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ASSESSING QUALITY MANAGEMENT PRACTICES AMONG BUILDING CONTRACTORS IN THE WA MUNICIPALITY

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DECLARATION

STUDENT'S DECLARATION

I, SHAHID AHMED KHALID, declare that this dissertation, with the exception of quotations and references contained in published works which have all been identified and duly acknowledged, is entirely my own original work, and it has not been submitted, either in part or whole, for another degree elsewhere.

SIGNATURE: …….

DATE: …….

SUPERVISOR'S DECLARATION

I hereby declare that the preparation and presentation of this work was supervised in accordance with the guidelines for supervision of dissertation laid down by the University of Education, Winneba.

NAME: ENGR. MICHEAL K. TSORGALI

SIGNATURE……...…….

DATE…….

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DEDICATION

I dedicate this piece of work to Almighty God who made it possible for me to complete this work. I also dedicate this work to my dad Alhaji Khalid Dawda, my mum Baidua Khalid, my lovely wife Mrs. Janatan Shahid Ahmed, my brother Daud Khalid, my Sister Zakia Khalid and my lovely childrens Fatiaha Khalid and Faran Khalid, you bring me joy.

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ABBREVIATIONS

QM	Quality Management
QMP	Quality Management Practices
EFQM	European Foundation for Quality Management
MBNQA	Malcolm Baldrige National Quality Award
DAP	Deming Application Prize
JUSE	Japanese Union of Scientists and Engineers
IIP	Investors In People
PQP	Project Quality Plan
KII	Key Informant Interview
IG	Interview Guide
SPSS	Statistical Package for the Social Scientist

ABSTRACT

The concept of quality Management is not of recent origin. Quality management as a concept is meant to complement efforts to achieve the required level of quality for a product which is well planned and organized. From the perspective of a construction company, quality management in construction projects maintains the quality of construction works at the required standard. The aim is to assess quality management practices in the construction industries in Ghana. The current study explored quality management practices among contractors in the Wa Municipality with the view of highlighting the contributions to the quality of projects and how the practices can improve for better execution of projects in the Municipality. This study is empirical in nature and as a result analyses, describes and explains the issues relating to Total Quality Management Practices among contractors. It adopted a cross-sectional survey design collecting data from both primary and secondary sources. The results showed that male contractors dominate the construction industry in the Wa municipality. The results further showed that 73% of construction companies do not have quality management initiatives in place. Factors that affect quality management practices and quality of projects in the Wa Municipality include; lack of understanding of quality management practices, lack of resources, lack of systems and structures for quality management and lack of focus on client. But to improve the quality management and quality of projects, the recommends that top management need to acquire and update their knowledge on quality management and qualified human resource with knowledge in QM must be employed for quality improvement. The study therefore concludes that agencies or consultants responsible for ensuring quality must work to enhance quality management among contractors. The study recommends that agencies and consultants provide clear guidelines on quality management to contractors.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the Study

Across management literature (Tan & Abdul-Rahman, 2005; Agbenyega, 2014; Olatunji et al., 2012), quality management as a concept is meant to complement efforts to achieve the required level of quality for a product which is well planned and organized. From the perspective of a construction company, quality management in construction projects should mean maintaining the quality of construction works at the required standard so as to obtain customers‟ satisfaction that would bring long term competitiveness and business survival for the companies. Also, Olatunji et al (2012), noted that quality management often used in the construction industry mostly encompassing and embedded in the phenomenon itself and are concepts such as quality control, quality assurance, quality improvement, quality standards etc. The authors revealed that the earliest form of formal quality management practices in construction can be traced back to ancient Greece and Rome. In addition to the aforementioned, Harris and McCaffer (2001), opined that quality management practices include all the means employed by managers in an effort to implement their quality policies. These activities include quality planning, quality control, quality assurance and quality improvement.

Construction quality according to Battikha, (2002) is a critical factor in determining project acceptance and resultant contractual payment levels. This has made participants in the construction industry to become notably conscious of the role of quality as an essential means to achieve client satisfaction and gaining competitive advantage in the industry.

Kanji & Wong (1998), as cited in Hoonakker (2006, p.1) advanced the view that Quality management has increasingly been adopted by construction companies as an initiative to solve quality problems and to meet the needs of the final customer. As suggested by Oakland and Aldridge (1995, p.1) cited by Hoonakker et al (2010, p.953) „if ever an industry needed to take up the concept of Total Quality Management it is the construction industry".

Quality has remained in the forefront amongst factors used to determine the degree of success or failure of a project. This long term development has made it imperative for all parties involved in construction projects to strive at all times to produce commendable structures (Feigenbaum, 1993).

Naoum, (1994; 2007) cited in Olatunji et al (2012) indicated that performance on a global level represents results of activities undertaken. He proceeded further to explain that performance of a project is measured as its ability to deliver the building or structure at the right time, cost and quality as well as achieving a high level of client satisfaction. It therefore stands to reason that quality performance in construction is results oriented and seeks evidence of quality awareness within the operations and output of a building/construction team. Quality performance is also defined over the long term for the effect to be permanent Yasamis et al (2002).In other words, quality performance improvements are expected to increase the productivity and profitability of contractors as well as increasing client satisfaction.

1.2 Statement of the Problem

For the past five years, the Wa Municipality has experienced the collapse of buildings constructed by local contractors within the municipality which has been attributed to poor and shoddy works and the use of low quality materials. For instance, in 2016, a two-storey classroom block under construction at Fallahia JHS in the Wa municipality collapsed. Also, a number of private buildings have similarly collapsed killing people and destroying properties. Consequently, official consultants of the government AESL and A&QS Consortium have put in measures such as regular screening of tender documents, regular inspection of construction sites, materials and key personnel as well as safety certificate registration to ensure that contractors comply with quality management practices in their operations.

In the Wa Municipality, some contractors do not adhere to client specifications which usually led to shoddy workmanship. In fact, some contractors do not even use experts or consult their consultants before taking decision which have serious implications on the quality of the project. Also many studies on quality management have failed to adequately point out the importance, effectiveness and strategies of quality management practices in the buildings/construction industry. Especially in the Wa municipality, there are no studies on quality management practices among building contractors which many believed is affecting the quality of building projects in the municipality. The above situation clearly demonstrates the value of quality management on the performance of buildings/structures, which is very crucial in Wa municipality. It is against this background that this study seeks to explore quality management practices among contractors in the Wa Municipality with the view of highlighting the contributions to the

quality of projects and how the practices can be improved for better execution of projects in the Municipality.

1.3 Aim

The aim of this research is to assess the quality management practices of building contractors in the Wa Municipality.

1.4 Research Objectives

The objectives of the study are to:

1. Examine the various quality management practices adopted by building contractors in the Wa Municipality.
2. Identify the factors that affect quality management practices and quality of projects in the Wa Municipality.
3. Devise ways of improving the quality management practices of building contractors in the Wa Municipality.

1.5 Research Questions

The specific research questions that this study seeks to answer are as follows:

1. What are the quality management practices adopted by building contractors in the Wa Municipality?
2. What are the factors affecting quality management practices and quality of projects in the Wa Municipality?
3. How can the quality management practices of building contractors be improve in the Wa Municipality?

1.6 Significance of Study

The study is significant for the following reasons:

- In the first place, the outcome of this study will bring out the views of contractors on their quality management practices in the Wa municipality. This will help authorities and policy makers identify the factors resulting in poor quality of projects and the collapse of buildings in Ghana.
- The study will be of great significance to Building Contractors who wish to know the impact an effective Quality Management Practice with particular focus on Quality Assurance would have on their deliveries.
- The study is also significant as it will attempt to bring to light the various ways in which quality management and assurance can be improved for better projects in the construction industry within the municipality.

1.7 Scope of the Study

The study involved issues like the concept and meaning of quality management, quality management practices, factors affecting the construction industry and quality management, importance of quality management practices to the building industry and improving the quality management practices in building industry in the Wa Municipality.

1.8 Organization of the study

The study has been divided into five chapters. Chapter one of the study consisted of the background of the study, problem statement, research questions, aim and objectives, significance, limitation, delimitation and organization of the study. Chapter two has been treated as literature review. Here, the study reviewed literature on quality management

practices across the world with emphasis on the construction industry in Ghana and particularly among contractors in the Wa municipality.

A complete description of the methodology adopted to conduct the study is provided under chapter three. In this chapter, areas of concern included the research design, population of the study area, sample and sampling techniques, data collection techniques as well as the data analysis.

Detailed analysis and presentation of data have been treated in Chapter four (4). The final chapter as chapter five contains the major findings. It also presents the conclusion and recommendations emanating from the analysed data.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

This chapter discuses literature that is relevant to the current study. The chapter reviewed literature on the concept and meaning of quality management, Quality Management Practices (QMP) in the Construction Industry. It also involved factors affecting the Quality of Works in the Construction, Importance of Quality Management Practices to the Building Industry, Compliance with Quality Management Practices by Building Contractors, and Ways of Improving Quality Management Practices among Building Contractors were all discussed

2.2 The Concept and Meaning of Quality Management (QM)

The concept of quality Management is not of recent origin. In the 19th century, the concept was understood as the "inspecting products to ensure that they met standards and specifications" (Agbenyega, 2014; p22). According to ISO 8402 (1994), "quality" is the degree of excellence in a competitive sense. Sabah, (2011), indicated that the issue of quality became more statistical in nature during World War II where statistical sampling techniques were used to evaluate quality, and quality control charts were adopted to monitor the production process of many companies and projects. The idea and meaning of the concept was broadened in the 1960s to cover the structure of organizations and not the narrow production process. In that vein, the entire organization was responsible for ensuring quality across every product and component of the organization.

As the world embraced the concept, organizations were forced to hire consultants to develop quality management practices and programmes for their organization as well as train employees on quality management and quality control systems (Reid and Sanders, 2007). "Quality management" includes both "quality control" and "quality assurance", as well as the additional concepts of "quality policy", "quality planning" and "quality improvement". "Quality management" operates throughout the quality system (ISO 8402).

In recent times, the concept of quality management has been defined mean to all activities of overall management functions, particularly top management leadership, that determine quality policy objectives and responsibilities for all members of the organization. Ashokkumar (2014) noted that the quality of construction projects is determined by quality management. According to Oakland (1993), "quality management" is a way of managing an organization, a business, a project or a process to improve the effectiveness, flexibility and competitiveness. According to Hoonakker et al. (2010), quality management is important for the delivery of a project with zero defects. Similarly, scholars (Watson and Howarth 2011; Hoonakker et al., 2010; Kiuus and Williams, 2001; Turk, 2006; Ofori et al., 2002) argued that the practice of quality management has the potential to speed up projects and increase profitability. It can also help to satisfy clients, reduce the number of defects in projects, reduce rework, bring competitive edge for firm and help to complete project within budget, improve construction firm"s reputation, help firm get continued business or work from clients, improve schedule performance, improve relationships with the consulting architects and engineering firms, increase buildability factors of projects, increase efficiency in using materials, promote control of

suppliers and subcontractors, reduce inspection costs, contribute to an increase in product quality, improve workmanship and efficiency, decrease wastage, and improve organizational communication (Omojola and Olugboyega, 2016).

To achieve quality in any industry, a management system must be in place to coordinate the activities of the organization. Like in other industries, quality management is an important management system needed to be considered by construction firms in order to improve the quality of projects as well as improvement in the level of the performance of firms. Most often than not, it is required of any construction firm seeking to sustain itself in the current highly challenging and competitive construction market to develop comprehensive quality management system. ISO 8402 (1994) also explained that quality management system as the organizational structure, process, resources and procedure needed to implement quality management and that it involves the activities of the overall management function that determines the quality policy, objectives and responsibilities, and implement them by means such as quality planning, quality control, quality assurance and quality improvement.

Mane and Patil (2015), considered quality management system as quality planning, quality assurance and quality control. Hoonakker et al. (2010) noted that quality management system includes investing in people, ISO 9000, custom designed systems and third party certifications. Omojola and Olugboyega (2016), in a study noted that the construction industries in the developing countries have been struggling with quality issues for many years. They further noted that many construction firms have been wasting a lot of resources due to faulty construction of capital intensive projects.

Past experiences from construction, manufacturing and services industries have shown that the implementation of quality management programmes require a thorough understanding of a number of factors including organizational culture and the specific changes needed inculcate the issue of quality in the minds of organizational members (McNabb and Sepic, 1995; Souza-Posa et al, 2001).

2.2.1 Frameworks on Total Quality Management

Different organizations adopt various frameworks or models as a guide in the implementation of quality management practices or systems. In literature, three quality frameworks or models are often adopted by organization which include the European Foundation for Quality Management (EFQM), Malcolm Baldrige National Quality Award framework (MBNQA) and Deming Application Prize (DP). According to Llusaret et al (2009), the Malcolm Baldrige National Quality Award (MBNQA) and the the European Foundation for Quality Management (EFQM) are relevant operational frameworks suitable for assessing TQM initiatives across different industries.

2.2.1.1 European Foundation for Quality Management (EFQM)

The European Foundation created EFQM in 1991 for Quality Management. It is a framework against which applicants of the European Quality Award are judged and recognized for organizational excellence in European companies. There are nine elements made up of five (5) enablers and four (4) results as shown in Figure 2.2.

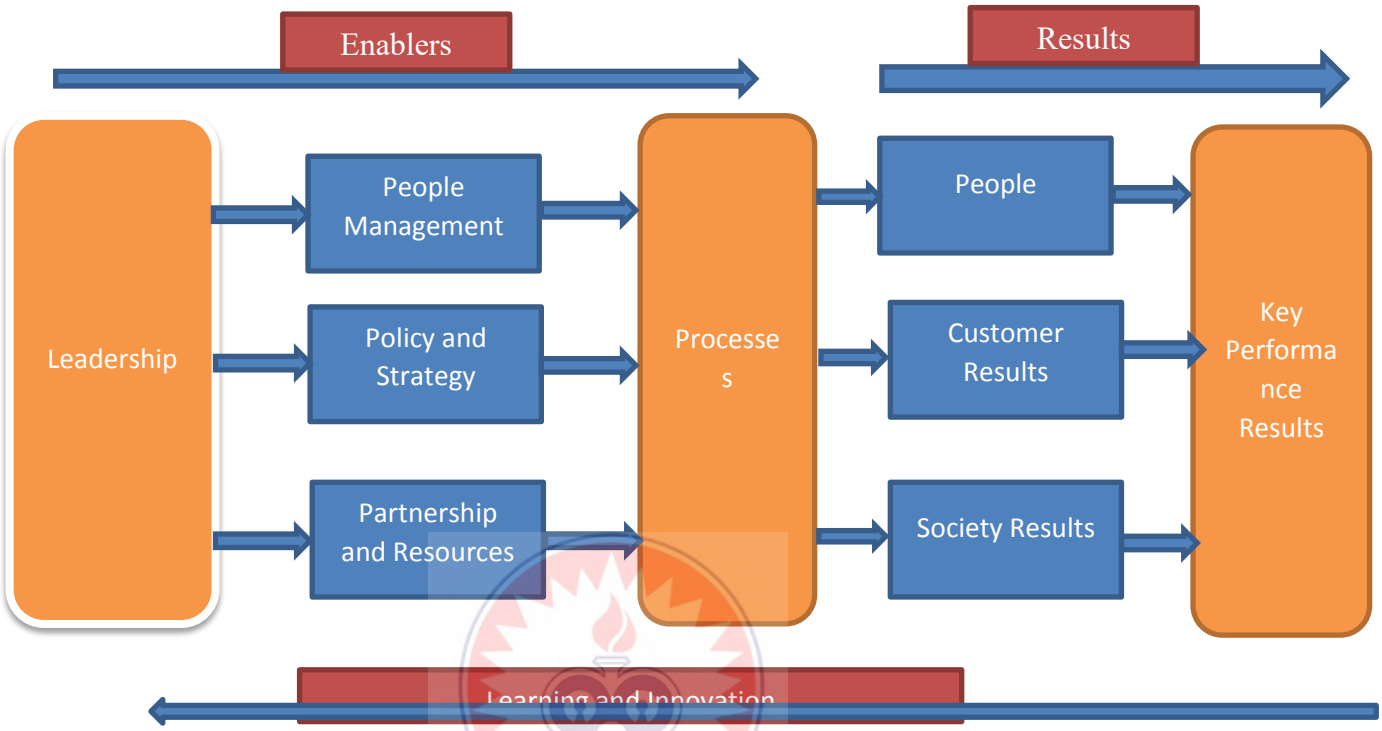

Figure 2.1: European Foundation for Quality Management

Source: EFQM (2010)

2.2.1.2 The Malcolm Baldrige National Quality Award (MBNQA)

The Malcolm Baldrige National Quality Award was founded in 1988 and it recognizes US organizations for excellent performance. There are seven (7) categories named as the main values in quality management. They are (1) leadership, (2) strategic planning, (3) human resources orientation, (4) process management, (5) information and analysis, (6) customer and market focus and (7) business results as shown in Figure 2.1. For organizations that intend on improving TQM, they assess themselves on these criteria in comparison with winners of MBNQA Awards.

Figure 2.2: Malcolm Baldrige National Quality Award (MBNQA)

Source: NIST (2009), Baldridge national Quality Program, http://baldridge.nist.gov/

2.2.1.3 Deming Application Prize (DP)

The Deming Application Prize (DP) model created by Japanese Union of Scientists and Engineers (JUSE) in 1951 is one of the highest awards on TQM in Japan. It was established in commemoration of the late Dr. William Edwards Deming who contributed greatly to Japans‟ proliferation of statistical quality control after the World War II.

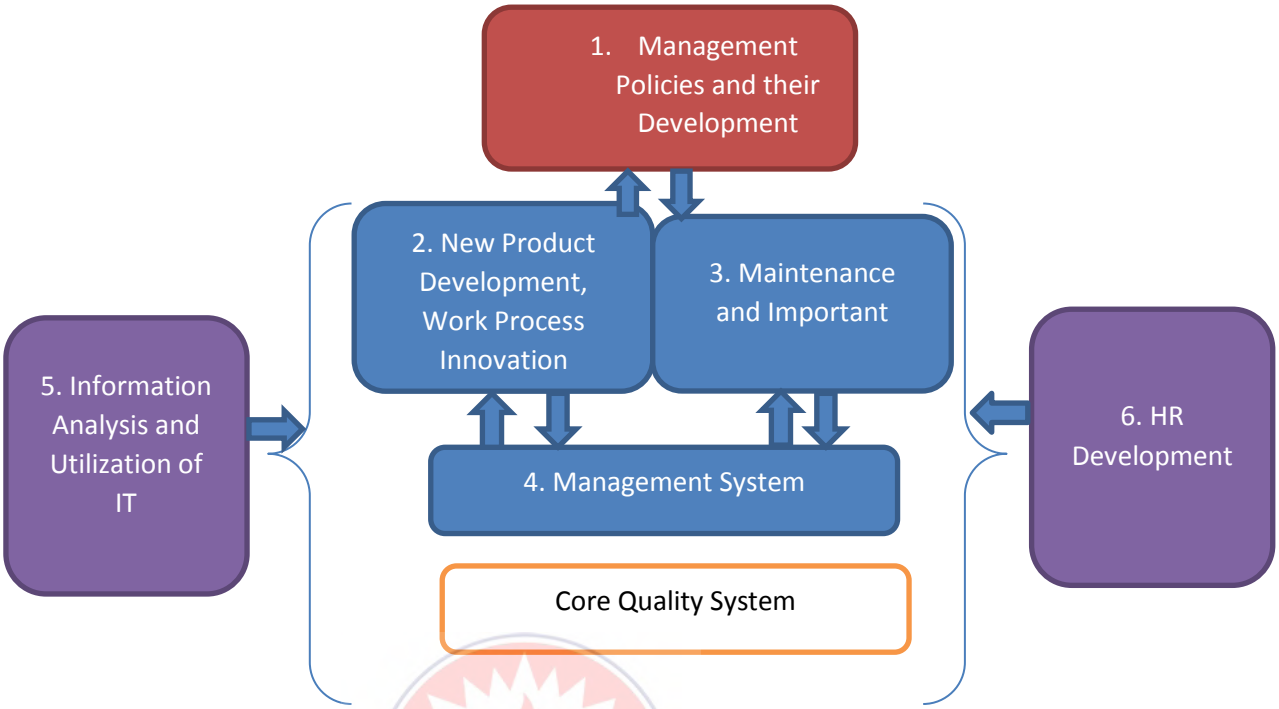

Figure 2.3: Deming Application Prize (DP)

Source: Juse (2010) http://www.juse.or.jp/e/deming/index.html

2.3 Quality Management Practices (QMP) in the Construction Industry

Throughout the world, the construction industry plays a very significant role in the development of many countries. However, it has been widely recognized that the development of construction industry in any country depends on the quality of construction projects. In the Construction industry, quality has been identified as one of the critical factors in the success of construction projects. Consequently, enhancement in the quality of construction projects is often linked with quality management in the project life cycle.

According to Ashokkumar, (2007), even though quality management at every stage of project life cycle is vital, quality management at the construction stage is what contributes significantly on final quality outcome of construction projects.

Quality management is being used among construction firms though not in a standardized manner as many construction firms are noted to have different quantity management systems. For decades, the problem of quality and its value of importance to the construction industry has remained an area of great concern and debate for scholars (CIRIA 1990). In recent times, the construction industry has widely been criticized for low quality of delivery of construction projects. Many have criticized both the quality of finished projects and the processes used during the project design and the construction stages (Omojola and Olugboyeg, 2016). Consequently, significant amount of resources including time is spent in correcting problems during the snagging process and the majority of projects either suffer from time overrun or cost overrun or both. Sommerville et al. (2004), noted that lack of care and a poor attitude towards quality on behalf of the contractor is leading to the snagging problems. The problem is further compounded as most clients only assess the quality of construction projects based on how their experience of the project (building) in use, instead of the materials and components of the projects (Fryer et al. 2004). According to Al-Ani and Al-Adhmani (2011), construction firms need to adopt quality management practices in order to solve quality problems and meet the demands of the clients.

There are different quality management systems and practices that construction industry players adopt towards achieving quality in its projects.

Griffith and Watson (2004), indicated that these systems may include, but not limited to Investors in People (IIP), ISO9000, EFQM, custom designed systems and or third party certifications. Regardless of the system used, quality should be managed in ways which are clearly identified, well documented and efficiently planned, implemented and controlled (Fryer et al. 2004). According to the Office of Government Commerce, (2009), key elements of quality systems include quality planning, quality control and quality assurance. However, quality assurance starts from top management who have the responsibility of crafting the quality policy for the organization. Once established the quality policy is expanded and transferred into objectives in the form of a quality manual. The quality manual sets out what management requires its staff to do to assure quality (Chung 1999). The quality manual is recognized as the key document on site as it will detail how the project will operate through quality procedures and instructions. Based on the quality manual, quality procedures and work instructions are developed for site use. A Project Quality Plan (PQP) is prepared to establish project level quality procedures bringing together the project information and the companies‟ policies, procedures and inspection routines‟ (Griffith and Watson, 2004).

In many developing countries, building contractors engaged in various practices towards ensuring quality in the projects. Omojola and Olugboyeg (2016) observed that supervision of workmanship has been one of the most used quality management practice among construction firms in Nigeria. They further noted supervision of workers has been a common occurrence on construction sites in Lagos state which supervisors relied upon to determine the quality of work done.

The employment of experienced supervisors and workers is practice use to ensure quality in building construction. To many, the level of quality of projects can be said to depend on the level of expertise of supervisors (Omojola and Olugboyeg 2016). It has been argued that where inexperienced supervisors or supervisors who are not knowledgeable in quality control are in charge of workmanship supervision, the building project may not be of good quality. Consequently, construction firms have adopted the practice of employing supervisors and workers with working experience in building construction.

Another quality management practice mostly adopted by construction firms is the enhancement and training of key workers. Many construction firms send their key employees for training program on quality control. This is to enable them item quality materials on site. Similarly, workers are being trained to enhance their skills in order to ensure good workmanship and educate them on quality management as well as enable them adhere to client‟s specifications.

Additionally, the use of proper procurement system and processes is a practice used to achieve quality in the construction industry. Most construction projects are awarded based on a procurement process which required contractors and subcontractors to use quality materials, adhere to quality and safety control measures as well as meet the client‟s specifications (Hoonakker et al. 2010; Tan and Abdul-Rahman 2011; Adusa-Poku (2014).

2.4 Factor Affecting the Construction Industry and Quality Management

The nature of construction of the industry is a complex one in which several participants, each with their own perspectives and interests, are brought together to complete a

particular project plan that typically changes several times during construction, while each tries to minimize the effects of weather, occupation hazards, schedule delays, and building defects. In many instances, the changes usually lead to delays in completion of the construction project, complaints about quality, and rework, which in turn can lead to further delays and so forth. Essentially, the industry is characterized by confrontational instead of cooperative relationships between the different parties involved, with claims by the different parties as a result (Kanji & Wong, 1998).

In literature (Marasini and Quinnell, 2010; Hoonakker et al., 2010), the construction industry has been widely criticized for its low quality of delivery of construction projects. Hoonakker et al. (2010) opined that company size as a factor affects the implementation of quality management. Chin and Choi (2003) identified top management commitment as the most critical factor affecting quality management practices. Other factors affecting quality management practices at the organizational or project level include; inconclusive interpretation of standard requirements, training policies, lack of internal quality audit and training for staffs at all levels, lack of understanding of quality management, lack of awareness, lack of available quality management system, high cost of implementing

Like any other industry, the construction is faced with different challenges which in one way or the other have affected the quality of projects in many countries. In most countries, finance has been identified as the main factor affection the construction industry. At every stage of the construction work, the contractor need funds and to also had to plan for financial payment to eliminate the risk because it might affect the project. However, most construction firms particularly those in developing are not able to obtain finance on time to enable them commence or complete their projects on time.

In situations where firms are able to finance projects on their own, payments to them delayed.

Also, proximity of project sites have affected the completion of many projects. Sometimes, construction site located in rural areas or far away from the beneficiary communities. It might be a cause which affected transportation causing difficulty and delay, hence a hindrance to the development of the construction industry.

Another major factor affecting the construction industry is Labour and Wage. In many different local areas, the problem related to labour such as lack of skilled labour, complex work, not being able to find labour might occur, which might be causes of work difficulty, delay and low quality of projects. Similarly, weather has been one of several important factor affecting the successful completion of projects in the construction industry. In many stances, contracted are not able to prevented or control certain climatic and weather conditions such as flooding, storm.

In the same vein, Sommerville, (1994), noted that the major barrier to the successful implementation of quality management system is the nature of the construction process as the projects are often very large, labour intensive and seldom situated in the same location. Also, the workforce tends to be transient and demand fluctuates, subject to the client‟s perception of the value of the construction project.

A second barrier to quality implementation is the many parties involved in the construction process, all of whom try to protect their own interests. The construction industry consists traditionally of three primary participants: the owner (or customer), the architect/ designer/engineer, and the (general) contractor.

The basic construction process occurs like this: the owner hires an architect/engineering firm to design the project and place the project out for bid to contractors (in a competitive bidding process), and the contractors perform the actual construction work. Even though a common project goal is shared (completion of the plan), participants differ in what they hope to gain from the construction process. The typical owner would probably agree that they would like to spend as little as possible to get their desired project completed. Designers are in business to provide a service to the owner; however, their relationship with the contractors is often unclear.

The contractors attempt to provide the product as drawn by the designer as efficiently as possible, in order to maximize their profit. Apart from the three primary participants, there are many other parties involved in the construction process: a variety of sub-contractors and suppliers. The many sub-contractors (ironworkers, carpenters, masons, plumbers, electricians, roofers) are a particularly important factor, and company size is a related factor that explains the difficulty in implementing quality. Construction companies vary greatly in size. In the US, over 80% of all contractors have less than nine employees (Center to Protect of Workers‟ Rights, 2002). General contractor companies are mostly large, but sub-contractor companies are often very small. A third barrier to quality implementation is non-standardisation. During construction, general contractors want to ensure quality throughout the project. However, according to Rowlinson and Walker (1995), the construction industry is characterized by its non-standardisation.

A final and important barrier to quality implementation and management is the bidding process. The typical construction bidding process starts with the release of a project description for public review by contractors.

The details of the project can vary, but typically specify enough detail so that experienced contractors can create a fairly accurate bid for the job. Some contract bidding is open only to general contractors, who are required to do the hiring of subcontractors after they are awarded the contract. Both contractors and researchers are concerned about „competitive bidding" for construction projects. For example, a contractor may try to reduce allotted resources towards safety or quality management in order to maintain a healthy profit margin for the job. Attempts to reduce involvement in safety and/or quality management can be very costly to a contractor, if they encounter accidents during the project. They may also experience schedule delays for many reasons: weather, labour shortage, late delivery of equipment or materials, and other events beyond the control of the contractor (Carty, 1995). State lack the manpower to implement quality management. The lack of expertise and resources required for quality management among construction firms suggests that construction professionals lack knowledge of quality management or are not provided with the resources needed to implement quality management.

2.5 Importance of Quality Management Practices to the Building Industry

The importance quality management practices to the development of the building industry cannot be over emphasized. Tan and Abdul-Rahman (2011) opined that quality management is required for a construction firm that seeks to sustain itself in the current construction market which is highly challenging and competitive. Quality management practice can help minimize material wastage, cost overrun and delay (Ashokkumar, 2014) and can be used to address client"s requirements (Hoonakker et al., 2010). Al-Ani and Al-Adhmani (2011) argued that quality management is an important management system to be considered by construction firms in order to improve the level of their performance;

yet construction firms are not practicing quality management. Similarly, Hoonakker et al., (2010) indicated that contractors know that there are obvious benefits of quality improvement. As noted, the most two cited benefits are repeat customers and reduced rework (McIntyre and Kirschenman 2000). In essence, contractors who employ quality management practices are noted to achieve higher customer satisfaction, improved schedule performance, improved relationships with architect/engineering firms and reduced rework (McIntyre and Kirschenman, 2000). Again, Love et al. (1999) revealed that the costs associated with redoing a step or portion of construction due to poor craftsmanship or change in plan are as high as 12% of the total project costs and required as much as over 11% of the total project working hours.

In the construction industry, quality management is considered as a process of verifying that the project is built to plan, that the tolerances allowable by industry standard and engineering practices have been met or bettered, and that the finished project (and all phases to get there) meet with the quality standards of the architect, engineer, owner, and general contractor (Agbenyega, 2014; p32). There are always subcontractors to a project and all of them have specific responsibilities to perform. In the process, project managers and supervisors are required to maintain high quality standards though they cannot be everywhere at the same time. All Required inspections by cities and counties help to ensure safety and code issues. In addition, a good general contractor or developer will have a worker in charge of quality control who be responsible for going through the building or project, ensuring compliance, and maintaining an ongoing list of corrective items that must be accomplished before the contractor who installed it is paid or leaves the job.

Generally, quality managers or technicians keep a very detailed binder, separated by areas/rooms/phases of the project with notes of items that must be either verified or corrected, with sign-off as each is accomplished. This binder becomes part of the project record and is an important element to completing the project on time and with expected quality maintained. Evidence from studies on quality management in the construction industry showed that many firms are able to survive in the increasingly competitive business world due the implementation of quality management practices. Quality management practices as observed enable construction firms provide quality projects and better services to their customers. Oswald and Burati (1992) proved that quality management has resulted in improved customer satisfaction, reduced cycle times, documented cost savings, and more satisfied and productive work forces. Likewise, Tang et al, (2005), from the viewpoint of the individual company noted that quality management enhances the organization‟s "shareholder value", ensures better utilization of the talents in the company, improves the overall quality and safety of projects and facilities and reduced project duration and costs. These considerations makes quality management Practices very important to the Building Industry.

2.6 Improving Quality Management Practices in the Building Industry

Considering the importance of quality management practices to the development of the construction industry, it necessary to improve the existence quality management practices and systems for better results. Many scholars have indicated that there are several ways improving quality management in the building industry.

One element that help improve quality management in the construction industry is Partnering.

In literature, partnering has been identified as one of the most promising options for improving quality. It can take the form either of a single project agreement, or of a longer term or strategic agreement covering a number of projects which sometimes manifested as a framework agreement. In their view, Kanji and Wong (1998, p. 124) considered project partnering in construction as a "synergy", thus a "cooperative, collaborative management effort among contracting and related parties to complete a project in the most efficient, cost-effective method possible, by setting common goals, keeping lines of communication open and solving problems together when they arise".

In both project partnering and strategic partnering, the principle is that the parties try to work as much as possible as if they were a single organization. Different partnerships can be created, for example between architects/engineers/designers and contractors, between contractors and subcontractors and between contractors and suppliers. To be successful, partnering requires commitment, real mutual trust and discipline. Scholars (Barlow, Cohen, Jashapara, and Simpson, 1997; Holti and Standing, 1996) further observed that partnering has been a major factor which has presented the biggest opportunities for change for both small and large scale industry players. Partnering is observed to have a positive impact on project performance particularly with respect to time, cost and quality. It as well resulted in improved customer satisfaction, safety and reduced litigation (Bennett and Jayes, 1995, 1998; Bresnen and Marshall, 2000).

Another way through which quality management can be improve is the use of pre-qualification in the bidding process. The use of pre-qualification criteria requires bidders to meet a minimum requirement of experience, performance, safety, or management programmes implemented.

Therefore, the owner or general contractor can reduce their risk of working with a poor performing subcontractor by also requiring for a maximum experience modification rating indicating good safety performance. Contractors may also require evidence of an implemented quality management system.

Changing the culture of the construction industry can also improve quality management. Kilmann, et al., (1985) and Schein, (1985) argued that organizational culture is a complex phenomenon embedded in behavioural norms, hidden assumptions and human nature, and consists of many levels. Using the Competing Values Framework developed by Cameron and Quinn (1999) many studies (Giritli, et al., 2006; Oney-Yazic et al., 2006; Yong and Pheng, 2008) examined the organizational culture in construction industry and have found that changes in the current organizational cultures can enhance team work, employee-involvement in quality and safety programmes, and corporate commitment to the ideals of the construction industry including quality management.

CHAPTER THREE

3.0 METHODOLOGY

3.1 Introduction

This Chapter provides the methodology employed in carrying out the study. The chapter outlines into details the research design, data requirements for the study as well as sampling procedures and techniques employed for data collection for the study.

3.2 Research Design

The research approach used was cross sectional survey design. This design was adopted because helped the study obtain enough data on Quality Management Practices across the construction industry.

Also, the study adopted a mixed method which combined both qualitative and quantitative techniques to analyze the data from the field. These two methods have both strengths and weaknesses, but when combined for a single purpose can complement each other to arrive at better and factual conclusions since it makes room for generalization. According to Neuman (2000), the limitations of one of the method would be complimented by the positives of the other method.

3.3 Population

The population of the study comprised of building contractors, their employees (foremen, engineers, quality management staff etc.) and staff of officially recognised consortiums in the Wa municipality. The Municipality is estimated to have about 455 officially registered contractors engage in the building and construction of both governmental and private individuals. The municipality also have three (3) consortiums namely AESL, A &

QS consortium and North West Consortium providing consultancy services to contractors. Staff of these consortiums together with the contractors formed the population for the study.

3.4 Sampling Techniques and Sample Size

The study adopted purposive sampling because of differences in the characteristics and opinions of the target population. To ensure true representation of the population, the study employed two different non-probability sampling techniques, thus purposive and convenient sampling techniques.

Purposive sampling technique was employed to purposively select officials from the consortium in the Wa municipality. Convenient sampling was also employed to select and contact the selected contractors as respondents for the study.

The estimated population 455 contractors is used to determine the sample size for the study. The sample size was determined using Yamane Taro (1967) formula stated as; $n=N/ [1+N \{e\}^2]$ where "N" is the Sample frame and "e" the significance level or sampling error.

At 10% significant level, the sample size is calculated as;

$n= 455/ [1+455\{0.1\}^2]$

n= 81.98 rounded to the nearest figure.

n=82

Thus sample size of 82 respondents.

3.5 Data Collection Techniques

The procedures used for the data collection are questionnaires, interviews and observations.

3.5.1 Questionnaires

The study developed questionnaires which were administered to seleted contractors and their workers in the Wa Municipality. The use of questionnaire was adopted because it is simple and easy for the respondents to complete and the researcher to analyse.

Each questionnaire contained four parts that specifically seeks to find answers to each of the research questions and opinion on the topic under stuy. The diversity of questions is to gave the respondents the opportunity to individually express their views and opinions. This also prevented the researcher from interfering with the responses, hence making the findings reliable and valid.

The first section captured the demographic characteristics of the respondents which included age, sex, level of education, ownership status, number of employees and position held at the company. The second part comprised of questions regarding dealing with quality management practices among contractors. The third section captured the the contribution of the quality management to the quality of projects whereas the forth section dealt with the ways of improving the quality management practices.

3.5.2 Interviews

The researcher interviews the staff of AESL and A&Qs Consortium. The interview involved, questions on the adoption of quality management practices, what the consulting

organizations are doing to ensure quality management and the difficulty contractors are facing in the area of quality management.

3.5.3 Observations

The study also used observations as a means of collecting data from the field. The researcher personally visited three construction sites in the Wa municipality in order to observe the activities, processes and practices followed by contractors and their workers in putting up buildings. Key notes and pictures were taken during observation process.

One of the site visited was Fallahia School where the contractor was building a 12-unit Two-Storey classroom block. The project was supervised by A&Qs Consortium. The researcher observed. The second site visited was at Wa Sombo where the contractor was constructing a CHIPS Compound for the community and the works supervised by AESL. The third site visited was at Wa Secondary senior high where the contractor was building an ICT laboratory block supervised by AESL as well.

At each of these sites, the researcher observed the quality of the building materials, how they were store, how the mixing of the materials was done and the general management practices followed by the foremen and their workers.

3.6 Data Analysis

The study employed qualitative methods and descriptive statistics in analysing the data gathered from the field. As study is dealing with numbers in terms of sample size and analysing of demographic characteristics of respondents, descriptive statistics was relevant. It is widely recognised that statistical figures are not always reliable as they may

not essentially reveal the true situation on the ground, hence the need for qualitative analysis.

Statistical Package for the Social Scientist (SPSS) was used to carry out the descriptive statistics and the results from the data then be discussed against the subject matter under consideration. With the qualitative technique, the study used familiarization, charting and coding to analyse the data and the results further presented in the form of tables charts and graphs. Also, the exploratory mechanism employed facilitated the cross-tabulation of results.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the results and discussion of the study. The major themes covered include demographic characteristics of respondents, compliance with quality management best practices, and contribution of quality management to project sustainability as well as the ways of improving quality management practices of contractors in the Wa Municipality of the Upper West Region of Ghana.

4.2 Results and discussion of Questionnaire

4.2.1 Results and discussion from Contractors and Workers

From table 4.1, out of the 82 respondents who were contacted, 92% were males whereas the remaining 8% constitute females. Males dominated the study as the construction industry is mainly dominated by male workers. But it is important to indicate the gender biasness does not have any influence on the results of the study since the main aim of the study was focus on quality management practices.

Table 4.1: Age Distribution of Respondents

Age	Frequency	Percent (%)
15-24	8	10
25-34	25	30
35-44	21	25
+44	28	35
Total	**82**	**100.0**

Source: Field Survey, 2018

From Table 4.1, the results revealed that the age of respondents" falls between 15years to 44 and above which was disproportionately distributed. Majority of the respondents constituting about 35% were 44 and above years, 30% and 25% also fell within the age group 25-34 and 35-44 years respectively. Only 10% of them were between the ages of 15-24 years. Considering the age distribution, it can be deduced that majority of the respondents falls within the active labour force and could have adequate understanding of the issues happening at the work site.

The level of education plays a critical role in the knowledge and understanding of what entails in total quality management especially in the construction industry.

Table 4.2: Level of Education

Educational Status	Frequency	Percent
No Formal Education	30	37
JHS/SHS	45	54
Diploma/Undergrad	7	9
Total	**82**	**100.0**

Source: Field Survey, 2018

From table 4.2, the results showed that majority of the respondents indicated that they have obtained some level of education (from basic school level to graduate level).

As revealed, 54% of the respondent had obtained basic education, thus Junior High School and also Senior High School. In respect to respondents who obtained college/undergraduate education, and only 9% had such qualification whereas 37% of the respondents have no formal education. This group of respondents was the second highest for the fact that they are being employed by the contractors who were mostly the educated group that have their own construction firms.

Given diversity of the work in the construction industry, there was the need to understand in what capacity each respondent has been contributing to ensuring total quality management.

Table 4.3: Position/Capacity of staff respondents

Capacity/Position	Frequency	Percent
Managing Director/Owner	8	12
Foreman	12	15
Other (Administrative staff, Engineers, Labourers etc)	60	73
Total	**82**	**100.0**

Source: Field Survey Report, 2018

From table 4.3 shows, the results showed that majority of the respondents were quantity surveyors, engineer, labourers and administrative staff of constructions companies as they constituted 73%. Also, 12% of them were managing directors and 15 were mainly foremen. These individuals are directly involved in the entire building process and have adequate knowledge on the quality and quantity of materials required and use at the site.

4.2.2 Quality Management Practices (QMP) in the Construction Industry

Quality management practices adopted by the construction industry were considered an important aspect of the data analysis.

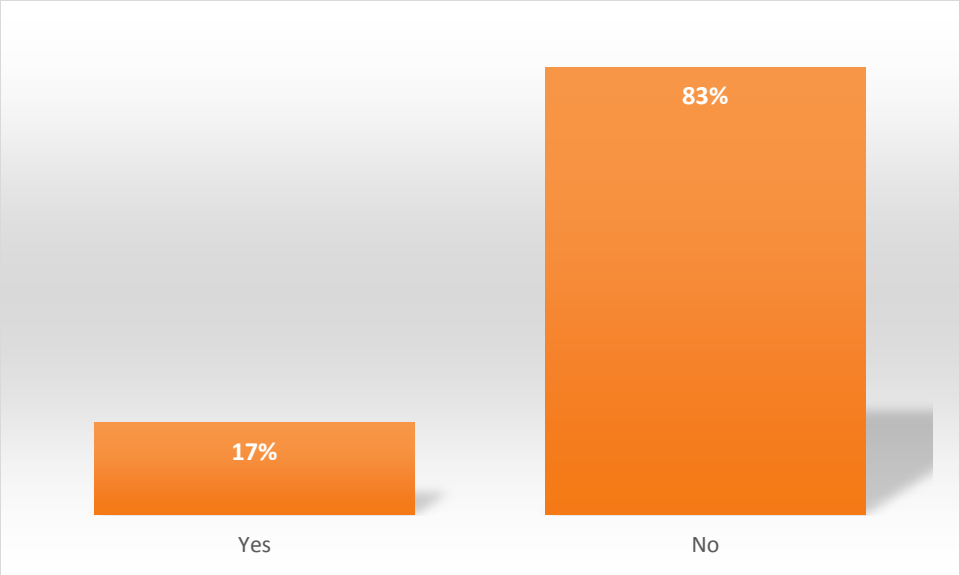

Figure 4.1: Companies with Quality management initiatives

Source: Field Survey, 2018.

The results in figure 4.1 showed that majority of the respondents representing 73% indicated that their companies do not have quality management initiatives in place though 17% indicated that, their companies have quality management initiatives in place. The results falls in line with the observation made by Omojola and Olugboyeg, (2016), who revealed that the construction industry is dominated by companies who do not pay attention to quality management issues and this has made a lot of people criticise the industry for low quality of delivery of construction projects.

On the other hand, the 17% of the respondents who indicated that they have quality management initiatives in place assigned reasons for having such initiatives some of which include compliance with Ghana Standard Authority procedures and regulations and also putting training schemes to improve their personnel in quality management practices.

Certification by the authoritative bodies to the construction firms for the purpose of ensuring quality was underscored. 74% of the respondents indicated that, they are not being certified whiles the remaining 26% were being certified. Those certified indicated that they were given certificates of competencies whiles those who have not done so to their staff said, plans are made in advance to ensure that their being certified.

As part in achieving this specific objective, respondents were made to select some well-defined quality management practices as outlined in the table 4.3. In understanding the best nature of quality management practices, all the respondents in one way or the other indicated that the listed items thus, setting up a quality department, developing strategies for total quality, and development of a quality system well adopted to some extent.

Finally, respondents were asked their readiness and interest to adopt quality management trainings and their responses were indicated as shown on the above chart.

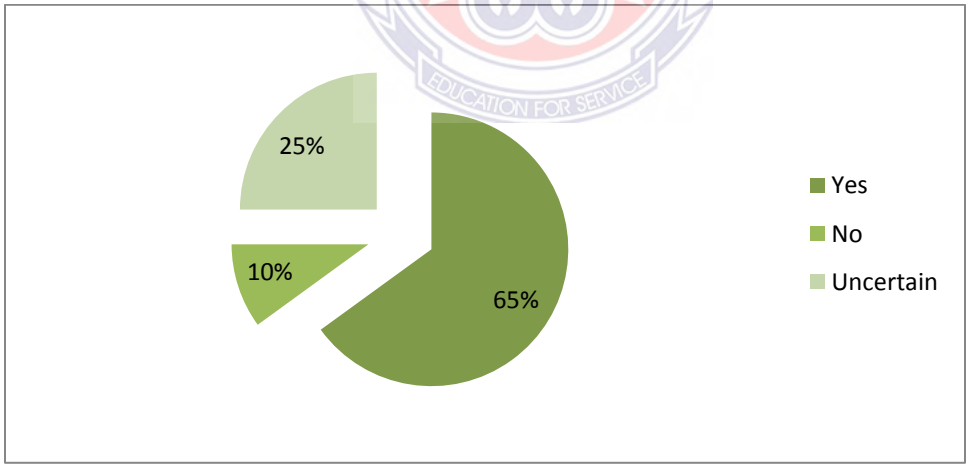

Figure 4.2: Adopting quality management practices

Source; Field Survey, 2018

From figure 4.2, the results showed that 65% of the respondents did indicate that they are ready to integrated quality management practices, 10% of them are not willing to

integrate quality management and 25% of them were uncertain whether they can adopt or cannot adopt quality management practices. This demonstrate that with time, a good number of contractors will be embracing quality management practices in the Wa municipality.

Table 4.4: Quality Management Practices adopted by Contractors

QM Initiative	Responses (n=60)	
	Yes	No
Setting up a quality department	30%	70%
Developing strategies for total quality	65%	35%
Development of a quality checking system	24%	76%
Client/Customer satisfaction initiatives	72%	28%
Employee involvement to improve quality	80%	20%
Supplier involvement program	45%	55%
Establishing measures of quality progress	60%	40%

Source: Field Survey, 2018)

From 4.4, the results showed that employee involvement to improve quality and client/customer satisfaction initiatives were the most adopted quality management initiative adopted by contractors in the Wa municipality. This was confirmed as 80% and 72% of the respondents attested to these. Also 65% attested that they develop other

strategies for quality management. On the other hand, the results showed that 76% of the respondents indicated that their companies do not develop quality checking systems, whereas 70% attested that do not set up quality department. The current situation did not depict a good image for the construction industry in the Wa Municipality as key elements of quality systems which can ensure quality planning, quality control and quality assurance (Government Commerce, 2009).

In any case, quality management has to start with, quality assurance emanating from top management who have the responsibility of crafting the quality policy for the organization. Once established the quality policy is expanded and transferred into objectives in the form of a quality manual. The quality manual sets out what management requires its staff to do to assure quality (Chung 1999). The quality manual is recognized as the key document on site as it will detail how the project will operate through quality procedures and instructions. Based on the quality manual, quality procedures and work instructions are developed for site use.

Based on the above, quality management practices by contractors in the construction industry in the Wa municipality needs improvement as the level of quality of projects can be said to depend on the level of expertise of supervisors as Omojola and Olugboyeg 2016).

4.2.3 Importance of Quality Management Practices to the Building Industry

The contributions of quality management practices to the quality of projects cannot be undermined. Tan and Abdul-Rahman (2011) opined that quality management is required for a construction firm that seeks to sustain itself in the current construction market which

is highly challenging and competitive. Responses on the importance of QMP to the building industry are shown in table 4.5.

Table 4.5: Contributions of QM to quality of projects

Statement	Responses						
	Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**	**Weighted Average**	**Rank**
Customer satisfaction has shown improvement due to adoption of quality management practices	15%	20%	15%	20%	30%	3.3	**1st**
The numbers of products/service defects, errors, or failures found by the customer have	20%	10%	30%	20%	20%	0.19	**6th**

decreased							
The number of customer complaints has decreased	10%	25%	15%	25%	30%	0.19	**6th**
Our financial results have been improving	25%	10%	15%	25%	30%	0.1975	**5th**
Our quality program has improved our business performance in general	10%	30%	15%	20%	15%	0.24	**2nd**
Our company has developed a culture that emphasizes quality	25%	25%	20%	20%	10%	0.215	**3rd**
The number of employees participating on	20%	35%	15%	15%	20%	0.2125	**4th**

quality teams has increased							
Employee satisfaction has increased	14%	16%	20%	40%	10%	0.189	**7th**
with suppliers has improved quality							
Partnership of purchased parts	40%	20%	15%	10%	20%	0.173	8th

Source; Field Survey, 2018

Customer satisfaction has shown improvement due to adoption of quality management practices was the response ranked as the most contributory factor to quality management in construction industry of the municipality. It scored a weighted average of 3.3 and as such, served as the best contributor of quality management. The highest weighted mean score confirms the assertions by other studies that, contractors who employ quality management practices are noted to achieve higher customer satisfaction, improved schedule performance, improved relationships with architect/engineering firms and reduced rework (McIntyre and Kirschenman, 2000).

Second on the ranking was improvement of business performances. This item scored a weighted average of 0.24, hence the second highest ranked contribution of QM. This results supports the view that increase quality practices in the construction industry ensures project or business sustainability (Agbenyega, 2014).

The number of products/service defects, error, or failures found by the customer level was a statement to measure the rate at quality management practices have improved. From the table above, this was ranked as the 6th contribution of quality management. As it is indicated in the literature review by Oswald and Burati (1992) proved that quality management has resulted in improved customer satisfaction, reduced cycle times, documented cost savings, and more satisfied and productive work forces.

Also indicated by Likewise, Tang et al, (2005), from the viewpoint of the individual company noted that quality management enhances the organization‟s "shareholder value", ensures better utilization of the talents in the company, improves the overall quality and safety of projects and facilities and reduced project duration and costs.

Among the various ways of achieving this results were also determining the level at which the Organizations or firms have developed cultures that emphasizes quality management and the rate at which employees are satisfied at their work environment. These two indicators have their ranking at 3rd and 7th in the Likert scale. It can also be noted that the average mean scores for the Organizations emphasizes on culture of quality are 0.25, 0.25, 0.2, 0.2 and 0.1 representing the scale of strongly disagree, disagree, neutral agree and strongly agree respectively. This means that the respondents in their opinions, most of the firms have consider this indicator very important in their service delivery having ranked third with weighted average score of 0.215. That of employees‟ satisfactions with the Likert scale of strongly disagree, disagree, neutral, agree and strongly agree have their mean score of 0.14, 0.16, 0.2, 0.4 and 0.1 respectively. The responses here show that, the firms do not place much emphasizes in their employees‟ satisfaction and this can has adverse effect of quality service delivery.

Table 4.6: Challenges of adopting quality management practices

Statement	Responses					
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Weighted Average
Lack of understanding of quality management practices	15%	20%	40%	10%	15%	**2.05**
Lack of top management commitment	15%	25%	30%	20%	10%	**1.95**
Lack of focus on customer/client	30%	15%	20%	20%	15%	**1.8**
Lack of resources	15%	20%	40%	15%	10%	**2.05**
Lack of systems and structures for quality management	25%	15%	20%	10%	30%	**1.8**
Lack of training on quality management	60%	10%	5%	10%	10%	**1.3**
Lack of rewards and recognition	25%	10%	25%	10%	30%	**1.8**
Lack of evaluation procedures and benchmark indices	40%	15%	10%	20%	15%	**1.6**

Source: Field Survey, 2018

From the results presented on the table 4.5, lack of understanding of quality management practices and lack of resources are considered as the two pressing factors affecting the

adoption of quality management by contractors in the Wa municipality as they obtained the highest weighted average scores of 2.05 each. These results can also have been drawn from the ordinary sense that if one do not understand what he/she want, then it cannot be implemented. As indicated earlier, lack of funds affects projects quality.

Secondly, lack of management commitment in the implementation of quality management was considered the next factor affecting the adoption of quality management practices as it scored a weighted average of 1.95. This result falls in line with what has been observed by Chin and Choi (2003) who noted that top management commitment is among the most critical factors affecting quality management practices.

Lack of customer focus/client and lack of systems, structures for quality management and Lack of rewards and recognition were third identified factors affecting the adoption of QM in the construction industry as each of them scored a weighted average of 1.8. The results contravene with the assertion that the major barrier to the successful implementation of quality management system is the nature of the construction process as the projects are often very large and lack of structures and well defined systems, Sommerville, (1994).

Finally, lack of rewards and recognitions as well as lack of evaluation procedures and bench mark indices were also uncertain by the respondents. The results from the analysis show that they have weighted average scores of 1.8 and 1.6. With this outcome one will argue that employee motivations will involve extra cost to the organizations and there post as thread to their survival on one side Monitoring on the other hand form a component of the project life cycle but the budget allocations to it is most at time very small to undertake it.

4.2.4 Ways of improving quality management practices

Quality management within industries varies with time and people expectations and as such new modalities to improve QM is always paramount. To get the inside view of respondents, some specific suggestion was listed for them to identify the particular item which they believe improves quality management practices. The responses are shown in table 4.6.

Table 4.7: Ways of Improving Quality Management among Contractors

Ways of Improvement	Responses					Weighted Average Score
	Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**	
Top management should be required to always updates their knowledge	20%	25%	25%	15%	15%	**10.2**
Top management should strongly promotes staff involvement in quality management and improvement activities	25%	10%	10%	30%	25%	**2.8**
Company must establish and fulfils its social responsibilities	10%	25%	30%	25%	10%	**10.0**
Qualified Human resource	30%	10%	25%	10%	25%	**2.5**

should be employed for quality improvement purposes						
Employees must be given information and the required training they need to do their job effectively	25%	30%	10%	25%	10%	**2.7**
Sufficient financial resources must be provided to support improvement activities	10%	30%	25%	25%	10%	**2.3**
Company must work closely with suppliers toward long term partnership and improvement.	30%	25%	10%	25%	10%	**9.6**
Company should ensures that suppliers can maintain high technical standards and meeting quality specifications	25%	10%	30%	10%	25%	**2.6**

Source; Field Survey, 2018

From the table above, the analysis shows that the highest ranked contributor to improving quality management practices was the need for top management to always update their knowledge and skills in their quest to ensure quality of their products/services. This has weighted average score of 10.2. This support the argument that, skilful managers will often generate efficient results as they will pass and train their staff.

Another measure was to determine whether management promoting staff involving quality management was a way of improving it. Upon the analysis, it is observed from the table that staff involvement in quality management is a way of contributing to ensuring quality. This has a weighted average score of 2.8 and lies with the range at which item identified is a contributory factor affecting quality management practices. Staff motivation is a key issue within organizations and need to be taken careful considerations since their actions and inactions have direct impact on production.

Again, companies/construction firms‟ fulfilment of their corporate social responsibilities and employing quality human resources were also two ways of determining whether they can contribute to quality management practices. In respect to former, it was observed from the analysis that, fulfilling corporate social responsibilities is a very important way of improving quality management. It has the second has weighted average score of 10 implying that if firms consider their role to offer to society, then good work will be delivered to them by doing the right thing. To some large extent, one will agree that doing good work forms part of corporate social responsibilities and more so build more partnership with the society. Partnering is an important tool in construction industry since it involves several actors in the supply chain and should not overlook. This adds up to Kanji and Wong (1998, p. 124) considered project partnering in construction as a “synergy”, thus a “cooperative, collaborative management effort among contracting and related parties to complete a project in the most efficient, cost-effective method possible, by setting common goals, keeping lines of communication open and solving problems together when they arise”

The latter, employing quality human resources was also considered as a way of ensuring quality of work done. This has score of 2.46 and served as the 6th ranked item among the 8 meaning that the nature of employees one hires will tell the ripple effect on what they would produce. It obvious that qualified and skilful workforce will bring effectiveness and efficiency given that they are dedicated to professionalism.

As it indicated by Omojola and Olugboyeg, (2016), employment of experienced supervisors and workers is practice use to ensure quality in building construction. To many, the level of quality of projects can be said to depend on the level of expertise of supervisors.

In a related way, the issue of whether employees must be given the required information and training they need to do their work by their employers were also a measure of ensuring quality management practices? Obviously yes, as indicated by the results from the analysis with weighted average score of 2.65 and the 5th ranked item among the rest. One will agree that, employees‟ skills development forms part of organization‟s responsibilities and has to do best to ensure that the needed skills and logistics are provided to their staff to facilitate them do their work smoothly without nay barriers. As it indicated in the literature review that, contractors should provide the necessary trainings for their staff coupled with the provision of adequate materials for them to do their work if they are interested in ensuring product quality and practices, (Hoonakker et al. 2010; Tan and Abdul-Rahman 2011; Adusa-Poku (2014).

Furthermore, the issues of whether sufficient financial resources should be provided to ensure quality and the firms working closely with suppliers towards long term partnership and improvement were measures to ensuring quality management among firms. The latter

indicated a weighted average score 2.31 depicting that it is a very important measure in contributing to quality of projects. Any project that do not have sufficient funds will lead to work stoppage and this affects its quality as a result of the time lines or even compromising with using the recommended work materials.

This results confirms the view that, significant amount of resources including time is spent in correcting problems resulting from financial challenges during the snagging process and the majority of projects either suffer from time overrun or cost overrun or both, (Omojola and Olugboyeg, 2016). The former on the other hand was the 3rd highest ranked of 9.6 weighted average score. This considers that partnership is very important in achieving quality results as a result of the chain process. The failure of one the actors can have bad consequences and the need to manage the partnership system is very important. In literature, partnering has been identified as one of the most promising options for improving quality. It can take the form either of a single project agreement, or of a longer term or strategic agreement covering a number of projects which sometimes manifested as a framework agreement. In their view, Kanji and Wong (1998, p. 124) considered project partnering in construction as a "synergy", thus a "cooperative, collaborative management effort among contracting and related parties to complete a project in the most efficient, cost-effective method possible, by setting common goals, keeping lines of communication open and solving problems together when they arise". This analysis adds up to Scholars (Barlow, Cohen, Jashapara, and Simpson, 1997; Holti and Standing, 1996) further observed that partnering has been a major factor which has presented the biggest opportunities for change for both small and large scale industry players. Partnering is

observed to have a positive impact on project performance particularly with respect to time, cost and quality.

Second but last item identified under this subsection was whether companies ensure that suppliers maintain high technical standards and meeting quality specification was a measure.

From the results show that it has a score of 2.6 and it was the 7th ranked among the factors indicating that it is a measure of ensuring quality management practices. The nature of raw materials use for any construction reflects the nature of the building. It is important for firms to bend on getting the right materials supplied to them. As it has been argued in the literature, most challenges of contractors is the non-compliance on standardizations during the project life cycle, Rowlinson and Walker (1995).

4.3 Results and discussion of Interview

The study conducted interviews with officials from the two main consulting organisations in the Wa municipality, thus AESL and A&Qs Consortium and some selected owners or managing directors of construction companies. The result from the interviews are as follows.

4.3.1 Results and discussion of Interview from AESL

During interview, the official from AESL revealed that;

> *"We make efforts to ensure that contractors adopt quality management practices. To ensure this, we regularly visit construction sites to ensure that the right materials and measurement are used by contractors. We also rejects projects that do not meet the required standards".*

The above statement demonstrates the efforts authorities responsible for ensuring quality buildings and projects are doing. As an effort, officials frequently visit the construction sites of contractors with the view to monitoring the material use and combination. Most of the consulting firms use this opportunity to monitor and evaluate the quality of projects.

The official also noted that;

> *"Most contractors always refuse to comply with required measurement and mixing of building material which does not ensure quality management".*

It could also be notice from the above statement that consultants are aware of the fact that contractors are always reluctant to use the right quality of materials in construction and this has affected the quality of projects.

He further stated that;

> *"We try to educate the contractors on the need to ensure quality management, but it is not all easy. Most of the contractors and their foremen have bad attitude and perception of quality management. They see this additional cost to them and are always reluctant to do the right thing".*

As to what the consultants are doing in order to improve the quality of building, the view of the consultants indicates that efforts are being made towards educating contractors on the need to uphold quality practices and to change their attitudes towards the adoption of standard practices.

4.3.2 Results and discussion of Interview from A&Qs Consortium

At A&Qs, an official revealed that;

> *"Quality management is critical to us as project consultants. So it is our responsibility to ensure that contractors adopt quality management practices. In our efforts, we try to educate the contractors on the need to ensure quality management. Some of them are trying though most of them and their foremen have bad attitude towards quality management practices that we recommend for them. They think implementing or adopting such practices will make them loose their profits".*

In this statement, it is evident that project consultants are serious about quality management. They consider it critical and as such, take responsibility of ensuring that contractors comply with standards. Consequently, consulting officials have taken various steps such as education and training of contractors and their foremen on the need to ensure the use of quality materials and adoptions of other quality management practices.

He also stated that;

> *We demolish projects that do not meet our requirement at a cost to the contractor. So a lot of them are trying to adopt quality management practices which is good for our projects". We adopt unexpected visit to sites and inspection of materials before they are used as strategies towards ensuring quality management among contractors".*

The official further revealed that,

"We try to make contractors understand that that the work they are doing is not just about the profit aspect, but also the effect on their ability to get more projects in the near future.

Similarly, it is evident from the above statement that officials/consultants are aware of the fact that contractors deliberately do not use the right quality of materials in construction and this has affected the quality of projects.

4.3.3 Results and discussion of Interview from a Foreman

On the issue of construction companies having quality management initiatives, an employee indicated that;

"I don't know if our company have such initiatives. The only thing is that we have been made to know that one has to follow the basic principles in mixing cement, water and the cutting of metal during construction and nothing else".

This statement implies that some of the construction firms lack quality management initiatives though they adopt certain practices towards ensuring quality management.

4.4 Results and discussion of Observation

The study also employed observation to gather its data. Three construction sites were visited and some observations were made at each of the sites. The three are Fallahia JHS, CHIPS compound at Wa Sombo and ICT Centre at Wa Senior High School.

4.4.1 Results and discussion of Observation at Fallahia JHS

At Fallahia JHS, the contractor was building a 12-unit Two-Storey classroom block. The project was supervised by A&Qs Consortium. It was observed that the foreman and his workers were not using any standard scale for measuring and mixing materials. There was no quality inspector at site though the workers indicated that the consultants come to inspect and ensure quality of the project.

Also, building materials at this site were left at the mercy of the weather. One could see iron rods and other materials on site rusting and this could affect the quality of the material used and for that matter, the quality of the project.

Figure 4.3: 12-Unit Two-Storey classroom block under construction at Fallahia JHS

Fig. 4.3 shows a collapsed 12-unit two-storey classroom block under construction at fallahia JHS which was as a result of poor workmanship and has been terminated leading to further investigation. Also it was observed that, it has developed several defects such as cracks on the walls and floors.

4.4.2 Results and discussion of Observation at Wa Sombo

The situation at Wa Sombo was no different from Fallahia JHS. At Fallahia JHS, the contractor was constructing a CHIPS Compound for a community. As usual, the contractor was not at site during working hours to ensure compliance of established standards. No standard form of measurement was also use and materials were also left in the sun, as shown in figure 4.4.

Figure 4.4: Building materials at Wa Sombo

4.4.3 Results and discussion of Observation at Wa Senior High Secondary School

Similarly, the happening at the Wa Senior High Secondary School was a bit different from the other two though the main contractor was on site to ensure that the right is done.

At this site, the contractor was building an ICT laboratory block. There was no site office and store room where the building materials were stored. However, the foreman and the main contractors have no quality management systems to ensure quality projects.

Figure 4.5: ICT laboratory block under construction at Wa Senior High Secondary School.

Fig. 4.5 showed an ICT laboratory block under construction at Wa Senior High Secondary School which was critically observed and realised that, the wooden materials used for the openings has several defects on them since they were exposed to the weather for long period before used.

Figure 4.6: Building materials left exposed to the sun and rain at Wa Senior High Secondary School.

From Fig.4.6 indicated that, the contractor was building an ICT laboratory block. There was no site office and store room where the building materials were stored. These building materials were exposed to the weather thereby causing defect on the material to deteriorate before use.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

Chapter five is the final chapter of the study and as such provides the summary of key findings of the study. The chapter also presents the conclusions of the study from which it made recommendations capable of improving quality management practices.

5.1 Summary of findings

The following are the summary of finding:

- The study revealed that, there was inadequate quality management practice due to lack of education and training of contractors and employee in the construction industry.
- The study revealed that, the assertion that contractors who employ poor quality management practices are noted to achieve abysmal customer satisfaction with architect/engineering firms, clients and maximized profit at the expense of the work.
- The study have shown that, quality management is important and can improve business performances and also increase the level at which firms developed culture that emphasizes on quality management.
- The research have shown that, the barriers preventing the adoption of QMP in the construction industry were: lack of the following resources, systems and structure for quality management, trainings, awards recognition and best ways of monitoring.

5.2 Conclusion

Fundamentally, Quality Management Practices adopted by the construction industry were considered an important by AESL and A&Qs officials and as such are working to ensure that contractors adopt them. Some of the ways of improving quality management were top management updating their knowledge in quality management, promoting and training of staff, improving the level of social corporate responsibilities and sufficient funding for smooth project implementations. The barriers/ difficulties encountered by firms in adopting quality management practices include low level of management understanding of the concept, lack of management commitment low focus on customer need and insufficient resources. The rest are lack of proper structure in the organizations, inadequate training needs lack of rewards and recognitions to employees and inadequate monitoring of projects.

5.3 Recommendations

The following recommendation have been made based on the findings.

- It is recommended that, real estate developers should educate citizens and contractors on the best type of Management practices and ensuring that guidelines are drawn for everyone to follow.
- Metropolitan, Municipal and Districts Assemblies should develop by-laws to control the building contractors to use the standardized raw materials in constructions in order to avoid damages.
- To ensure quality management practices, government should set up quality management units, develop strategies and road maps to ensure quality assurance,

develop quality system and customer satisfaction initiatives, employees‟ involvement in quality management activities, supplier involvement and effective partnership and establishing measures of quality progress.

- Finally, future research should be done to examine at least one third of the regions in Ghana and obstacles contributing to quality management practices among building contractors in the Wa Municipality.

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APPENDICES

TOPIC

ASSESSING THE QUALITY MANAGEMENT PRACTICES OF BUILDING CONTRACTORS IN THE WA MUNICIPALITY

This questionnaire is a part of my Maters of Technology at the University of Education, Winneba. As a partial fulfilment of my master"s degree, I am conducting a research into the Assessing the Quality Management Practices of Building Contractors in the WA Municipality. The main objective of this research is to assess the quality management practices of building contractors in the Wa Municipality. The information obtained will be used for research purposes only and no attempt will be made to identify any individual or organizations in any of our publications. I really appreciate your time and energy spent on this questionnaire.

SECTION A

SOCIO-DEMOGRAPHIC CHARACTERISTICS

1. **Sex;**

   Male [ ] Female [ ]

2. **Age**

15-24 [ ] 25-34 [ ] 35-44 [ ] Above 44 [ ]

3. Level of education

No formal Education [ ]

JHS/SHS graduate [ ]

College/Undergraduate [ ]

4. Position

Specify …….

SECTION B

QUALITY MANAGEMENT PRACTICES ADOPTED BY BUILDING CONTRACTORS

1. Does your company have quality management initiatives in place?

   Yes [ ] No [ ]

2. If yes to question 1, what are the quality management initiatives do you have?

   Please mention them

   .....

   .....

   .....

3. Did your company obtain any certificate or award on quality management?

   Yes [ ] No [ ]

4. If yes to question 3, can you please list the certificate(s)?

   ……

   ……

   ……

   If no to question 1, why don"t you have quality management initiatives in place?

……

……

……I

n your opinion, do you think is important for your company to have quality management initiatives?

Yes [ ] No [ ]

5. Which of the following initiatives has your company implemented ever since your started operations? (Tick as many as apply to your company).

Initiative	Tick
Setting up a quality department	[ ]
Developing strategies for total quality	[ ]
Development of a quality system	[ ]
Customer satisfaction initiatives	[ ]

Employee involvement to improve quality	[ ]
Supplier involvement program	[ ]
Establishing measures of quality progress	[ ]

6. Do you consider the quality management program of your company successful?

……

……

……

……

SECTION C

CONTRIBUTIONS OF THE QUALITY MANAGEMENT PRACTICES TO THE QUALITY OF PROJECTS

The following are contributions of quality management practices. Please select by ticking the appropriate response that best represents your level of agreement that your company has with the following statements based on the scale provided below.

1 = strongly disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = strongly agree

Statement	1	2	3	4	5
Customer satisfaction has shown improvement due to adoption of quality management practices					
The numbers of products/service defects, errors, or failures found by the customer have decreased					
The number of customer complaints has decreased					
Our financial results have been improving					
Our quality program has improved our business performance in general					
Our company has developed a culture that emphasizes quality					
The number of employees participating on quality teams has increased					
Employee satisfaction has increased					

Partnership with suppliers has improved quality of purchased parts					

SECTION D

WAYS OF IMPROVING THE QUALITY MANAGEMENT PRACTICES

1. Which of the following factors do you think can help improve quality management in your company? Please indicate your degree of agreement using the scale.

1 = strongly disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = strongly agree

Factors	1	2	3	4	5
Top management should be required to always updates their knowledge					
Top management should strongly promotes staff involvement in quality management and improvement activities					
Company must establish and fulfils its social responsibilities					
Qualified Human resource should be					

employed for quality improvement purposes					
Employees must be given information and the required training they need to do their job effectively					
Sufficient financial resources must be provided to support improvement activities					
Company must work closely with suppliers toward long term partnership and improvement.					
Company should ensures that suppliers can maintain high technical standards and meeting quality specifications					

2. Would you company be interested in participating in any training on quality management?

   Yes [ ] No [ ]

3. The following have been identified as barriers or difficulties usually faced in during the adoption of quality management practices in your organization. Please indicate the degree of agreement using the scale.

1 = strongly disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = strongly agree

Statement	1	2	3	4	5
Lack of understanding of quality management practices					
Lack of top management commitment					
Lack of focus on customer/client					
Lack of resources					
Lack of systems and structures for quality management					
Lack of training on quality management					
Lack of rewards and recognition					
Lack of evaluation procedures and benchmark indices					

Thank you

KEY INFORMAT INTERVIEW GUIDE

General guidelines

- Introduce yourself to the interviewee
- Introduce the research topic and objectives
- Address the issue of confidentiality
- Briefly explain the purpose of the interview
- Briefly explain why the interviewee is chosen
- Briefly discuss the process of the interview

Researcher/Officer: Shahid Ahmed Khalid

Research Topic: Assessing Quality Management Practices among Building Contractors in the Wa Municipality.

Technique: Personal Interview (Face-to-Face)

Research Area: Wa Municipal

Total Time required: At least 15 minutes per interview

Interview Questions

1. As a consultant, are you aware of the quality management practices adopted by contractors in the Municipality?
2. In your view, what do experts use to measure quality management?
3. What is your opinion about the quality of service delivery by contractors in the municipality?
4. Why is it so difficult to improve quality in the construction industry?

5. What is the relationship among actors (consultants and contractors) in the construction industry in the Wa Municipality?
6. What is the effect of the culture of the residents and total quality in the Municipality?
7. How often do you conduct quality management reviews among your contractors?
8. What strategies do you employ to ensure quality management among your contractors?
9. Do you often involve the beneficiaries of these projects in the entire process despite the fact that some may have limited knowledge in quality management?
10. What is your general comments on quality management practices of contractors in the Wa Municipality?

Closing Remarks:

- Allow some minutes for comments and inquiries.
- Reaffirm the issue of confidentiality
- Inform the interviewee again about how the data will be used.
- Finally, thank the interviewee for accepting to be interviewed

!!!!!Thank You!!!!!

CHECK LIST FOR DIRECT OBSERVATION

Activity

1. **Pre-construction Activities**

   i. *Inspect the types of building material to buy*

   ii. *Find out how these materials are acquired and supply sources*

   iii. *Observed how the materials are kept in the stores.*

   iv. *Ask type of facilities they are to construct*

   v. *Enquire the transaction cost of acquiring the materials*

2. **Construction activities**

   i. *Observe the ratio of cement to sand use*

   ii. *Observe the type of iron rod use and what part of the building*

   iii. *Observe the quantity of water use*

   iv. *Ask how long it takes to complete a particular mixer*

3. **Quality management practices**

   i. *Education and training*

   ii. *Better craftsmanship of employees*

   iii. *Improve management-worker relations.*

   iv. *Use design-build contract and require quality*

   v. *Safety rules and regulations*

4. Ask question as what are the contributions of the quality management practices to the quality of projects in the Wa Municipality?
5. How can the quality management practices of building contractors be improve in the Wa Municipality.
6. Take pictures as evidence on what has been observed