby, on the other hand, believes that the cost of quality includes only the non-conformance costs, and conformance costs of prevention and appraisal are not really the cost of quality, but more the cost of doing business. Table (2.1) shows a comparison of the experts:

Table 2.1: Comparison of the Experts

	Deming	Juran	Crosby
Definition of Quality	Continuous improvement	Fitness for use	Conformance to requirement
Application	Manufacturing driven companies	Technology driven companies	People driven companies
Target audience	Worker	Management	Worker
Senior management responsibility	Responsible for 94 % quality problems	of Less than 20 % of quality problems are due to workers	Responsible for quality
Quality process structure	Fourteen points for management	Ten steps to quality improvement	Fourteen steps to quality improvement
Emphasis on	Tools/system	Measurement	Motivational
Types of tools	SPC	Analytical, decision making and cost of quality	Minimal use
Use of goals and targets	Not used	Breakthrough projects	Posted goals for workers
Improvement basis	Continuous to reduce variation	Project team approach set goals	A "process ', not a programme, improvement goals
Teamwork	Employee participation in decision- making; break down barriers between departments	Team and quality circle approach	Quality improvement teams; quality councils

Source: Adapted from Carlos (1997) and Kerzner (2003)

2.3.2.8 ***Implication to the work***

From the six total quality management theories that were discussed, however the work hinged on three of those theories. They include Deming, Juran, Crosby and Feigenbum. **Deming theory** focuses on quality improvement through reduction in the variation of products and improving on the average. The firms should focus on maintaining a set standard and not varying it. **Juran theory** anchors on fitness for use and it states that the management are responsible for the success of quality management. The small and medium scale construction firms should ensure

that leadership and management commitment is paramount. Juran believed that quality management's specific task was not only to identify and eliminate variation, but also to serve customer expectations. The entire firm must embrace TQM as a customer focused quality improvement initiative **Crosby theory** insists that doing the right thing at the right time is key (Zero Defects). When small and medium construction firms have that mind set, their quality of work will always be high.

2.3.3 Theories on company competitiveness

I. **Strategic Management Theory**: This integrates diverse management practices and perspectives in pursuit of goals in the context of rapid environmental changes in the world economy. This theory is directed towards the need for change to gain competitiveness in response to changing environmental circumstances and institutional arrangements (Shantanu, 2002). Strategic management is about what is being done now to bring about a future result and is iterative process geared to deal with discontinuous futures. The main field of strategic management is to identify long-term opportunities and threats and how in the process firms mobilise their assets and develop their capabilities in their desire to address these threats and implement a successful strategy to gain advantage of the opportunities.

II. **Resource-based Theory of Firm**: The competitive advantage of the firm is determined by the internal competencies of firms rather than the external environment as viewed from industrial organization perspective (Shantanu, 2002). This means that it draws attention to the firm's internal environment as a driver for competitive advantage and emphasises the resources that firms have developed to compete in the environment. Moreover, firm capabilities are rooted in the ability of the firms to configure and

synthesise organizational resources, (these resources can be physical, monetary, and human). In effect, it is the continuous interaction between resources and capabilities that becomes critical in providing competitive advantages to the firms. The resource-based view has provided deep understanding in that the resources and capabilities of a firm serve as sources of sustained competitive advantage. The differences in firms' performance are based on the disparities of firms' resource that are unique to firms and are acknowledged as the source of competitiveness.

There are good theories on company competitiveness, which indicate the potential areas for generating competitiveness. There are two main theories for understanding the competitiveness of companies. The first theory, Porter (1980, 1985) [cited in Lu, *et al*. (2008)] suggested that competitive advantage stems from the competitive strategy adopted to deal with the strengths, weaknesses, opportunities, and threats facing an organization. Three generic competitive strategies are recommended-cost leadership, differentiation, and focus. Then he engaged the value chain to disaggregate a company into many discrete value activities and proposed that the activities for implementing competitive strategy are ultimately the sources for competitive advantage.

The second theory of organizational competitiveness is the resource-based and core competence approach, which suggests that firm-specific resources that are valuable, rare, non-substitutable, and inimitable, are the sources for competitive advantage (Barney, 1991), as well as the strengths and weaknesses of the two streams of theories, researchers e.g., Kale, 2002; Dikmen and Birgonul, 2003) suggest that they are complementing rather than contradicting each other in explaining the competitiveness of a company. These two theories provide the guidelines for identifying the candidate success factors for the competitiveness of a contractor. Success factors

for the competitive advantage of an organization should cover the areas of competitive strategies, value activities, and firm-specific resources collectively.

2.3.3.1 *Implication to the work*

In applying strategic management, small and medium scale construction firms need to strategies by identifying long-term opportunities and threats and how they will mobilise their assets and develop their capabilities in their desire to address these threats and implement a successful strategy to gain advantage of the opportunities. The resource-based theory focuses on resources and improving on those resources. Firm's competitiveness depends on the combination of tangible and intangible assets (e.g. human resources, material inputs, industry infrastructure, technology, reputation, trademarks) and processes within organization, which together provide competitive advantage and can be termed as sources of competitiveness.

2.3.4 Summary of theoretical framework

In view of the discussions of the theoretical framework, it is clear that managers have to plan structural adjustments to guarantee the survival of the whole system, constantly formulating new interpretations of the business scenarios in order to find an adequate positioning, implementing (when necessary) periods of adjustment, transformation and redefinition the organizational structure. This adaptive and proactive behavior should be based upon systems theory conceptual pillars in order to promote sustainable and long-lasting performance. Given real-world complexity, we strongly believe that systems theories and perspectives can effectively contribute to management, marketing and service research due to their dual approach: the global, holistic view of observed phenomena and the specific, reductionist view of their specific components and traits.

The increasing emphasis on the importance of competitiveness stems not only form its ability to enable sustainable growth, but also form dynamic competition in today's world. It is generally accepted that globalization accounts for the increased importance of competitiveness (Flanagan et al. 2005). Globalization has created an interconnected and interdependent world; it converts the world into a complex and multifaceted dynamic place with free competition and free trade. Also client demands have increased for high quality products and services which are reflected by increasing competition to the highest level, and the need for high quality has become a strategic element to gain competitive advantage. TQM has become one of the most successful practices in helping companies enhance competitiveness and prosperity through ensuring sustainable growth, (Osayawe and McAndrew, 2005).

2.4 The Conceptual Framework

A concept is an image or symbolic representation of an abstract idea (Okolie, 2011). In this context, it is the researcher's position on the research problem and further shows the relationships that exist between different constructs that the study intends to investigate. The conceptual framework therefore gives direction to this research. Based on the theoretical framework discussed in the preceding sections, the performance concept is chosen as the conceptual framework for this thesis. The coming sections present this concept and the related variables and constructs

To better understand the issue of TQM, it is necessary to discuss some core or fundamental concepts underlying the theoretical framework. These concepts, apart from addressing the key issues in the research explain the relationships among the variables that constitute the greater part of this chapter. From the foregoing, the conceptual framework for this research lies at the steps that will lead to the success of SMCFs performance. This will evolve from effective TQM

practices to competitive advantages. The issues relating to these fields of research will be discussed from the perspective of construction management and within the general principles of management. Figure 2.5 shows a model of the conceptual framework for this research.

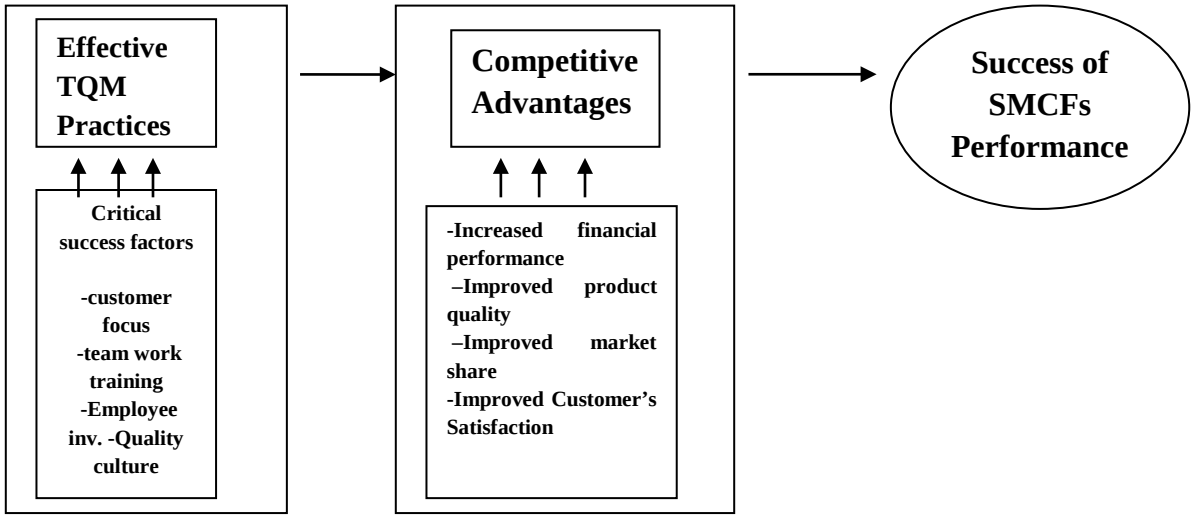


Figure 2.5 Researcher's model of the Conceptual framework

2.4.1 Total quality management concept

The quality concept can have different interpretation due to individual criteria based on roles in the chain of activities which are based on an individual's perspectives within the value chain. Quality is defined by the Oxford Dictionary (2009) as "the degree of excellence of something as measured against other similar thing". It is the degree to which a set of inherent characteristics of a product or service fulfils requirements of customers and other stakeholders (International Organization for Standardization, 2015). However, within the business environment, quality is related to product and service characteristics and customer satisfaction. It can vary according to different perspectives such as customer and organisation perspectives. The American Society for Quality Control defines quality as "the total features and characteristics of a product or service made or performed according to specification to satisfy customers at the time of purchase and

during use" (Talha, 2004). The emphasis in this definition is that the quality is achieving the specification.

The simple definition of quality is meeting the customer requirements, Moreover, and aiming at increasing customers satisfaction, many organisations have focused on quality and reduced their costs to gain maximum customer satisfaction, examples of this being Toyota in Japan, Samsung in South Korea. According to (Foster, 2001 cited in Maguad, 2006) achieving customer satisfaction depends on not only how well and how thoroughly quality actions in the several areas of the organisation work individually but also on how well and how thoroughly they work together. Mukherjee (2006) indicates that quality satisfies three Fs- Fit, Form and Function. This is a conventional definition of quality which is basically confined to a product satisfying the need for the required dimensions, fitment, required form and aesthetics. The product should also be able to fulfill the functions desired to be performed by the product.

From the above definitions, one can conclude that quality is more than a tool or issue used to gain competitive advantage for businesses because it is a matter of survival. So, most of the quality concepts which mentioned above are focuses on providing a product that satisfy and meet the customers' needs. Quality is therefore extremely necessary for the organisations to ensure that they have delivered their products or services according to the customer expectations and requirements. Moreover, each business or activity has a different definition of quality, for example in sales the term quality is more focused on the services which are provided to customer, while in manufacture, the term quality is more focused on the production process, and in construction, quality refers to both of services provided and outputs and it is very difficult to

give specific definition for quality, but there is no doubt and everyone can agree that, quality is perfection through control, accuracy, and completeness in work.

Most of the writers on TQM have their own definition, so TQM is one of the most popular modern management concepts. For the past 25 years, most governments and organisations have implemented a TQM concept. BS5750: British Standard (BSI, 1992) defines TQM as "TQM is a management philosophy and company practices that aim to harness human and material resources of an organisation in the most effective way to achieve the objectives of the organisation". According to Asian Institute of Technology (AIT), TQM is “a philosophy that strengthens the culture to foster continuous organisational improvement through systematic, integrated, consistent effort involving everyone and everything, focusing primarily on total satisfaction of internal and external customers, where employees work together in teams with process ownership, guided by a committed top management, which takes a proactive participation”. (Nukulchai, 2003). Also, according to Wessel and Burcher (2004), the British Quality Association defines TQM as “an all-embracing business management philosophy focusing on completely fulfilling customer requirements with a maximum of effectiveness and efficiency".

The above definitions define the TQM as a philosophy but from different point of view. British Standard described the TQM as the management philosophy aimed to achieve organisation objectives. While, the Asian Institute of Technology (AIT), defined the TQM as the philosophy aiming to satisfy the customers. The critical phrases in British Quality Association definition towards TQM is a management philosophy aiming to meeting the customer requirements. Therefore, the common word towards TQM concept is a philosophy. The British Railway Board

defines TQM as “the process, which seeks to meet and satisfy customer requirements throughout the whole chain of internal and external customers and suppliers" whereas the Royal Mail defines it as "A comprehensive way of working throughout the organisation, which allows all employees, as individuals and as teams, to add value and satisfy the needs of customer". The critical word toward the TQM definition is the process and way of working.

A definition by the US Department of Defence that succinctly captures the essence of the concept is: “TQM utilizes both quantitative (technical) methods and human resource (behavioural) practices to improve material and service inputs, intra-and inter organisational processes, and to sharpen the focus on meeting customers’ needs (Singh and Smith, 2004). Sashkin and Kaiser (1991) mention that TQM is based upon the constant attainment of customer satisfaction, through incorporating management and employee commitment, training, continuous improvement and great supplier relations.

There are a number of ways by which TQM has been defined. It generally means a quest for excellence, creating the right attitudes and controls to make prevention of defects or errors possible and optimize customer satisfaction by increased efficiency and effectiveness. According to Hill (2008) TQM is considered as an approach of continuous improvement in all quality aspects of the whole processes, goods, services and employees within the firm, and it aims at adding value to the delivered products to customers through continuous development of firm’s processes and systems. AL-Asiri (2004) defined TQM as a philosophy of continuous organizational development through the employment of customer satisfaction and by basing it on the permanent workers contribution in order to improve goods, services and processes. Prajogo (2005) asserted that TQM is a process to enhance flexibility, effectiveness, and firm

competitiveness to meet customer needs and expectations. Generally speaking, all perspectives mean seek for professionalism, excellence, optimize customer satisfaction through enhancing effectiveness and efficiency, and creating the suitable attitudes and controls to make prevention of defects and errors possible.

Figure 2.6 below shows TQM as one of the strategic economic responsibilities of the firm. It is a "management philosophy" that includes different core values. The values of TQM are "customer focus", "continuous improvement", "process orientation", "everybody's commitment", "result orientation" and "learning from each other". Combined they are the prerequisites for quality management (Hellsten and Klefsjö, 2000).

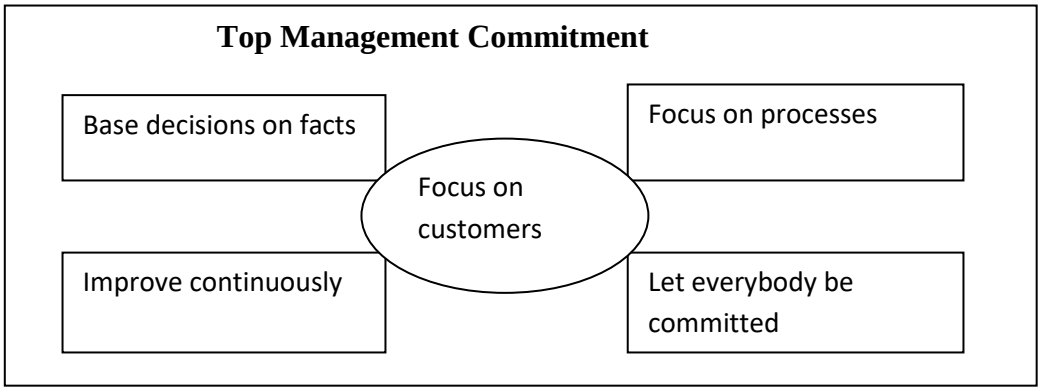


Figure 2.6: The cornerstones of TQM
Source: Hellsten and Klefsjö (2000)

Thus, TQM is presented differently in different points of view, as there is no general and formal definition of TQM which can fit or be implemented in all organisations within all sectors. TQM definitions are different in each region and each country, based on national and organisational culture and perception of quality, and the requirement of that culture. However for this research the definition given by Gunasekaran and McGaughey (2003) will be adopted; which states that TQM is a "management philosophy that encourages cost reduction, the creation of high quality

goods and services, customer satisfaction, employee empowerment, and the measurement of results". TQM focuses on the process of improvement, customer and supplier involvement and training and education in an effort to achieve customer's satisfaction, cost effectiveness and defect- free work and it provides culture and climate essentials for innovation and for technology advancement (David and Murat, 1997).

Before an organisation can rip the benefit from TQM implementation, some principle would have to be enshrined into the organisation's culture. The principles can assist in developing objectives and measures. Furthermore, resources and strategic planning areas which require focus can also be identified. In summary, effective TQM is possible through the implementation of the principles. Since there is no agreed definition of TQM, the principles will expectedly vary. The principles include:

2.4.1.1 *Continuous improvement*

This means a commitment to constant examination of the technical and administrative process in search of better methods' (Fuentes-Fuentes *et al*., 2004). TQM is concerned with the continuous improvement in all the process of production, from the levels of planning and decision making to the execution of work by the front line staff.

The aim of continuous improvement is continuously to identify and eliminate those activities that add little or no value to the product or service provided, i.e. waste. In addition to these classifications, the waste of human potential is also considered. It also aims to identify and eliminate the cause of a mistake in order to prevent its reoccurrence. Fuentes-Fuentes *et al*. (2004) explained that organisations operating in a dynamic environment are liable to carry up continuous improvement in its operation; they explained that the face of competition changes faster in this environment as a result of the changes in customers' needs, competitors' activities

and service/product innovation. Continuous quality improvement (CQI) has emerged as a dominant theme for survival and growth in today's fiercely competitive business environment (Prybutok and Ramasesh, 2004).

2.4.1.2 *Top Management Commitment and Leadership*

Tannenbaunm *et al*. (1961) cited in Gherbal *et al*. (2012) defined leadership as "the interpersonal influence, exercised in a situation, and directed, through the communication process, towards the attainment of a specified goal or goals". Top management commitment/leadership is very crucial to the success of TQM program of construction organization (Low and Teo, 2004; Jha and Kumer, 2010; Gherbal *et al.*, 2012). TQM requires effective change in organisational culture and this can only be made possible with the deep involvement/commitment of management to the organisation's strategy of continuous improvement, open communication and cooperation throughout the organisation. TQM implementation improves the organisational performance by influencing other TQM dimensions (Kaynak, 2003).

TQM must start at the top with the chief executive'. The commitment of leadership to the TQM strategy as shown in their daily disposition to work will go a long way in motivating employees to deliver quality services that exceeds the expectation of customers. Management must provide policies for promoting client /customer satisfaction; actively communicate quality policies and plans to employees (internal and external) to create awareness, interest, desire and action. In addition, management must as well provide the necessary resources and problem-oriented training to the employees to drive the TQM agenda.

2.4.1.3 *Customer Focus*

Customer focus can be defined as the degree to which a firm continuously satisfies customer needs (Gherbal *et al.*, 2012). The key to the quality management is maintaining a closer relationship with the customer in order to fully determine the customer's need, so the customer should be closely involved in the product design and development with valuable input to every stage (Saylor 1996 as cited in Gherbal *et al.*, 2012).

An organisation must continually and actively conduct market research and measure customer satisfaction. In addition, this information must be utilised in the design of the organisation's products and services. The customer allows an organization to exist, for every organization, profit or non-profitable, partnerships, departments, functions, groups, or teams, therefore customer focus is very critical in TQM. Impliedly, in construction industry, quality should be customer driven. Employers should be well aware of the concept of internal and external customers. They should care about meeting and exceeding the customer expectations. There must be a focus on customer feedback and accordingly the process should be driven. According to Jurancited in Arditi and Gunaydin (1997) the parties in a process (Supplier, Processor, and customer) have a "triple role". This triple role concept is applicable to construction industry.

2.4.1.4 *Employee involvement*

To progress towards TQM, it is essential that the abilities and experience of all employees are utilized. Most work and customer contact takes place at the lower end of the organisation. As a result, these employees are the most likely source of improvements within the organisation. TQM recognizes that every employee has significant potential to make improvement. Through motivation, instilling the internal customer concept and training of employees are very important factors to satisfy and gain the attention and effort of employees. TQM also requires that there

are clearly defined methods of gaining employee involvement and that the way in which the performance of employees is measured, is in terms of meeting the objectives of TQM and the organisation.

2.4.1.5 *Teamwork*

Teamwork refers to an increase in employees' control over their work and allowing them to work as a group (Ooi *et al.*, 2007). It is widely accepted working in a team or group is generally more effective than working individually (Zairi *et al*., 2005 as cited in Gherbal *et al*., 2012). This practice provides an atmosphere of mutual relationship, involvement, and participation in the organization. The eventual aim of the team approach in construction project is to get everyone, including contractors, designers, vendors, subcontractors, and owners involved with the TQM process. Team work is necessary to encourage competitive activities internally among employees and externally with respect to suppliers and customers.

Dale *et al.* (1994) noted that team work is a key feature of involvement. To him, team work aids the commitment of the workforce to the organisational goals and objectives. It is essential to have a team made of people with right attitudinal disposition to working in groups so as to realise the gains of quality management. Team work is a way of stimulating positive work attitude, which includes loyalty to the organisation and a focus on organisational goals. Some of the benefits of Team work as highlighted by Oakland (1995 as cited in Adrediran and Adrediran, 2008), are listed below

i. Recommendations made by teams are more likely to be accepted and implemented where the team is highly formidable, unlike the individual suggestion which represents just an individual's opinion;

ii. A greater variety of complex problem will be tackled i.e. problems beyond the capability of an individual or department can be handled more efficiently through the pooling of resources together;

iii. Working in teams exposes a problem to a great variety of knowledge thus problems beyond functional departments can be solved more easily; and

iv. Team work will boost workers morale and ownership through participation in problem solving and decision making.

2.4.1.6 *Training*

Training helps in preparing employees towards managing the TQM ideology in the process of production. Training equips people with the necessary skills and techniques of quality improvement. It is argued to be a powerful building block of business in the achievement of its aims and objectives (Stahl, 1995 cited in Adediran and Adediran, 2008).

Once the commitment from top management is present, quality training should be continuously performed. Training of the top management team in the basics of TQM is an essential step. The training program should be part of the quality policy where the responsibilities, organization, needs, monitoring and assessing of results are essential in the improvement cycle. Through training, employees are able to identify improvement opportunities as it is directed at providing necessary skills and knowledge for all employees to be able to contribute to ongoing quality improvement process of production.

The training efforts should include construction in the basics of TQM, cause and-effect analysis, team problem solving, interpersonal communication and interaction, cost of quality measurement and statistical method.

2.4.1.7 *Quality culture*

Quality Culture is defined by Hofstede (2001), as “all the interaction that takes place between employees within an organization along with the relationships engendered by this behavior”. Within the TQM culture a co-operative and open culture has to be created by the organization management in which all the employees have to be made to feel that all of them are responsible for satisfying the organization’s customers. They are going to feel and consider this only if they are involved in the development of the vision, plans and strategies of the organization.

It is crucial for the organization to achieve a successful implementation of TQM to encourage the employees to participate in all these activities. The work culture must be very conducive. There should be an active interaction amongst the peers and support from supervisors. The critical importance of the employee’s involvement in the quality process of an organization should be based on the belief that the best process innovation idea comes from the people actually doing the job (Jha and Kumar, 2010). Gherbal *et al.* (2012) however, opined that employees are unlikely to behave in an acceptable responsible way in the case where they see the management behaving irresponsibly and saying something or acting in opposition of it.

2.4.1.8 *Supplier relationship*

The parties involved in the process of producing a quality product are; the supplier, the processor and the customer, and the ability to improve the quality of the product mainly depends on the relationship between the mentioned parties. The quality of work performed by the contractor is mainly related to the parties: the designers, the suppliers and the subcontractors. The quality of the specifications and drawings comes from the designers; the quality of the materials and equipment comes from the suppliers and the quality of the work performed by the

subcontractors. Therefore; the long-term relationships with the supplies are very important to the contractor in order to achieve a quality product.

2.4.1.9 *Supplier Management*

The supplier quality is an important element of quality management in construction organization because materials purchased are a major source of quality problems (Kaynak, 2003; Metri, 2004). Supplier quality management includes fewer dependable subcontractors, reliance on suppliers process control, strong inter dependence of supplier and customer, purchasing policy, emphasizing quality rather than price, supplier quality control and supplier assistance in quality development. Materials are often a major source of quality problems and affect buyer satisfaction. According to Metri (2004) instead of relying on tools such as acceptance sampling to establish the quality of incoming materials and component parts, it is preferable for constructors to purchase from a more limited number of qualified or certified suppliers.

2.4.1.10 *Purchasing and supplier management*

The output of any process is dependent on the nature of its inputs. When an organisation is viewed as a single process, the impact of supplied products and services becomes apparent. As a result, a TQM environment requires that purchasing decisions are made with quality (i.e. fitness for purpose) as the main determinant. Supplier relations should progress in the direction of supplier partnerships that embrace the following principles:

i. Both parties are to benefit from the relationship;
ii. Both parties should seek to improve quality;
iii. The number of suppliers used should be minimized; and,
iv. There should be an intention to form long-term relations.

2.4.1.11 *Performance measurement*

Whether at the organisational, departmental, or individual level, are the values that enable management to effectively plan, monitor, and control and make decisions within an organisation. According to Williams (1997 cited in Nonxuba, 2010), the performance measures in a TQM environment should be linked to the achievement of organisational and TQM objectives. These measures also need the ability to support a proactive management style.

2.4.1.12 *Communication*

The strategy of changes towards TQM must be brought in clear and direct form of communication from the top management to all staff/employees in the organization, and the good leadership is mostly by good communication.

The attitude and behavior of staff/employees can be affected by communication and good communication. Also, the attitude of people can be changed through gaining their acceptance.

Total quality message is the first step in communication and it should be followed by TQM directive. People should know when and how they would get into the process. Also, what the process is, and the benefits from achieving the TQM. All these steps need to be brought in simple and short language between functional groups in the organization, in addition, the communication and participation must be used in all levels and in open way without barriers by concentrating on the process rather than other departmental issues.

2.4.1.13 *Strategic planning*

The strategic planning involves how the company sets strategic directions, how it determines key action plans, and translates them into an effective performance management system. Strategic planning incorporates the development and deployment of plans (Lee *et al.*, 2003), improve relationships with customers, suppliers, and business partners (Prybutok *et al.*, 2008) and helps

in achieving long and short term goals through participative planning (Teh *et al.*, 2009). Strategic Planning allows firms to set clear priorities and allocate resources for the most important things. It also provides specific instructions for approaching, executing, and evaluating the development of strategic concepts (Metri, 2004).

According to Weiss and Gershon (2008), citing Deming (2000), the following principles are the cornerstones of TQM, namely:

a) Policy, planning, and administration;
b) Product design and design change control;
c) Control of purchased materials;
d) Production quality control;
e) User contact and field performance;
f) Corrective action; and,
g) Employee selection, training and motivation.

According to Kelce and Lee (2004) citing Lee (1998), there are nine elements of TQM, which can be identified, validated and established, namely:

a) Customer focus;
b) Top management commitment;
c) Quality data and reporting;
d) Training;
e) Roles of quality department;
f) Employee involvement;
g) Process management;
h) Product and service design; and,

i) Supplier quality management.

According to Kelce and Lee (2004), the above nine elements of TQM are matched with four major principles for the successful implementation of TQM namely:

a) Top management commitment;

b) Employee involvement;

c) Supplier participation; and,

d) Quality program.

The third and the fourth requirements map to the relationship with customers and suppliers. It is in these relationships that SME's may be disadvantaged when compared with large organisations, because they do not have as many resources or much influence. However, SME's may have an advantage over large organisations in the second requirement, as it is believed to be easy for SME's to get employees involved since most of the employees are more centralized and there are fewer lines of communication than in larger organisations (Kelce and Lee, 2004).

2.4.2 Competitiveness advantage concept

Competitiveness concept is one of the most important concepts in construction industry. Flanagan *et al.,* (2005) explained that competitiveness could be described as something that is multi-defined, multi-measured, multilayered, dependent, relative, dynamic and process related. Shen, *et al.* (2006) defined competitiveness as the ability of organization's to compete for business in various markets. Company competitiveness is defined as the ability to design, produce, and (or) market products superior to those offered by competitors, considering the price and non -price qualities (Momaya and Selby, 1998).

The concept of the competitive advantage is given by Barney (1991) who writes that a firm has sustainable competitive advantage when it implements the strategy of value creation that is not implemented by other competitors. Competitive advantage comprises of factors that a firm needs to have in order to succeed in business (Analou and Karami, 2003). It is the capability of the organization to do its activity in a way or in different ways, that other competitors can not realize (Kotler, 2000). Competitive advantage is a base for a good strategy and a good one creates competitive advantage (Analou and Karami, 2003). The importance of the competitive advantage has increased this last decades (Coplin, 2002).A firm has competitive advantage when it is able to create more economic value than its rivals do (Barney and Hesterly, 2010). Porter's (1985) arguments reflect the strengths, weakness, opportunities, and threats (SWOT) of the framework for assessing competitive advantages.

The concept of sustained competitive advantages gather relevance when we can understand that competitive advantage does not lie in the products or services themselves, but in the resources and capabilities that produce them. To sustain a competitive advantage a company's own resources and capabilities must therefore be difficult to imitate, not easily substituted by other resources or capabilities, incapable of being rapidly developed elsewhere, and firmly attached to the company that deploys or uses them. If all of these covenants are obtained then the right mixes of resources and capabilities will be used and combined to provide the right products or services, in the right market, at the right time. As a result, if these goals are attained, the firm can aim to achieve sustainable competitive advantage and obtain above average returns. More importantly, in today's competitive environment, to sustain a competitive advantage firms, need to, above all, provide value to customers. This value can either be cost advantage, services or differentiated strategies (Leonora, 2002).

Divergent views exist to describe competitive advantage based on different goals of studies. Tracey *et al*. (1999) have investigated competitive advantage from the aspect of, price, cost, delivery, flexibility and quality. Robberts (2003) had proposed lower cost, differentiation, innovation, and growth. Shu and Ta chien (2007) have evaluated competitive advantage by four dimensions, reduced dependency, knowledge transfer, technology development, and technology transfer. (Chiang 2004; Lee 2000) have adopted low cost, and differentiation as competitive advantage dimensions.

Barney (2002) discusses four approaches to measure the firm's competitiveness. These measurements are firm's survival, stakeholder approach, simple accounting measures, and adjusted accounting measures. Feurer and Chaharbaghi (1994) measure competitiveness quantitatively by profit, ability to raise capital and cash flow in terms of liquidity status. Soliman (1998) adds cost, quality, delivery dependability, flexibility and innovation as factors formulating such a competitive position. Porter (1985) indicates that a firm experiences a competitive advantage when "its actions in an industry create economic value and when few competing firms are engaging in similar actions." De Wit and Meyer (1999), Buffam (2000), and Christensen (2001) indicate that a firm has a competitive advantage when it has the means to edge out rivals when competing for the favor of customers. According to Kume (2010), in the in coming years, the competitive advantage may have its sources based on: Quick answers; Continuous improvement of the product and services; Services added in products; distinctive Competences and Skilled and trained staff for the long run.

The research will be based on the definition given by Scarborough (2011) which states that a competitive advantage refers to that differentiating factor that drives customers to buy from a specific business rather than from their competitors. The key to business success, however, is to

develop a unique competitive advantage that creates value for customers and is difficult to duplicate. Shenawy *et al.* (2007) show that firms could achieves competitive advantage, when they have improved financial performance, improved customer satisfaction, faster response to competitive environment and improved product quality.

2.4.3 The concept of small and medium construction firms

In attempting to conceptualize small and medium enterprises (SMEs) in Nigeria, some points need to be stressed. First, there is no generally accepted definition of small or medium businesses because of the classification of businesses into large, medium or small scale is a subjective and qualitative judgement (Ekpenyong, 1997). Secondly, small businesses are generally quite responsive to their environment and our environment changes fast. Changes in the environment therefore affect what constitutes a small business at a particular point in time. Thirdly, what the definition aims at is to set some limits (lower and upper) that will assist in achieving the set purpose. Such limits can be in terms of level of capitalization, sales volume, number of employees, etc.

SMCFs's definitions differ from country to country. Ajagbe and Ismail (2014) mentioned that various yardstick have been used to define SMCFs such as the value of assets employed and the use of energy. Abdullah *et al.* (2012) highlighted that over time in Nigeria, the government has used various definitions and criteria in identifying what is referred to as Small and medium firms. At certain point in time, it used investment in machinery and equipment and working capital at another time, the capital cost and turnover were also used (Umar, 2008). The National association of small and medium scale enterprise (NASME) defines a small sized firm as an organization with less than 100 employees and an annual turnover of ₦500 million. The Central Bank of Nigeria defines SMCFs as an enterprise with an asset base of ₦200 million excluding

land and working capital with staff employed by the firm not less than 10 and not more than 300 (Kelly, 2006).

The definition of MSMEs in Nigeria as contained in the National Policy on Micro, Small and Medium Enterprises (SMEDAN, 2007) is adopted in this study (Table 2.2)

The National Policy document states that, where there is a conflict in classification between employment and assets criteria (for example, if an enterprise has assets worth seven million naira (N7m) but employs 7 persons), the employment-based classification will take precedence and the enterprise would be regarded as micro (SMEDAN, 2007). This is because employment-based classification tends to be relatively more stable definition, given that inflationary pressures may compromise the asset-based definition.

Table 2.2. Classification of MSMsE in Nigeria

S/N	Size category	Employment	Assets (N million) (excluding land and buildings)
1.	Micro enterprises	Less than 10	Less than 5
2.	Small enterprises	10 -49	5 less than 50
3.	Medium enterprises	50 -199	50 – less than 500

Source: Small and medium enterprises development agency of Nigeria (SMEDAN), Abuja, 2007.

Abudullah *et al.* (2012) opine that Small and medium construction firms play an important role in the construction by fostering income stability, growth in the industry and also the provision of infrastructure for the economy. Ajagbe *et al*. (2012) mentioned some of the characteristics that

have distinguished small firms from larger firms. They added that large firms often times have direct access to international and local capital markets. Whereas SMCFs do not oftentimes have such global connections due to the high cost intermediation for smaller projects. Additionally, the fixed costs of complying with regulations, a limited capacity to market products abroad, and limited access to policy makers weigh against the SMCFs more than the larger firm. Ismail *et al.* (2012) added that small enterprises largely operate at a threshold which falls below the regulatory and institutional constraints that inhibit other SMCFs. Gushibet (2011) mentioned that an important feature of SMCFs in Nigeria have to do with the organisational structure, owing to its ownership status revolving around a family and as a result of which it is either run as a sole enterprise or partnership. Due to this, most of the firm's organizational structure is pyramidal and as such decision making and information dissemination in the firm.

CHAPTER THREE

LITERATURE REVIEW

3.1 Introduction

The literature review gives an insight into the work and findings already available within the research area. Therefore, the discussions were weaved around the following sub-headings: TQM evolution; TQM implementation in Nigerian construction industry; Benefits and Obstacles of TQM practices; the Critical Success Factors of TQM; Challenges faced by SMCFs; Strategies in construction firms; SWOT analysis of SMCFs; Interrelationships between SMCFs, TQM and Competitive Advantage ;TQM Models and frame works and Previous research on TQM.

3.2 Total Quality Management Evolution (From Inspection to TQM)

During the early days of manufacturing, work was inspected and a decision made whether to accept or reject it. As business became larger, so, too, did this role and full time inspection jobs were created. However, accompanying the creation of inspection functions, other problems arose, such as more technical problems occurring requiring specialized skills which were often not possessed by production workers; the inspection lacked training; and inspectors were ordered to accept defective goods to increase output. These changes led to the birth of the separate department with a chief inspector reporting to either the person in charge of manufacturing or the works manager. With the creation of the new department, there came new services and issues, such as standard of training, recording of data and the accuracy of measuring equipment. Thus, it became clear that the responsibility of the chief inspector was more than just product acceptance, and a need to address defect prevention emerged. Hence, the quality control department evolved,

in charge of which was a quality control manager with responsibility for the inspection services and quality control engineering.

In the 1920's, statistical theory began to be applied effectively to quality control and, in 1924, Shewhart made the first sketch of a modern control chart. His work was later developed by Deming and the early work of Shewhart, Deming, Dodge and Romig constitutes much of what today comprises the theory of statistical process control (SPC). However, there was little use for these techniques in manufacturing companies until the late 1940's. At that time, Japan's industrial system was virtually destroyed, and it had a reputation of cheap imitation products and an illiterate workforce. The Japanese recognised these problems and set about solving them with the help of some notable quality gurus: Juran, Deming and Feigenbaum. In the 1950's, quality management practices developed rapidly in Japanese plants and become a major theme in Japanese management philosophy. By the late 1960's and early 1970's, Japan's imports into the USA and Europe increased significantly, due to its cheaper, higher quality products, compared to Western counterparts.

In 1969, the first international conference on quality control sponsored by Japan, America and Europe, was held in Tokyo. Feigenbaum states that the term "total quality" was used for the first time and referred to wider issues such as planning, organisation and management responsibility. Ishikawa (1985) explains how "total quality control" in Japan was different, as it was referred to as "company wider quality control" and describes how all employees and management must study and participate in quality control. However, the quality revolution in the west was slow to follow and did not begin until the early 1980's when companies introduced their own quality programmes and initiatives to counter the Japanese success. According to the UK Department of Trade and Industry (1982), Britain's world trade share was declining and this was having a

dramatic effect on the standard of living in the country. There was intense global competition and any country's economic performance and reputation for quality was made up of the reputation and performance of its individual companies and products/services.

The British Standard (BS) 5750 for quality systems had been published in 1979 and in 1983 the National Quality Campaign was launched, using BS5750 as its main theme. The aim was to bring to the attention of industry the importance of quality for competitiveness and survival in the world market place. Since then, the International Standardization Organization (ISO) 9000 has become the internationally recognized standard for quality management systems. It comprises a number of standards that specify the requirements for the documentation, implementation and maintenance of quality systems. TQM is now part of a much wider concept that addresses overall organizational performance and recognizes the importance of process.

Some researchers have defined different levels of TQM evolution. For instance, Chin *et al.* (2002) identify TQM evolution as five stages: could be better; room for improvement; promising; vulnerable; potential winners; and world class. Lau *et al.* (2004) classify five levels of development: unaware; uncommitted; initiator; improver; and achiever. However, Crosby, Weeb, Bryant and others categorize the TQM evolution into four stages within this progression as: Quality Inspection, Quality Control, Quality Assurance and Total Quality Management, as follows:

3.2.1 Quality inspection (QI)

Quality Inspection is defined by Dale and Bunney (1999) as "activity such as measuring, examining, testing or gauging one or more characteristic of an entity and comparing the results with specified requirements in order to establish whether conformity is achieved for each

characteristic". Feigbaum (1991) points out that quality inspection was adopted before the First World War and developed after the Second World War as a result of increasing worker numbers and job complexity which made it harder to keep quality at the required level and, thus, it was necessary to develop a quality inspection concept within factories or organisations. However, according to Costin (1994), at one time products and services were examined, measured or tested under a simple inspection-based system to assess their conformity. Costin adds that inspection was a way of ensuring quality at an appropriate point, which differs between manufacturing, services or commercial types. Moreover, an inspection system was applied as an appraisal point by those responsible for a process of self-inspection or by experienced staff employed specifically for this purpose. During that period, any materials, products or components not conforming to specification used to be modified, reworked or passed on concession. In addition, inspection used to grade the final product and not directly involve operation processes, customers or suppliers.

3.2.2 Quality control (QC)

In (1946), the USA nominated General Douglas MacArthur to lead the re-building process of Japan. During this time, the General invited two key individuals to assist with the re-building process (Joseph Juran and Edward Deming) due to their role in the development of the modern quality concept. They promoted the quality control process to Japanese business and focused on the upper management rather than giving full attention to quality experts, which encouraged the Japanese to develop the culture of continuous improvement and integrate quality control throughout their organisations, Simpson *et al.* (2002).

Quality Control is defined by the ISO (2009) as “Operational techniques and activities that are used to fulfill requirement for quality”. This definition implies that any activity, whether serving the control, management or improvement of quality, is considered as quality control activity involving product design, operation process and outputs. Moreover, quality control is that part of quality management related to achieving quality requirements using statistical methods. It is related to the inspection process of the finished products and services but it is more focused on preventing any defect and monitoring operation processes to check whether they meet the desired requirement (Genasan *et al*., 2009). Quality control is simply performed by inspection under which one or more properties of a product are examined, tested, measured or compared with specified criteria for assessing the conformity. Any product that does not meet the requirements is either scrapped, rework or passed. Quality control system is a screening process without prevention content.

3.2.3 Quality assurance (QA)

Quality Assurance is defined by Zahir (2013) as the total of pre- programmed or systematic actions and procedures necessary for ensuring that a product or services fulfils and will continue to fulfill certain specifications. The basic components of QA are systems control, quality design, statistical quality control, certification by third parties, cost of no quality, and analysis for the root causes which are responsible for a failure. Moreover, quality assurance encompasses all actions and programmes that are designed to ensure that the final product or service will fulfill customer expectations and satisfaction such as design, distribution, development, production and servicing.

Besterfield (2003) states that quality assurance is a set of activities done before the manufacturing or planning process of products and services to assure good quality to the customers. In addition, it emphasises defect prevention by improving production and associated processes to avoid or reduce chances that might cause defects in the first place, whereas quality control is a set of activities done during manufacturing products or delivering services to customers but testing and blocking the release of defective outputs; thus, it emphasises defect detection.

3.2.4 Total quality management (TQM)

The origin of the phrase TQM began to emerge by the end of the 1970s by the US Naval Air System Command but, according to the American Society for Quality, the phrase was first adopted as Total Quality Control in 1980 to portray the Japanese style management which was implemented by American companies during that period. In the 1980s, the expression was changed to Total Quality Management, suggested by one of the employees (Nancy Warren) because she noticed that her colleagues did not like the word control. Following that, in 1981, Nancy started to research the philosophy of Edward Deming and the work of Juran, Crosby and Ishikawa to make performance improvement. By 1982, American corporations were in a near panic due to the high productivity of Japanese companies who spread their products throughout America and they gained a high market share as a result of low labour costs in Japan, the Japanese work ethic, conflict between labour and management and burdensome government regulations in the USA (Mele and Colurcio, 2006).

Crosby (1979) mentions that TQM applies the idea of quality assurance to the whole product and service range by emphasising doing the job right first time, every time, on time. In addition, customer views and ideas are sought and fed into the organisation system to ensure achieving

customer satisfaction continuously. TQM is defined by Gunasekaran and McGaughey (2003) as a “management philosophy that encourages cost reduction, the creation of high quality goods and services, customer satisfaction, employee empowerment, and the measurement of results”. This idea is supported by Antony (2009) in stating that TQM seeks to fulfill customer needs and expectations continuously by producing and servicing what they desire at the lowest cost and at the right time by emphasising involving the vital mass of human resources. As discussed by Li *et al.* (2006), TQM requires that an organisation has to apply all the principles of quality management at every level and by everyone in the organisation.

Andrew and Tang (2009) mention that the complex and dynamic technology, resources and task environment, and customer expectations and orientation are the primary factors behind adopting TQM in today's organisations. They add that TQM has shifted management style away from traditional thinking in terms of process control and organisation aims to giving more attention to the organisational culture as the essential driver of process control. There are some differences between TQM and traditional management, for instance:

i. TQM emphasises that profits follow quality, not the other way around.
ii. TQM focuses on customers and their expectations more than profits.
iii. TQM creates goal-directed connections among managers, suppliers, customers and everyone in the organisation.
iv. With the TQM system, everyone is motivated to contribute towards quality, while in contrast, traditional management is monolithic; managers just manage and employees just work.
v. TQM involves everyone, regardless of level, in improving work patterns and environment.

vi. TQM is process oriented, not result oriented as in traditional management.

vii. TQM is against labour division and emphasises job rotation to improve employee performance and pushes them towards being multi-skilled workers.

viii. TQM stresses continuous improvement; in contrast, traditional management makes improvement when needed.

ix. TQM favours giving more responsibility and authority at all levels, against short spans of control in traditional management and

x. TQM stresses defect prevention rather than detection.

Martinez- Lorente *et al.* (1998 In Ahmed, 2010) summarized the chronology of TQM development as in Table (2.2).

Table 3.1: Important Events in the Development of TQM

Year	Events
1924- 32	Hawthorns studies demonstrated the importance of the social and psychological climate in work.
1924	Shewhart developed statistical process control. (SPC)
1926	Bell Telephone began to apply statistical process control methods. 1940s US army pushed the use of sampling methods during World War II.
1950s	Many attempts at work improvement undertaken (e.g. job enrichment, work redesign, participative management, quality of work life, worker involvement).
1950	Deming's first visit to Japan.

1951	Creation of Deming Application Prize in Japan. First edition of Juran's Quality Control Handbook published.
1954	Juran's first visit to Japan. Maslow's theories about human needs.
1960	Liberalisation of economy in Japan with pressure to improve quality to compete with foreign companies. McGregor's X and Y theories.
1961	First edition of Feigenbaum's Total Quality Control published.
1962	The idea of quality circles appeared in the first issue of the Japanese Journal Quality Control for the Foreman.
1970s	The pressure of Japanese companies began to be felt in US companies.
1972	QFD was developed at Mitsubishi's Kobe shipyard.
1973	After the 1973 oil crisis the JIT system was adopted by a vast number of Japanese companies. A small number of US and European companies began to apply this system in the 1980s.
1974	Quality circles began to be widely introduced in the USA; the first quality circle programme was launched in Lockheed in 1974 and in the UK Rolls-Royce introduced the concept in 1979.
1979	First edition of Crosby's Quality is free published. Xerox Corp. started to apply benchmarking concept to processes. Publication of the BS5750 quality management series.
1980	An NBC television documentary about the "Japanese miracle" proposed Deming as a key element in this miracle.
1981	Ouchi's Z theory 1982 First edition of Deming's Quality, productivity and competitive position published.
1983	"Quality on the line", published by Garvin in Harvard Business Review, analysed the differences between Japanese and US companies, showing some of the reasons for the better performance of the Japanese. A paper about Taguchi's design of experiments was published in Harvard Business Review.
1985	Navel System Command named its Japanese- style management approach "total quality management".
1986	First edition of Deming's Out of the Crisis published. It became a bestseller.

1987	First edition of ISO 9000 quality management system series. PublicationK of the Malcolm Baldrige National Quality Award.

Source: Martinez- Lorente *et al*. (1998, In Ahmed, 2010)

3.3 Total Quality Management Implementation in Nigerian Construction Industry

Despite all effort made in the different fields in adapting new strategies and implementation procedures, sustainable development in industries has become a major concern in the last decade both in developed and developing countries. It is widely accepted that customer satisfaction is the primary focus in modern business success. Companies must always put the customer needs in first place. This has resulted in the exercise of value creation. Therefore, with the concept of value, customer value has become a source of sustainable competitiveness. Therefore, companies have adopted different platforms for value creation, such as; mass production, streamlined supplier networks, value in design, lean Construction/production, six sigma and, total quality management (TQM).

However, TQM represents a platform for marketing potentialities, and synergistic in facilitating efficient management of process for value creation and delivery in the highly dynamic and competitive market, Mele (2007). TQM is found to have a strong and positive impact on organisational performance (Mehmet and Lenny, 2006). TQM as a management approach focus on the early involvement of all construction project members at early stage of the procurement process, therefore, taking the right decision at early stage will save a great deal of time effort and money leading to more added value to the construction project.

Despite the fact that construction industry has lagged behind other industries in TQM implementation, TQM is widely recognised as an enabler for performance in the industry, after

being successfully implemented worldwide by many highly competitive organisations to improve performance and productivity, especially within the services and manufacturing industries (Love *et al.* 2004). According to Abas and Yaacob (2006), the success of TQM adoption in manufacturing and other industries has been forcing the construction industry to implement the TQM philosophy to be able to cope with the rapid changes in the business environment. They add that TQM adoption within an organisation has become a vital strategy for all organisational aspects after being considered an important operational-level element by some firms.

3.4 Benefits and Obstacles of Total Quality Management Implementation

3.4.1 Benefits of total quality management implementation

The successful implementation of TQM will result in:

i. **Improved employee involvement:** TQM ensures that everyone in the organisation has a clear understanding of what is required and how processes relate to the business as a whole. Through the practice of TQM, teamwork is employed and the employees are motivated and encouraged to control, manage and improve the processes, which are within their responsibility (Dale, 1994 cited by Antony *et.al*., 2002).

ii. **Improved communication**: A better communication can be accomplished through the effective implementation of TQM principles in any organisation. More open and frequent communication among people will be established, and they will view and treat one another as customers and suppliers (Anjard, 1998 cited by Antony *et al*., 2002).

iii. **Increased productivity:** TQM changes the organisational culture and creates a happy working environment. Due to effective delegation, empowerment, and total staff involvement, problems are identified and solved at lower levels. The working process

will become more efficient. Consequently, productivity can be increased by reducing cycle times (Antony *et al.,* 2002).

iv. **Improved quality and less rework:** Within the context of a TQM implementation, work processes and improvements are focused upon. Employees will place more emphasis on the elimination of root cause relines rather than the correction of problems. In addition, more up-front effort is applied to clarify requirements and prevent proactively the, occurrence of defects and errors. Problems will be identified and tackled at lower levels, by the people closest to the work who are empowered to deal with the problems. As a result, the quality of the products/services will be improved and product rework will be reduced (Antony *et al*., 2002).

v. **Improved customer satisfaction:** Through open communication among employees, customers and suppliers, the true voice of the customers can be more readily understood. Since quality operations also focus more on the work process and improvement, the company will provide a better quality product/service to the market. As a result, enhanced customer satisfaction is achieved.

vi. **Reduced costs of poor quality:** Effective implementation of TQM will lead to significant reduction in costs of poor quality such as scrap, rework, late deliveries, warranty, replacement, etc. (Antony *et al*., 2002).

vii. **Improved competitive advantage:** A further, benefit is to strengthen the competitive advantage of the organisation to survive in the market. If TQM is successfully implemented, it will result in better customer satisfaction (Antony *et al.,* 2002).

Bardoel and Sohal (1996), list the following benefits of a TQM implementation, namely:

a) Better control of processes resulting in consistency from design to delivery;

b) Reduced production time;
c) Reduced damaged goods;
d) Reduced delivery time;
e) Decreased set up time;
f) Increased performance measurements; and,
g) Improved customer perception to company.

According to Kotelnikov (2009), there are five main advantages of a TQM implementation, namely:

a) It encourages a strategic approach to management at the operational level, through involving multiple departments, in cross- functional improvement and systematic innovation processes.
b) It provides a high return on investment through improved efficiency.
c) It works equally well for the service and manufacturing sector.
d) It allows organisations to take advantage of development that enables managing operations as a cross functional process.
e) It fits an orientation towards inter- organizational collaboration and strategic alliances through establishing a culture of collaboration among different departments within organisations.

3.4.2 The obstacles to tqm implementation

When implementing a TQM program, many companies face unique problems resulting from their own specific external and internal environments (Ljungstrom and Klefsjo, 2002). Identifying the obstacles that hinder TQM implementation can be used to assist in guiding managers in performing self-audits of their current implementation of TQM program and to develop effective strategic policies and related action programmes planned to overcome the barriers(Jun *et al.*, 2004).

It is generally accepted that TQM takes a long time to implement as it requires large organizational changes (Rallabandi *et al*., 2010). Rallabandi *et al.* (2010) argue that TQM can increase performance in the long run. However, in order to obtain the perceived benefits from TQM one must be patient. Johnson and Kleiner (2013) stress that organizations often do not show improvement in the bottom line until after a year or more following a wide-ranging TQM implementation. They furthermore argue that managers often feel disappointed when no immediate improvements in profitability or competitive advantages show. They underline that this may represent a serious obstacle to the continuing use of TQM practices, since managers might decide to discontinue TQM programs as a result hereof. In addition hereto they emphasize the need for managers to understand that a lack of immediate results is not tantamount to failure of implementation. In extention hereof, Ahire *et al*. (1995) stress that often cited reasons for TQM failures among others encompass unrealistic expectations regarding the time-frame and costs associated with TQM implementation, lack of top management commitment, over- or under-reliance on statistical methods, and failure to build and sustain a quality-oriented culture.

Oakland, (1995) identified factors that hinder the implementation of TQM. These include the thought that its implementation can be time consuming, bureaucratic, formalistic, rigid and impersonal. Cao *et al.* (2000) argue that the reason for failures of TQM implementation may often be subscribed to a general lack of understanding of the TQM concept. When managers have difficulties in understanding and interpreting TQM, it is difficult to secure a successful implementation throughout the organization. On the contrary Dale *et al*. (2000) found that the lack of success of TQM is not as a result of the concept but rather the way it had been introduced into an organization and used by managers; it is expected that many fundamental mistakes will be made by senior managers in additional to their advisers in issues related to communication,

training, infrastructure, teams and projects, involvement, problem solving, and measurement. Overall, they add that there is a fundamental failure of management to stick to the basics (Dale *et al.*, 2000)

According to Wilkinson *et al.* (1998), the lack of commitment from any particular group within the organisation can be a serious barrier in management of quality. Most especially the non-commitment by management to quality management is a major hindrance to the successful implementation of TQM. Ugboro and Obeng, (2000) in their research they found out that the halfhearted implementation of TQM is a major reason for its failure in most organisations. According to them, organisations are only willing to implement just those aspects of TQM which is supported by existing organisational culture. Their findings revealed that employees did not feel as part of the decision making process and their ability to make contributions to quality improvement were restricted due to the limited authority granted them to carry out their activities. Smith, (2004) explained that quality management programs have failed because they were 'programs of the month'. According to him, implementing quality throughout an organisation is not the result of a formalised programme but requires a cultural change in the way activities is conducted. Andrle, (1994) on his own assessment, claims that the adoption of incompatible quality approach by organisations results in the failure of TQM implementation, he further stressed that the delegation of quality leadership by managers might lead to the development of TQM bureaucracies that are ineffective like other functional departments.

Another study carried out by Amar and Zain (2002) to examine the barriers faced by manufacturing organization in implementation of TQM identified 11 pertinent factors acting as barriers that are most frequently faced by Indonesian Organisations. These are issues relating to employees, management, attitude towards quality, organizational culture, interdepartmental

relations, raw materials, machines and equipment, information, method and training. However, the most frequent barrier, according to results of the above study, pertains to human resource factor. Bayazit (2003) reported that lack of qualified Quality consultants, the conflict between management structure and TQM, the difficulty in developing company specific models, the difficulty in achieving teamwork among employees were the most frequent difficulties faced by Turkish manufacturing companies when implementing TQM. Red (2005) also investigated barriers that hamper the success of TQM implementation in a developing country and concluded that the failure of TQM may be due to two key reasons: methodology and implementation. Methodology refers to the techniques and tools being employed to improve a process; these should be suitable and sufficient to improve a process.

3.5 The Critical Success Factors (CSFs) of Total Quality Management

Critical Success Factors can be defined as “the limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organization, they are the critical key area where 'things must go right' for the business to flourish.

The following sections investigate the implementation of TQM as well as its critical Success Factors (CSFs) empirically identified in studies conducted by a number of authors. For example, Saraph, Benson *et al*., 1989; Flynn, Schoeder *et al.,* 1994; Powell, 1995; Terziovski and Samson, 1998; Bayazit, 2003; Rad , 2005; JU, Binshan *et al*.,2006; Karuppusami and Gandhinathan, 2006; Bartley, Gomibuchi *et al*., 2007; Chowdhury, Paul *et al*., 2007; Abdullah, Uli *et al.*, 2008; and Salaheldian, 2009. Saraph *et al.* (1989) examined the development of qm practices in twenty- two manufacturing and service organizations in the USA and developed eight CSFS of QM. They consists of the roles of leadership and quality policies, quality department, training,

product/services design, supplier quality management, process management, quality data and reporting, and reporting, and employee relations. It further suggested that these CSFs of QM can be used by decision-makers to evaluate the status of QM efforts and identify possible areas for improvement in the quality (Seraph, Benson *et al.,* 1989). Flynn, Schoeder *et al.,* 1994 added that top management support creates an environment in which quality activities are rewarded. The CSFs identified in their study were quality Information System (IS/s); process management; product design; workforce management, supplier involvement, and customer involvement. These CSFs need to be used together to sustain manufacturing capabilities. As manufacturing capability and quality improve, the organization attains and sustains a competitive advantage. This in return, gives feedback, support and information to top management which stimulate continuous improvement.

Ahire *et al*, (1996) expanded the practices even further and identified 12 factors that are critical for the implementation of TQM derived mainly from the literature, these factors are: Top management commitment, Customer focus, Supplier quality management, Design quality management, Benchmarking, use of statistical process control, internal quality information, Employee empowerment, Employee involvement, Employee training, Product quality, and Supplier performance. Karuppusami and Gandhinathan (2006), analysed, sorted and proposed a list of 56 CSFs of TQM based on 37 TQM empirical studies conducted between 1989 and 2003, Their results showed that the first five CSFs included employee relations; product/service design; quality data; role of quality department; Human Resources Management (HRM) and Development (HRD); design and conformance (JU, Binshan *et al*., 2006) studied the possible effects of TQM and Knowledge Management (KM) interaction and confirmed that there exist multiple positive effects between them. Companies may implement one of them first or both at

the same time depending on circumstances of the companies. The CSFs of TQM identified in their study were top management ; benchmarking; process management; product design; employee training; empowerment, supplier quality management and customer satisfaction. Although supplier quality management was identified as a critical success factor of TQM, it was notsuggested; like others that it would work as practical directions KM implementation (JU Binshan *et al*., 2006).

For successful implementation of TQM, an organisation's culture needs to be focused on its customers. An organization can move towards a customer- focused culture by listening to customers' view; analyzing; understanding; integrating and developing their expectation. Customer focused strategies, procedures, and processes need to be regularly reviewed and improved (Bartly, Gomibuchi *et al.,* 2007) .Chowdhury *et al*., (2007) employed ten critical factors of quality practices to investigate the effect of top management commitment in TQM implementation in a Thai manufacturing industry. Their results showed that companies with stronger commitment of top management will exhibit a more effective quality effort.

Investigating the empirical literature, it becomes evident that the critical success factors of TQM differ somewhat in scope from one study to another. This being said, several common elements and practices are observed throughout the literature, as documented in the section above. The table below provides an overview of the critical success factors according to the empirical literature:

Table 3.2: Summary of empirically identified critical success factors of TQM

Critical success factors of TQM	Supportive literature
Top management commitment	Saraph et al. (1989); Flynn *et al*. (1989); Salaheldin (2009); Turkyilmaz *et al.* (2010); Demirbag *et al.* (2006); Fuentes *et al*. (2006); Ahire *et a*l. (1996); Powell (1995)
Supplier management	Karuppusami (2006); Saraph *et al*. (1989); Flynn *et al*. (1989); Demirbag *et al*. (2006); Salaheldin (2009); Ahire and Golhar (1996)
People management	Terziovski *et al.* (1999); Saraph *et al*. (1989); Flynn *et al.* (1989); Sun (2000); Ahire *et al*. (1996); Powell (1995); Yusof and Aspinwall (2000); Hendricks and Singhal (1997)
Customer focus	Salaheldin (2009); Karuppusami (2006); Bartley *et al.* (2007); Saravanan and Rao (2006); Rahman and Bullock (2005); Flynn *et al.* (1989); Turkyilmaz *et al*. (2010), Karuppusami and Gandhinathan, 2006).
Process management	Ravichandran and Rai (2000); Kanji (2000); Flynn *et al.* (1989); Claver and Tari (2003); Yusof and Aspinwall (2000)
Quality data and reporting	Saraph *et al*. (1989); Kaynak (2003); Ahire and Golhar (2006); Flynn *et al*. (1989); Salaheldin (2009)

Source: Researcher (2017)

Although there are many studies in TQM literature, authors such as Idris and Zairi, 2006; Karuppusami and Gandhinathan, 2006; Prajogo and McDermott, 2005; Sila and Ebrahimpour, 2002; Singh and Smith, 2006; Vouzas and Gotzamani, 2005. It is recommend that further concern should be made for the evaluation of critical success factor of TQM, the results of their adoption and the type and extent of their relationships

3.6. Challenges Faced by Small and Medium Construction Firms

Although SMEs are seen as veritable and viable engines of economic development, the growth and development of SMEs especially SMCF in Nigeria have been slow and in some cases even stunted, due to a number of problems and challenges confronting this all-important sub-sector of the economy. Some of the problems highlighted by Onugu (2005) include difficulties associated with complying with regulatory requirements in the specific areas of operations of the SMEs; problems of undercapitalization and difficulty with access to bank credits; bureaucratic bottlenecks; corruption and lack of transparency arising from government regulation and regulators; as well as government's lack of interest or focus in addressing the specific factors responsible for the abysmal performance of the sub-sector. On the other hand, Oluboba (2011) blamed the poor performance of the Nigerian small scale enterprises on poor management practices, poor access to funds, low equity participation from stakeholders, poor infrastructural facilities, shortage of skilled manpower, multiplicity of regulating agencies and the over-bearing operating environment, societal and attitudinal problems, little access to markets and lack of access to information.

Various authors have researched into the problems facing small building contractors both in the construction industry and also in the business environment as a whole. Ihua and Siyanbola (2012) in their exploratory investigation of the critical challenges limiting small business performance in Nigeria revealed that five critical challenges hamper the operations of small building contractors in Nigeria, namely: limited access to credit, high cost of doing business, inadequate infrastructure, inconsistent economic policies, and corruption and multiple taxes. Agwu and Emeti (2014) in a similar view on the issues, challenges and prospects of small and Medium Scale Enterprises (SMEs) in Port Harcourt, Nigeria reported that poor financing,

inadequate social infrastructures, lack of managerial skills and multiple taxation were major challenges confronting SMEs in Port-Harcourt city.

Fatai (2014) examined the problems and prospects of small building contractors in Nigeria and stated that the challenges facing small building contractors can either be induced by the operating environment (financial problems, government unfavorable fiscal policy (government policy, globalization effects, infrastructural facilities financial institutions etc) others are functions of the nature and character of SMEs themselves (poor management practice, poor accounting standards, shortage of manpower, financial indiscipline and corruption. These authors have covered the problems of SMEs and contractor in the business world in general.

In the construction industry likewise, researches have also be carried out on the problems and challenges of small building contractor both in Nigeria and in the world over. Chilipunde (2010) carried out a questionnaire survey on the constraints and challenges faced by small and medium sized building contractors in Malawi and reported that the operational challenges facing small were lack of finance, training and business skills; limited skills in construction information technology (IT), and prevalence of unethical conduct amongst some of the stakeholders. Nesan (2005) in his work on project finance model for small contractors in USA addressed the problems of small and start up contractors in funding their projects. He concluded that for small building contractors, there are very limited options available from the banks or other lending institutions to cover this large working capital requirement in the absence of sufficient collateral.

Adams (1997) identified he constraint on SMCFs performance in Nigeria as emanating from uncertainties in supplies and prices of materials, obtaining interim payment, procuring work, access to capital, negotiating variation payment, access to plant and equipment, inappropriate

contract conditions, maintain plan and equipment, resolving contract disputes, meeting deadlines, design changes, incomplete contract documents, transporting materials and equipment, materials control in site, providing reliable tenders, communicating with client/representatives, shortages shortage of skilled labor, public image, accounting of financial management inadequate supervision by client project planning and site management, technical know-how, commitment to construction, company organization, personnel management and providing quality workmanship.

Smith-Jackson *et al*. (2014) in their study of safety critical incidents among small building contractors posited that small building contractors tend to inherit the problems that were not resolved in the earlier construction planning stages. They added that the early work done by designers, planners, and larger contractors make it difficult for small contractors to provide inputs to ensure contract obligations are more compatible with their resource constraints and capabilities. Hagstedt and Thideman (2013) carried out a research on the growth challenges for small building contractors in the construction industry in Norway. Two categories of growth challenges were identified; the first one was related to liquidity while the second one was related to the organization of the company. In summary, the challenges and problems facing small building contractors identified in literature are financial, infrastructural, managerial, technological, human resource, and safety problems etc.

3.7 Strategies in Construction Firms

Due to the uncertainty and complexity of the sector, the construction has been considered as a unique industry (Holt, Love and Li, 2000; Price, 2003; Dansoh, 2005). The uniqueness makes the construction industry vulnerable, difficult to manage, and less competitive. However, to remain competitive, an organisation must quickly recognise the changes in

environment, be flexible enough to respond to the changes, and understand its own capabilities (Holt et al., 2000). Junnonen (1998) asserts that when dealing with a changing environment, strategy is important to organisations. The changing environment has occurred due to numerous variables that can influence the construction industry. Some of these influenced variables are technology, people or workers, government policies, and sustainability issues (Lee, 1991; BDW, 2006; Chinowsky *et al*., 2007; KPMG, 2008). However, these four (4) influenced variables can be analysed, reduced, exploited, and addressed using strategic planning concept. Strategic planning should make the organisation becoming more 'strategic'. That is being able to meet the challenges of a changing environment by stimulating strategic thinking and strategic analysis (Senge, 1990; LaPiana, 2004). For instance, construction organisations need to be vigilant to survive in the future due to the greater pace of technological changes than before.

Strategy is the scope and direction of the organization over the long term which achieves advantage for the organization through its configuration of resources within a changing environment to meet the needs of markets and to fulfil l stakeholder expectations. (Johnson & Scholes, 2002). It is frequently described as a deliberate set of actions to achieve competitive advantage, giving coherence and direction to the organization (O"Regan and Ghobadian, 2005). Commonly, the strategy formation tends to be an analytical process for setting visions, missions, goals and action plans, separate from implementation (Johnson *et al*., 2011).

Strategy analysis is an approach to facilitating, researching, analysing, and mapping an organization's abilities to achieve a future envisioned state based on present reality and often with consideration of the organization's processes, technologies, business development and people's capabilities. It is process of conducting research on the business environment wherein an organization operates and on the organization itself, in order to formulate strategy. Strategic

analysis is the use of tools such as SWOT analysis, PEST analysis, value chain analysis and other methods with an aim of determining the best way an organization can reach the desired goals and objectives using the available resources. Measuring the effectiveness of the use of these resources is possible using the presented analytical production function. Examples of analytical methods used in strategic analysis include: SWOT analysis; PEST analysis; Porter's five forces analysis; four corner's analysis; value chain analysis; early warning scans; war gaming (Downey, 2012).

3.8 Methods of Analysing Strategic Environment

The Construction environment can be broadly classified into external and internal environment. According to Kotler and Armstrong (2012), marketing environment consists of actors and forces which affect marketing management's capability to operate successfully in providing product and services to key clients. Blythe (2005) similarly classifies environmental factors into two areas: the external environment and the internal environment meaning factors happening outside the organisation and within it.

The external environment of an organization exists of the general environment and the task environment. While the internal environment of a company includes the elements within an organization its boundaries (Daft, 2003). We can think of the organization, the products of an organization and the competitive strategy which an organization uses.

Use of strategy tools is recommended, they can help to allocate the current position, to see possibilities, identify threats and help with making better choices. Managers can use different analytical tools to understand the firm's own capabilities, customers, and business environment. Afterwards, based on achieved results, strategy recommendations could be developed. There are various existing methods of strategic analysis, and each can be used based

on whether it is external or internal environment or both. Figure 3.1 below shows a graphical representation of it.

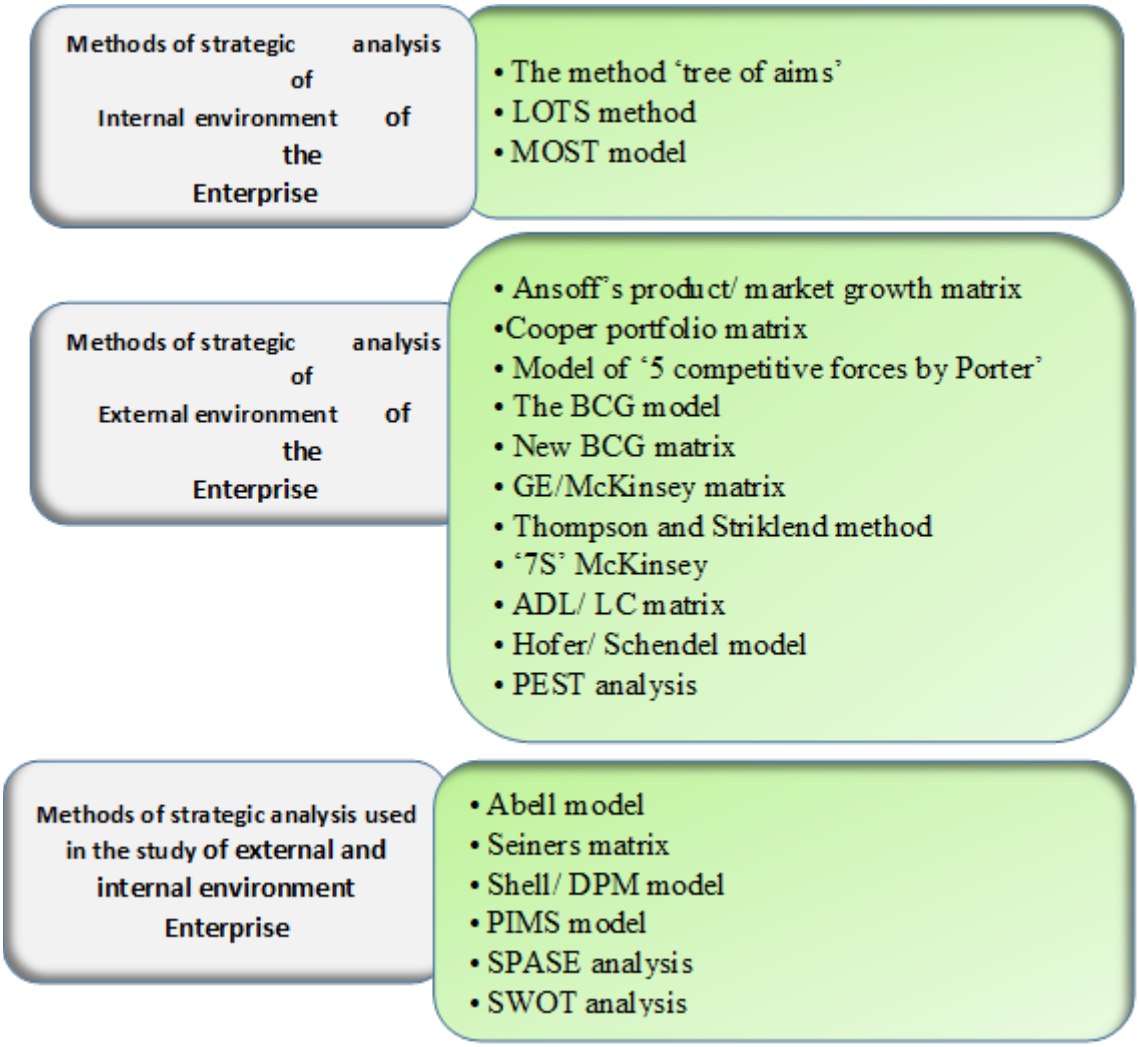


Figure 3.1. Methods of strategic analysis
S o u r c e: Wasilij and Irina (2014)

3.8.1 Methods of strategic analysis of internal environment of the enterprise

3.8.1.1. *The method 'tree of aims'*

The method 'tree of aims' is a graphic chart that demonstrates change of general aims into sub-aims. The top of chart is interpreted as aims, ribs or arches, as a copula between the aims. This is the main universal method of system analysis. The 'tree of aims' comes forward as

systematization of hierarchy of aims that represents their collateral subordination and inter conditionality.

3.8.1.2 *LOTS method*

LOTS method includes a detailed, sequential discussion of a number of business issues at different levels and varying degrees of complexity: from the corporate mission of the enterprise as a whole to the individual project in its middle. Discussion includes nine stages and refers to the existing state, strategy, long-term goals, short-term objectives, methods and objects of analysis, human resources, development plans, organization of management, reporting.

3.8.1.3 *MOST model*

MOST model clarifies to the hierarchy between the mission, strategies and objectives. According to this model, the position of a business entity is described with undefined criteria, which may include sales volume, profit margins or payment of dividends, a number of employees.

3.8.2 Methods of strategic analysis of external environment of the enterprise

3.8.2.1 *The Ansoff growth matrix*

The Ansoff Growth matrix is another marketing planning tool that helps a business determine its product and market growth strategy. Ansoff's product/ market growth matrix suggests that a business' attempts to grow depending on whether it markets new or existing products in new or existing markets. The output from the Ansoff product/ market matrix is a series of suggested growth strategies which set the direction for the business strategy. There are four ways: market penetration, market development, product development, and diversification.

3.8.2.2 *Cooper portfolio matrix*

Cooper portfolio matrix defines the criteria for selection of the enterprise strategy:

– The attractiveness of industry, which, in turn, is determined by the market attractiveness and technological level.

– Business Force" that is also determined by market advantages of commodity and synergistic effect of the enterprise in technology of production and marketing.

3.8.2 3 *Model of 5 competitive forces by Porter*

Michael Porter's Five Forces is a powerful competitive analysis tool to determine the principal competitive influence in a market. It is a broadly used model in business that refers to the five important factors that drive a firm's competitive position within an industry. By thinking through how each force affects you, and by identifying the strength and direction of each force, you can quickly assess the strength of the position and your ability to make a sustained profit in the industry. Thus Five Forces analysis helps you stay competitive by:

i. Knowing the strength of these five forces, you can develop strategies that help their businesses be more competitive and profitable.

ii. Looking at opportunities, you can to strengthen their organization's position compared to the other players for reducing the competitive pressure as well as generate competitive advantage.

According to Porter in Marco (2009), there are five competitive forces. These are: Potential new entrants, bargaining power of customers, bargaining power of suppliers, Threat of substitute products and the Rivalry among competitors. Potential new entrants are potential new players on the market. It is not in the benefits of a firm if it is easy for potential new entrants to enter the market. The bargaining power of customers is the power which customers

have to bargain. The bargaining power of supplier is the power which suppliers have to bargain with a company. This power is relatively large if a certain supplier is the only player on the market. This information can also be obtained by doing an internship at the company. The threat of a substitute product is the threat that a certain product will replace another product. The rivalry among competitors in a certain market is influenced by the other four forces.

3.8.2.4 *The BCG strategic portfolio model*

It is a method of approaching and analyzing business marketing and growth developed by the Boston Consulting Group. The primary guiding principle of the BCG group's strategy is that experience in a market share leads to reduced costs and higher profits. This model uses the BCG marketing matrix, a system to classify business enterprises based on their potential for profits and growth. The model also applies mathematical formulas to business enterprises or products to calculate potential growth and earnings.

The BCG growth matrix part of the model classifies each product as a 'cash cow', 'problem child', 'star' or 'dog'. 'Cash cows' represent product lines that bring in a high income at low cost to the company, leaving plenty of money to put to other uses. 'Star' product lines may bring in some profits but require more investment to maintain their market share. These are products with the potential to become future 'cash cows' if the company invests in them wisely.

'Problem children' do not generate cash flow and require more investment but still have potential to grow. These are the products to watch, as they can eventually become either 'stars' then 'cash cows' or 'dogs'. 'Dog' products may generate some income or loss but have slow-growing markets, making them poor continuing investments for a company's dollar (Hirsh, 2014).

3.8.2 5 *New BCG matrix*

New BCG matrix is used to characterize the products (services), which the enterprise provides. In this model, two factors are interacted: number of competitive advantages of products (services) and the importance of competitive advantages in general.

3.8.2.6 *GE/ McKinsey matrix*

McKinsey & Company developed a nine-cell portfolio matrix as a tool for screening GE's large portfolio of strategic business units (SBU). This business screen became known as the

GE/ McKinsey matrix and is shown below:

The GE/ McKinsey matrix is similar to the BCG growth-share matrix in that it maps strategic business units on a grid of the industry and the SBU's position in the industry. The GE matrix, however, attempts to improve upon the BCG matrix in the following two ways:

– The GE matrix generalises the axes as 'Industry Attractiveness' and 'Business Unit

Strength' whereas the BCG matrix uses the market growth rate as a proxy for industry attractiveness and relative market share as a proxy for the strength of the business unit.

– The GE matrix has nine cells vs four cells in the BCG matrix.

3.8.2.7 *Thompson and Striklend method*

Thompson and Striklend method foresees the choice of alternatives of corporate level depending on two parameters: rates of market growth (rapid or slow) and competitive position of enterprise (strong or weak). Possible strategic alternatives in the fields of the matrix are placed in order to reduce their attractiveness.

According to this model, on the X axis the competitive position of business is estimated and on the Y axis—the dynamics of market growth. There are given strategies in the four quadrants of the matrix, each of which specifies the provision of strategic business units in the two measured spaces of matrix.

3.8.2.8 *'7S' McKinsey model*

'7S' McKinsey model is a way of understanding the major internal factors, influencing its present situation and future development. A conceptual diagram of this model includes seven factors for success of business entities: strategy, skills, generally accepted values (shared values), structure, system, staff, cultural identity (style).

3.8.2.9 *ADL/ LC matrix*

The concept of the life cycle of the field consistently passes four stages: nucleation, growth (or development), maturity, aging (decline). The main theoretical provision of ADL/ LC model is that a separate kind of business and any business entity may be located on one of these life cycle, and therefore it is necessary to analyze it within that stage.

3.8.2.10 *Hofer/ Schendel model*

Hofer/ Schendel model is concentrated on the positioning of existing businesses in the matrix of the goods development and determination of ideal set development. It should be noted that there are only two optimal sets of business: buying a new or sale of the old type of business, however, the situation of each business is determined according to the degree of market development and its performance according to competitors.

3.8.2.11 *PEST analysis*

The PEST analysis is a useful tool for understanding market growth or decline, and as such the position, potential and direction for a business. PEST is an acronym for Political, Economic, Social and Technological factors, which are used to assess the market for a business or organizational unit. Sometimes it's expanded to include legal and environmental factors and called a PESTLE analysis.

The Political dimension itself represents all the regulations that the government of a country, state or a local community, designs to influence the behavior of a company (Daft, 2003). The economic dimension represents the general economic health of a country in which a firm operates (Daft, 2003). We can see the economic health of a country via indicators like the gross domestic product (GDP), the growth rate of the aggregate economy and unemployment. The socio-cultural dimension of a firm represents the norms, values and other demographic characteristics of the country in which a company operates (Daft, 2003). The technical dimension of the a firm represents all the scientific and technical advances in a specific industry (Daft, 2003).

3.8.3. Methods of strategic analysis used in the study of external and internal environment

3.8.3.1. *Abell model*

Abell model, in fact, has corrected shortcomings of Ansoffa model. The Abell model is a three-dimensional model for defining the business of the company and finding areas for growth and diversification along its axis. The company's mission is created with three strategic questions to be answered:

a) Who is our target customer group?
b) What function do we provide to the customer?

c) How do we provide that function (technology)?

These issues come together in the Abell model. In Abell model we look at three dimensions:

a) Market Group Dimension. Whom are we serving?
b) Problem-Solving Dimension. In which needs will we provide?
c) Technology Dimension. How do we provide in the needs?

3.8.3.2 *Shell/ DPM model*

Fundamental idea of Shell/ DPM model is that the overall enterprise strategy should ensure the maintenance of balance between the cash surplus and the deficit through the development of new promising businesses based on the latest scientific and technological developments that will absorb excess of money supply, which are in the maturity phase of the life cycle.

3.8.3.3 *PIMS model*

PIMS model (Profit Impact of Market Strategy)—method of analyzing the impact of market strategy on profit. This model provides determination of quantitative patterns of factors influence on outcomes of business entities (profitability, profits) arising from the analysis of empirical experience of the potential operation of a large number of industrial enterprises.

3.8.3.4 *SPACE analysis*

SPACE analysis (Strategic Position and Action Evaluation); SPACE method (evaluation of strategic assessment of actions) is a comprehensive method for analysis of the position in the market and choosing the optimal strategy for medium and small enterprises.

The analysis assesses the internal and external environment and allows to design an appropriate strategy.

The analysis describes the external environment using two criteria:

– Environmental Stability (ES)—it is influenced by the following sub factors: technological change, inflation rate, demand volatility, price range of competitive products, price elasticity of demand, pressure from the substitutes;

– Industry Attractiveness (IA)—it is influenced by the following sub factors: growth potential, profit potential, financial stability, resource utilization, complexity of entering the industry, labour productivity, capacity utilization, bargaining power of manufacturers.

The inside environment is also described by two criteria:

i. Competitive Advantage (CA)—it is influenced by the following factors: market share, product quality, product lifecycle, innovation cycle, customer loyalty, vertical integration,

ii. Financial Strength (FS)—it is influenced by the following indicators: return on investment, liquidity, debt ratio, available versus required capital, cash flow, inventory turnover.

3.8.3.5 *Seiners matrix*

Seiners matrix (model 'product/ market') includes: classification of markets and products on existing markets, new products, but they are related to existing markets. This model is used to determine the probability of success in choosing one or another type of business and for choosing between different types of businesses.

3.8.3.6 *Strength, weakness, opportunities and threats (SWOT)*

SWOT analysis is a method that summarizes all the internal and external factors of the sector's environment and analyse corresponding strengths, weaknesses, opportunities and threats. SWOT analysis provides information that can help in matching the sector's resources and capabilities to

the competitive environment in which it operates (Afuah, 2009).It is also a strategic tool that can help companies analyze their situation and conditions they are faced with, summarize for their past and make a developing strategy and plan for future life and evaluate. “S” stands for strengths, “W” stands for weaknesses, “O” stands for opportunities, ”T” stands for threats. The basic goal of the SWOT analysis is to identify and evaluate the strengths and weaknesses in the internal environment and opportunities and threats in the external environment of the system. The analysis is based upon the comparison of the internal features of the system (advantages and shortcomings) which can be controlled within the system with those coming from the external environment, upon which the system does not have a control (Afuah, 2009).

The elements of the SWOT analysis, presented in Figure 3.2, were firstly developed as a strategic planning tool (Afuah, 2009).

Internal	Strength	Weakness
External	Opportunities	Threat

Figure 3.2 SWOT framework
Source: Friend and Zehle, (2009)

3.9 SWOT Analysis of Small and Medium Scale Construction Firms in Nigeria

An important feature of SME Sector is its ability to create jobs. Vibrant SMEs are considered crucial in solving multivariate socioeconomic problems in developing economies including unemployment, low growth and poverty. Since productive employment is the key to achieving sustainable reduction in poverty and the fact that SMEs have potential of creating mass employment, (Abubakar and Yahya, 2013). They are seen as having the potential to quickly respond to the customers need in a more flexible though less bureaucratic manner than large firms. As a result of their small scale and their particularly ownership-managerial structure (Ade

et al., 2015). Fabayo (1989) observed that one major claim for focus on SMEs is that they are large employers of labour and this makes them vital in coping with the problems of unemployment and poverty. SMEs have been found to have locational flexibility. From the study conducted by Uzor (2004), he noted that they could be more readily used to achieve industrial dispersal and regional balance in economic development. Another outstanding contribution is its influence on the contribution to the competitive price structure. The large number of small firms forms a broadly based variety of piece enterprise firms, providing a near perfect competitive situation. In this way, small businesses act as a natural antidote to the price formation of large and powerful monopolistic or oligopolistic conglomerations.

SMEs are generally more productive than large firms but institutional failures and financial market impede their development; SMEs expansion boost employment more than large firms because they are more labour intensive. Thus, any attempt to develop SMEs will greatly assist in poverty alleviation strategies in developing economies. SMEs in Nigeria are characterized by high labour intensity, ease of entry and exit, small startup and operating capital, low labour skill requirements and they trigger entrepreneurial and indigenous technological development (Mukras, 2003).

Evidently, these enterprises are mostly characterized by inadequate capital base and low managerial and technical skills mainly caused by their poverty situation and inaccessibility to adequate investment capital. In addition most of them are informal because they lack the wherewithal and requisite tools of integrating with formal structure. In addition, the incessant epileptic power supply across the country and inadequate infrastructure such as roads, storage facilities, telecommunication, access to market etc pose great challenges to these nascent

enterprises. Closely related to the problem of inadequate power supply and social infrastructure is the problem of some policies designed by government which are inimical to the growth of small businesses. An example of this can be seen in the removal of subsidies commonly advocated and implemented by government thus aggravating the problems of small businesses.

Pinhold (2008) argues that one of the primary reasons why new SMEs fail is their abnormal rate of creation. New SMEs are formed at a rate that is far higher than is needed by the economy. Also, individuals have complex motivations for starting a business and achieving a financial return is but one of them. Over-optimism fuels the process causing business founders to overestimate the returns and underestimate the risks involved. The resulting oversupply of new SMEs creates a necessity for a high business failure rate. Yrle *et al*. (2000) argue that suppliers of capital such as banks and venture capitalists believe that poor management is the most important factor contributing to small firm failures. Although most entrepreneurs claim that finance is a key cause of failure, banks contend that they are willing to lend to new firms that are investment ready. Environmental factors such as government role; business partner affiliation and preferences; nature and characteristic of value chain; logistics and telecommunications infrastructure; economic and political instability; human-rights issues; business culture macro-economic policies; natural disasters and floods can affect the development of SMEs (Rose, 2014). Boeker and Wiltbank (2005) find that to entrepreneurs, the four most important factors causing failure are poor market conditions, poor capitalisation, poor management strategy and key people incompetence. Rose (2014) divided factors affecting the development of SMEs into internal and external factors. Under internal, he listed lack of management attension to strategic issues such as human resource management, level of education and social cultural issue while

external factors include access to finance, government policies, corruption, marketing and application of information technology.

Table 3.3 SWOT Analysis of Small and Medium Scale Construction Firms

Strength	**Weakness**
High return of investment on successful project; Ability to create job (labour intensive); small startup and operating capital; less overhead; Locational flexibility; potential to quickly respond to the customers need in a more flexible way; some of the lowest construction cost	poor capitalization; Lack of coordination and networking; Lack of procedures for monitoring quality; Poor information systems; low managerial and technical skills; poor market conditions; Poor management strategy and Key people incompetence.
Opportunities	**Threat**
High speed of construction industry development; Low labour cost; Regional peace process; Government new policies.	Credit terms and conditions of commercial banks discourage investments ; Excessive corruption and a lack of transparencies; Poor existing infrastructure; Obstacles in registration procedures; Environmental issues; Government laws and regulations; uncertainty in politic; Multiple taxes and Strong competition from the large firms.

Source: Researcher (2017)

3.10 Interrelationships between Small and Medium Scale Construction Firms, Total Quality Management and Competitive Advantage

It is vital to understand the relationship between SMCFs, TQM and Competitive Advantage in other to have a good understanding among the components. Below shows a graphical representation of their interrelationship:

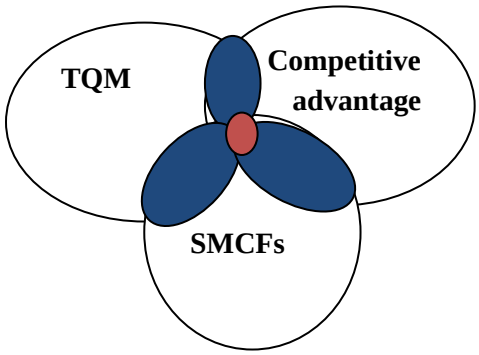


Figure 3.3 Interrelationship among the components in the conceptual framework.

Source: Researcher (2017)

3.10.1 Implementation of total quality management and competitive advantage

The intensity of global competition has led to significant changes in the way companies conduct their businesses (Al-Rfou *et al*., 2012). Providing a higher quality service as a strategy for achieving competitive advantage has become a strategic imperative for organizations and senior managements around the world. Quality therefore has become a strategic tool for measuring business performance in today's dynamic environment (Hassan *et al*., 2012). According to Mansour (2007), several quality tools and techniques have been employed to achieve this management objective and TQM has proved to be among the most effective quality techniques that have been applied. Since the introduction of TQM in the early 1980s, it has contributed immensely to management practice around the world. Its importance as a source of competitive

advantage cannot be overemphasized by firms. Adoption of TQM has become widespread among organizations during the last decades as it has been recognized as a major source of competitive advantage and long term profitability (Dale *et al*, 2001). It plays a vital role in the development of management practices (Hoang *et al,* 2006).As it has been confirmed as the most effective quality tool that can provide firms with sustainable performance and competitive advantage since its emergence in 1980s (Reed *et al.*, 2000).

The effective implementation of TQM will increase customer satisfaction with service offerings (Omachonu and Ross, 1994). Quality enhances customer loyalty through satisfaction; this in turn can generate repeat business and lead to the attraction of new customers through positive word of mouth. The word of mouth communication will help in cost reduction. This Omachonu and Ross (1994), noted will provide competitive edge to the company. The improvement in company will result in increased market share and profitability.

Empirical studies have shown that the way organizations implement TQM can significantly affect the results and business impact, hence organizations need to take proper measure in implementing TQM in their organizations. Some companies in Nigeria today are making every effort to put in TQM process in their operations to help produce quality products and services in meeting customer needs. Others have also failed as far as TQM is concerned. Several literatures have suggested that proper TQM implementations can lead to better competitive advantage. In addition, many studies have investigated the notion that TQM practices provide an approach to improve financial performance. A research carried out by Hendriks and Singhal (1997), Hendriks and Singhal (1999) and cited in Agus and Sagir, (2001), indicated that an effective TQM programmes actually improved operating performance. The statistical results provided strong evidence that firms that have won quality awards outperformed the controlled firms on operating

income-based measures. Mann (1992) also agreed that TQM is not only a management tool for producing quality products and services but also a process that leads to increased productivity and more favourable competitive position. He emphasized that there exists a correlation between quality and productivity. As quality improves waste or rework is minimized; and customer satisfaction will also be enhanced. Deming (1986) indicated 14 TQM principles which he offered as requirements to remain competitive in providing products and services. According to Deming TQM would generate improved products and services, reduced costs, more satisfied customers and employees and improved bottom line financial performance.

3.10.2 Competitive advantage and small and medium scale construction firms in Nigeria

The SME sector is the major drive which promotes the growth of jobs in a country's economy. The development of the country is linked to the strengthening and enhancement of the private sector where SMEs play an important role. The growth of SME in services, agriculture, construction, and so on, has been considered as the engine growth and has contributed to the Nigerian economy. Sustainable growth and the increase of SME competitiveness will provide the environment for investment and employment.

Enterprises are faced with an increasingly competitive environment in which it is difficult to maintain a sustained competitive advantage (Shih, Liu and Hsu 2010). Guarda, Augusto and Silva (2012) state that competitive advantage can be understood as seeking unique opportunities that will give the enterprise a strong competitive position. According to Shih *et al*. (2010), in order to sustain a competitive position, managers should prepare to respond promptly to changes in customer preferences, competitor strategies and technological advancements. For these reasons, many enterprises – whether public or private, and small or large – initiate their own

competitive intelligence services to advise their decision makers (Taleghani, Rad and Rahmati 2012).

Distinctive competencies help a firm stand out in its markets when its competencies are superior to its competitors (Andrew, 1971). Core competencies and distinctive competence are two main factors that induce SMEs to have competitive advantage. Competitive advantage is important for businesses. Not all businesses have competitive advantage; however, they have to find ways to have it. The competitive advantage is a concept of special importance.

Key success determinants for SMEs are important determinants of competitive advantages. Therefore, studying which variables determines performance and how success is attained is as relevant as studying managerial role in success. If success is understood as achieving a sustainable competitive advantage that in turn is founded on customer satisfaction and financial performance (Doyle and Woong, 1997, cited by Leonora, 2002), then attaining success will be a goal of any firm regardless of location, size or gender of founder. Even though small firms appear to be a vital part of the economy, the propect for any individual firm is uncertain. Many small firms die during their first years of operation, or struggle to survive. The number of small firms that achieve large economic returns for their owners and grow substantially is limited. Further studies by Gadenne (1998) cited by Leonora (2002) suggested that the success of a firm is due to the way it utilizes its internal resources and not due only to the strategy it chooses, the environment in which it operates and to the combination of resources it makes, but also to the environment in which it operates and to the combination of resources it makes, but also to the entrepreneur and managerial characteristics.

Improving SMCF competitiveness requires policies that act on the economic, political and social institutions within the country, on the resulting markets and on the organizations that regulate,

stabilize and legitimize these markets. As such, an SMCF development strategy has to bring to the forefront the challenges that they face due to size effects and address the deficiencies in institutional and organizational structures, with a view to enhance its competitiveness. First, taking a bird's-eye-view of how the macroeconomic policies and the microeconomic environment (the business environment) affect an SME, the prime decision-maker to invest in growth and competitive advantage is justified.

A study of the SMEs in the Netherlands adopted a resource-based approach to identify the source of competitive advantage in a sample of 63 firms representing manufacturing and service sectors (Tilley and Tonge 2003). According to this study, "front runners" were distinguished from "back members" by the way in which they combined three sets of competencies: market, technological and organizational. Wickham (2001) also apply the resource-based theory in their analysis of competitive advantage in entrepreneurial firms.

3.10.3 Small and medium scale construction firms and total quality management

According to Lee (2004), small companies may be very different from large ones in many aspects such as management style, production processes, available resources, negotiation power and customer relations. As a result hereof, the adoption of TQM may be perceived differently by SMEs. Gobell and Shea (1995) examined the reasons for adopting TQM in ten small companies. They found that the reasons among others comprised an aspiration to improve company performance, as management believed that TQM was an avenue for survival in competitive environments. Promotion of growth, including the use of TQM as a marketing tool, was furthermore put forward as a reason for implementing TQM. Likewise, a desire to change customer expectations, with reference to the close client relationship prevailing in small companies, was argued to constitute an important factor.

It is important for SME's to remain competitive as they are considered the lifeblood of a modern economy (Ghobadian and Gallear 1996). Furthermore, SME's do not only contribute to outputs and employment, they also affect the competitive power of large organisations (Mendes, 2002). TQM is considered as a way for SME's to improve the quality of their products and services (Quazi and Padibjo, 1998).

The continuously growing competition on the market place has forced many SME's to start focusing on quality improvements and cost reduction in order to stay competitive (Wiklund, 1999). According to Hughes (2006), there is potential to improve the competitive performance of small to medium sized companies (SMEs). In addition, TQM has been widely applied for improving competitiveness around the world (Samson and Terziovski). Although the interest and the use to implement TQM continue to be high among large organisations, small organisations are still lacking behind in TQM implementation (Hansson, 2002). Research has shown that TQM can be used by SME's with considerable success (Ghobadian & Gallear, 1996 cited by Zelealem and Getchew, 2002). An introduction of TQM to SME's can help to sharpen SME market focus, to become more efficient, to harness their human resources better, and to improve their competitiveness (Ahirea and Gohlar, 1996 cited by Zealealem and Getachew 2002).

According to Tannock *et al.* (2002), the importance, of quality and the adoption of TQM in SME is not restricted to their relationship with larger customer. Furthermore, the adoption of TQM can help SME's to manage the transfer from incubation stage to maturity stage effectively, because the implementation of TQM creates as much stronger focus on customer needs and expectations. Furthermore, TQM creates effective and efficient business processes and the execution of skills to deliver low cost high quality products and services (Tannock *et al.*, 2002).

According to Hansson (2002), small business enterprises intending to implement TQM, need an approach better tailored for the small organisation context, and focused on changing process. One could expect that smaller organisations should experience less resistance to change, and would require less expenditure to implement and maintain TQM (Weish and White, 1981 and Haksever, 1996 cited by Hansson, 2002).

According to Yusof and Aspinwall (2000) cited by Zelealem and Getachew (2002), when SME is implementing TQM, SME's should not imitate the same approach as a large organisation. They need to modify, adapt, or revise the approach in terms of SME needs and characteristics. The characteristics to be considered as the guide in developing a framework for TQM implementation are listed as below:

i. Systematic and easily understood;
ii. Simple in structure;
iii. Having clear links between the elements or steps outlined;
iv. General enough to suit different contexts;
v. Represent a road map and a planning tool for implementation;
vi. Answer 'how to opposed to 'what is?' and
vii. Implementable.

Baidoun and Zairi (2003) further provide the following guidelines for a successful TQM implementation:

i. Demonstrate top management commitment and involvement.
ii. Develop a clear belief in the benefits that TQM can bring to the organisation.

iii. Ensure consensus agreement of all senior managers. All senior managers' serves at the quality council as members, attending training courses, attending conferences, reading about TQM, and visiting other organisations for benchmarking purposes.

iv. Recruit a quality-related manager to provide support in the planning and implementation stage.

v. Demonstrate visibility of senior managers' commitment to quality and customer satisfaction.

vi. Communicate the mission statement consistently; and,

vii. Develop a comprehensive quality policy and effective deployment of goals.

3.11 TQM Models and Frameworks

3.11.1 Models proposed by experts

The various models presented by experts are most advantageous for organisations when they select which models will fit with their implementation process. It is therefore very interesting to look at important TQM models from an integration point of view.

Voehl (1995) presented the main principles of TQM in the form of the "House of Quality", the roof consisting of three sub systems: the management, the social and the technical sides of the organisation, and this represents the superstructure of TQM. To quality supports the following superstructure, which has four pillars: customer satisfaction, continuous improvement, managing with facts and respect for people. The foundation of TQM, according to Voehl (1995) is made up of four managerial levels, which are strategy, process, project, and task management. Finally, the cornerstones for the quality house are the strategic, operations, project and personal quality planning.

The model proposed by Oakland (2006) as shown in Figure (3.4), was widely embraced and adopted in the UK through the activities of the Department of Trade and Industry (DTI) 'Quality Campaign' and 'Managing in to the 90's programmes. These approaches brought together a number of components of the quality approach, including quality circles (teams), problem solving and statistical process control (tools) and quality systems, such as BS 5750 and later ISO 9000 (system).

Culture played a large role in the environment of those organisations that were successful in implementing the TQM approach. Communication is always seen to be essential in achieving success but the most important element is commitment, from everyone in the organisation, especially from those who are in direct interaction with customers. The customer / supplier or 'quality chains' form the core, which is surrounded by the hard management necessities of a good quality system, tools, and teamwork. This model was found to be very useful, especially from the public sector as a first step to the TQM approach.

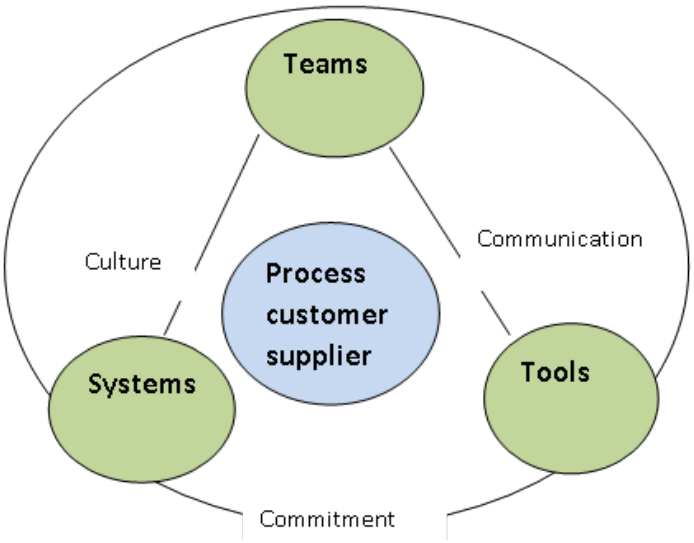


Figure 3.4: TQM Model
Source: Oakland and Marosszeky (2006)

3.11.2 Models based on quality awards

The Deming Prize in Japan in 1950 was the start of these quality awards, so the companies began to become interested in quality frameworks. Evan and Lindsay (2001), show that the quality awards instituted by several countries help promote awareness of quality and productivity and facilitate exchange of information among organisations, as well as encourage organisations to adopt strategies to improve quality, productivity and competitiveness.

3.11.2.1 *Malcolm Baldrige national quality award (MBNQA)*

As a part of quality improvement efforts, companies should measure their progress. The measurement can be by customer or employee survey and this could help to monitor process improvement, but criteria to evaluate the effectiveness of overall quality process are necessary.

The aim of the award was to promote quality awareness and its impact on competitiveness, share information on successful quality strategies and the benefits derived from implementing these strategies, and proposes a set of criteria that can be used by business, industry, government and other enterprises in evaluating their own quality improvement efforts. Moreover, Baldrige's criteria are grouped into four basic elements: driver, system, measures of progress, results and goal.

Companies are awarded the Baldrige National Quality Program for Performance Excellence, when they successfully implement the Baldrige model. This model helps organisations to improve their capabilities, performance practices, and results. Communication is facilitated by sharing the information on best practices around in the industry. This serves as a tool for guiding, understanding and managing performance and for planning opportunities for learning. The

Baldrige Award criteria are built on the following set of interrelated core values and concepts (NIST, 2003):

i. Visionary leadership;
ii. Customer-driven excellence;
iii. Organisational and personal learning;
iv. Valuing employees and partners;
v. Agility;
vi. Focus on the future;
vii. Managing for innovation;
viii. Management by fact;
ix. Social responsibility;
x. Focus on result and creating value; and,
xi. Systems perspective.

These are embodied in seven categories which are used to assess organizations. The framework that connects and integrates these categories as shown in Figure (3.5).

i. The leadership category: this examines how the senior executives create a clear quality value system to guide all company activities.
ii. The strategic planning category: this examines how the company sets strategic directions, how it determines key action plans, and then to translates them into an effective performance management system.
iii. The customer and market focus category: this examines how the company determines requirements and expectations of customers and markets. Also determine their satisfaction.

iv. The information and analysis category: this examines the management and effectiveness of the use of data to support key company processes and performance management systems.

v. The human resource development and management category: this examines how the workforce is enabled to develop and utilize its full potential with the company's objectives.

vi. The process management category: this examines the key aspects of process management, including customer-focused design, product, and service delivery processes, support processes, and supplier and partnering processes involving all work units.

vii. The business results category: this examines the company's performance and improvement in key business areas including customer satisfaction, financial and marketplace, performance, human resources, supplier and partner performance, and operational performance.

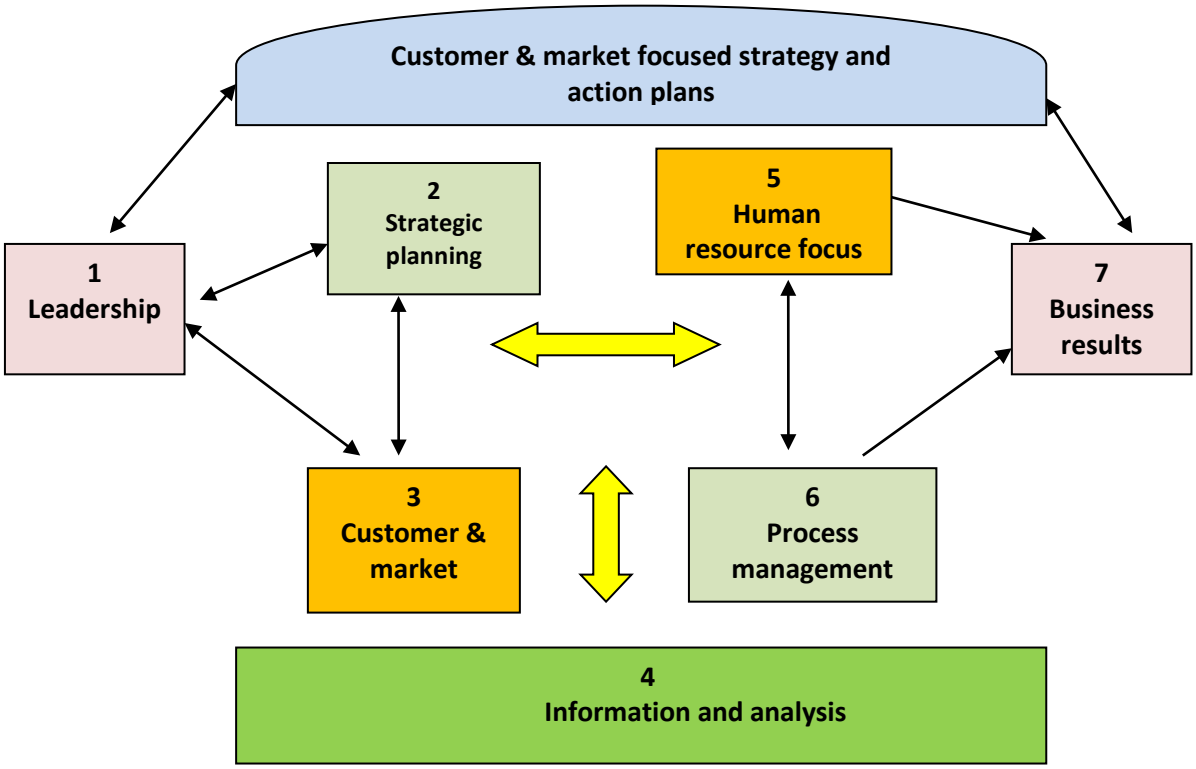


Figure 3.5: Baldrige Model
Source: Oakland and Marosszeky (2006)

3.11.2.2 *European quality award*

In the 1990s, the European Foundation for Quality Management (EFQM) launched the European Quality Award, which is the most prestigious award for organizational excellence and is the top level of the (EFQM) levels of excellence. The award includes a separate category for organizations in the public sector, and for factories, sales and research units. This framework was the first one to include 'Business Results' and really to present the whole business model.

Similar to the Baldrige award in the US, the European Quality Award in Europe is designed to increase the awareness throughout the European Community, in business in particular, of the growing importance of quality to their competitiveness in the increasingly global market and to their standard of living (Evans and Lindsay, 2001). Moreover, the EFQM Model emphasizes that it is to be recognized that process is the approach by which an organization harnesses and releases the talents of its people to produce the desired performance. In addition to this, improvement in performance can be achieved by improving processes and this can be brought about by involving the people. The simple model is that people improve performance by means of good processes is shown in Figure (3.6). Achieve better performance through involvement of all employees (people) in continuous improvement of their processes.

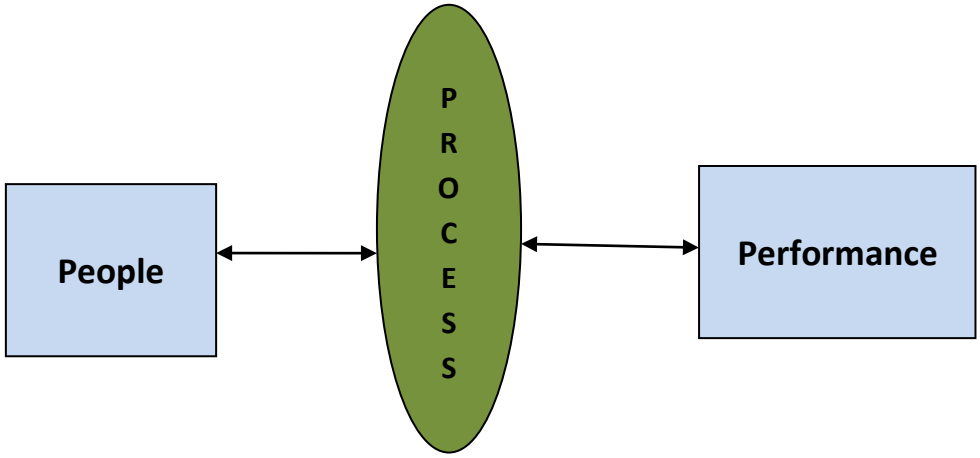


Figure 3.6: The Simple Model to Improve Performance
Source: Oakland and Marosszeky (2006)

According to Dubas and Nihawan (2005), the European foundation quality Model (EFQM) Excellence Model is a non- prescriptive framework based on nine criteria. Five of these are 'Enablers' and four are 'Results'. The enablers' criteria cover what an organization does. The Result criteria cover what an organization achieves. Results are caused by Enablers and feedbacks from Results help to improve Enablers. It contains a set of nine weighted criteria that are utilized in the assessment process. The model is based on the premise that : Excellent results with respect to performance, customers, people and society are achieved through leadership driving policy and strategy, that is delivered through people partnerships and Resources, and Processes.

Leadership driven policy and strategy are necessary to aid customer, employee and favourable society results, and besides these people partnerships, resources and processes are directed towards ultimate excellence in key performance results. The delivery of these results enables the drive towards innovation and learning. The EFQM Excellence Model is depicted below in Figure 3.7

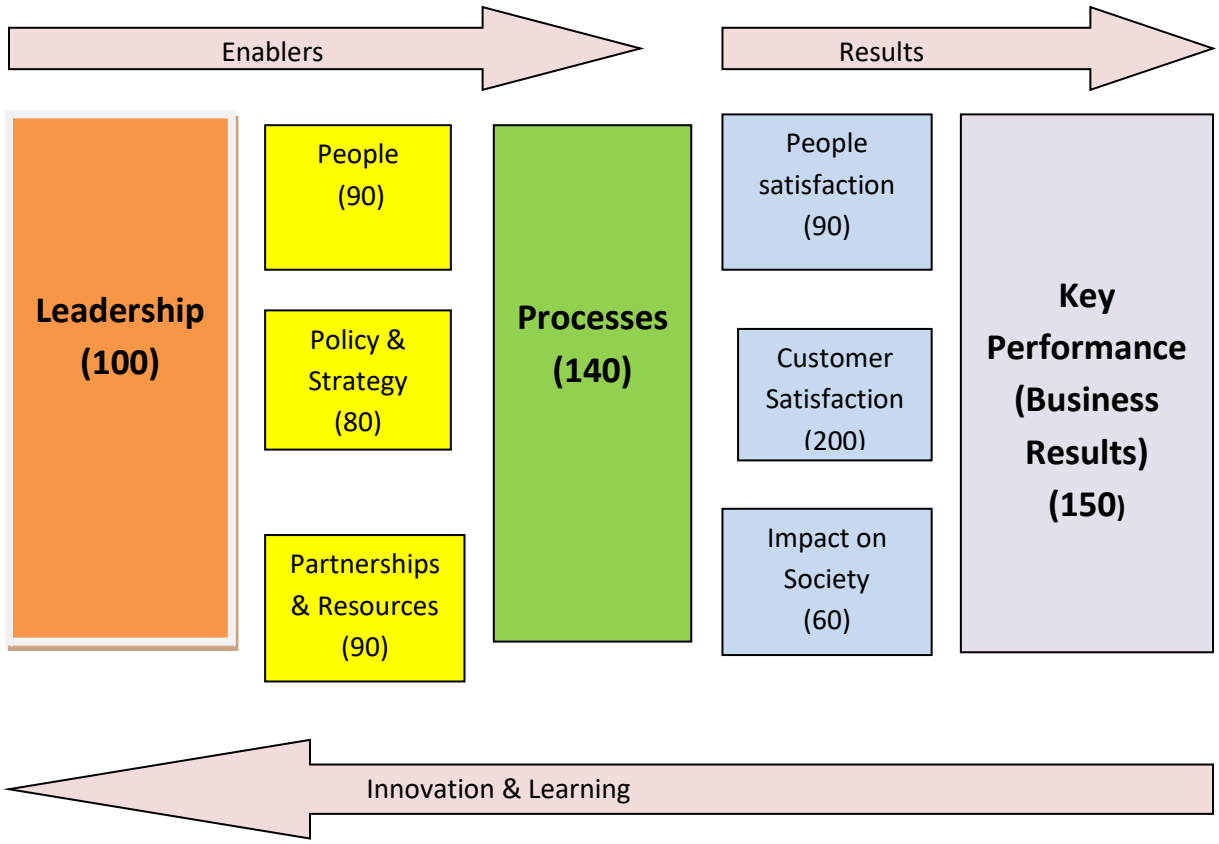


Figure 3.7: The EFQM Excellence Model

Source: Oakland and Marosszeky (2006)

The EFQM publication for the new millennium of the so-called 'Excellence Model' captures much of the learning and provides a framework which organisation can use by following these ten steps:

a) Set direction through leadership;
b) Establish the results they want to achieve;
c) Establish and drive policy and strategy ;
d) Set up and manage appropriately their approach to processes, people, partnerships and resources;
e) Deploy the approaches to ensure achievement of the policies, strategies and thereby the results;

f) Assess the 'business' performance, in terms of customers, their own people and society results;
g) Assess the achievements of key performance results;
h) Review performance for strengths and areas for improvement ;
i) Innovate to deliver performance improvements; and,
j) Learn more about the effects of the enablers on the result.

MaCarthy (2005), in study about the impact of EFQM Excellence model on leadership in German and UK organisations found there were more differences in perceptions of good practice between German organisations recognised for excellence and German organisations not using the Excellence Model than between German and UK organisations. In the UK, there were more differences between what was described as good practice and what was described as usual practice among organisations not using the Excellence Model than among organisations recognised for excellence. German assessors differed in their view of good practices from UK assessors and German organisations.

3.11.2.3 *The new model for TQM*

The new TQM model provides the basis of excellence in the industry and covers all angles and aspects of an organisation and its operations. It is based on the excellent work done during the last century. Oakland (2006), presents a new model for TQM that addresses the hard and soft issues of quality. As shown in Figure (3.8) performance improved through better planning, and the management of people and the processes in which they work. These are the keys to delivering quality products and services to customers. These four Ps are important in to delivering quality products and service to customers. The early frameworks of TQM involved three Cs, culture, communication and commitment, which we can never underestimate as they

are the foundation of the TQM framework. Oakland adds these are the "soft foundations" which must encase the hard necessities of planning, people and processes.

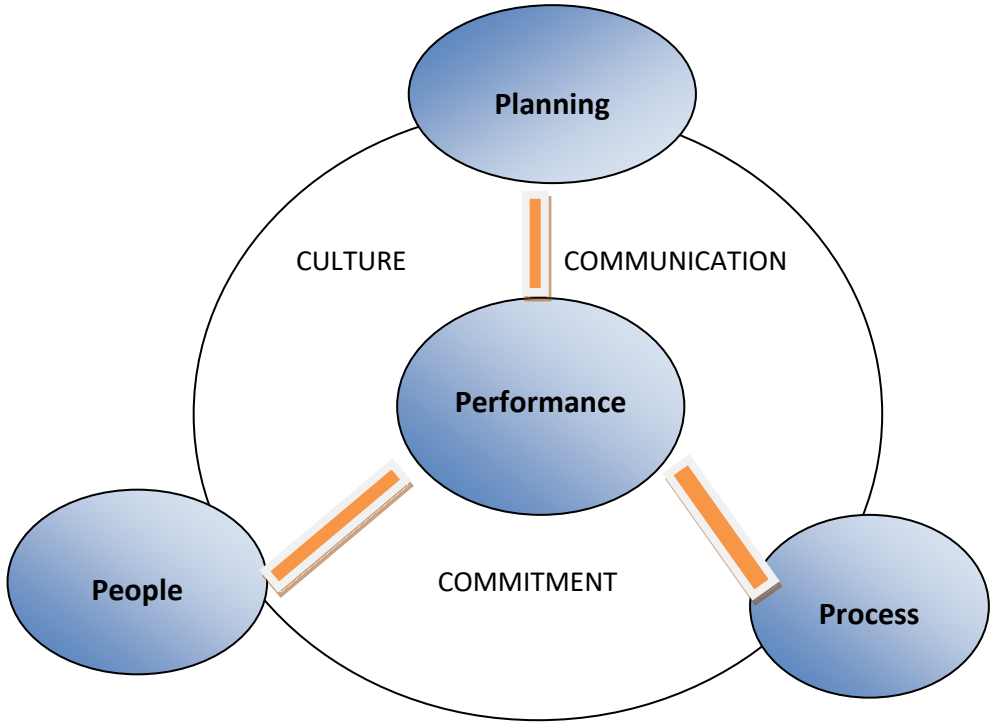


Figure 3.8: New Framework for Total Quality Management
Source: Oakland and Marosszeky (2006)

3.11.2.4 *Australian quality award (AQA):*

The Australian Quality Award provides a model certified by the Australian Quality Council, an organisation recognized by the Commonwealth Government of Australia as the top organisation for quality management.

The Council measures quality performance through six categories of criteria. The people, information and analysis, strategy, policy, and planning categories have the greatest effect on the quality of processes, according to the model. The quality of processes, in turn, affects

organisational performance. Customer focus and leadership are key elements, interacting with all the other parts of the model. Although it is similar to the MBNQA, the Australian Quality Award has an increased emphasis on the significance of multicultural management (Ahmed, 2010).

The AQA's evaluation framework consists of six examination categories: leadership, policy and planning, information and analysis, people, customer focus, and quality of process/product and service. The design is a quality oriented process and procedure, based on the premise that quality improvement requires an influential leadership which leads the quality programme forward and nurtures a creative and innovative workforce capable of improving output quality and meet customer satisfaction. The Australian Quality Award evaluation framework is depicted in the figure 3.9 below:

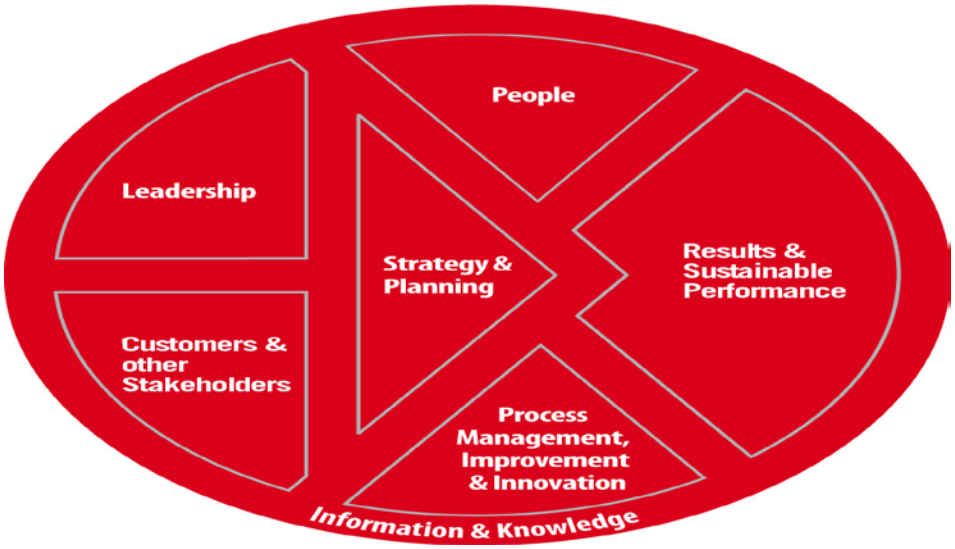


Figure 3.9: The Austrian Quality Award Model

Source: SAI Global (2018)

The model emphasises that management has to focus on internal customer satisfaction and workforce motivation to ensure full satisfaction for the external customer.

Furthermore, the model implies that customer focus has to be taken into consideration within every activity to assure quality improvement and customer satisfaction. The AQA model core concepts and application assessment are similar to the Baldrige and European Quality Awards including application process, assessment, interviews, site visits and point values, but it neglects the business results in the evaluation process.

3.11.2.5 *King Abdullah II award for excellence (KAAE)*

The King Abdullah II Award for Excellence was established by a royal decree in 2002. This award aims at enhancing the competitiveness of Jordanian businesses by promoting quality awareness and performance excellence, recognizing quality and business achievements of Jordanian organizations, and publicizing these organizations' successful performance strategies and sharing them. The Award helps promote the concepts of excellence, innovation, quality and transparency in all government departments and institutions.

The model examines leadership capacity to direct the organisation effectively to achieve the organisational goals and the provision of necessary resources. In addition, the award focuses on the general framework of the organisation's strategic planning, and examines the relationship between organisational culture and leadership commitment to employee improvement and enhancing organisation core value, achieving missions and strategic goals (Ahmed, 2010). The award also examines organisational procedures and policies in the area of predicting and strategic planning in terms of organisational vision, mission and strategies to achieve organisational goals by understanding the external and internal environments. In addition, it examines their ability to transfer these strategies into real work, and also whether the

organisations are able to manage their human resource management, finance and information systems.

The choice of a quality model or quality system is a critical issue because it depends on the vision of the organisation. There are many models, and each model can provide an idea to any organisation, but there is no model that can furnish all the solutions for all organisational requirements. Therefore, quality models or quality systems provide a concrete foundation to communicate as to how an organisation should work and identify the responsibilities of all members participating in the organisation. Table (3.4) present the different quality models.

Table 3.4 Comparison of different Quality Models

Models	Criteria	Focuses	Most important elements have an impact on construction industry
TQMEF (TQM-Efficiency) Model	Process and Efficiency, Customer Focused performance, People Management, Team Building &Business partner Development	Process & Efficiency	Process, Customer, People management
Oakland Model	(3c) Culture, Communication, Commitment + (4P) Planning, Performance, Processes +People	Commitment	Commitment, Culture, People, Processes
MBNQA (Malcolm Baldrige National Quality Award)	Leadership, Strategic Planning, Customer and Market, Information and analysis, Human Resource Focus, Process management, Business Results	Leadership	Leadership, Human Resources, Processes
EFQM (European Foundation Quality Management)	Leadership, People, Policy and Strategy + Partnership & Resources+ Processes+ People Satisfaction + Customer Satisfaction+ Impact on Society + Key Performance	Leadership	Leadership, People, Customers, Processes, Society

Source: Ahmed (2010)

3.12 Results of the Review of Total Quality Management Models

After reviewing the Total Quality Management models, it becomes clear that all are attempting to help an organisation towards total quality implementation and adoption. Deming Model is a

prescriptive model in terms of the practices, tools and techniques such as quality circles, quality control, standardisation and statistical analysis. EQA model provides organisations with an implementable TQM model, effective benchmarking tool, self-assessment methods and a method for sharing good practice and experience. The model is useful and helps organisations towards quality improvement and competitiveness, On the other hand, the model has its shortcomings in terms of missing some fundamental elements in quality improvement such as research and development, innovation and strategic positioning.

The Baldrige Award, EQA, AQA and KAA attempt to model TQM by identifying its constituent parts, and assume that there is a relationship between the different constituents of TQM such as relationship between design and process implementation and the end results, or relationship between management styles and attitudes. Furthermore, they are based on an underlying framework linking organisation, values, process, activities and results together, at the same time providing a checklist of quality management categories.

The AQA and the Baldrige Award are based on the premise that there are two key elements underpinning the efforts of introducing total quality: management leadership and external customer focus, whereas the EQA and KAA emphasise the fundamental role of top management commitment on quality management achievement, but the focus on external customer is explicit and it manifests itself in a number of ways including the sort of examination to deal with customer satisfaction and the requirement for the applicants to provide evidence of benchmarking. However, the Baldrige Award, AQA, EQA and KAA point out that customers play the major role in determining products and services quality and that the goal of quality improvement is improved by enhancing customer satisfaction, whereas with EQA, ‘excellence’ in service delivery is the underlying philosophy of the Charter Mark Award. However, The

Baldrige Award, AQA, EQA and Charter mark awards have placed their objectives toward focusing on customer satisfaction. While the Deming Prize, King Abdullah II Award for Excellence and Pride in Job quality award do not emphasize customer satisfaction for international competitiveness, rather they focus on process appreciation concept.

The Baldrige, EQA and Deming models of quality awards provide a universal framework for evaluating aspects of quality management practices in an organization. They also provide a framework for identifying a range of intangible and tangible processes which influence the organization's total quality management and the end results. Although each model has its own unique categories and emphasis, there are some common areas which are: Leadership; People management; Processes; Policy and strategy; Supplier relations; Customer focus; Education and training; Employee participation.

However, the award models do not seek to assess the overall management excellence; they are concerned with factors which affect total quality management; they provide "what to do" and do not provide "how to do" to reach the targets; they do not address a specific organization's characteristics which may affect the implementation of TQM; they do not provide detailed guidelines for the organizations to use in improving quality management practices; they do not provide all kinds of quality management methods to be used for overcoming the weaknesses of the organizations. Thus, there remain some difficulties for the organizations in applying the quality award models effectively to improve their quality management practices. Many of the existing TQM models are not developed specially for the construction industry organizations. Also, the existing models may not match the organizational culture of the country and this may cause conflict with the existing culture and then failure in TQM implementation. The successful transformation to TQM requires a change in the organizational culture of an organization. The

addition and modification of various factors from the different models were introduced to make the model matches the organizational culture and the requirements of the construction firms in South-East Nigeria. Also, the company's strength, weakness, opportunities and threats will be incorporated in other to enhance its actualisation.

3.13 Previous Studies on Total Quality Management

Redha (2014) carried a research on Framework for Successful Total Quality management Implementation and Its Effect on the Organizational Sustainability Development. His main purpose for the research is to construct a generic model for successful implementation of Total Quality Management in Oil sector, and to find out the effects of this model on the organizational sustainability development performance of Libyan oil and gas companies using the structured equation modelling approach. The research approach covers both quantitative and qualitative methods. Data analysis reveals that there is a significant positive effect of the TQM implementation on organisational sustainability development. Twenty four (24) quality factors are found to be critical and absolutely essential for successful TQM implementation. The framework created was based on the four major road map constructs; Top management commitment, employee involvement and participation, customer-driven processes, and continuous improvement culture.

Gabriel (1999) in his study the role of TQM in raising the service quality of public health laboratories in developing Countries presents the TQM concept as a feasible framework to support implementation of the Health for all strategy in less developed countries. An action plan is specifically designed for public health laboratory services, which may also be adapted to other sectors. It appeals to donor agencies and health policy makers to address the long-time

unattended of public health laboratory services in less developed countries, starting with pilot work on TQM. Pheng and Ann (2004) discussed the implementation of TQM in construction firms, and concluded in their study that TQM has been recognised as a successful management philosophy in the manufacturing and service industries, so can likewise be embraced in the construction industry to help raise quality and productivity.

Sadikoglu and Olcay (2014) have looked critically at the effects of TQM practices and how these practices affect the performance of an organization in Turkey. Their study employed the cross-sectional survey methodology. The sample was made up of organizations that were members to the Turkish Quality Association and those firms that were located in Kocaeli-Gebze Organized Industrial Zone. The findings revealed that firms in Turkey faced obstacles due to the fact that they did not involve employees, lack of a good firm structure and lack of resources. Similarly, Oluwatoyin and Oluseun (2008) tested the effects of TQM on organizational performance and the stakeholder satisfaction focusing on the airline industry in Nigeria and revealed that TQM airlines had a higher levels of employee satisfaction than those airlines that did not embrace TQM. Adoyo (2012) focused on the relationship between customer service quality and customer loyalty among retail pharmacies in western Kenya. The findings indicated that relationship quality dimensions namely service quality, commitment, trust, and satisfaction had significant positive effect on the ultimate outcome of customer loyalty.

Gathoga (2001) carried out a study on effects of TQM implementation on business performance in service institutions, a case study of Kenya Wildlife Service. The findings revealed that the role of leadership has a positive impact on TQM implementation. None of these studies have focused on total quality management practices and competitiveness of the organizations in the aviation industry in Kenya. Shibani, Soetanto and Ganjian conducted an

investigation on the Critical Success Factors of the implementation of Total Quality Management (TQM) in Libyan construction organisations. They used questioonaire as their instrument for data collection which they distributed to 200 contractors in Tripoli. The findings identified five reliable and valid TQM constructs, namely 'organisation management', 'communication to improve quality', 'training and development', 'employee's involvement and recognition' and 'culture'. The findings also revealed a low level of CSFs implementation, which might be originated from little understanding of the fundamental TQM principles.

The construction companies face a lot of challenges on how to adopt a strategy for higher quality at a reduced cost without affecting their profit margin and the clients' requirement. A study by Okuntade (2015) Barriers and Benefits of TQM in the Nigerian Construction Industry: A review, recommends TQM as the only ways of solving these challenges in the construction industry. Similarly, the findings of a study carried out by Ahmed (2010) suggested that TQM can be successfully implemented among Qatar's construction companies. This was drawn from the best practice of TQM implementation as a guideline for the client construction company to consider in adopting the TQM philosophy. Furthermore, a framework was suggested for the Client recommending the actions the Client should take to establish and implement a TQM framework which will increase productivity, stream line the processes and improves the quality of the services and the products offered by the client. Results of a study carried out by Arawati (2004), aimed to identifying the relationship between TQM and overall performance, show there is a strong and positive association between TQM, overall performance and customer satisfaction and suggest that an emphasis on quality would result in organisation gains.

Quality has been recognized as a key focus for competitiveness. This is supported by Kamal (2012) in his study on the impact of TQM on competitive advantage of pharmaceutical

manufacturing companies in Jordan concluded that TQM is strategically and tactically important for gaining a competitive advantage. Therefore, organizations should be committed to TQM practices and their successful implementation. The finding of the study by Abu *et al*., (2011), is that large construction companies generally take into account the principles of TQM. No wonder they are believed to dominate the construction firms.

Schonberger (1992) citied by Fatih (2012) describes that quality provides competitive advantage, so quality management systems like TQM could generate competitive advantage for firms. Powell (1995) mentions that TQM is a potential source of sustainable competitive advantage for companies. Powell (1995) concludes that firms with implemented TQM combined with tacit resources (e.g. employee empowerment) can outperform competitors with the accompanying TQM ideology. So, Powell (1995) mentions that firms which have adopted TQM obtain competitive advantage over firms that do not adopt TQM. Furthermore, Reed *et al.* (1996) describe that TQM could lead to competitive advantage, because improved quality is linked with higher profits and increased market share. Douglas and Judge (2001) also describe that organizations which adopted TQM practices achieved competitive advantages. They mention that TQM practices function as an independent system in organization and when combined with other organizational assets it generates competitive advantage (Douglas and Judge, 2001).

Suhong *et al.*, 2006; Lakhal *et al*., 2006 and Musran, 2013 have found a positive correlation between TQM and competitive advantage that consist of, delivery dependability, cost or price, time to market, and product innovation. Shenawy *et al*. (2007) conduct a meta-analysis in order to investigate the effect of TQM on competitive advantage. The authors suggested a model for TQM that incorporates five major components of TQM which are top management commitment and leadership, teamwork, culture, training and education, and process efficiency. All these

components are positively related with competitive advantage, which means that TQM positively influences competitive advantage of the companies (Shenawy *et al*., 2007). The authors present most use measures of competitive advantage in TQM literature, which are improved revenues, growth in market share, product quality and customer satisfaction (Shenawy *et al.*, 2007). So, Shenawy *et al*. (2007) show that firms with TQM could achieves competitive advantage, because it leads to improved financial performance, improved customer satisfaction, faster response to competitive environment and improved product quality.

Corredor and Goni (2008) mention that early adopters of TQM can benefit from being first ones in the markets. Companies could be first in the markets with effective TQM and achieve customer satisfaction or efficiency improvements. As mentioned, increased customer satisfaction and efficiency within firms generates competitive advantage. In line with these results, Jung *et al.*, (2009) also mention that TQM elements move towards improving firm's performance such as customer satisfaction, process improvement and business performance. This will generate competitive advantage for firms. Additionally, Kumar *et al.* (2009) improvements in quality and productivity through effective TQM enable firms to increase their market share and to charge higher prices for their products, which, in turn, results in higher profitability. As mentioned before, increased market share and product quality leads to competitive advantage for firms. In contrast to Kumar *et al*. (2009), Jimenez and Costa (2009) describe that TQM leads not only to higher quality products but also to cheaper products through cost efficiency which generates competitive advantage.

A research carried out by Addae-Korankye. (2013) indicated that an efficient and effective implementation of TQM is a source of sustained competitive advantage. The study conducted by Daft (1991) confirms this. Daft found out that firms employing a TQM approach can

simultaneously achieve all three of Porter's competitive strategies. As stated earlier, the focus on improving the quality of products and services to the organization's current customers (thereby increasing customer value), leads both to lower costs of production (cost leadership) which produce both greater profits and lower prices, and differentiation (the firm's products and services are seen as providing higher levels of reliability, quality, and value). His research revealed that firm that did not adopt or implement Porter's strategies did not have strategic advantage.

A study was done by Gitangu on Total Quality Management and Competitive Advantage of small and medium enterprises in Nairobi City County. The Results established that there exists a correlation between total quality factors and competitive advantage. They results inferred from the questionnaire survey that the small and medium scale enterprises in Nairobi are trying cope with new quality management practices to increase the productivity. The study used only quantity survey to analysis the work.

Lavene (2016) in his study, Total quality management practices and competitive advantage in the aviation industry in Kenya used forty companies in the aviation industry operating in Kenya were studied. A cross-sectional survey was done and data collected was analyzed using the Statistical Package for the Social Sciences software. He concluded from his study that Top leadership in organizations play an important role in implementing TQM practices. Provision of a good working environment for employees is key as well as their participation in strategy formulation activities of the organizations. Organizations need to embrace the culture of learning and development as it is important to continually train and develop the workforce. Supplier quality management and process quality management were also concluded as being key to improving the performance of the organization in general.

Thus customer satisfaction is the ultimate goal of every organization. In order to attain this, organizations need to pay great attention to quality.

Douglas and Judge (2014) examined TQM implementation and competitive advantage. They examined the role of structural control and exploration. They explored the relationship between the level that TQM practices had been adopted in organizations and the competitive advantages that had been consequently achieved. They found out that this relationship was strongly supported. Two factors namely control and exploration do influence the financial performance of those organizations that embraced TQM practices. Similarly Kurtus (2007) examined how organizations can use TQM to achieve competitive advantage. He looked at the TQM philosophy of doing business which recommends that organizations lower their prices by reducing waste, and also helping suppliers to give quality inputs used in production. He concluded that companies attain a competitive advantage by producing goods at lower costs compared to their competitors and at the same time giving good quality goods and services. Total quality management is the key to gaining competitive advantage.

Awino *et al.* (2012) in their study on Total Quality Management and competitive advantage of firms in the horticultural industry in Kenya, showed that it is not total quality that has been posting different results, but lack of effective implementation of total quality. A crucial finding was the poor evidence of the leadership concept and the tendency of taking quality certification as an end by itself. It is demonstrated that most of the certified companies do not understand the philosophy behind quality management and, therefore, cannot implement it effectively.

Stella (2014) carried out the research with the intention of exploring ways of successfully implementing Total Quality Management (TQM) in Small to Medium Scale Enterprises (SMEs) in Zimbabwe identifying the critical success factors of TQM constructs, and develop

a framework as a business excellence model to determine the success factors of TQM practices by SMEs in Zimbabwe . In this study, 54 small business enterprises from a total of 180 registered SMEs at Glen View 8 Complex were studied. Questionnaire were used. The study revealed that SMEs were not following the principles of Total Quality Management. The majority of SMEs were not customer focused, neither were they supplier focused. Further, SMEs did not send their employees for further training and development programmes. The owners themselves professed ignorance on the benefits of TQM and were even indifferent on the implementation TQM practices in their businesses. The researcher, therefore, recommends that the government take the initiative to educate the SMEs so that they appreciate the benefits of TQM.

In another study by Nonxuba, (2010), he tried to determine the constraints to TQM implementation within South African clothing SME's. The survey conducted with questionnaire within SME's provides positive feedback with respect to the quality process, but the following barriers has been identified: Lack of employee involvement in decision-making, miscommunication between management and employees and the dissatisfaction of employees within companies, in which all of the above are one of the fundamental requirements to successful implementation of TQM. The case study done by Wilkes and Dale (1998) to study BEM (formally known as European Quality Award EQA) in SMEs (employing less than 250 staff) located in England, shows that the award and its documentation, although simplified, were not ideal for the SMEs studied. Indeed it was found to be daunting and complex, especially for the smaller companies studied. McAdam (2000) suggests that SMEs may see TQM (especially in the context of BEMs and the Balanced Scorecard approach) as adding a degree of formal assessment and bureaucracy, which will compromise their flexibility and responsiveness.

The previous studies regarding TQM considered the concept of the TQM as one of the best solutions to overcome the construction industry problems. Moreover, many studies focus on importance of the tools and techniques in implementation TQM philosophy. TQM system is an integrated system of methods, principles, and best practices that provide a framework for organisations to strive for excellence in the everyday process. To become a world class competitor, companies need a model to integrate continuous improvement tools into system that involves participative cross- functional implementation.

3.14 Summary of Reviewed Literature

This section attempts to synthesis the literature reviewed in this study with a view to establishing the possible study gaps that are found in the course of the review. In doing this, the problem which informed the study, would be the focus. Hence the following could be deduced:

a. In Nigeria, like most developing countries, the construction industry plays a dominant role in the economic development. (Ibironke, 2003);
b. The indigenous construction companies in Nigeria are predominantly small and medium-sized (Adams ,1995);
c. A large number of registered SMCFs's services have not been adequately utilized on the delivery of capital projects by the client (Olateju, 1991; Samuel, 1999; Idoro, 2004; Idiaka and Bala 2012;Odediran *et al.,* 2012; Alintah-Abel and Nnadi 2015);
d. Quality has been recognized as a key focus for competitiveness (Kamal, 2012)
e. An emphasis on quality would result in organisation gains (Arawati, 2004);
f. TQM is strategically and tactically important for gaining a competitive advantage (Kamal, 2012; Kuratko *et al*., 2001; Agus and Sagir, 2001; Shenawy *et al*., 2007; Addae-Korankye 2013; Faihan 2013);

g. TQM has been recognised as a successful management philosophy, so can likewise be embraced in the construction industry to help raise quality and productivity(Pheng and Ann, 2004);

h. There is a strong and positive association between TQM, overall performance and customer satisfaction (Arawati, 2004),

i. Large construction companies generally take into account the principles of TQM (Abu *et al*., 2011);

j. Quality is considered a global phenomenon for organisations seeking customer satisfaction and high output quality worldwide to gain competitive advantage, continuity, and stability which will enable those companies to compete locally and globally within the rapid changes of environmental variables (Loiy, 2012).

3.15 Gaps in the Study as Revealed in the Literature

A close look at the synthesis of literature shows some glaring gaps, which the present study seeks to fill.

1. It is true that many studies conducted by authors have produced Total Quality Management models, but none has critically analysed those models to get each of their success factors in Nigeria especially in South-East of Nigeria.
2. Presently studies on Total quality Management in construction industry have not been conducted in sufficient details for small and medium scale construction firms in Nigeria, particularly South-East of Nigeria.
3. In addition, works reviewed on achieving competitive advantage through Total quality management for Small and medium construction firms were carried out in other parts of

Nigeria and outside Nigeria. None has been carried out in South-East of Nigeria where this study will be carried out. The identification of ways to achieve competitive advantage will help the small and medium scale construction firms to increase their performance.

4. Most of the research works that was carried, though outside the shores of the nation did not triangulate their methods for analysis. They used only quantitative method (Questionnaire). When triangulation is done, it will give a stronger validity of the findings.

It is these gaps in literature that necessitated this study.

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 Introduction

To obtain or gather data for any research work, certain procedures must be used. This chapter therefore, discusses the procedures and techniques or strategies that underlined the conduct of this research. It is divided into subheadings which include: Research design, types and sources of data, population of the study, sampling technique, determination of sample size, methods of data presentation and analysis, testing of hypothesis and validity and reliability of the measuring instrument.

4.2 Research Design

Research design includes the practical procedures adopted for accessing the subjects of the study. It is a broad plan of how the researcher intends to go about answering the research questions. A mixed research design was used for the study. It is the best approach for the study because it requires both quantitative and qualitative designs to address the problem statement. The quantitative design used was Correlational design**.** This explores the relationship between two or more variables through a correlational analysis. The intent is to determine if and to what degree the variables are related. The Qualitative Design used was the Grounded Theory**.** The focus is to develop an understanding of a phenomenon or situation in order to be able to develop a theory/model for items such as factors, a form of interaction, or a process.

4.3: Types and Sources of Data:

Data for the research was sourced through primary and secondary data. The data was collected expressly to help solve the research problems.

4.3.1 Primary Data:

Primary data is the information gathered directly by the researcher. For the purpose of this research primary data was collected through questionnaire, oral interviews, direct observation and walkthrough evaluation.

Data required:

1) Data from contractors on the implementation of quality management system by their firms.
2) Data on what best defines quality
3) Data on how to rate customer satisfaction ; recognising their needs and expectations
4) Information about the adequacy of Quality control professionals, with their qualifications and efficiency.
5) Data on how TQM were used to improve Project design ,financial performance, reduce change order , improve customer satisfaction and increase market share
6) Data on how TQM were used to improve competitive advantage.
7) Data on their quality improvement program available in their firms
8) Data on policies or guidelines for quality activities
9) Data on the time of periodic Quality check and methods of executing quality control
10) Data on critical success factors of TQM
11) Data on impediments / factors that may influence the implementation of TQM within their firms and the construction sector in general.

4.3.2 Secondary data:

One of the foremost advantages of using secondary data is that it helps in formulating and understanding the research problem, broadening at the same time the base for scientific conclusions to be drawn.

For the purpose of this study, the collected secondary data, include the most relevant and current, within the discipline from text books, academic articles, journals and magazines. A number of online sources were also used to get information for literature review.

4.4 Questionnaire

The questionnaires designed for this study was both structured and semi-structured questionnaires (multiple choices) and included both open ended and closed ended questions. The open ended questions allowed respondents to freely express their opinions and views without prejudices so that adequate information is obtained in relation to the objectives of the study.

The questionnaires was divided into two sections A and B. Section A requested general information from staff working with small and medium scale construction firms in the 3 eastern states on their qualifications and experience while Section B got information from SMCFs to reflect their perception, procedures and application of TQM in their various firms, including their critical success factor.

A total of three hundred and twenty eight (328) questionnaires were distributed to respondents Professionals and staff of SMCFs by the researcher, research assistants and professional colleagues by hand. However, where the respondents were busy, questions were asked orally or the questionnaires left with them to fill at their disposal.

The questions were geared towards achieving the research objectives and well-articulated having a bearing on the research questions. A questionnaire has some values when straightforward and fairly accurate information is required from a large population (Gillham, 2000). The questions were structured to ensure consistency and avoid ambiguity. In addition, the respondents were directed on how to complete the questionnaires appropriately. A cover letter accompanying the questionnaire was prepared, giving a brief description of the research aim and objectives, assuring respondents of total confidentiality of their responses and expressing appreciation for their anticipated responses. To ensure validity and reliability, a pilot-test of the questionnaire was equally carried out on experts and potential users. The feedback from the pilot survey showed if the respondents have questions for clarification and difficulty in understanding what were required. Also their views were noted and the necessary changes effected. The feedback/results obtained from the pilot survey were used in the design of the final questionnaire for the field study.

4.5 Oral Interview

Oral interview was used to make up where questionnaire failed, due to its formal nature. For example, oral interview complimented the questionnaires administered.

In this research, the interview guide approach was used. The interviews were conducted with the staff in the targeted SMCFs. The personal or face-to-face interviews provided the necessary information regarding:

a) The respondents views on the application of TQM in the targeted SMCFs;

b) The impact of TQM in the target SMCFs;

c) Level of TQM implementation in the target SMCFs; and

d) Impediments/hindrances to TQM implementation in the target SMCFs.

e) Cost of total quality management in SMCFs.

f) The evaluation of total quality management feedback mechanism in SMCFs

The interviews were unstructured and semi-structured to enable the researcher obtain clarifications of some variables which needed further in-depth investigation. They include the informal mode of interviews due to the sensitivity of some of the issues in the study. This helped to remove bias arising from respondents who could have given false information to portray the firms in good stead. The semi-structured interviews adopted for the study also allowed meanings and perceptions of TQM to be generated in line with the subjectivists/constructivists mode of creating knowledge in the study context.

The interviews adopted a conversational style starting with an opening question to prepare the interviewee for further questions. Main questions were on key issues. This was followed by questions probing the answers offered. The conversational style adopted facilitated the discussion of topics which, in the opinion of the interviewees were important. Further probing questions explored emergent issues such as construction/government policies and attitudes to TQM implementation. The interviews concluded by asking the interviewees to talk about other issues which might not have been covered by the questions. Interviews continued until respondents' responses could not yield any further new information or additional ideas. Simply put, the interviews were saturated.

4.6 Direct Observations and Walkthrough Evaluations

Direct observations were adopted in this research. The essence of direct observations and walkthrough evaluations are to enable the researcher to have a visual view of the environment

and provides a real life scenario on the quality of work in the study area. For this purpose, walkthrough evaluations were carried out by the researcher on some of the buildings and roads executed by small and medium scale construction firms in three states of the south-east states. Photographs and paper recordings were used.

4.7 Population of the Study

Preliminary survey of the study revealed that a total of four hundred and fifty six (456) SMCFs, comprising of one hundred and fifty three (153) in Abia, one hundred and fifteen (115) in Ebonyi and one hundred and eighty eight (188) in Enugu were used in the study area.

Table 4.1: Small and Medium Construction firms registered in Abia, Ebonyi and Enugu

	Abia State	Ebonyi State	Enugu State	Total
Small construction firms	**48**	**39**	**57**	**144**
Medium Construction Firms	**105**	**76**	**131**	**302**
Total	**153**	**115**	**188**	**456**

Source: Ministry of Works and housing, Abia, Ebonyi and Enugu (2018)

These are SMCFs that executed projects in 3 South-Eastern state of Nigeria will form the population of this study. From each firm, four persons were chosen, making it a total of 4 persons per firm (4 x 456 = 1824). Therefore, the population for this study covered 1824 respondents. These staff are believed to have adequate knowledge and experience on TQM in

their firms. Okolie, (2011) states that, a population is the aggregation of elements from which a sample is actually selected.

4.8 Sampling Techniques

For high degree of accuracy and adequacy in representation of the sample, the researcher employed stratified random sampling technique and purposive sampling technique.

The sequential process involved first, a stratified random sampling for the administration of questionnaires in the survey aspect of the study then followed by the purposive sampling technique for the selection of participants for the interviews. This is because purposive sampling is a non-probability technique that selects informative subjects or units of observation as a representation of the wider relatively cost effective, easer, and ensures that only those elements that are relevant to the study are included.

The goal of purposive sampling is not to randomly select units from population, but to create a sample with the intention of making generalizations (statistical inferences) from that sample to the population of interest. Hence, purposive sample technique was used in selecting the nature of professionals from the target population of 1824.

4.9 Determination of Sample Size

The sample size for this study was determined using Taro Yamane's formula, Yamane (1978)

$$n = \frac{N}{1+N(e)^2}$$

When n = sample size

N = population

e^2 = Margin of error (assumed 5%)

1 = unity or constant

Therefore = $\frac{1824}{1+1824\ (0.05)^2}$

$\frac{1824}{1+(1824x0.0025)}$

$\frac{1824}{1+4.56}$

$\frac{1824}{5.50}$ = 328

The sample size of 328 was adopted for this study.

Table 4.2 Distribution of Questionnaire

Group	Abia	Ebonyi	Enugu	Total
Staff of SMCFs	**112**	**82**	**134**	**328**
%	**34**	**25**	**41**	**100**

Source: Researcher's field study (2018)

4.10 Method of Data Presentation and Analysis

Data collected for this research was analysed with the aid of Statistical Package for Social Science (SPSS) version 22 software and MS-Excel. In order to portray the results for better understanding, the data was presented in tables and charts. Furthermore, the data generated for this study were analyzed with appropriate statistical techniques. The techniques included relative frequency distribution (percentages), mean score index, relative importance index, analysis of variance (ANOVA), student Z-test and Pearson Correlation Coefficient.

4. 10.1 Relative frequency distribution: This was used to answer questions raised in general information of section A of the questionnaire. This is the frequency of the respondents on

each factor divided by the total frequency of all the respondents. It is generally expressed as percentage or average.

4. 10 .2 **Mean score**: This method is used for ranking purposes such as in evaluating the critical success factors of TQM.

4. 10. 3 **Standard deviation (SD);** this is a measure of the spread of scores within a set of data. This method was used in evaluating critical success factors, company strategies (SWOT) and competitive advantages.

4. 10. 4 **Relative importance index (RII);** this was used to determine the relative importance to the respondents on the factors that improve TQM.

4.10.5 Testing of hypotheses

Hypotheses postulated are put in null (Ho) and was tested as follows.

Hypothesis one:

One way Anova was employed to validate hypothesis one. It was used to find out variance between the two groups and variance of the observations within groups. The one way Anova was used to assess the respondent's opinion (Staff of SMCFs) on the TQM implementation in SMCFS in South-East of Nigeria.

Decision rule: The predetermine level at which the hypothesis could be rejected or accepted was fixed at 0.05 (5% significance level) such that if the probability value in the Anova table is > 0.05 level of significance, we accept the null hypothesis, otherwise we reject the null hypothesis.

Hypothesis two

Student's z- test is a parametric test- statistic used to determine if two sets of data are significantly different from each other, and is most commonly applied when the tests statistic would follow a normal distribution if the value of a scaling term in the test statistics were known. Students' z-test was used to show if critical success factors does not significantly affect companies' strategies in South-East Nigeria.

Decision rule: The decision to accept null hypothesis is anchored on the probability value of the student t- test becoming > 0.05 level of significance, otherwise the null hypothesis will be rejected.

Hypothesis three:

Pearson Correlation Coefficient was used to validate hypothesis three. It is the mostly widely used method to measure the extent of relationship between two or more variables and used for both interval and ratio scales. Pearson Correlation Coefficient tool was used to assess the respondent's opinion that there is no significant relationship between the application of TQM and Competitive Advantage. See formula for Pearson correlation coefficient.

While Kendall tau rank correlation coefficient and spearman correlation coefficient were used to validate the Pearson correlation analysis.

Decision Rule: Reject the null hypothesis if p-value is less than or equal to 0.05 [Level of significance (α)]; otherwise do not reject.

Spearman Correlation Coefficient

The spearman correlation coefficient is used to determine the type of relationship or level of association between the variables and also the strength of this relationship. In this regard, it was used to validate the Pearson correlation analysis.

Hypothesis four:

In other to estimate the impact of the companies' strategies on competitive advantages, this study adopted ordinary least square (OLS) technique. This technique was chosen because it possesses some optimal properties; its computational procedure is fairly simple and it is also essential component of most other techniques.

Model Specification

This study built a multiple regression model and make use of econometrics procedure in estimating the relationship between the variables under study.

The functional form of the model is specified as:

Model One

$PR= F (ST, OP)$…… (3.1)

The stochastic model is specified as:

$PR_t = \beta_0 + \beta_1 ST_t + \beta_2 OP_t + \mu_t$……. (3.2)

Where

PR= Price (dependent variable)

F= functional relationship

ST = strength (first independent variable)

OP = Opportunity (second independent variable)

t = time period

β_0= Constant

β_1, β_2, are the relative slope coefficients and partial elasticities of the parameters.

μ_t = stochastic error term

Model Two

MS= F (ST, OP)…… (3.1)

The stochastic model is specified as:

$MS_t = \beta_0 + \beta_1 ST_t + \beta_2 OP_t + \mu_t$ ……. (3.2)

Where

MS= Market share (dependent variable)

F= functional relationship

ST = strength (first independent variable)

OP = Opportunity (second independent variable)

t = time period

β_0= Constant

β_1, β_2, are the relative slope coefficients and partial elasticities of the parameters.

μ_t = stochastic error term

Model three

QS = F (ST, OP)…… (3.1)

The stochastic model is specified as:

$QS_t = \beta_0 + \beta_1 ST_t + \beta_2 OP_t + \mu_t$…… (3.2)

Where

QS= quality of service (dependent variable)

F= functional relationship

ST = strength (first independent variable)

OP = Opportunity (second independent variable)

t = time period

β_0= Constant

β_1, β_2, are the relative slope coefficients and partial elasticities of the parameters.

μ_t = stochastic error term

Model four

PR= F (WK, TR)…… (3.1)

The stochastic model is specified as:

$PR_t = \beta_0 + \beta_1 WK_t + \beta_2 TR_t + \mu_t$ …… (3.2)

Where

PR= Price (dependent variable)

F= functional relationship

WK = Weakness (first independent variable)

TR = Threats (second independent variable)

t = time period

β_0= Constant

β_1, β_2, are the relative slope coefficients and partial elasticities of the parameters.

μ_t = stochastic error term

Model Five

MS= F (WK, TR)…… (3.1)

The stochastic model is specified as:

$MS_t = \beta_0 + \beta_1 WK_t + \beta_2 TR_t + \mu_t$…… (3.2)

Where

MS= Market share (dependent variable)

F= functional relationship

WK = Weakness (first independent variable)

TR = Threats (second independent variable)

t = time period

β_0= Constant

β_1, β_2, are the relative slope coefficients and partial elasticities of the parameters.

μ_t = stochastic error term

Model Six

QS= F (WK, TR)…… (3.1)

The stochastic model is specified as:

$PR_t = \beta_0 + \beta_1 WK_t + \beta_2 TR_t + \mu_t$…… (3.2)

Where

QS= quality of service (dependent variable)

F= functional relationship

WK = Weakness (first independent variable)

TR = Threats (second independent variable)

t = time period

β_0= Constant

β_1, β_2, are the relative slope coefficients and partial elasticities of the parameters.

μ_t = stochastic error term

The models

PR= F (ST, OP)…… (1)

MS= F (ST, OP)…… (2)

QS= F (ST, OP)……. (3)

PR= F (WK, TR)…… (4)

MS= F (WK, TR)…… (5)

QS= F (WK, OP)…… (6)

Note: The first three models are to find the relationships between the competitive factors (Price, Market shares and Quality of service) with strength and opportunities while the last three is to find the relationship between competitive factors with weakness and threats.

4.11 Validity and Reliability of the Measuring Instrument

In an effort to ensure the validity of the instrument, the instrument was subjected to face and content validity. This is to enable the researcher obtain information relevant to the purpose and objectives of the research. The factors had content validity since their items were adapted from the previous studies in the literature. Copies of the questionnaire were presented to three professionals in 2 small and medium scale construction firms for vetting. Their suggestions were incorporated into the final draft. The questionnaires were also validated by ensuring that all the questions and statements in the questionnaires were geared towards answering the research questions. It was ensured that it formed the appropriate instrument for testing of the hypotheses. The questionnaires were also structured to ensure consistency by avoiding ambiguous items and there was personal determination and commitment on the part of the researcher to follow up, collect, and present data in its real and undiluted form.

The reliability of the study was enhanced by conducting a pilot study before the main data collection exercise. The pilot involved a total of 7 respondents in the relevant firms and utilized the test retest approach. The questionnaire was administered to the 7 respondents who were asked to complete. After two weeks, the same questionnaire was administered to the same set of respondents. The responses for the first and second round were compared using the Pearson Product Moment Correlation Coefficient at a threshold of 0.7. Cronbach's coefficient alpha values vary between 0 and 1. it is also important to know that Nunnally and Bernstein, (1994) suggest that alpha values above 0.7 can be considered as adequate. The test yielded a correlation coefficient of 0.85 leading to the conclusion that the instrument is highly reliable.

The summary of results of the internal consistency reliability test for all the constructs used in this study is presented in Table 4.3.

Table 4.3: Internal Consistency reliability test for all the construct

S/No	Section	Cronbach's Alpha
1	1st section	0.963
2	2nd section	0.955

Level of Implementation

S/No	Critical Success Factor	Cronbach's Alpha
1	Leadership and top management commitment and leadership	0.869
2	Customer Focus	0.980
3	Continuous Improvement	0.989
4	Employee Participation	0.982
5	Recognition and Reward	0.963
6	Training	0.954
7	Quality Culture	0.879
8	Communication	0.905
9	Performance Measurement	0.806
10	Strategic Planning	0.761

S/No	Section	Cronbach's Alpha
1	Critical Success Factor	0.842
2	Strength	0.983
3	Opportunities	0.969
4	Weakness	0.988
5	Threats	0.985
6	Price	0.984
7	Market Share	0.975
8	Quality Service (Product Quality)	0.988

Source: Researcher's field Work (2017)

From the tables, each section is good for various analyses; this is because all the reliability values are greater than 0.70 which is the minimum acceptable value.

CHAPTER FIVE

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

5.1 Introduction

The goal of the study was to develop a total quality management model that will be used in South-East of Nigeria. The presentation, analysis and interpretation of all the data collected are presented and analysed in this chapter. They were based on the objectives, research questions and hypotheses which guided the research.

Distribution of Questionnaire

5.2.1 Number of copies of Questionnaire Distributed and Returned

Table 5.1 below shows that a total number of 328 copies of the questionnaire were distributed to the respondents based on a purposive sampling. Out of the 328 copies of questionnaire distributed, 303 were completed and returned which corresponds to a response rate of 92%. The response rate was high because professional colleagues assisted the researcher in distributing and returning the questionnaire. The response rate of 92% is therefore reasonably high and adequate for the study. The rest of the questionnaire were either not properly completed or returned uncompleted. The ones not properly completed were disregarded because they were not usable. Some respondents gave no reason for the uncompleted questionnaire, while others cited busy schedule as their reason. Table 5.2 shows the population distribution of respondents and the percentage response to the questionnaires.

Table 5.1. Return Rate of Questionnaire

Questionnaire	Frequency	Percentage (%)
Total no of copies of Questionnaire administered	328	-
No of copies received	303	92
No not received	25	8
Total		100%

Source: Researcher's field survey (2018)

5.2.2 Response rate of questionnaire

Table 5.2 below provides two basic information. First; the population of respondents or staff in each of the state that were issued copies of the questionnaire and second; their response rates. Majority of the respondents work in small and medium scale construction firms in Enugu, while those who work in Ebonyi had the least population distribution. It is also instructive to note that this distribution depicts the population strength of the small and medium scale construction firms that are registered in those various States.

112 copies of questionnaires were distributed SMCFs in Abia, 82 to SMCFs in Ebonyi and 134 to those in Enugu. Out of these, 101, 74 and 128 copies respectively were returned, representing 33.33%, 24.42% and 42.24% response rates. Overall, this shows that the majority of the respondents responded to the questionnaire. The percentage responses also show a fair representation of all the small and medium firms in the three states.

Table 5.2. Population Distribution of Questionnaires and Percentage Response

State	No of copies of Questionnaire distributed	No of copies of Questionnaire received (response)	Percentage contribution to total response
Abia	112	101	33.33
Ebonyi	82	74	24.42
Enugu	134	128	42.24
Total	328	303	100%

Source: Researcher's field survey (2018)

5.3 Background Information

The study collected basic information regarding the participants and the organizations in which they work. According to Sifers *et al.* (2012), reporting the sample characteristics enables research consumers to determine the representativeness of the sample and applicability of findings in their settings.

5.3.1 Gender of Respondents

As shown in figure 5.1, 197 of the respondents representing 65% are males, while 106 respondents representing 35% are females. This shows that majority of the participants were

male. This finding matches expectations as the construction is a male dominated industry in all parts of the world (Jimoh *et al*., 2016).

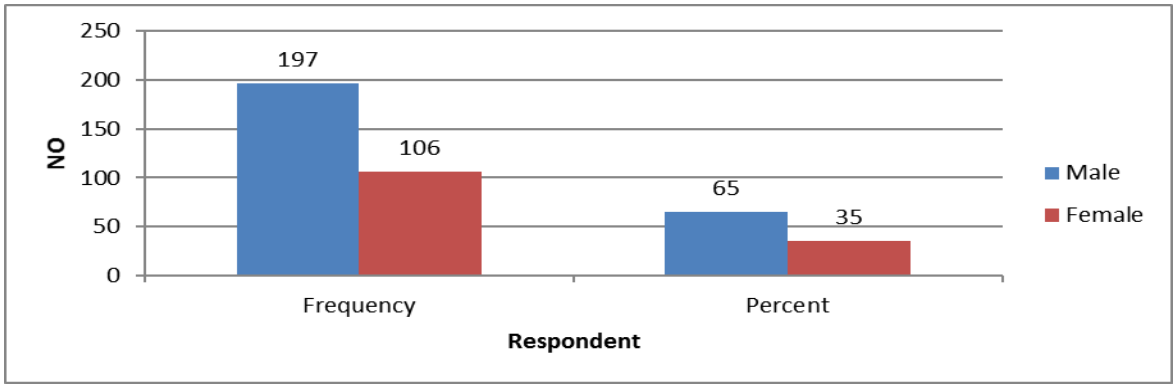


Figure: 5.1 Gender of Respondents
Source: Researcher's field survey (2018)

5.3.2 Designation of respondents

Figure 5.2, as shown below indicates participants held diverse position in their respective organisations. Engineers were the most highly represented in the sample with 83 at 27.4% followed by builders with 79 at 26.1%. The next were supervisors with 76 at 25.1%. Employers were the least represented with 65 at 21%. This shows that respondents were made up of professionals and experts that can effectively contribute to total quality management in their various fields.

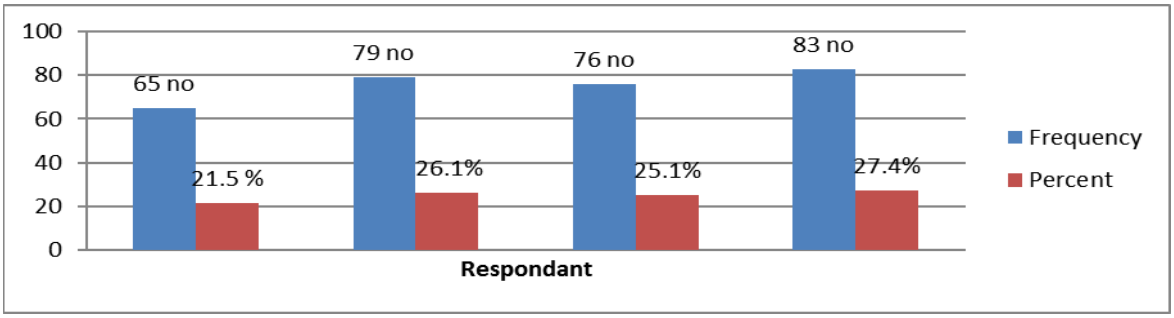


Figure: 5.2 Designation of Respondents
Source: Researcher's field survey (2018)

5.3.3 Work experience of respondents

As the Figure 5.3 indicates, that 94 respondents representing 31% have worked between 1- 5 years, 79 of them representing 26.1% have worked between 6 to 10 years, 67 respondents representing 22.1% have worked between 11-15 years and 36 respondents representing 11.9% have worked between 16-29 years, while 27 respondents, representing 8.9% have worked over 20 years. The trend therefore, shows that majority of the respondents are experienced and as such can provide informed opinion about the subject matter.

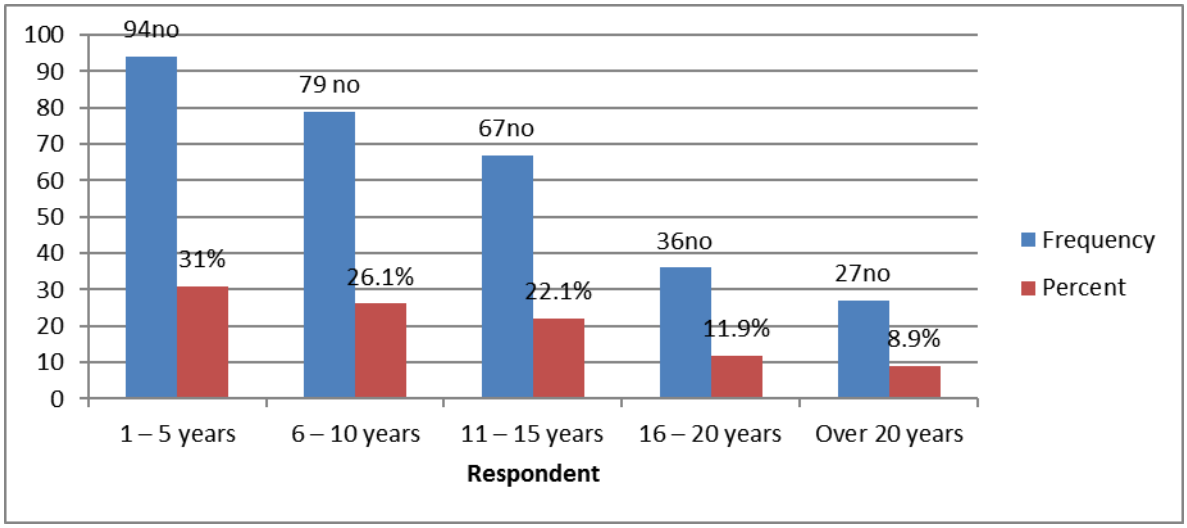


Figure: 5.3 Work Experience of Respondents
Source: Researcher's field survey (2018)

5.3.4 Qualification of respondents

In terms of their academic qualification, the Figure 5.4 below shows that majority of the respondents (127) representing 41.9% have Bachelor's (first) degrees, followed by 79 (26.1%) who have M.Sc. The next is 62 (20.5%) who have Higher National Diplomas followed by 33 (10.9%) who have other qualifications. However, 2 respondents representing 0.7% have a Ph.D.

Generally, the above scenario reflects the level of education, albeit the reasoning ability of the respondents, which is considered impressive, above average and will be pertinent for the total quality management issue under study.

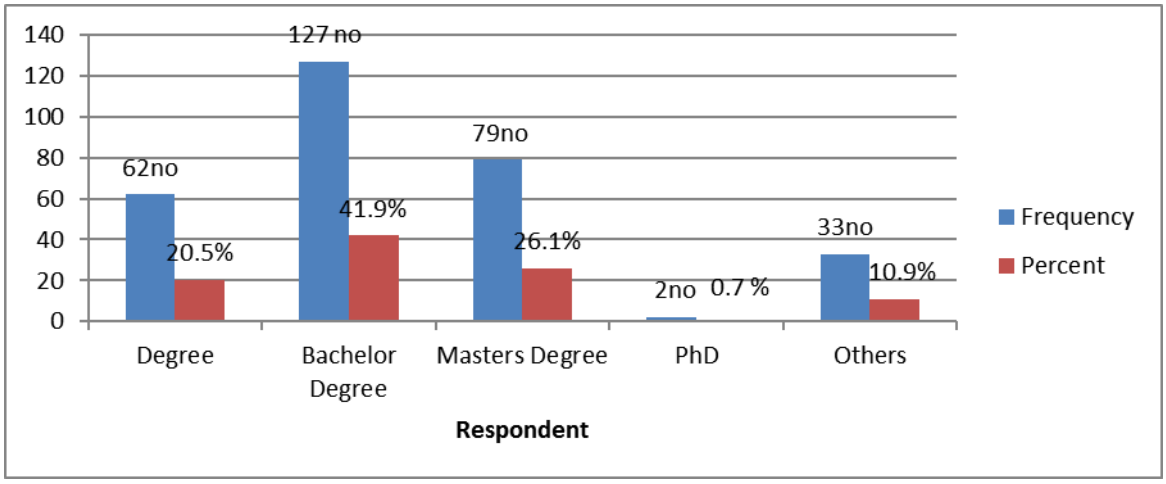


Figure 5.4 Qualification of Respondents

Source: Researcher's field survey (2018)

5.3.5 No of Employees in your firm

As the Figure 5.5 indicates, that 106 respondents representing 35% have between 10- 49 employees, 97 of them representing 26.1% have between 55 to 99 years, 54 respondents representing 17.8% have between 150-199 years while 46 respondents representing 15.2% have worked between 100-149 years.

Following SMEDAN (2007), small-size companies have between 10- 49 employees while medium size companies have between 50- 199 employees. This shows that majority of the construction firms are medium size and this supports what Odediran *et al*.(2012) says that the majority of contracting firms in our construction industries were medium-size companies whose activities were limited to the locality.

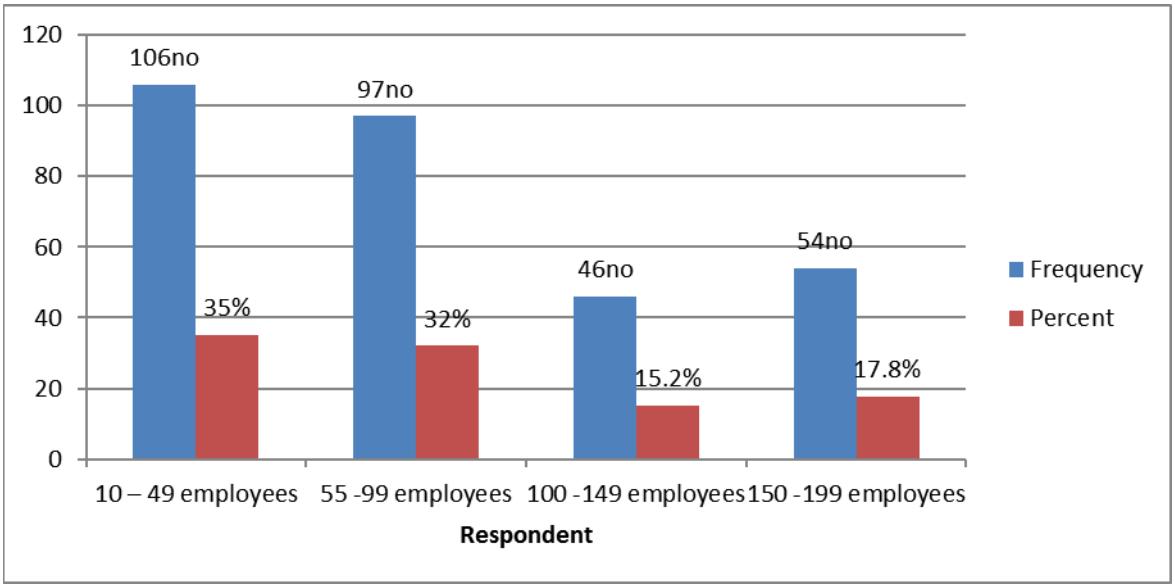


Figure: 5.5 No of Employees in your firm

Source: Researcher's field survey (2018)

5.4. Questionnaire Section B: Questions Related to the Concept of TQM

The first objective of the study was to examine the perception of the concept of TQM by small and medium construction firms in South-East Nigeria. To realize this objective, participants were presented with a list of questions.

5.4.1 Awareness of TQM

Figure 5.6 further indicates that 288 respondents representing 95% are aware of total quality management while 15 respondents representing only 5% are not aware of it.

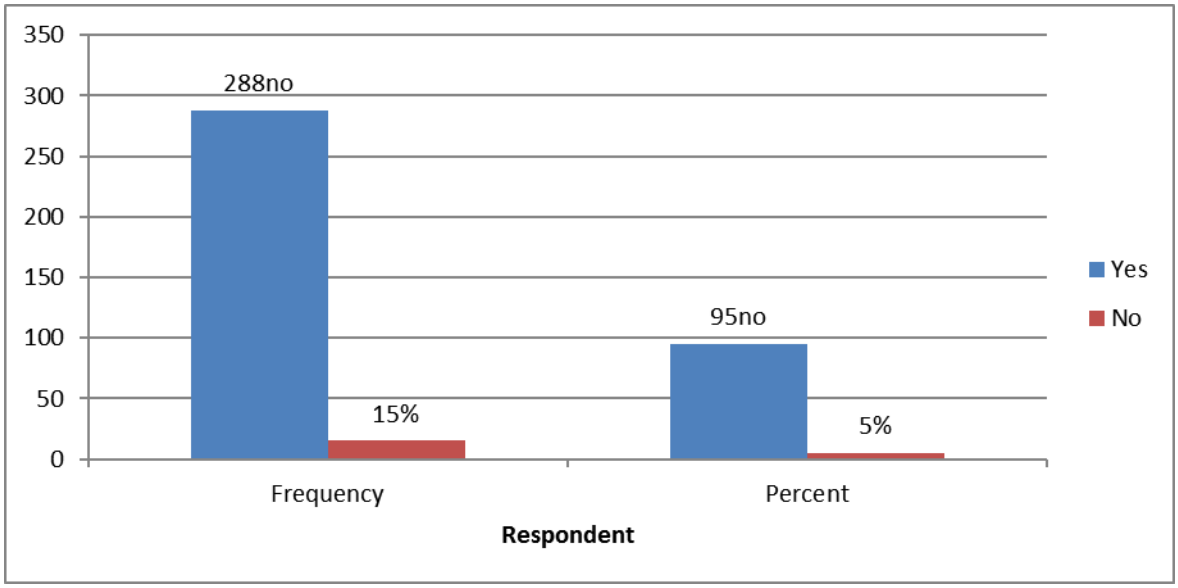


Figure: 5.6 Awareness of TQM

Source: Researcher's field survey (2018)

5.4.2 Analysis of responses on rating and ranking the definition and perception of TQM

To rank the definition of TQM, the respondents were asked to rate it on a 5-point Likert scale (5= Strongly agree to 1= Don't know), after which the mean scores to be used for the ranking was calculated. Participants' responses were analyzed using descriptive statistics specifically mean and standard deviation with aid of the statistical package for social sciences. In this case, the mean ranged between 1 and 5 with means closer to 1 suggesting that the majority of the participants disagreed with the statement and means closer to 5 suggesting that the majority of participants agreed with the statement. Results are presented in Table 5.3:

From the table 5.3 each of the respondents gave their personal evaluation of each statement. As the Table illustrates, Result show that; it is an approach of continuous improvement in all quality ranks first with mean scores of 4.310, while is a management practice through the organization geared to ensure the organization consistently meets or exceeds customer requirements

establishing housing budget ceilings ranked 2nd with a mean score of 4.267. Other concept such as it is an effective system to ensure production and service at the most economical levels that allow customer satisfaction (4.237), is a management philosophy to achieve the organizational goal (4.122) and it is a quest for excellence, creating the right attitudes and quality control management philosophy that promotes cost effectiveness and sustainable project quality to client satisfaction (3.864) ranked, 3rd, 4th and 5th respectively.

However the different in their mean is small. This support what different authors stated that TQM is presented differently in different points of view, as there is no general and formal definition of TQM which can fit or be implemented in all organisations within all sectors. TQM definitions are different in each region and each country, based on national and organisational culture and perception of quality, and the requirement of that culture.

Table 5.3. Ranking of the Concept of TQM

Issues Raised	Strongly agree (5)	Agree (4)	Strongly disagree (3)	Disagree (2)	Don't Know (1)	Mean	STD DV	Rank
Is a management philosophy to achieve the organizational goal	141	124	3	4	31	4.122	0.82	4
It is an effective system to ensure production and service at the most economical levels that allow customer satisfaction	199	48	11	19	26	4.237	0.68	3
It is an approach of continuous improvement in all quality	184	68	22	19	10	4.310	0.79	1
It is a quest for excellence, creating the right attitudes and quality control management philosophy that promotes cost effectiveness and sustainable project quality to client satisfaction	63	198	2	16	24	3.864	0.51	5
Is a management practice through the organization geared to ensure the organization consistently meets or exceeds customer requirements	173	73	33	13	11	4.267	0.62	2
Grand mean						4.16	0.68	

Source: Researcher's field survey (2018)

5.4.3 Analysis of advantages of TQM

To rank the advantages of TQM, the respondents were asked to rate it on a 5-point Likert scale (5= Strongly agree to 1= Don't know), after which the mean scores to be used for the ranking was calculated. Participants' responses were equally analyzed using descriptive statistics specifically mean and standard deviation with aid of the statistical package for social sciences. In this case, the mean ranged between 1 and 5 with means closer to 1 suggesting that the majority of the participants disagreed with the statement and means closer to 5 suggesting that the majority of participants agreed with the statement. Results are presented in Table 5.4:

As the Table illustrates, the statement that TQM ensures Clients Satisfaction had the highest mean score (*M*= 4.79, *S.D.* =.518). This result is consistent with the study by Hellsten and Klefsjö (2000), where it was established that TQM is Client Focus. All the management commitment is to give the customer satisfaction. The statement with the second highest mean score is it ensures continuous improvement (M= 4.67, S.D. =.618). No wonder Hill (2008) considered TQM as an approach of continuous improvement in all quality aspects of the whole processes, goods, services and employees within the firm. The next is it improves material and service input (M= 4.41, S.D. =.871), followed by it enhances efficiency with (M= 4.19, S.D. =.777) and the last two include it promotes effectiveness (M= 4.14, S.D. =.818) and it enhances flexibility (M= 4.04, S.D. =.637)

Table 5.4 Agreement to statement relating to advantages of TQM

Issues Raised (SA=5, A=4,..	Mean	SDev	Remark
It enhances flexibility	4.0429	.63674	Agree
It promotes effectiveness	4.1386	.81821	Agree
Ensures continuous improvement	4.6667	.61798	Agree
Improves material and service input	4.4092	.87127	Agree
Clients satisfaction	4.7855	.51807	Agree
Enhances efficiency	4.1881	.77690	Agree
Overall mean	**4.371833**		**Agree**

Source: Researcher's field survey (2018)

5.4.4 Quality improvement program

The following explains the respondents' opinions on the application of quality improvement program in their various firms as shown in Table 5.5 below:

a. Provision of Quality improvement programme: Table 5.5 enquired from the respondents' if they have quality improvement programme. The result shows that majority of 276 (91%) respondents have quality improvement programme while only 27 (9%) do not have it. This shows that quality improvement programme is very important for any construction firm to survive

b. Available Quality improvement programme: On the issue of the type of quality improvement programme available. 194(64.03%) respondents said Quality control/quality assurance, 64(21.12%) said TQM while 4.5(14.85%) of them said ISO 9000.

c. Regular application of quality measures: As indicated in Table 5.5, 164(54.13%) respondents agreed that quality improvement measure is applied regularly in their firms. 135 (44.55%) maintained that it is implemented very regularly while 4(1.32%) of them agree that the application is fairly regular.

d. Alternative measures for controlling quality of work: Table 5.5 also enquired from respondents that does not have quality measures how they have been controlling quality in their firms. Majority of the respondents 23(85.19%) stated that they test their materials in approved organisations while the remaining respondents 4(14.81) always execute to standard. The responses indicated that everyone in the construction industry understands that there is need for quality in all construction project.

Table 5.5. Opinion of Respondents on the application of Quality improvement program in their various firms

Questionnaire Item	Variables	No of Responses	Percentages (%)
Do your firm have quality improvement program?	(a) Yes	276	91.09
	(b) No	27	8.91
Total		303	100%
What type of Quality improvement program do you have?	(a) TQM	64	21.12
	(b) ISO 9000	45	14.85
	(c) Quality Control/Quality Assurance	194	64.03
	(d) Others	0	00.00
Total		303	100%
How regular do you apply quality measure in your firm?	(a) Very Regular	135	44.55
	(b) Regular	164	54.13
	(c) Fairly Regular	4	1.32
	(d) Not Regular	0	0.00
Total		303	100%
For the firm that does not have Quality improvement programme, how have you been controlling the quality of your work?	(a) Always execute to standard	4	14.81
	(b) Always test our materials in approved Organisations	23	85.19
	(c) Others	0	0.00
Total		27	100%

Source: Researcher's field survey (2018)

5.5 Level of Implementation of Total Quality Management by Small and Medium Construction Firms.

Another objective of the study was to examine the level of implementation of TQM in small and medium construction firms in South- East Nigeria. To realize this objective, respondents were

presented with a series of statements relating to factors of TQM and asked to indicate the extent to which they implement it on a five point Likert-type scale (1=very low, 2= Low, 3=Neutral, 4=High, and 5= Very High). Participants' responses were analyzed using descriptive statistics specifically mean and standard deviation with aid of the statistical package for social sciences. Results are presented in Table 5.6:

Table 5.6 Questions related to level of implementation

S/N	**Leadership and top management commitment and leadership**	**Mean**
1	Top management actively participates in quality management activities	2.6898
2	Top management learn quality-related concepts and skills	2.6799
3	Top management discusses many quality-related issues in top management meetings	2.7822
4	Top management focuses on product quality rather than yields	2.6370
	Customer Focus	
5	We actively and regularly seek customers input to identify their needs and expectations	2.9043
6	Customer needs and expectations are effectively disseminated and understood throughout the workforce	2..6007
7	We systematically and regularly measure customer satisfaction	2.9076
8	Quality-related customer complaints are treated with top priority	2.8779
	Continuous Improvement	
9	Company emphasizes improvement rather than maintenance	2.6601
10	My company emphasizes the best implementation of continuous improvement process for all tasks at all levels	2.6766
11	The company compare customer satisfaction levels with that of competitors	2.7558
12	Company records are kept for future decision making and for the purpose of efficiency (learning from mistakes and identification of	2.8614

	successful activities) and continuity	
	Employee Participation	
13	Management meet employee regularly to update them on the progress or otherwise of the company	2.6799
14	Employees are actively involved in quality-related activities	2.5941
15	There is a conscious policy by management to ensure good working condition for employees	2.1815
16	Most employees suggestions are implemented after an evaluation	2.5545
	Recognition and Reward	
17	Our firm improves working conditions in order to recognize employee quality management efforts	2.7228
18	Our firm has salary promotion scheme to encourage employee participation in quality management	2.4356
19	Position promotions are based on working quality in our firm	2.4455
20	Excellent suggestions are financially rewarded	2.1914
	Training	
21	Employees get training regularly to improve company outputs	2.5182
22	Adequate resources are arranged for employee education and training	2.4719
23	The company has scheduled employee training	2.4026
24	There is scheduled training for the further development of management	2.6931
	Quality Culture	
25	Our firm constantly adapt to cultural change to fit with the changes in the business environment	2.7129
26	There is an ongoing creation of quality awareness among employees	2.5809
	Communication	
27	Our company continually tries to improve communication	3.0693
28	Our company clearly communicates its strategies and goals with employees	2.8515
29	Employees receive regular feedback to make performance developments	2.5347

	Performance Measurement	
30	My company adopts a self-assessment system to improve performance	
31	Competitive benchmarking is made against primary competitors	2.7426
32	My company is tracking quality cost to reduce the cost of waste, rework and rejection	2.7393
	Strategic Planning	
33	We know our company mission	2.4323
34	Our firm has a comprehensive and structured planning process which regularly sets and reviews short and long-term goals	2.9505
35	Our firm incorporates the needs of all stakeholders when we develop our plans, policies and objectives	2.5809
36	There is a written statement of strategy covering all business operations which is articulated and agreed by our senior managers	2.7063
Overall average		**2.6448**

Source: Researcher's field survey (2018)

5.5.1 Hypothesis one

The level of implementation of TQM in SMCFs in South-East Nigeria is not low.

Based on this objective, the above null hypothesis were postulated and tested.

Data used: Table 5.6

Statistical tool: Z- test statistics

Z-test statistics is selected because the number of observation is large, above 30 (large N values)

Data analysis software: SPSS version 22

Decision Rule: Reject the null hypothesis if p-value is less than or equal to 0.05 [Level of significance (α)]; otherwise do not reject.

[DataSet2] C:\Users\USER\Documents\Alinta\Hyp1.sav

5.7 One-Sample result of level of implementation of TQM

	N	Mean	Std. Deviation	Std. Error Mean
The level of implementation of TQM	36	2.644769	.1985437	.0330906

One-Sample Test

	Test Value = 3.0					
	Z	Df	Sig. (1-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
The level of implementation of TQM	-05.735	35	.000	-.2052377	-.398401	-.4895012

Source: Researcher's computation and extract from SPSS version 22 (2018)

Decision, Conclusion and Reason: From the first table, the mean there is 2.644769 and this mean is less than 3.0 which is the mean cut – off point. Then from the second table, the mean difference is –0.2052377 and the p – value is 0.000, less than 0.05. This implies that the average level of implementation of TQM is below, 3.0; that is the mean level of implementation of TQM is a little below average. Since the P-value of 0.000 is less than 0.05. Hence we reject the null hypothesis and conclude that the level of implementation is low.

5.6 Critical Success Factors of TQM and Small and Medium Scale Firms' Strategies for Success in South-East Nigeria.

The third objective of the study was to determine the critical success factors of TQM and their impact on small and medium scale firms' strategies for success in South-East Nigeria.

5.6.1 Critical success factors of TQM for small and medium scale construction firms in South-East Nigeria.

To evaluate the Critical Success Factor, the respondents were provided with a table that had a list of critical success factors and were told to rate the extent to which they agree on a five point Likert-type scale (1=Strongly Disagree, 2= Disagree, 3=Neutral, 4=Agree, and 5= Strongly Agree). Participants' responses were analysed using

Results are presented in Table 5.8:

Table 5.8 Questions related to Critical Success Factors

S/N	Issues Raised	Mean	SDev	Remark
1	Leadership and top management commitment	3.8614	1.32996	Agree
2	Customer Focus	3.7822	1.43700	Agree
3	Continuous Improvement	3.7294	1.40223	Agree
4	Employee participation	3.6601	1.34704	Agree
5	Recognition and Reward	3.3267	1.41029	Agree
6	Training	3.3828	1.44386	Agree
7	Quality Culture	3.4389	1.39134	Agree
8	Communication	3.4917	1.36868	Agree
9	Performance Measurement	3.5512	1.41533	Agree
10	Strategic Planning	3.7525	1.36226	Agree

Source: Researcher's field survey (2018)

5.6.2 Strength, weakness, opportunities and threat (SWOT) analysis for small and medium scale construction firms in South-East Nigeria

Part of the objective of the study was to examine the SMCFs' strategies for success in South-East Nigeria. The concept of SWOT (strength, weakness, opportunities and threats) analysis was used. To realize this objective, participants were presented with a list of strengths, weakness, opportunities and threats and asked to rate them on a scale of 1-5

Table 5.9. Average Agreement with Statements Relating to Strength and Opportunities

S/N	**Strength**	Mean	SDev
1	Small startup and operating capital	3.8383	1.34346
2	Locational Flexibility	3.7855	1.40606
3	Lower overhead	3.7063	1.41288
4	Quickly respond to customers need in a flexible way	3.6370	1.35694
5	High return of investment on successful project	3.3036	1.42130
	Opportunities		
6	Low labour Cost	3.3597	1.44867
7	Government new policies	3.4488	1.38936
8	Regional peace process	3.4488	1.37016
9	High speed of construction industry development	3.5281	1.42298
10	New business technologies (e.g. mobile/ tablet computing)	3.7228	1.37710

Source: Researcher's field survey (2018)

As the Table 5.9 illustrates, the statement relating to strength of the small and medium firms, Small start-up and operating capital had the highest mean score (M= 3.84, $S.D.$ =1.343). This implies that this is the statement that had the highest level of agreement among participants. This

result is consistent with the study by Mukras (2003),who said that SMEs in Nigeria are characterized by high labour intensity, ease Locational Flexibility was ranked second with mean score (*M*= 3.79, *S.D.* =1.406) The least ranked was high return on invested on successful project with mean score (*M*= 3.30, *S.D.* =1.421).

On the other hand the statement concerning the opportunity was analysed, it was discovered that the statement with the highest mean is new business technologies. No wonder according to Schubert and Leimstoll (2007), though Porter's and Millar's theories disagree on the issue of ICT (technologies) to SMEs, they both agree that competitiveness of an SME depends on the ways in which technologies are used to support business processes. The next ranked is high speed of construction industry development with a mean score (*M*= 3.53, *S.D.* =1.423). The least ranked was low labour cost with a mean score (*M*= 3.36, *S.D.* =1.449).

Table 5.10. Average Agreement with Statements Relating to Weakness and Threats

S/N	**Weakness**	Mean	SDev
1	Poor Capitalization	3.9868	1.28922
2	Poor information Systems	3.7426	1.43504
3	Poor Management Strategy	3.6304	1.39844
4	Lack of Procedures for monitoring Quality	3.9208	1.23966
5	Low managerial and technical Skills	3.2673	1.44816
	Threats		
6	Government Laws and Regulations	3.4653	1.48211
7	Discouragement on investments through credit terms & conditions of commercial Banks.	3.4620	1.39217
8	Strong competition from the large firms	3.9769	1.27227
9	Multiple taxes	3.3432	1.41457
10	Excessive corruption and lack of transparencies	3.9538	1.19789

Source: Researcher's field survey (2018)

Table 5.10 shows that poor capitalization was ranked highest with mean score (*M*= 3.99, *S.D.* =1.289). This is one of the major weaknesses that Ihua and Siyanbola (2012) stated in their work that hinders small and medium contractors. The next ranked was lack of procedures for monitoring quality *(M*= 3.92, *S.D.* =1.240). The last was low managerial and technical skills.

On the issue of threats to SMCFs, Strong competition from the large firms was strongly endorsed by the greater participants with (*M*= 3.98, *S.D.* =1.272). No wonder that Idoro (2010) opined that multinational and large construction firms have however continued to succeed in Nigeria as the preferred type of Construction Company. Next is excessive corruption and lack of transparencies with (*M*= 3.96, *S.D.* =1.20). The least was discouragement from investments through credit terms and conditions of commercial banks.

5.6.3 Hypothesis two

Hypotheses two

Critical success factors of TQM does not significantly affect SMCFs' strategies in South-East Nigeria.

Statistical tool used: Pearson product moment correlation coefficient

Statistical package used: Statistical package for social science (SPSS v.22)

Table 5.11 Correlations results of critical success factors of TQM and strength and opportunity

		Critical success factors	Strength	Opportunity
Critical success factors	Pearson Correlation	1	.403	.460
	Sig. (2-tailed)		.048	.020
	N	10	10	10
Strength	Pearson Correlation	.403	1	.002
	Sig. (2-tailed)	.048		.995
	N	10	10	10
Opportunity	Pearson Correlation	.460	.002	1
	Sig. (2-tailed)	.020	.995	
	N	10	10	10

The result of the model indicates that strength having the correlation coefficient of (0.403) implies that strength positively impact on the critical success factor also opportunity having the correlation coefficient of (0.460) implies that opportunity positively impact on the critical success factor, That is an increase in strength and opportunity will lead to increase in critical success factor on the average. Also from the result, the probability value is less than 0.05 on both strength and opportunity indicates that strength and opportunity are significant variables to determine critical success factors hence we reject null hypothesis.

Table 5.12 Correlations results of critical success factors of TQM and weakness and threats

		Critical success factors	weakness	Threats
Critical success factors	Pearson Correlation	1	-.400	-.353
	Sig. (2-tailed)		.022	-.002
	N	10	10	10
Weakness	Pearson Correlation	-.400	1	-.104
	Sig. (2-tailed)	.022		.775
	N	10	10	10
Threats	Pearson Correlation	-.353	-.104	1
	Sig. (2-tailed)	-.002	.775	
	N	10	10	10

From the result, weakness having the correlation coefficient of (-0.400) indicates that weakness negatively impact on the critical success factor and threats also having the correlation coefficient to be (-0.353) negative coefficient indicating decrease in critical success factors as a result of increase in weakness and threats, a unit increase in weakness and threats will lead to decrease in critical social factor on the average.

More so, the result of the probability value in the above table having the P-value less than 0.05 indicates that weakness and threats have significant impact on critical success factor.

5.7 Identify the Relationship between Implementation of TQM and Competitive advantage.

Another objective of the study was to identify the relationship between implementation of TQM and Competitive advantage. In other to achieve this objective, a hypothesis was postulated. To test the hypothesis, a simple linear Regression and correlation was used. Then, the results were presented using the model summary ANOVA and coefficients model.

5.7.1 Hypothesis three

There is no significant relationship between implementation of TQM and Competitive Advantages

Data Used: Table 5.13

Statistical tool: Simple Linear Regression and Correlation

Data analysis software: SPSS version 22

Decision Rule: Reject the null hypothesis if p-value is less than or equal to 0.05 [Level of significance (α)]; otherwise do not reject.

Table 5.13 Questions related to Competitive Advantage

	PROFITABILITY	Mean	SDev
	Price		
1	Financial performance will be outstanding	3.9736	1.26044
2	Revenue (sales) growth will be outstanding	4.0000	1.30206
3	Financial performance will exceed competitors	3.8317	1.19660
4	Revenue growth will exceed competitors	3.5743	1.31984
	Market share		
5	Firm's market share improve on implementation of TQM	3.7921	1.38093
6	Market share will be higher than competitors after implementation	3.5908	1.30873
7	Volume of sales will increase	3.5347	1.36584
8	Customers are more satisfied with the products	3.9406	1.28791
9	Share of distribution is more than the competitors	3.3333	1.47083
10	Enter new Market, improve image of your company	3.5875	1.38276
	Quality Service (Product Quality)		
10	Demand for the product will increase rapidly	4.0759	1.19499
11	Firm's level of product quality is higher compared with competitors'	4.0000	1.30206
12	Competition will be based on product or service differentiation and not price	3.8086	1.19449
13	Improve Quality of Product/Service	4.1617	1.14087
14	Increase your ability to innovate	3.7261	1.29475

Source: Researcher's field survey (2018)

Regression of level of implementation of TQM and measures of Competitive Advantage

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	Measures of profitability[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: Level of implementation of TQM

5.14 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.807[a]	.651	.608	.0800764

a. Predictors: (Constant), Measures of competitive advantage

We can observe from the table that the value of R (the correlation coefficient) between level of implementation of TQM and the measures of competitive advantage is 0.807 (which is about 80.7%); that is a strong positive relationship which is an increasing relationship between the two variables.

5.15 ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.096	1	.096	14.953	.005[a]
	Residual	.051	8	.006		
	Total	.147	9			

a. Predictors: (Constant), Measures of competitive Advantage

b. Dependent Variable: Level of implementation of TQM

The ANOVA table above shows that the result of the regression is significant because the p – value from the table is 0.005, a value which is less than 0.05. This implies that the regression model is good and can therefore be used.

5.16 Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.437	.572		.764	.467
	Measures of competitive advantage	.574	.148	.807	3.867	.005

a. Dependent Variable: Level of implementation of TQM

From the table, we can see that the regression equation is as follows:

$$Level\ of\ Implementation = 0.574 Measures\ of\ Competitve\ Advantage$$

Decision, Conclusion and Reason: The null hypothesis will be rejected; this is because the correlation is significant as seen above and since p-value of 0.005< 0.05. Hence there is a significant relationship between implementation of TQM and Competitive Advantages.

5.8 Identify the Significant Impact of SMCFs Strategies' on Competitive Advantage.

The fifth objective of the study was to identify the significant impact of SMCFs' strategies on competitive advantage in South-East Nigeria. In other to achieve this objective, a hypothesis was postulated. To test the hypothesis, a simple linear Regression was used. Then, the results were presented by using models.

Hypotheses four

There is no significant impact of SMCFs' strategies on competitive advantages in South-East Nigeria

Statistical tool used: Ordinary least square techniques (OLS)

Statistical package used: Econometrics views (Eviews v.8.0)

Regression result of the first model

Dependent Variable: PR

Method: Least Squares

Date: 08/07/18 Time: 07:47

Sample: 1 5

Included observations: 5

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	173163.1	452737.0	0.382481	0.7389
ST	40.06387	168.0593	4.238391	0.0338
OP	118.5810	254.9884	4.465044	0.0176

R-squared	0.331271	Mean dependent var	3181.000
Adjusted R-squared	-0.337458	S.D. dependent var	4516.963
S.E. of regression	5223.801	Akaike info criterion	20.24355
Sum squared resid	54576188	Schwarz criterion	20.00921
Log likelihood	-47.60887	Hannan-Quinn criter.	19.61461
F-statistic	5.495374	Durbin-Watson stat	1.374719
Prob(F-statistic)	0.008729		

Decision Rule

Accept null hypothesis (Ho) if the probability value is above 0.05, otherwise reject null hypothesis.

Analysis of the first regression output representing the first model

Strength and opportunity have a positive coefficient indicating increase in price as a result increase in strength and opportunity. Numerically, a unit increase in strength will lead 40.06387 increase in price on average value. More so a unit increase opportunity will lead to 118.5810 increase in price.

Also from the result of the probability value which is less than 0.05 in both strength and opportunity implies that strength and opportunity have significant impact on price, it means that strength and opportunity are significant variables to determine price.

Regression result of the second model

Dependent Variable: MS

Method: Least Squares

Date: 08/07/18 Time: 07:52

Sample: 1 5

Included observations: 5

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	13829.46	6786.987	2.037643	0.1785
ST	4.515267	2.519379	2.792214	0.0150
OP	7.299557	3.822536	5.909611	0.0364

R-squared	0.649713	Mean dependent var	1102.000
Adjusted R-squared	0.299427	S.D. dependent var	93.56014
S.E. of regression	78.31008	Akaike info criterion	11.84294
Sum squared resid	12264.94	Schwarz criterion	11.60860
Log likelihood	-26.60735	Hannan-Quinn criter.	11.21400
F-statistic	1.854804	Durbin-Watson stat	2.057272
Prob(F-statistic)	0.350287		

Decision Rule

Accept null hypothesis (Ho) if the probability value is above 0.05, if otherwise reject null hypothesis.

Analysis of the second regression output representing the second model

From the regression result above, strength and opportunity equally have positive coefficient indicating increase in market share as a result increase in strength and opportunity. Numerically, a unit increase in strength will lead 4.515267 increase in price in average. Also a unit increase opportunity will lead to 7.299557 increase in price.

Also from the result of the probability value which is less than 0.05 in both strength and opportunity implies that strength and opportunity have significant impact on market share, it means that strength and opportunity are significant variables to determine market share.

Regression result of the third model

Dependent Variable: QS

Method: Least Squares

Date: 08/07/18 Time: 07:54

Sample: 1 5

Included observations: 5

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-753.4118	1873.204	-0.402205	0.7264
ST	0.388912	0.695347	0.559307	0.0322
OP	0.617941	1.055018	0.585717	0.0174

R-squared	0.146923	Mean dependent var	331.4000
Adjusted R-squared	-0.706154	S.D. dependent var	16.54690
S.E. of regression	21.61353	Akaike info criterion	9.268226
Sum squared resid	934.2897	Schwarz criterion	9.033888
Log likelihood	-20.17056	Hannan-Quinn criter.	8.639288
F-statistic	0.172227	Durbin-Watson stat	2.172361
Prob(F-statistic)	0.853077		

Decision Rule

Accept null hypothesis (Ho) if the probability value is above 0.05, if otherwise reject null hypothesis.

Analysis of the third regression output representing the third model

From the regression result above, strength and opportunity also have positive coefficient indicating increase in market share as a result increase in strength and opportunity. It also shows that, a unit increase in strength will lead 0.388912 increase in price in average. Also a unit increase opportunity will lead to 0.617941 increase in price.

Also from the result of the probability value which is less than 0.05 in both strength and opportunity implies that strength and opportunity have significant impact on market share, it means that strength and opportunity are significant variables to determine market share.

Regression result of the fourth model

Dependent Variable: PR

Method: Least Squares

Date: 08/07/18 Time: 08:44

Sample: 1 5

Included observations: 5

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	21166.19	92204.24	0.229558	0.8398
WK	-24.14809	48.40760	-0.498849	0.0273
TR	-2.554407	38.98154	-0.065529	0.0037

R-squared	0.271374	Mean dependent var	3181.000
Adjusted R-squared	-0.457253	S.D. dependent var	4516.963
S.E. of regression	5452.729	Akaike info criterion	20.32933
Sum squared resid	59464516	Schwarz criterion	20.09499
Log likelihood	-47.82332	Hannan-Quinn criter.	19.70039
F-statistic	0.372446	Durbin-Watson stat	1.815149
Prob(F-statistic)	0.728626		

Decision Rule

Accept null hypothesis (Ho) if the probability value is above 0.05, if otherwise reject null hypothesis.

Analysis of the fourth regression output representing the fourth model

From the regression result above, strength and opportunity also have negative coefficient indicating decrease in price as a result increase in weakness and threats. It also shows that, a unit increase in weakness will lead 24.14809 decrease in price in average. Also a unit increase threats will lead to -2.554407 decrease in price.

Also from the result of the probability value which is less than 0.05 in both weakness and threats implies that weakness and threat have significant impact on price, it means that weakness and threat are significant variables to determine price.

Regression result of the fifth model

Dependent Variable: MS

Method: Least Squares

Date: 08/07/18 Time: 08:46

Sample: 1 5

Included observations: 5

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1221.944	467.0520	2.616291	0.1203
WK	-0.841890	0.245204	-3.433423	0.0754
TR	-1.236054	0.197457	-6.259857	0.0246

R-squared	0.956424	Mean dependent var	1102.000
Adjusted R-squared	0.912849	S.D. dependent var	93.56014
S.E. of regression	27.62029	Akaike info criterion	9.758688
Sum squared resid	1525.761	Schwarz criterion	9.524350
Log likelihood	-21.39672	Hannan-Quinn criter.	9.129750
F-statistic	21.94855	Durbin-Watson stat	1.246503
Prob(F-statistic)	0.043576		

Decision Rule

Accept null hypothesis (Ho) if the probability value is above 0.05, if otherwise reject null hypothesis.

Analysis of the fifth regression output representing the fifth model

From the regression result above, weakness and threats also have negative coefficient indicating decrease in market share as a result increase in weakness and threats. It also shows that, a unit increase in weakness will lead 0.841890 decrease in market share on average. Also a unit increase threats will lead to 1.236054 decrease in market share.

Also from the result of the probability value which is less than 0.05 in both weakness and threats, it implies that weakness and threats have significant impact on market share, it means that weakness and threats are not significant variables to determine market share.

Regression result of the sixth model

Dependent Variable: QS

Method: Least Squares

Date: 08/07/18 Time: 08:48

Sample: 1 5

Included observations: 5

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	364.9800	337.8703	1.080237	0.3930
WK	-0.028827	0.177383	0.162515	0.0758
TR	-0.059324	0.142843	-0.415311	0.0182

R-squared	0.270941	Mean dependent var	331.4000
Adjusted R-squared	-0.458118	S.D. dependent var	16.54690
S.E. of regression	19.98081	Akaike info criterion	9.111131
Sum squared resid	798.4653	Schwarz criterion	8.876793
Log likelihood	-19.77783	Hannan-Quinn criter.	8.482193
F-statistic	0.371631	Durbin-Watson stat	1.199103
Prob(F-statistic)	0.729059		

Decision Rule

Accept null hypothesis (Ho) if the probability value is above 0.05, if otherwise reject null hypothesis.

Analysis of the sixth regression output representing the sixth model

From the regression result above, weakness and threats also have negative and insignificant impact on the quality of service indicating decrease in quality of service as a result of increase in weakness and threats.

From the result, the probability value is less than 0.05 which implies that weakness and threats have significant impact on the quality of service, hence, weakness and threats are significant variables to determine quality of service in Nigeria.

Conclusion

In all the six models formulated to meet the fifth objective, it shows that strength and opportunity have positive and significant impact on price, market share and quality of service on the average. More so, weakness and threats have negative and significant impact on the price, market share and quality of service on the average.

5.8 Presentation and Analysis of In-depth Interviews

A convenient sample of fifteen members who are professionals of staff from different department in small and medium construction firms were contacted. They were from 5 (five) targeted SMCFs for interviews. Out of the fifteen contacted, only seven (47 percent) yielded positive responses and were interviewed as shown in Table 5.16 The rest of the invitees who

declined gave reasons ranging from lack of time to being on leave within the interview period.

Table 5.17 Interviewees and their roles in the targeted SMCFs

Firm	Number of interviews conducted	Roles of the interviewees
Firm A	3 (2 Engineers and 1 Architect)	Designs building, monitors and on-going projects.
Firm B	2 (1 Builder and 1 Architect)	Construction Work, Designs work, Monitor the projects.
Firm C	2(Engineer and Project manager)	Contract administration, Construction work, monitoring the projects.

Source: Researcher's Field Work (2018)

The interviews were conducted with seven respondents occupying key positions in design, construction and quality departments of their firms. The questions were structured to

provide data and information from the experiences of respondents on critical aspects of quality management best practices; challenges encountered in the total quality management implement; strategies for improving total quality management in the targeted SMCFs. The results and analysis of the responses are presented using tables, descriptions and narratives as follows:

5.9.1 Status of interviewees and nature of department in the firms

A question on this was asked to establish the background and primary organisational nature of the interviewee's department in the organisation. Table 5.18 shows the results obtained

Table 5.18 interviewees' status and nature of department/professions in their firms

CEO		Chief Engineer		Control Officer		Supervisor		Chief Architect		Other		Total	
No	%	No	%	No	%	No	%	No	%	No	%	No	%
2	29	2	29	1	14	1	14	1	14	-	-	7	100

Source: Researcher's field work (2018)

5.9.2 Involvement in design, construction and quality monitoring of buildings

Table 5.18 further shows that the interviewees were drawn from design, construction, and quality management teams respectively. Responses from the interviewees show that Quality department is involved in monitoring the quality of materials used and the output. It was equally noticed that some of their staff multi task. This means that some of them function in more than one department. This might pose a problem because productivity might be low.

5.9.3 Critical success factors of total quality management in your firm

The respondents were asked what the critical success factors of Total quality management for small and medium construction firm was. From the opinion of respondents, the most common of the critical success factor was management commitment. Others include Education and Training, Supplier quality management, Vision and Plan statement, Employee Empowerment, Recognition and Reward and Customer Focus. The majority of the interviewees agreed that these factors play a significant role in achieving effective implementation of TQM.

A respondent stated:

"I believe that having regular meetings with clients, being committed to work, creating a quality culture, providing regular training to improve employees and having quality planning are all considered as a great economic benefits to the firm and equally improve quality and, thus, customer satisfaction".

5.9.4 Benefits of total quality management implementation and relationship with competitiveness

The respondents were asked the benefits of applying a TQM system within your organisation and if it influences company competitiveness?

The results show that quality is very important for SMCFs because firms find that decisions made by clients are not based around price and, thus, the lowest bid does not always win; rather, the client decision is based on what else contractors can deliver. Therefore, in most cases, they do not want the cheapest contractor to come in and deliver poor quality and so, increasingly, contractors get tendering reviews and health and safety performance checks. The participants said that having a TQM system in place is more effective in terms of quality achievement in the short and long terms. Dealing with defects and rework costs organisations time, money, reputation and confidence in their employees and their system and, therefore, rework, correcting errors, reacting to customer complaints and missing deadline costs are higher than having a TQM system in place. A respondent commented on the benefits of total quality implementation as:

"When a quality system is in place it will help firms to achieve customer expectation which is likely to lead to repeat business with the same client and at the same time getting reference letters. Not just that, but also references that help companies to secure new clients, which is so important in terms of improving competitiveness, profits, enhancing company reputation and expanding market share".

5.9.5 Challenges to total quality management implementation

Given the current quality practices in the SMCFs under study, the respondents were asked to state the challenges or problems they have in implementing TQM in SMCFs.

The responses were diverse; ranging from poor capitalization, Poor management strategies, time consuming, lack of immediate results and attitude of workers. Nevertheless, the consensus of opinion among respondents was that management do not prioritise the issue of quality. Instead their aim is to make maximum profit from work executed even if they have to cut corners. Almost all the respondents agreed that inadequate trained personnel constitute a major challenge to the implementation of total quality management.

5.9.6 Total quality management evaluation practices and feedback mechanism

The respondents were asked to describe their key measures for judging the quality success of a new project after it has been completed. The interviewees gave a range of responses, but generally referenced informal feedback and communications from their firms. During the interview, it was clear that the respondents did not have any clear or systematic mechanism for measuring the successful implementation of total quality management.

5.9.7 Cost of total quality management

The respondents were asked if they believe that the cost of TQM implementation could be higher than failure of achieving quality in terms of rework, correcting errors, reacting to customer complaints, missing deadlines, and having deficient project budget due to poor planning.

Additionally, by adopting TQM, organisations try to improve quality by ensuring conformance to internal requirements and, thus, create constancy of purpose towards improvement of products

and services, with the aim to improve competitiveness and remain in business and thus provide jobs.

5.9.8 Summary of in-depth interviews

Many companies were applying some of CSF's for their organisations even without having a formal TQM system in place. They stated that, even though they do not have formal TQM, their main priority was maximising profits throughout the quality of the final project. They stated that customer satisfaction was an important element for their organisation which helped them to build their reputation in the Nigerian market.

The general conclusion that can be drawn from the interview segment of this study is that respondents rarely measure aspects of TQM. When they do, it is done in form of informal complaints and communications. Only one of the respondents has what appears to be a systematic way of collecting information regarding quality. Respondents generally seemed interested in a model for implementation of TQM. All the respondents agreed that they would use such a tool if available to implement and increase their competitive advantage. Inadequate trained personnel and low management commitment were listed as the major obstacles to the successful implementation of total quality management.

5.10 Summary of Direct Observations and Walkthrough Evaluations

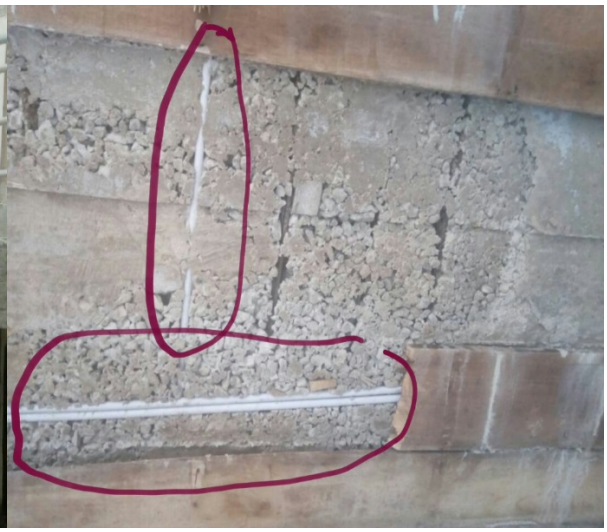
For privacy of the clients, the project's names were withheld. Direct observations and walkthrough evaluations carried out by the researcher on some of projects carried out by small and medium scale construction firms' showed a lot of poor quality works. There were exposed reinforcement bars in one of the sites. This indicated the absence of reinforcement cover (See

plate 1). There was a collapsed yet to be completed road which was likely caused by washout as a result of lack of adequate compaction and no embankment protection (See plate 2)

Poor formworks and casting were observed. This was likely due to improper formwork. The contractor used plank instead of marine plywood (See plate 3). Honey comb was noticed this was probably as a result of improper vibration and insufficient concrete cover (See plate 4)

The defects found at the column at an ongoing project were cracks. The crack is likely caused by poor quality expansion joints (See plate 5). Poor casting of the beam were observed which caused exposed reinforcements. The poor casting was probably caused by poor quality formwork (See plate 6). Major crack in a column was visibly noticed. It was likely caused by wrong placement of expansion joint material and using hardwood instead of particle board (See plate 7). When a beam was assessed, it was observed that there was honey comb on the beam. The likely cause was poor vibration when the beam was cast. From the above analysis, it can be concluded that the supervision being a vital key was not adequately done.

<u>Plate I:</u> An exposed reinforcement bar in a raking floor beam **<u>Plate II:</u> Collapsed yet-to-be completed road** ***(Sources: Researchers Field Work, 2018)***



<u>Plate III:</u> Poor forms and casting **<u>Plate IV:</u> An Exposed Electrical Pipe**

(Sources: Researchers Field Work, 2018)

Plate V: Major crack in a column of an ongoing project

Plate VI: Poor casting and exposed reinforcement

(Sources: Researchers Field Work, 2018)

Plate VII: Major crack in a column of an ongoing project **PlateVIII:** Poor concrete vibration on raking floor beam

(Sources: Researchers Field Work, 2018)

5.11 Model Development

A model is a simplified framework that is created to illustrate complex processes. It is a graphical, mathematical (symbolic), physical, or verbal representation or simplified version of a concept, phenomenon, relationship, structure, system, or an aspect of the real world (Muller, 2016). The objectives of a model include (a) to show the interrelationships (direct or indirect) and interrelationship of an action and reaction in terms of a cause and effect, (b) to facilitate understanding by eliminating unnecessary components, (c) to aid in decision making by simulating 'what if' scenarios, (d) to explain, control, and predict events on the basis of past observations.

Models are divided into three classes on the basis of their degree of abstraction (a) Iconic model: It is the least abstract, physical, 'look-alike' representation of some specific entity, such as a model airplane or train or house. (b) Analogue model: more abstract but having some resemblance to what it represents, such as a chart, graph, map, network diagram.(c) Symbolic model: most-abstract model with no resemblance but only an approximation to what it represents, such as a mathematical equation or formula, financial statement, language, and set of accounts (Stanley, 2017). In the context of this research, the total quality model developed falls into the class of an analogous model.

5.12 Basis for the Development of TQM Model for Small and Medium Scale Construction Firms in South-East Nigeria

In this twenty-first century competitive world, construction companies face the challenge of providing quality works to their clients to sustain their competitive advantage. Hence, there is the need for the principles of TQM in small and medium scale construction firms in South-

East Nigeria to improve the quality of works. The first step towards this feat is to adopt a simple systematic framework to guide all stakeholders in the construction industry.

TQM implementation is a never-ending exercise and a very challenging task that calls for a well-structured pragmatic approach (Harrington and Voehl, 2012). TQM provides a holistic framework for the operational activities of construction enterprises.

This chapter therefore seeks to propose a framework that will guide small and medium construction firms in South-East in the implementation of TQM Principles. The proposed framework is based on the literature review and the analysis on critical success factors, SWOT and competitive advantage). All levels of management must be on board for the program to be truly successful. Any lack of effort or resources will undermine the success of a TQM program, causing negative ripples throughout the company.

5.13. Factor Analysis

A principal component analysis to establish factorial validity and to confirm whether. Principal component analysis showed that the factors were logic and reflected accurately what was intended to be measured. The principle components extraction with varimax rotation was used to identify factors with eigenvalues of at least one in order to obtain more easily interpreted factor loadings.

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.893
Bartlett's Test of Sphericity	Approx. Chi-Square	6120.300
	Df	45
	Sig.	.000

The table shows that the Principle component analysis (PCA) can confidently be conducted since the Kaiser-Meyer-Olkin Measure of Sampling Adequacy value is 0.893; higher than the minimum. Then the Bartlett's Test of Sphericity has a p – value of 0.000. With the above, we move ahead to do the PCA for the critical success factors.

Communalities

	Initial	Extraction
Leadership and top management commitment	1.000	.948
Customer Focus	1.000	.961
Continuous Improvement	1.000	.958
Employee participation	1.000	.960
Recognition and Reward	1.000	.259
Training	1.000	.784
Quality Culture	1.000	.617
Communication	1.000	.542
Performance Measurement	1.000	.966
Strategic Planning	1.000	.956

Extraction Method: Principal Component Analysis.

Table 5.19

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.953	79.528	79.528	7.953	79.528	79.528
2	.806	8.058	87.586			
3	.711	7.114	94.700			
4	.250	2.499	97.199			
5	.143	1.431	98.630			
6	.049	.490	99.119			
7	.038	.382	99.501			
8	.021	.213	99.714			
9	.019	.188	99.903			
10	.010	.097	100.000			

Extraction Method: Principal Component Analysis.

We can see that total variance explained by the PCA is 79.528%; that is the Principal Components Analysis was able to explain about 79.528% of variations in the critical success factors.

Component Matrix[a]	
	Component
	1
Performance Measurement	.983
Customer Focus	.980
Employee participation	.980
Continuous Improvement	.979
Strategic Planning	.978
Leadership and top management commitment	.974
Training	.886
Quality Culture	-.786
Communication	.736
Recognition and Reward	-.509

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

From here, we see that the critical success factors increase with increasing performance measurement, followed by customer focus and employee participation (they increase at the same rate), after the follow continuous improvement, strategic planning, leadership and top management commitment, training, then with decreasing quality culture, communication and recognition and reward.

5.14 The TQM Model for Small and Medium Scale Construction Firms in South-East Nigeria

One of the objective of this study is to postulate the development of TQM model for SMCFs for efficiency and sustainability in service delivery. .The total quality management model will thus, be a road map or framework for successful implementation of total quality management for small and medium scale construction firms in south east Nigeria, which is ultimately aimed at improving service delivery and competitive advantage.

This new model focuses on the use of TQM critical success factors in the construction industry with a focus on TQM implementation impact on competitiveness (profitability, market share and quality services) towards improve customer satisfaction. Clearly the construction industry has much to gain from adopting TQM. In addition, SWOT analysis of the small and medium scale construction firms were taken into account in forming the new model. An outline and description of this model is illustrated in figure 5.7

The Total Quality Management model, as evidenced in figure 5.7 above, describes the relationship and operationalization of the variables identified from the analysis, literature survey and those based on the researcher's field work. This approach recognizes best practices identified in the study and can transform the current situation of the small and medium construction firms in South-East Nigeria to a more systematic way of improving competitiveness. The model is a holistic one; built around a combination, mix or harmony of the following perspectives:

5.14.1 Critical success factors of TQM

Effective implementation of Total Quality Management by small and medium scale construction firms in South-East Nigeria requires a strong commitment from all members of the organisations to the critical success factors. Thus identification of these factors is a key component of successful implementation of total quality management. This has been discussed in the literature review, see Section (2.4.1.1) and the result of the questionnaires and Interviews in section (5.6) and Section (5.9.3) respectively.

5.14.1.1 *Leadership and top management commitment*

Leadership and top management play leading role in driving the TQM implementation towards a successful conclusion. The degree of support and visibility that top management offers in implementing a total quality environment is fundamental to the successful implementation of TQM with construction organisations. The top management or leadership must be at the top of the quality hierarchy because without active participation from the top management, the TQM effort will fail. The commitment of leadership to the TQM strategy as shown in their daily

disposition to work will go a long way in motivating employees to deliver quality services that exceeds the expectation of customers.

5.14.1.2 *Continuous improvement*

Adoption of a continuous improvement approach in small and medium scale construction firms in South-East Nigeria requires not only upper administration commitment, but also uncovering the current underlying culture and examining the appropriateness of the objectives to adopt continuous improvement. There should be continuous improvement in all the process of production, from the levels of planning and decision making to the execution of work by the frontline staff. It will help to identify and eliminate the cause of a mistake in order to prevent its reoccurrence. The focus on continuous improvement will lead to the formation of formidable team.

5.14.1.3 *Quality culture*

Within the TQM culture a co-operative and open culture has to be created by the organization management in which all the employees have to be made to feel that all of them are responsible for satisfying the organization's customers. They are going to feel and consider this only if they are involved in the development of the vision, plans and strategies of the organization. In addition, the work culture must be very conducive. There should be an active interaction amongst the peers and support from supervisors.

5.14.1.4 *Customer focus*

It is necessary for organisation to maintain a close link with their customers in order to know their requirements and to measure how it has been successful in meeting up to customers' requirements. TQM require organisations to develop a customer focused operational processes

and at the same time committing the resources that position customers and meeting their expectation as an asset to the financial wellbeing of the organisation.

5.14.1.5 *Training*

Results from the survey prove that formal training is not a regular exercise done in the small and medium scale construction firms in South-East Nigeria. Training equips people with the necessary skills and techniques of quality improvement. Training programme should not be seen as a onetime event but a lifelong process. Through training, employees are able to identify improvement opportunities as it is directed at providing necessary skills and knowledge for all employees to be able to contribute to ongoing quality improvement process of production. Training helps individuals and organizations to improve for quality, competitiveness, productivity, incoming changes and seek out future ideas. Most organizations have excellent training policies and facilities for employees but when sales are down, the organizations may carry out cost-netting exercises and may see training as luxury.

Staff should be encouraged to attend seminar or conferences so as to be able to keep abreast of current development; The choice of most appropriate methods of training must be given consideration; the method elected will depend on the needs of the organization, employees and technological changes; there should be clear set of objectives and defined policy for training and the criteria used for selecting training participants should be carefully designed and publicized within the organization.

5.14.1.6 *Employee participation*

The study reveals that employee involvement though considered to have influence in business performance of the firm has not been given the required level of attention. This affects the

business performance in their organization, since the organization has attained the expected environment where employees can absolutely, freely, openly discuss problems and issues; share knowledge and experience; actively seek opportunities to enhance their competence, knowledge and experience; valuate their performance against their personal goals and objectives; accept ownership of problems and their responsibility for solving them; and understand the importance of their contribution and role in their firms

Employees at all levels are the essence of an organization and their full involvement enables their abilities to be used for the organization benefit. Motivated, committed, and involved employees within the organization; innovation and creativity in furthering the organization's objectives; employees being accountable for their own performance; and employees eager to participate in and contribute to continual improvement, is considered to be the outcome of employee involvement in the organization.

5.14.1.7 *Strategic planning*

Strategic Planning deals with ways to achieve organisational goals and objectives leading to long term performance of the company. Involving a critical look at the whole business, deciding which way the company will head, and what actions management will take, so that the company will get there or rather achieve the set goals. Hence, questions such as; what do we set out for? Where are we? Where should we be? What is our strength? What are our weaknesses? All these are required to be adequately answered. Firms that adopt strategic planning predict unfavourable circumstances and apportion capital consequently. Strategic planning should be used to plan, develop and implement strategies that should result in improved customer and employee satisfaction.

5.14.1.8 *Communication*

Total quality managers use effective communication to enlist the support of other employees, towards achieving corporate objectives. When an organization's vision is communicated to its entire employees, the whole picture, the path, the future, and everything about the ultimate goal is made known, the organization moves systematically towards total customer satisfaction, rapid rates of improvement and world-class levels of performance. Communication is so important to the extent that quality objectives are stated in the business plan in the same way that costs and schedules are' included. Communication is an essential prerequisite for employee improvement, as information IS required to make meaningful and correct decisions.

Communication with the customer is also an essential part of TQM as the feedback is required to know what exactly the customer expects as well as to measure customer satisfaction. Providing a quality service or product to the customer, and good communication, are inextricably linked. Listening to your customers, whether internal or external, is a founding principle of quality".

5.14.1.9 *Recognition and award*

To effectively support organizational quality efforts, firms need to implement an employee compensation system that strongly links quality and customer satisfaction with pay. Rewards for quality appear to have a positive relationship with employee morale. Recognition and reward activities are valued by employees, and therefore provide motivation or incentives. Giving public visibility to quality efforts that identify and remedy problems sends a strong message that such efforts are a valued part of employees' contributions to the firm. Recognition is a motivator, which can contribute to employee satisfaction when it is present. Besides monetary reward,

today's employees require reinforcement of a sense of accomplishment in their jobs and the positive recognition that they are personally contributing to achievement of firm goals. Promotion can have positive effects on employee satisfaction. Effective recognition and reward activities can make employees commit to their jobs and make their jobs more enjoyable.

Firms should institute a serious recognition and reward program which must be consistent with organizational values and objectives. If individual or team efforts cannot contribute to the realization of the overall organizational objectives, they cannot be recognized and rewarded. Therefore, objectives of individuals or teams need to be continuously reviewed and updated. Also the program should be approved by the workers' congress and strictly implemented. Otherwise, recognition and reward activities cannot effectively stimulate employee commitment, enthusiasm, and creativity. Finally, recognition and reward can be provided at several levels: Individual, team, department, or business unit.

5.14.1.10 *Performance measurement*

It is important for organisations to have a comprehensive and balanced view of their performance, lest they focus on the short term and the wrong issues. There should be a metric used to quantify the efficiency and/or effectiveness of an action. This should be achieved through key performance indicators (KPIs) in order to be able to take corrective actions to keep the organisation on track. The performance measurement system encompasses the process of setting goals, developing a set of performance indicators, after which performance data can be collected, analysed and interpreted. The objective of this process is to use this information to assess the effectiveness and efficiency of actions that are undertaken involving management and employees in a dialogue and communication on organisational improvements

Performance measurement is thus considered critical for effective and efficient control and correction of a business. Moreover, the system also communicates strategic intent and importance to the rest of the organisations in terms of what is and is not being measured. By measuring and evaluating the current level of performance via the performance indicators, the progress towards goals can be monitored.

5.14.2 Strength and opportunities of a small and medium scale construction firm

For small and medium scale construction firms to stand in the market, it is necessary for them to face new challenges by adopting proper strategy. SWOT (Strength, Opportunity, Weakness, and Threats) analysis is one of the techniques used to undertake a more structural analysis to formulate the best strategy. The purpose of conducting a SWOT analysis is to capitalize on a company's strength, minimize any weaknesses, exploit market opportunities as they arise and avoid, as far as possible, any threats.

The aim of SWOT analysis is to identify the extent to which the current strategy of an organization and its more specify strength and weakness are relevant to, and capable of dealing with the changes taking place in the business environment. Every unit must be aware of their Strength, Opportunity, Weakness and Threats. From the study it was observed that there is an increasing relationship between critical success factors and issues considered to be of advantages to firms. This implies that as the CSFs are increasing, the strength and opportunities of small and medium scale construction firms in South-East Nigeria will equally be significantly increasing. Effects should be made to implement the critical success factors so that the strength and opportunities of the firms will increase whereas the weakness and threats will equally reduce since to succeed in any field, weakness must be overcome through strength and threats must be transferred into opportunities.

5.14.3 Competitive advantage

From section 5.7, it shows that there is a significant relationship between implementation of TQM and competitive advantages. This indicates that when the total quality management are implemented the competitive advantage will increase. The competitive advantage which include profitability, market shares and quality service. The organization focuses on customer needs; it focuses on understanding current and future customer needs. Similarly, increased revenue and market share obtained through flexible and fast response to market opportunities is considered to be an outcome of customer focus in the organization. In addition increased use of the organization's resources to enhance customer's satisfaction, and improved customer loyalty leading to repeat business is considered to be an outcome of customer focus in the organization.

Any organisation contemplating on identifying a sustainable source of competitive advantage should take a comprehensive analysis of its internal environment to identify its strength and weaknesses. Quality product and services ensure not only the customer's future return but also fewer complaints and lower warranty costs. Higher profits improve reputation and hence increased market share. Quality in constructed facilities is one of the factors that determine clients' satisfaction. Furthermore, only clients who are fully satisfied with the quality of constructed facility would be willing to do repetitive work with the same contractor or would be willing to refer other clients to such a contractor. By achieving high quality in constructed facilities, small and medium construction firms in South-East Nigeria are able to secure repetitive works thereby improve their competitiveness and market share. This explains why they rated achieving high quality in constructed facility as a great way for gaining competitive advantage in the Nigerian construction market.

5.14.4 Customer satisfaction

A successful project occurs when the contractor knows that customer satisfaction is the ultimate goal of TQM. Most organisations know throughout its ranks that the purpose for all efforts at work is to please the customer better. This implies that organisations must know through feedbacks and measurements how the customer views their product. There are internal and external customers in every organisation. Internal customers are the process owners within the organisation and external customer is the final user of the constructed work. The key factor to ensure customer satisfaction is in knowing, understanding and meeting the clear and realistic objectives of the customer.

For companies, customer satisfaction is emphasised to gain competitive advantages, to differentiate themselves from competitors, but it is also an effective way to improve quality by using various approaches in developing and monitoring products and offering services to improve customer relationships. By addressing and understanding client needs and expectations, anticipating their evolving interests, and establishing a communication network with clients, organisations can overcome their competitors and improve their market-share and, thus, customer satisfaction is directly related to company success and quality improvement.

5.15 SWOT Analysis of the New Model

5.15.1 Strengths

- This is the first model to be developed to assess the TQM implementation in small and medium scale construction in South-East in Nigeria.

- This model was built not only by considering the internal environment in construction companies, but also the role of external factors that affect TQM implementation.

- This model is based on the common critical success factors of TQM implementation, based on evaluating TQM guru beliefs, quality awards and the literature review.

- It shows the positive effects of TQM implementation on company competitiveness as one of the major concerns for small and medium construction firms in South-East Nigeria to be able to compete with the counter parts in other parts of the country and large construction firms operating in Nigeria.

- This model can be implemented in different States of the South-East with the same culture and business environment.

- Give valuable insights into the organisation's strengths, weaknesses, opportunities and threats; its overall strategic position in the market -place;

6.15.2 Weaknesses

- This model was built for small and medium scale construction firms in South-East Nigeria which may limit the model and might mean that it cannot to be used by other small and medium construction firms in other parts of Nigeria.

- This model was not been tested as a result, it purely an academic Model.

6.15.3 Opportunities

- It is expected that model will assist in re-engineering and restructuring small and medium construction firms in South-East Nigeria to be able to have confidence and compete favourably with their counter parts in other regions.

6.15.4 Threats

- Because South-East Nigeria faces rapid changes in its economic, social, legal and business environment, this model might be limited to the current economy and business environment.

CHAPTER SIX

SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSION AND RECOMMENDATIONS

This chapter provides the summary of key findings of the research, discussions, conclusions, recommendations, contribution to knowledge and suggestions for further studies with particular reference to the aim and research objectives.

6.1 Summary of key Findings

(1) Majority of construction firms in South-East Nigeria are medium size companies (Table 5.

(2) Quality improvement programme is very important for any construction firm to survive (table 5.5)

(3) Majority of quality improvement programme that is being adopted by small and medium construction firms in South-East Nigeria are quality control / quality assurance (Table 5.5)

(4) TQM is presented differently in different points of view, as there is no general and formal definition of TQM which can fit or be implemented in all organisations within all sectors (Section 5.4.2)

(5) Majority of staff and management of small and medium scale construction firms in South-East Nigeria are aware and understand the concept of total quality management (Figure 5.6, 5.7)

(6) The level of implementation of total quality management in small and medium construction firms in South-East Nigeria is low (slightly below average) (Table 5.6, 5.7).

(7) The major critical success factors of total quality management by small and medium scale construction firms in South-East Nigeria are leadership and top management and strategic planning (Table 5.8, 5.14.1.1).

(8) There are various benefits of implementing total quality management in small and medium scale construction firms In South-East Nigeria. The major one by the work is Client's satisfaction. others include ensures continuous improvement, enhances efficiency , improves materials and service input and promotes effectiveness (Table 5.4 and section 5.9.4)

(9) Challenges to the implementation of total quality management in small and medium scale construction firms in South-East Nigeria were discovered. These include Poor capitalization, poor management strategies, time consuming and lack of immediate results (section 5.9.5).

(10) Customer Satisfaction is an important element for organization which has helped to build their reputation in the Nigerian market (5.9.8).

(11) The main strengths of small and medium scale construction firms in South-East Nigeria are Small start-up and operating capital and locational flexibility and lower overhead while the opportunities are New Business technologies and high speed of construction industry development (Table 5.9).

(12) The main weakness of small and medium scale construction firms identified include Poor capitalization and lack of procedures for monitoring quality while the threats include

strong competition from the large firms and excessive corruption and lack of transparencies (table 5.10)

(13) The Null hypothesis for hypothesis two was rejected implying that there is a relationship between the identified critical success factors and competitive strategies in small and medium scale construction firms in South-East Nigeria. There is an increase in strength and opportunities and a decrease with weakness and opportunities (Table 5.11 and table 5.12)

(14) Using regression equation, the relationship between level of implementation and competitive advantage is level of implementation = 0.574 measures of competitive advantage.

(15) The three (3) major competitive advantages in small and medium scale construction firms in South-East Nigeria include price, market shares and quality services (Table 5.13)

(16) In Hypothesis three, the Null hypothesis was rejected indicating that there is a significant relationship between application of total quality management and competitive Advantage (Table 5.13, 5.14)

(17) In Hypothesis four, the Null hypothesis was rejected indicating that there is a significant impact of SMCFs' strategies on competitive advantage (Section 5.8). The strength and opportunities impact positively while the weakness and threats impact negatively.

(18) There is presently no clear or systematic mechanism for measuring the successful implementation of total quality management by small and medium scale construction firms in South-East Nigeria (5.9.6).

6.2 Discussions

This research is based on the development of total quality management model for small and medium scale construction firms in South- East Nigeria for a competitive advantage. The research explored quantitative method of data generation which comprised the design, pre-test and administration of structured questionnaire to staff of small and medium construction firms in 3 South-East states (Abia, Ebonyi and Enugu State). This was followed by qualitative instruments like interviews and direct observation which were used to generate important constructs from the target population. Data and information obtained from the quantitative research instruments were used to test the hypotheses postulated by the researcher.

The comprehensive literature review of the TQM concept in chapter two reviews the theoretical framework which is anchored on the TQM theories, system theory, company competitiveness theory and conceptual framework. Chapter three discussed the current state of knowledge by reviewing previous relevant literatures in the fields of evolution of TQM, The implementation of TQM in the construction industry and the critical success factors of TQM and SWOT analysis of SMCFs in Nigeria analysed. It continues the literature review by appreciating the interrelationship between SMCF, TQM and competitive advantage. A comparison of quality gurus such as Deming, Juran, and Crosby and quality awards (the Deming Prize, MBNQA, EQA, Pride in Job and Charter Mark awards) were discussed to understand the TQM requirements and critique.

It was great to discover that total quality management concept was understood by majority of the staff however when the level of implementation was analysed, it was discovered that it was low. No wonder Dale *et al*. (2000) found that the lack of success of TQM is not as a result of the concept but rather the way it had been introduced into an organization and used by managers; it

is expected that many fundamental mistakes will be made by senior managers in additional to their advisers in issues related to communication, training, infrastructure, teams and projects, involvement, problem solving, and measurement. Effective implementation of TQM practices helps to increase the quality and services of the organization (Geralis and Terziovski, 2003 and Gilbert and Prhizgari, 2000). Its importance should be stressed in every firm and a framework should be used to help its implementation and a systematic mechanism for measuring the successful implementation should be adopted.

Some of the key advantages of TQM arising from this research show that it ensures clients satisfaction which had the highest mean score (M= 4.79, S.D. =.518). This result is consistent with the study by Hellsten and Klefsjö (2000), where it was established that TQM is Client Focus. Also it was discovered that it ensures continuous improvement (M= 4.67, S.D. =.618). No wonder Hill (2008) considered TQM as an approach of continuous improvement in all quality aspects of the whole processes, goods, services and employees within the firm.

SWOT analysis of small and medium construction firms in South-East Nigeria was carried out. The results shows that the main strengths are small start-up and operating capital had the highest mean score (M= 3.84, S.D. =1.343). This result is consistent with the study by Mukras (2003),who said that SMEs in Nigeria are characterized by high labour intensity and ease Locational Flexibility was ranked second with mean score (M= 3.79, S.D. =1.41)While the opportunities are new business technologies and high speed of construction industry development. In the same frame the result of the weakness showed Poor capitalization with mean score (M= 3.99, S.D. =1.289) and lack of procedures for monitoring Quality (M= 3.92, S.D.

=1.240) while the threats include strong competition from the large firms and excessive corruption M= 3.98, S.D. =1.272) and lack of transparencies (M= 3.96, S.D. =1.20).

The result of this research also identified various critical success factors of total quality management. The one that has the highest rank is leadership and top management commitment. The commitment of leadership to the TQM strategy as shown in their daily disposition to work will go a long way in motivating employees to deliver quality services that exceeds the expectation of customers. Next is customer focus as such it is necessary for organization to maintain a close link with their customers in order to know their requirements and to measure how it has been successful in meeting up to customers' requirements. This is followed by strategic planning. Small and medium scale construction firms in South-East Nigeria should take a critical look at the whole business, deciding which way the company will head, and what actions management will take, so that the firm will get there or rather achieve the set goals.

Furthermore, the results indicates that formal training is not a regular exercise done in the Small and medium scale construction firms in South-East Nigeria. Training programme should not be seen as a onetime event but a lifelong process. Through training, employees are able to identify improvement opportunities as it is directed at providing necessary skills and knowledge for all employees to be able to contribute to ongoing quality improvement process of production. It is argued to be a powerful building block of business in the achievement of its aims and objectives (Stahl, 1995 in Adediran and Adediran, 2008). The training can be through seminar or conferences which helps to keep abreast of current development.

The research findings further indicate that most of the prevalent challenges the firms encounter while implementing total quality management include Poor Capitalization, Poor Management strategies, time Consuming and lack of immediate results. In some firms they believe that it is wasting fund not knowing that the cost of quality is lower than failure of achieving quality in terms of rework, correcting errors, reacting to customer complaints, missing deadlines, and having deficient project budget due to poor management. Some of the firms are impatient to see the result that its implementation will bring. What they are after is their immediate gain. What they don't know is that if client is satisfied with your output, the client will definitely patronize you again and may even recommend you to other clients.

The research findings showed that there is an increasing relationship between critical success factors and SMCFs' strategies of the firms (correlation is a high positive correlation of 99.7%). This implies that as the CSFs are increasing, the strength and opportunities of small and medium construction firms will equally be increasing. Finally another finding indicated that there is a significant relationship between application of Total Quality Management and competitive Advantage (Price, Market Shares and Quality Services) This finding clearly supports what Dale *et al*. (2001) stated that adoption of TQM has become widespread among organizations during the last decades as it has been recognized as a major source of competitive advantage and long term profitability.

6.3 Conclusion

TQM has shown that it is a strategic tool for an organization to employ in the quest to remain competitive as such must be taken serious. If adequately deployed, the principle brings about added value to an organization in terms of efficiency in operation, employee satisfaction, customer satisfaction, and even profitability. The finding also revealed that small and medium

scale construction firms in South-East Nigeria are still lacking behind in TQM implementation. Small and medium construction firms intending to implement TQM, need an approach better tailored for the small organisation context, and focused on changing process.

The idea behind the implementation of TQM is to ensure that adequate attention is given to quality so as to give room for an error free transactional process and less room for customer complaints while maximizing customer satisfaction. The synergy among the TQM factors brings about exceptional or crucial improvements in the firm performances. In addition, their strengths and opportunities are increased by implementation of total quality management while their weakness and threats are reduced. This shows that correct implementation of total quality management improves a firm generally. It is proven that satisfied customers continue to patronize based on the trust built over time and are more willing to recommend quality service to others as shown in this research.

Effective implementation demands that management must show sustained commitment to TQM and provide suitable working environment that will promote the desirable organizational culture. Adequate employee empowerment and well-coordinated teamwork and through constant training and retraining of employees are other critical elements that will ensure that quality of customer -focused goods and services are continuously improved to meet the needs of present and future customers. Full implementation of TQM will ensure sustained profitability and increase the organization's asset base and market share, thereby averting corporate failure.

Conclusively, there is need therefore, to bear in mind that, it is virtually impossible for any small and medium scale construction firm to reap the numerous benefits of total quality

management, except the entire firm embraces a guide to total quality management implementation and are committed to making it work. It is expected that the results of this research will adopt a holistic model for efficient implementation of total quality management among small and medium construction firms in South–East Nigeria in other to achieve competitive advantage. The model should however be applied with caution since it is purely conceptual or hypothetical and has not yet been validated.

It is expected that the results of this research will assist in re-engineering and restructuring small and medium scale construction firms in South-East Nigeria to be able to have confidence and compete favourably with their counter parts in other regions and the research will also contribute in no small way in increasing the quality level of construction projects that are executed in South-East of Nigeria.

6.4 Recommendation

Based on the findings of the research, the following recommendations are made as effective, efficient and sustainable ways of improving and implementing total quality management in service delivery by small and medium scale construction firms in South-East Nigeria.

a) Small and medium construction firms need a cultural change which cannot be achieved without changes to norms, beliefs and values. Change should not be immediate or of excessive concern, and the focus has to be upon changing the organisational core strategic issues. Otherwise that will cause an extreme variation in organisational performance.

b) Small and medium scale construction firms should embrace a degree of transformational change by adopting a customer focus strategy instead of a price focus strategy. The

change should be driven by shifts in organisational strategy and redefining the organisational mission and core-values.

c) Understanding the concept of quality is not enough for meeting customer requirements. Therefore, it is important that the client's construction company should focus so as to understand their processes and end results which can be achieved by creating systematic processes for their activities that in turn facilitates achieving the quality that meets customer's requirements.

d) All stakeholders in the industry need to understand the importance of quality standard and inculcate it throughout the design phase of projects and not just at the actual construction phase. In addition, construction companies have to keep in mind that there is a direct line between poor quality and defects from one side and reputation and sustainability from the other side; therefore, quality is a very important for the construction industry.

e) The top management structure requires overhauling, since top management is very often not qualified to even understand the exact processes due in part to an inadequate qualification. Therefore, it is recommended that the top management be more educated and should continually update their knowledge by attending training courses that especially focus on the quality management concepts.

f) Top managers must be committed to quality and must communicate the importance of quality services throughout the organization.

g) There should be proper coordination among departmental and cross-functional teams to continually determine ever changing customer's requirements and to evolve strategies

that will ensure continuous improvement of the quality of goods and services to the satisfaction of present and future customers.

h) Adequate training should be given to all employees to improve their proficiencies in their tasks. With effective training, employees know the industry and the structure of the firm. In addition, effective training will improve employees' loyalty to the firm, motivation, and work performance. If employees are trained on producing reliable and high quality products and/or services, their full participation in the production stage would be more fruitful. Thus, customer satisfaction will increase and customer complaints will reduce.

i) Management needs to show faith in their employees and improve their work relations, while employees should be motivated and supported to make decisions regarding their work and be able to propose solutions related to work problems. Through improving project coordination and effective communication, workers must be motivated to improve their performance and skills.

j) The unwillingness of employees to seek improvement is due to a misunderstanding of the benefit of improvement and the fear of change. Therefore, it is recommended that employees be informed of any changes the company intends to make with a clear description of the aim of the improvement and the benefit employees will gain from this improvement or changes before being ordered to implement them.

k) It appears that employees are afraid to complain or suggest anything to the upper management due to fears of losing their job. Therefore, it is essential to understand that the management's role is to reduce such fear and provide a safer environment for their employees to openly suggest and propose their opinions. This could be done by

providing complains and suggestions boxes to allow employees or workers to express their complaints and suggestions without identifying their identity.

l) Enforcement of quality standards must be given urgent attention and those that will be appointed to enforce quality must be professionals with integrity.

m) The government being the major client of the construction industry should come up with an award for excellence for quality construction to deserving organisations. This will serve as an incentive for conforming to quality standards in various areas of the construction industry.

n) Prospective building owners should insist on assessing the quality performance of contractors before awarding a contract, this will motivate contractors to improve and document their quality management procedures in order to be competitive and maintain a continuous flow of business. Quality and not lowest competitive bid should be a major criterion in the selection of contractors.

o) Small and medium construction firms in South-East Nigeria should make concerted efforts to adopt the Total Quality Management model, developed in this study for competitive advantage and effective service delivery.

6.5 Contributions to Knowledge

The key contributions to the body of knowledge in this research include:

1. Creating an understanding of total quality management model in South-East Nigeria. The subject of Total quality management had received little attention among researchers in South-East Nigeria. There was a gap in knowledge on quality standards in these firms. This research is considered to be the first study researching TQM in small and medium

scale construction firms in South-East Nigeria thus far and it will, therefore, provide valuable knowledge to them when applying TQM tools and techniques, by helping them to overcome the several barriers stopping them from implementing the TQM tools and techniques.

Findings may also be generalized to reflect quality assessment practices in other developing countries particular those in sub-Sahara Africa.

2. The study provides a critical analysis of different models to get their success factors in Nigeria especially in South-East of Nigeria. This knowledge presents top stakeholders basis for developing future programs and interventions aimed at improving quality assessment in South-East Nigeria.

3. Development of a conceptual Total Quality Management model for small and medium scale construction firms in South-East in Nigeria will ensure efficiency and effectiveness and for competitive advantage and effective service delivery. Thus this model is to be used by SMCFs in south-east Nigeria since the findings will provide knowledge of the significant of practicing TQM, so as to improve organizational strategies and competitive advantages, which will create a competitive business environment in the Nigerian market leading to high quality services provided from the clients and final users. Below is the developed model:

6.6 Areas for Further Studies

1. Since this research is based on the development of total quality management model for small and medium scale construction firms in South-East Nigeria, another study could be carried out in other regions of Nigeria for reasons of generalization of findings. TQM implementation in a broader sampling frame covering the Middle East or Europe to ascertain whether the same practices are evident across countries of different cultures, education systems and economic climates

2. Furthermore, future studies could focus on more measures of competitive advantage and sustainability to estimate the impact of effective TQM. This will increase the reliability of the findings

3. Finally, the total quality management model developed in this research is purely conceptual, hence there is need to carry out another study to validate the model in order to ascertain its practical implementation.

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APPENDIX 1

QUESTIONNAIRE FOR SMALL AND MEDIUM CONSTRUCTION FIRMS IN SOUTH EAST NIGERIA

The questionnaire is an important aspect of an ongoing PhD Dissertation "Development of a Total Quality Management Model for small and medium construction firms in south east Nigeria" which aims at determining the level of implementation and appraise critical success factors. This is with a view to developing a model which the small and medium construction firms can adopt for competitive advantage and effective project delivery.

Please, your firm is among those selected for the study and your co-operation in answering the questions in this questionnaire, based on your experience is crucial to the success of the study. Therefore, your candid and prompt response will highly be appreciated.

This study is strictly an academic exercise, hence, every opinion, information or data you indicate will be treated confidentially. To preserve your anonymity, providing your name is optional.

Thank you very much for the anticipated cooperation and quick response. If you have any need for further inquiries, please contact me via the email below

Yours faithfully,

Alintah-Abel Uchechi, V.
(**Tel.** 08034645585; **Email:** uchevanessa@yahoo.com).

Section I: General Information

Please fill or tick (√) to indicate your response, as it applies to you.

1. Name of Respondent (optional)_____
2. Name of Construction Company you are working for_____
3. Which area of South-East are you_____
4. Gender Male ☐ Female ☐

Designation	☐ Employee ☐ Team Leader ☐ Builder ☐ Supervisor ☐ Engineer ☐ Management ☐ Others (please Specify) ……

Work Experience	☐ 1 – 5 years ☐ 5 – 10 years ☐ 10 – 15 years ☐ 15 – 20 years ☐ Over 20 years

Academic Qualification	☐ Diploma ☐ Bachelor Degree ☐ Master's Degree ☐ PhD ☐ Others (Please Specify)……

Number of Employees in the organization	☐ Less than 10 employees ☐ 10 - 49 employees ☐ 50 -99 employees ☐ 100 -149 employees ☐ 150 – 199 employees

Section II

Questions Related to the Concept of TQM

(1) Are you aware of TQ ☐ Please Tick ☐ YES NO

(2) How will you rate the following on a scale of 1 (don't know [DN]) – 5 (strongly agree [SA])?

	SA 5	A 4	SD 3	D 2	DN 1
Is a management philosophy to achieve the organizational goal					
It is an effective system to ensure production and service at the most economical levels that allow customer satisfaction					
It is an approach of continuous improvement in all quality					
It is a quest for excellence, creating the right attitudes and quality control management philosophy that promotes cost effectiveness and sustainable project quality to client satisfaction					
Is a management practice through the organization geared to ensure the organization consistently meets or exceeds customer requirements					
Note: **SA**= strongly agree; **A**=agree; **SD** = strongly disagree; **D** = disagree; **DN** = don't know					

(3) To what extent do you rate the following features of TQM Concept?

	SA 5	A 4	SD 3	D 2	DN 1
It enhances flexibility					
It promotes effectiveness					
Ensures continuous improvement					
Improves material and service input					
Clients satisfaction					
Enhances efficiency					
Note: **SA**= strongly agree; **A**=agree; **SD** = strongly disagree; **D** = disagree; **DN** = don't know					

(4) Is there quality control unit in y ☐ r firm? ☐ YES NO

(5) If not how have you been controlling your work? (Tick one that applies most)

☐ Always execute to standard ☐ Always test our material in approved organization

Questions related to level of implementation

(6) On the scale of 1 (Don't Know) – 5 (Strongly Agree), rate the extent to which you agree to the level of implementation of the following in your firm (please tick appropriately)

S/N	**Leadership and top management commitment and leadership**	SA 5	A 4	SD 3	D 2	DN 1
1	Top management actively participates in quality management activities					
2	Top management learn quality-related concepts and skills					
3	Top management empowers employees to solve quality problems					
4	Top management discusses many quality-related issues in top management meetings					
5	Top management focuses on product quality rather than yields					
	Customer Focus					
6	We actively and regularly seek customers input to identify their needs and expectations					
7	Customer needs and expectations are effectively disseminated and understood throughout the workforce					
8	Our firm involves customer in our product design processes					
9	We systematically and regularly measure customer satisfaction					
10	Quality-related customer complaints are treated with top priority					
	Continuous Improvement					
11	Company emphasizes improvement rather than maintenance					
12	My company emphasise the best implementation of continuous improvement process for all tasks at all levels					
13	The company compare customer satisfaction levels with that of competitors					
14	Company records are kept for future decision making and for the purpose of efficiency (learning from mistakes and identification of successful activities) and continuity					
	Employee Participation					
15	There is a sense of commitment among workers for the common good of the company					
16	Management meet employee regularly to update them on the progress or otherwise of the company					
17	Employees are actively involved in quality-related activities					
18	There is a conscious policy by management to ensure good working condition for employees					
19	Most employees suggestions are implemented after an evaluation					
	Recognition and Reward					
20	Our firm improves working conditions in order to recognize employee quality management efforts					
21	Our firm has salary promotion scheme to encourage employee					

	participation in quality management					
22	Position promotions are based on working quality in our firm					
23	Excellent suggestions are financially rewarded					
	Training					
24	Employees get training regularly to improve company outputs					
25	Employees receive regular health and safety training					
26	Adequate resources are arranged for employee education and training					
27	The company has scheduled employee training					
28	There is scheduled training for the further development of management					
	Quality Culture					
29	Our firm constantly adapt to cultural change to fit with the changes in the business environment					
30	There is an ongoing creation of quality awareness among employees					
	Communication					
31	Our company continually tries to improve communication					
32	Our company clearly communicates its strategies and goals with employees					
33	Employees receive regular feedback to make performance developments					
	Performance Measurement					
34	My company adopts a self-assessment system to improve performance					
35	Competitive benchmarking is made against primary competitors					
36	My company is tracking quality cost to reduce the cost of waste, rework and rejection					
	Strategic Planning					
37	We know our company mission					
38	Our firm has a comprehensive and structured planning process which regularly sets and reviews short and long-term goals					
39	Our firm incorporates the needs of all stakeholders when we develop our plans, policies and objectives					
40	There is a written statement of strategy covering all business operations which is articulated and agreed by our senior managers					
Note: **SA**= strongly agree; **A**=agree; **SD** = strongly disagree; **D** = disagree; **DN** = don't know						

uestions related to critical success factor

(7) On the scale of 1 (Don't Know) – 5 (Strongly Agree), rate the extent to which you agree the following to be the critical success factor of TQM the following (please tick appropriately)

S/N		SA 5	A 4	SD 3	D 2	DN 1

1	Leadership and top management commitment					
2	Customer Focus					
3	Continuous Improvement					
4	Employee participation					
5	Recognition and Reward					
6	Training					
7	Quality Culture					
8	Communication					
9	Performance Measurement					
10	Strategic Planning					
Note: **SA**= strongly agree; **A**=agree; **SD** = strongly disagree; **D** = disagree; **DN** = don't know						

(8) Are there other success factors that your firm has witnessed? Please Indicate

……

Questions related to SWOT

(9) Which of the following do you consider to be of advantage to your firm

S/N		SA 5	A 4	DN 3	D 2	SD 1
	Strength					
1	Small startup and operating capital					
2	Locational Flexibility					
3	Lower overhead					
4	Quickly respond to customers need in a flexible way					
5	High return of investment on successful project					
	Opportunities					
6	Low labour Cost					
7	Government new policies					
8	Regional peace process					
+9	High speed of construction industry development					
10	New business technologies (e.g. mobile/ tablet computing)					
Note: **SA**= strongly agree; **A**=agree; **DN** = don't know; **D** = disagree; **SD** = strongly disagree						

(10) **Which of the following do you consider to be of disadvantage to your firm**

S/N		SA 5	A 4	DN 3	D 2	SD 1
	Weakness					
1	Poor Capitalization					
2	Poor information Systems					
3	Poor Management Strategy					
4	Lack of Procedures for monitoring Quality					
5	Low managerial and technical Skills					

	Threats					
6	Government Laws and Regulations					
7	Discouragement on investments through credit terms & conditions of commercial Banks.					
8	Strong competition from the large firms					
9	Multiple taxes					
10	Excessive corruption and lack of transparencies					
Note: **SA**= strongly agree; **A**=agree; **DN** = don't know; **D** = disagree; **SD** = strongly disagree;						

Questions related to Competitive Advantage

(10) On the scale of 1 (Don't Know [DN]) – 5 (Strongly Agree [SA]), rate what will happen when TQM is implemented in your company (please tick appropriately).

	PROFITABILITY **Price**	**SA 5**	**A 4**	**DN 3**	**D 2**	**SD 1**
1	Financial performance will be outstanding					
2	Revenue (sales) growth will be outstanding					
3	Financial performance will exceed competitors					
4	Revenue growth will exceed competitors					
	Market share					
5	Firm's market share improve on implementation of TQM					
6	Market share will be higher than competitors after implementation					
7	Volume of sales will increase					
8	Customers are more satisfied with the products					
9	Share of distribution is more than the competitors					
10	Enter new Market, improve image of your company					
	Quality Service (Product Quality)					
10	Demand for the product will increase rapidly					
11	Firm's level of product quality is higher compared with competitors'					
12	Competition will be based on product or service differentiation and not price					
13	Improve Quality of Product/Service					
14	Increase your ability to innovate					
Note: **SA**= strongly agree; **A**=agree; **DN** = don't know; **D** = disagree **;SD** = strongly disagree						

(11) What suggestions would you propose to assist small and medium construction firms to improve their total quality management? *Please use separate sheet if necessary.*

Thank you very much for your valuable time.

APPENDIX 2

INTERVIEW GUIDE

Contact person.....

Firm.....

Phone No.....

To whom it may concern.

Sir/madam,

My name is Alintah-Abel Uchechi .V, a PhD research candidate at Nnamdi Azikiwe University, Awka, Anambra State. I am carrying out a survey on "Development of a Total Quality Management Model for small and medium construction firms in South East Nigeria" which aims at determining the level of implementation and appraise critical success factors. This is with a view to developing a model which the small and medium construction firms can adopt for competitive advantage and effective project delivery.

The purpose of this interview is to obtain your opinion and experience on total quality management implementation in small and medium firms, challenges, critical success factors and how the challenges can be solved. The interview is estimated to last between 45 and 60 minutes. Let me assure you that the information or data obtained through this interview and any documentation from you will be treated confidentially and that no records kept will bear your institution's name or your personal name. I would also like to seek your permission to record the interview using a tape recorder.

The questions are about your current practices and challenges hindering implementation of Total Quality Management.

1. What is your status and nature of unit/department responsible for the preparation and implementation of the Total Quality management?

2. What do you understand as best practices?

3. What is your firm's perception of quality?

4. Are there any existing policies in your firm which you use as a guide in the implementation of total quality Management? Yes or No.

5. Do you think that your firm is currently implementing total quality management? If yes, kindly state your reason(s). If no, suggest an alternative.

6. Do you think that your firm's implementation total quality management sufficiently? Yes or No.

7. What problems or challenges do you often face in implementation of Total Quality management?

8. Are there any measure or structure or mechanism in place established by your firm to monitor its implementation? If yes, briefly describe.

9. What are your firm's strength and opportunities that lead to successful implementation of total quality management?

10. What are your firm's weakness and threats that can hinder to successful implementation of total quality management?

11. In your opinion what are the critical success factors of total quality management in small and medium construction firms?

12. Have you ever received a client's complaints regarding quality of work? If yes, how do you get to hear of such complaints, and how did you handle it?

13. On a scale of 1% - 100%, how will you assess the implementation of the total quality management by small and medium firms in south East Nigeria?

14. What suggestions do you have for improving total quality management implementation by small and medium firms in South East Nigeria?

15. Is there any question you would like to ask me?

Thank you for sparing some time out of your busy schedule to make this meeting possible. I wish to also thank you for the insights I have gained from your rich experience which will help in compiling data for this research.