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COLLEGE OF ART AND BUILT ENVIRONMENT

DEPARTMENT OF BUILDING TECHNOLOGY

**CORPORATE SUSTAINABILITY OF QUANTITY SURVEYING FIRMS IN
GHANA**

By

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Bsc. (Hons.) Building Technology

**A THESIS SUBMITTED TO THE DEPARTMENT OF BUILDING
TECHNOLOGY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR A
DEGREE OF MASTER OF PHILOSOPHY IN BUILDING TECHNOLOGY**

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DECLARATION

I hereby declare that this work is the result of my own original research and that to the best of my knowledge it contains no material previously published by another author or material which has been accepted for the award of any degree of the University, except where due acknowledgement has been made in the text.

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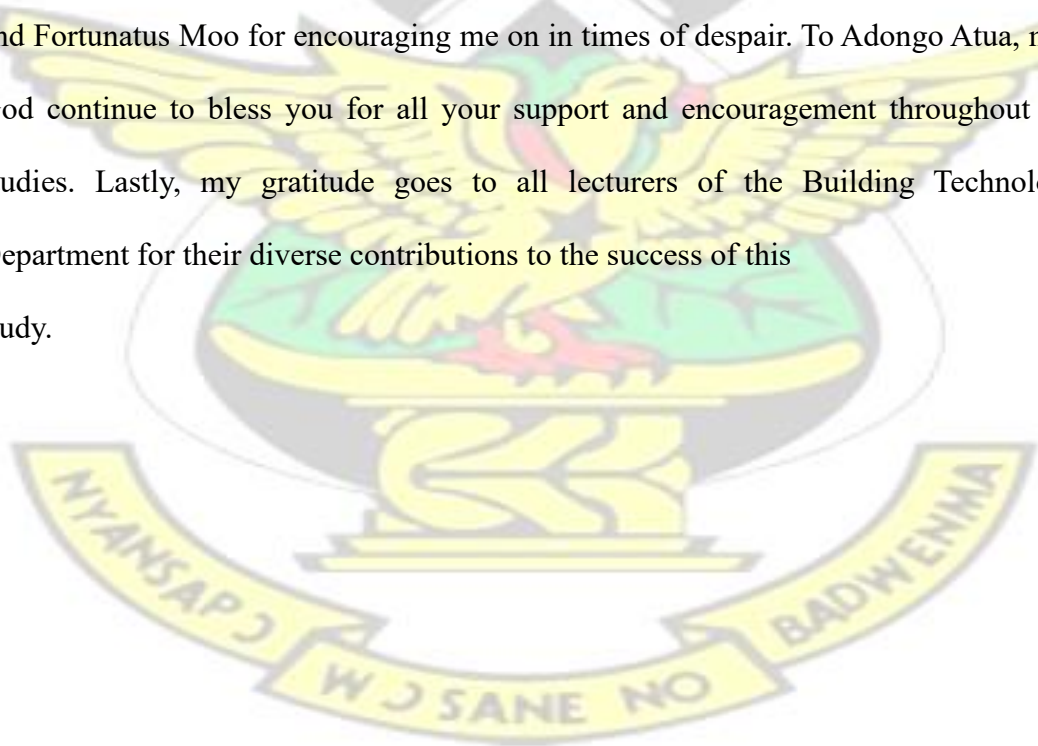
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DEDICATION

This thesis is dedicated to the memory of late father, Akonvare Akadiire Awene

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ABSTRACT

Ghana is faced with a deteriorating employment issues with employment performance declining averagely 3.7 yearly. The trade liberalisation programme with the rapid cedi depreciation has led to the collapse of many efficient local enterprises and firms and subsequently loss of jobs, internal and external attrition, and slow growth of the economy. Also, it has rendered the private sector sluggish to sustain. Quantity Surveying Firms (QSFs) operations is key to all the infrastructural development, which is considered to be an economic booster worldwide. The ability to sustain the QSFs is partly to sustaining the construction industry which potentially generate jobs and income for all forms of skilled and un-killed labour and further the growth of Gross Domestic Products of nations. QSFs are confronted with many challenges that pose threat to its survival and sustenance. These include lack of innovation of skills, fear of extinction from other construction professionals, low human capital retention and development of talents for future generation. The past decades have seen a rise in diversification of services into non-traditional areas in pursuant to sustain due to the instability and complexity of demands in the construction industry. Firms and organisations are making effort to implementing something sustainable, due to continuous and systematic changes sustainability has given the world currently. Studies on sustainability of firms in the construction industry in developing countries and Ghana in particularly have been generally scanty. As a consequence, there exists no policy direction for the sustainable development and growth of the QSFs. Thus, this study sought to develop a criteria for assessing the sustainability of QSFs to enhance their survivability. The study adopted a mixed research approach where preliminary interview was conducted on 10 QSFs purposively sampled and subsequently developing questionnaires which was administered to 46 Ghanaian QSFs. 25 Senior Quantity Surveyors (QSs) answered with a response rate of 55%.

Nvivo 8 Software was used to analyse the interview whereas the Factor Analysis, Relative Importance Index and Descriptive Statistics were adopted to analyse the quantitative data. The discussions and interpretation of results were supported by systematic synthesis leading to the development of a sustainability criteria to sustain the operations QSFs in the midst of espoused challenges of firms in Ghana with possible sectors to diversify into. In order to guide upcoming QSPs, the study identified the most demanded QS services by clients as: Preparation of Bills of Quantities, Valuation and Final Account, Interim Payment Certificate, Preparation of Contract Document and Estimation, Project Management, Cost Planning etc. There was attrition of both QSPs and graduate professionals at a rate of *1 to 3 professional* per firm in a year to the former. Voluntary and involuntary factors led to the attrition of QSPs. Furthermore, factors identified to promote sustainability of QSFs was espoused to include education and upgrading of staff, good economic conditions and policies, firms logistics, diversification of services, safety, security and technological edge etc to enhance their survival. Finally, the study established a clear definition for corporate sustainability.

Key words: Corporate Sustainability, Attrition, Quantity Surveying Firms, Quantity Surveying Professionals, Ghana

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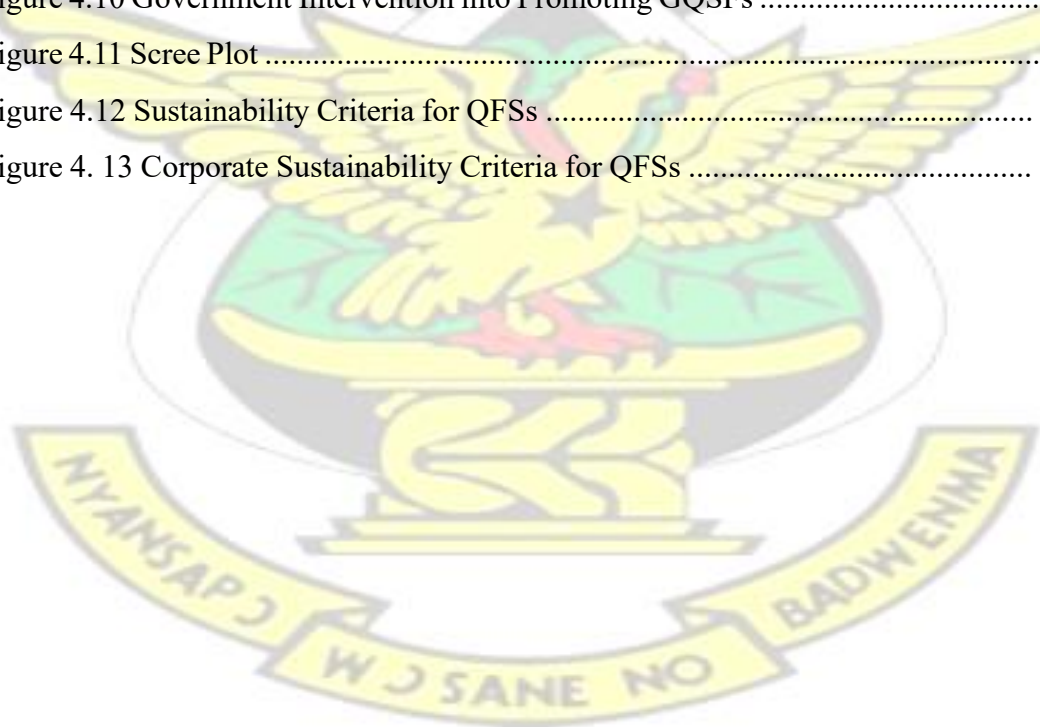


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CHAPTER ONE

INTRODUCTION

1.0 Background to the Study

The Quantity Surveying Professional is part of the key professionals within the built industry (Nayalingam, et al., 2013) with expert knowledge in construction cost management, and improve service delivery to clients through effective knowledge management (Senaratne & Sabesan, 2008). The Quantity Surveying Practice is one of the key players in the development and existence of the construction industry across the world. This is because Quantity Surveying Firms (QSFs) are cost planners, contract administrators, claim experts, adjudicators, value managers, estimators and also processing engineers (chemical engineering plant and oil rigs) who analyse and control costs of projects (in material, labour and plant) from the feasibility studies to the completion.

Quantity Surveyors (QSs) in Ghana traditionally manage project finances of clients predominantly in building and roads sector of the built industry (Addai, et al., 2009). These traditional services are Bills of Quantities preparation, Cost Planning, Estimating, Bid and Contract Documentation and Contract Administration (Addai et al., 2009; Hanid et al., 2007). Hanid et al., (2007) emphasized that as the Quantity Surveying Services evolved, some traditional services were evolved to add on forecasting, analyzing, project planning, cost controlling, project evaluating, budgeting and problem solving and modeling. Non-traditional QS services has witness a rise in diversification within the past decade to include feasibility studies, mediation, expert witness/appraisal, valuations, project/construction management and facility management (Addai, et al., 2009).

It is clear that the services of Quantity Surveying Firms (QSFs) or profession is being redefined to gain more grounds to meet the current demands of the built industry, Oil and Gas, Banking and other sectors of the economy and also to sustain its survival to create more jobs. This is confirmed in Hanid et al., (2007) that Quantity Surveyors (Qs) of this era consistently diversify in knowledge and expertise to meet the current scope of work demands. The instability in the built industry threatens the QSP. This has therefore made it necessary to sustain its future by evolving into other industries (Hanid et al., 2007).

Corporate sustainability relates to firms by the inclusion of social and environmental dimensions in business operations with stakeholder interaction (Marcel and Marco, 2002). Sustainability has become a central issue in all forms of organizational operations (Kiewiet & Janita, 2007); also, it's a complex and confusing concept (Faber, et al., 2005) and an essentially integrative concept (Gibson, 2006). Tyteca (1998) confirms that the need for procedures to measure sustainable development or sustainability is increasingly widely recognized. Research has identified over 50 definitions and circumscriptions of sustainability. However, these definitions could not be compared easily (Faber et al., 2005). Accordingly, many approaches to sustainability have environmental consideration, and addresses social, economic and ecological considerations. The intersection of social, economic and ecological interest often describes Sustainability (Gibson, 2006).

According to Faber et al., (2005) most disciplines that work on sustainability had personal standpoints in areas of ecology, economic, social and biology. However, other disciplines perspective is mostly not considered. Tyteca (1998) argues that very little has been done toward the measurement of sustainability at the company level.

Sustainability had united numerous organisational practices under one umbrella (Kiewiet & Janita, 2007). Lately, many institutions are making efforts to undertake sustainable practices (Faber, et al., 2005). QSFs need to follow suit, because largely, research confirms the valuable contribution of quantity surveying profession in the built industry (Addai, et al., 2009; Hardie, et al., 2005; Ofori & Toor, 2012; Frei & Mbachu, 2009; Davis, et al., 2007; Hanid et al., 2007). The current approach to sustainability recognises continuous and systematic changes of the world (Faber, et al., 2005). This role of companies in achieving sustainability is intimately linked to the pressures they receive from outside and to the internal motivation of managers and workers and hence will influence the companies' strategic intent or objectives (Tyteca, 1998). Therefore corporate sustainability in a particular organisational setting necessitates the implementation of a particular unique concept (Kiewiet & Janita, 2007).

There is a recent emerging public and business interest in building sustainable organizations, amassed research and educational interest in the area of organisational sustainability (Jeffrey, 2010). There is extensive research on sustainability, either in its development, assessment, corporate performance, indicators etc. According to researchers, "Sustainability" is defined to be the intersection economic, environmental and social interest (Sara, 2013; Jeffrey, 2010; Limpho, et al., 2010; Robert, 2006; Bansal, 2002). There are copious terms which recounts sustainability within the built environs for a greener ecological and a sustainable natural environment (Sara, 2013), hence studies on sustainability are always related to the environment. However, little has been done on sustaining corporate organisations. Bansal (2002) observed that the varied meaning to sustainable development is due to the narrow reach of the term. A sustainable competitive QSFs can effectively manage huge capital investment, physical infrastructure, and construction body in general. This results in the improvement of

social performance and environmental issues of the construction industry and also promote a sustainable economic future for humanity.

1.1 Problem Statement

Hardie et al. (2005) stated that unless formal innovation evaluation is developed, QSs risk separation from the current built industrial structures and be considered suspiciously by constructions professionals. The recession in construction in UK and other developed countries in the latter part of 1990s led to fear. Based on this, many professionals speculated that QS might become extinct as a formal profession (Ofori & Toor, 2012). Challenges related to construction in developing countries doesn't differ from that of Ghana (Laryea, 2010). Cartlidge in 2002, opined that the QSP was faced with numerous challenges and people speculated it being at the verge of extinct (Ofori & Toor, 2012). Also, in 2006, Cartlidge confirmed a high level scarcity of practicing quantity surveyors.

It is important for QSFs to realise their factual potential assets (Davis et al., 2007), but a numerous companies, particularly the bigger firms have very short-term policies in retaining talents in these firms (Ofori & Toor, 2012). A study conducted by Ofori & Toor, (2012) revealed that scarcity of QSPs in QSFs is due to unattractive salaries. They had difficulties recruiting the right quantity surveying professionals to work. The limited staff recruited hardly stay. Though the industry is booming and expanding nationwide, employers struggle to attain qualified QSs for firms because of lack of promotional structures. So the questions by Ofori & Toor (2012) are how to attract the qualified staff, to groom and retain these talents for future leaders for QSFs.

Evolution of technology threatens the corporate sustainability of QSFs. These have almost simplified and automated the core QS activity which is largely Bills of

Quantities (BoQ) preparation. According to Hardie et al. (2005) professional's duties and roles are possible to change within a dynamic and complex industrial demands. Some traditional duties may obsolete and others greatly alter in scope and responsibilities with the advent of new technologies. Currently, there are computer programmes which produce automatic quantities and pricing from 3D computer aided design and has gradually taken care of most repetitive and routine works in QS.

According to Limpho et al. (2010) the main purpose for a sustainable assessment framework has arrived. Clarity on the meaning of sustainability and what is to be sustained, reasons to prioritize some aspects to others and its beneficiaries is required. Stakeholders are required to agree on the specific contextual meaning and its corresponding dimension of sustainability (Limpho, et al., 2010). It is therefore important to probe the sustainability of quantity surveying firms in Ghana.

QSFs are confronted with many challenges that pose threat to its sustainability. These include innovation of skills, fear of extinction from other players of the construction industry, low human capital retention, and development of talents for future generation. Also, the technological advancement and complexity of new demand in the industry is rendering some functions of QS obsolete. All the problems stated, shows a lag in corporate sustainability of meeting all demands of all category of stakeholders (employees, members, clients, financial allies, suppliers, state or local authorities etc.) (Perrini and Tencati, 2006). Sustainability of stakeholder relationships to firms boost the capacity of its operations (Perrini and Tencati, 2006). It is in this sense that this research is relevant and especially in a developing country like Ghana to satisfy all stakeholder value into to building sustainable corporate QSFs.

1.2 Research Questions

Following from the problem statement, there are several questions that would be asked with the aim of identifying the true issues in respect of corporate sustainability of QS Firms. These questions bother on the status of QSFs, their needs, and strategies for corporate sustainability. Consequently, the questions below guided the study:

- i. What is the scope of activities of QSFs?
- ii. What are the challenges to the corporate sustainability of QSFs? iii.

What factors account for the high attrition rate of QSP in QSFs?

- iv. What criterion can be used to assess the corporate sustainability of QSFs in Ghana?

1.3 Aim of the Study

The study seeks to develop criteria for assessing the corporate sustainability of Quantity Surveying Firms (QSFs) in Ghana.

1.4 Objective of the Study

The specific objectives of this research include:

- i. to identify the scope of activities of QSFs; ii. to identify the challenges to the corporate sustainability of QSFs; iii. to assess the factors that lead to attrition in QSFs;
- iv. to develop innovative criteria for assessing the corporate sustainability of QSFs.

1.5 Significance of the Study

Organisations with QS operations will have the advantage over their contemporaries and will place them on a good position in making strategic decision for its future prospects. QSs will personally be well informed on aspects of the profession of good prospects to promote effective carrier decision and development of young professionals (Frei & Mbachu, 2009). The research is also to recommend measures to promote the sustainability of QSFs in Ghana to boost entrepreneurs and investors morale that sector.

This will enable Ghanaian Quantity Surveying Firms (GQSFs) to consciously plan to increase their competitiveness and build their professional status to add on opportunities and reduce possible threats, and to enhance the operations of QSFs for practicing professionals and sustain it for upcoming QS students.

1.6 Scope of the Study

The study focuses on registered QSFs under the Ghana Institution of Surveyors (GhIS) which are in good standing according to GhIS-QS Division, (2013) and QSFs that have registered with GhIS before either existing or not to identify their sustainability considering their organizational cycle (starting up, survival, growth and succession).

1.7 Methodology

The research used mixed method approach. For ease identification of factors that defines the criteria of corporate sustainability QSFs in Ghana, a thorough literature search on sustainability was done to develop some structured questionnaire. These questionnaires were used to collect data from the target group. The target group was Quantity Surveying firms registered with the Register General Department and with

the Ghana Institution of Surveyors. Unstructured interview was conducted on other QS Professional to cross-check the information given.

Primary data was obtained through field survey using interviews and questionnaire from the targeted group. Secondary data was obtained through desk research by reviewing both published and unpublished literature.

Statistical Package for Social Sciences version 17 (SPSS) was used to analysis the data. Descriptive statistics was used in analyzing open ended questions. Data obtained from focus groups was analyzed in a bid to contribute to this knowledge gap.

1.8 Structure and Organisation of the Study

The study was presented in five (5) chapters. Chapter one (1) dealt with general introduction, background , problem statement, aim and objectives of the study, research questions, significance, scope of the study, methodology and structure and organization of the study. Literature review formed the bases of the second chapter with theoretical framework. Chapter three (3) gives a reflection of the methodology used to collect data; e.g. sampling, administration of questionnaires, visits and interviews. Chapter four (4) dealt with the outcome (field work) of the analyzed data, findings and discussions; summary of the outcome of the study, its conclusion, recommendations / suggestions for further research are catered for in chapter five (5). Finally, there are references comprising the sources of information used for this research work. This is followed by illustrative appendices.

CHAPTER TWO

LITERATURE REVIEW

2.0 Overview of Quantity Surveying Profession

A quantity surveyor is a professional qualified and passably knowledgeable in all aspects of construction costs and contractual administration (Hanid, et al., 2007; Ashworth, 2010). Quantity surveying is not a new profession (Ofori & Toor, 2012). Internationally, it has been established as construction professionals who provide a professional service within the built industry to government and private clients (McAdam & Canning, 2001). The QS Profession came to being into the construction industry.

It was found necessary to estimate the cost of projects ever since human built. It is evident in history that Egyptians engaged in some aspects of quantity surveying (QS). However, in the 17th century the QS profession was formally developed in the UK (Ofori & Toor, 2012).

The role of QS is currently more vital than the profession when it was originally established in England in 1785 (Senevirante, et al., 2008). The traditional duties of QS were measurement and valuation. Accounting and negotiation were later included to the profession. As the profession advanced forecasting, analyzing, planning, controlling, evaluating, budgeting, problem solving and modeling were included (Hanid, et al., 2007). Currently, the services of QS have extended to non-construction sectors namely banking and petroleum industries (Addai et al., 2009; Smith, 2009; Hanid et al., 2007). Currently, Qs mostly lead in project delivery, because of the expertise and value in cost planning services to firms (Smith, 2009).

2.1 An Overview of Ghanaian Quantity Surveying Profession

The QS profession as internationally known and established (McAdam & Canning, 2001), is also known and established in Ghana. Surveying in Ghana dates back to the colonial era. QSs and Engineers came from Europe to see to the construction of Castles, Forts and other infrastructure to accommodate colonial masters and aid their businesses. There is only one public University that offers degree programmes in QS and Construction Economic in Ghana, namely, the Department of Building Technology in the Kwame Nkrumah University of Science and Technology, Kumasi.

The Polytechnics in Ghana also run Higher National Diploma programmes in Building Technology.

There are institutions that regulate the practices of every organisation in the world as well as Ghana. The QS industry in Ghana is regulated by several bodies which includes the Licensed Surveyors Association of Ghana (LISAG) and the Ghana Institution of Surveyors (GhIS) (Obeng-Odoom & Ameyaw, 2011). In September, 2005 LISAG was established (Tenadu, 2014) and are into land surveying whilst GhIS was established in February 1969 (GhIS, 2011). However, GhIS regulates the profession in Ghana. These professions includes the quantity surveyors (QSs), land surveyors (LS) and the valuation and estates surveyors (VES) all under GhIS (ObengOdoom & Ameyaw, 2011).

As at 2009, there were about 221 QSs, of which 16 percent holds Fellows category of membership, Professional Associates were 61 percent and 23 percent are Technician by membership (Obeng-Odoom & Ameyaw, 2011). Currently, there is a total of 269 surveyors of which 12.6 percent are fellows, 72.2 percent are Professional Associates and 15.2 percent are Technician QS coupled with 38 practicing firm in good standing

per the regulation of the QS Division of GhIS (GHIS-QS Division, 2013). This is clear that the numbers admitted into the QSP is appreciating, but not in unison across the sectional categories of the profession.

As a key professional in the construction industry (Nayalingam et al., 2013), QSs in Ghana provide the entire basic traditional roles in QS profession. Pheng & Ming, (1997) argues that the QS provide advice on cost to client and is tasked to execute project to a budget prescribed. They see projects through inception to completion.

QSs in Ghana traditionally provide financial management services, these services include BoQs preparation, Cost Planning and Estimating, Bid and Contract Documentation and Contract Administration to the building and road construction industry (Addai et al., 2009). These traditional services are not only provided by Ghanaian QS, but Pheng & Ming, (1997), Hanid et al., (2007) and Nayalingam et al., (2013) confirm these services as general practices by QSs.

The GQSP has diversified in the past decade to services in non-traditional areas (Mining, Banking, Manufacturing, Transport and Aviation sectors) (Addai et al., 2009) and now the emerging Oil and Gas. The advent of technological development and the coming into being of the Public Procurement Act (PPA 663) in the procurement of works and service in public institutions has also redefined QS practices in procurement of works in the public sector. Ofori & Toor (2012) argue that QS profession has evolved within the last decade; and in this era of rapid change, organisations keep realigning to the environment to maintain effectiveness and competitiveness (Lui, et al., 2006). Addai et al. (2009) therefore calls on the profession to evolve and reinvent itself in the line with the emerging trends on change in the industry, by changing working patterns,

acquiring new knowledge areas, skill and mindset and strategies to influence the growth and survival of the QSP/QSFs.

2.2 Significance of QS Profession/QSFs

The role of QSs is key in the relationship among all stakeholders in construction projects (Hardie, et al., 2005). However, QS practices are guided by strict professionalism, inclusive of responsibility to their employers or client. Also, it is the responsibility of QSs to keep the dignity and status of the profession; to discharge duties to clients efficiently, effectively and in a proficient way of complete loyalty and without delay (Fugar & Adinyira, 2008). The competences required by every QS is set out in the Table 2.1 below.

Table 2. 1 Competences of Quantity Surveying Professionals

| Mandatory Competence | Core Competencies | Optional Competencies |
|---|---|---|
| Conduct rules Ethics and professional practice Client care Communication and negotiation Health and safety Accounting principles and procedures Business planning Conflict avoidance, management and dispute resolution procedures Data management Sustainability Team working Leadership Managing people Managing resources | Commercial management of construction or Design economics and cost planning Contract practice Construction technology and environmental services Procurement and tendering Project financial control and reporting Quantification and costing of construction works. | Capital allowances Commercial management of construction or Design economics and cost planning (whichever is not selected as a core competency) Contract administration Corporate recovery and insolvency Due diligence Insurance Programming and planning Project evaluation Risk management Conflict avoidance, management and dispute resolution procedures or sustainability |

Source: adapted from (Fugar & Adinyira, 2008) cited from RICS (2006)

Furthermore, QSs can establish measures to promote financial transparency in project delivery. Technology can be used to integrate cost with other important data to ensure accountability for all stakeholders on the project (Ofori & Toor, 2012).

QS Profession by large research is capable of managing project financing to meet estimated cost. Infrastructure development is the spine to national development and cannot be realized without the essential and massive contribution of QSFs/QS Professionals (Nayalingam, et al., 2013). Pheng & Ming (1997) assert QS professionals are occasionally appointed to be project managers throughout the construction project stages, and to organize all the works of stakeholders in the project execution. Governments worldwide appreciate how infrastructural development is critical to sustain growth and diversify economies as in the case of Ghana (Ministry of Finance and Economic Planning, 2013). Hence there are Development Offices across all the Local Government Departments, Public Tertiary Institutions and in some Ministries and Department. Paramount among these development offices“ organogram is the QS Profession. QS professionals are mandated to execute their traditional roles in the award and monitoring of infrastructural development within all sectors. Doughtily QSP are professionally engaged in non-construction sector within the public service which credence the assertion to unravel the uncompromised needs for QS professionals.

2.2.1 Significance of QS in the Construction Industry (CI)

The CI renders services to the private, commercial, public limited companies, the government and international bodies. QS professionals play enormous roles to the success of delivery of construction products. Table 2.2 below presents how Pheng & Ming (1997) explicitly outline all the tactical duties QS address in construction project from inception to completion. Other authorities confirm these duties QS engage in as general duties (Addai et al., 2009; Davis et al., 2007; Frei & Mbachu, 2009; Hardie et al., 2005; Hanid et al., 2007). Moreover, Qs are the project cost accountant and advisors to the projects stakeholders on issues on contract administration and

procurement (Fellows et al. 2003, cited in Ofori & Toor, 2012). Also QSs functions centres around cost and contract management in the contractor outfit.

The surveying services regulator in Ghana, GhIS tacitly buttresses QSFs by lobbying major construction clients to patronize the service of experts who have undergone professional training process with them (Obeng – Odoom & Ameyaw, 2011); this was a move to confirm the stands of GhIS to QSFs to curtail quack QSPs. The statement published in the print media and on GhIS website in 2009 as in Obeng – Odoom and Ameyaw (2011) which states that *“The Governing Council of the Ghana Institution of Surveyors (GhIS) presents the underlisted fully paid up Individual Members and Practising Firms in good standing [...] for the information of all Government Ministries, Departments, Agencies/Parastatals, Metropolitan, Municipal and District Assemblies, Public and Private Corporate Bodies and the General Public. Furthermore The Governing Council strongly advises the above-mentioned employers to use Surveyors and Firms it recognises, who are thus bound by its: Constitution, Code of Conduct and Ethics, Disciplinary Procedures and Conditions of Engagement and Rules of Conduct”*.

Table 2. 2 Duties of Professional Quantity Surveyors in the Construction Industry

| Stage | Duties of the Quantity Surveyor |
|--|---|
| Feasibility Study | Initial cost indications based on similar and recently completed buildings Cost implication of site conditions |
| Outline Proposals | Preparation of rough estimates based on client's requirements Assist client in setting cost limit or budget |
| Preliminary Design | Preliminary estimates and preparation of initial cost plan Group element cost targets established |
| Detailed Design | Comparison with client's cost limit or budget Detailed estimate Preparation of elemental cost plan and amplified cost plan Elemental cost targets established Comparison with client's budget and earlier estimates Cost checks to obtain best solution in each element as drawings are produced |
| Final Design | Preparation of tender documents Continue cost checks and obtain quotations from specialists Pre-tender estimate |
| Tender Period | Attend to tenderer's queries Issue corrigendum |
| Tender Evaluation | Evaluate tender Prepare reconciliation statement and compare tender sum with estimated costs Advice on course of action to be taken Prepare cost analysis |
| Award of Contract | Prepare letter of acceptance after client has approved tender Compile documents and prepare for contract documentation |
| Construction | Prepare valuations for payments on account at the intervals stated in the contract and agree with contractor's quantity surveyor Plot payments on account on "rate of spend" graph and report to architect on any significant divergent Advise architect, if requested on expenditure of provisional sums, measure and value work carried out by the main contractor against provisional sum (except where lump sum quotation have been accepted) and adjust Prepare estimates of likely cost of variations on receipt of copies of architect's instructions Later measure and value check and price daywork voucher Advise architect if requested on expenditure of prime cost sums, check nominated sub-contractors' and nominated suppliers' final accounts and adjust contract sum accordingly Prepare final reports for architect and client at the same time as interim payments Check main contractor's claims for increase in costs of labour, materials, levies, contributions and taxes etc. applicable. Alternatively, apply price adjustment indices to amounts included in interim valuations Measure project based on schedules of rates or on bills of approximate quantities as the work proceeds, either on site or from architect's drawing, and value at contract rates Advise architect, if requested on contractor's claims (if any) for loss and expense payment if accepted, negotiate claims with contractor |
| Completion of Project and Defect Liability Period | Advise on extension of time and imposition of liquidated ascertain damages Finalize project accounts Feedback on cost data and prepare cost analysis of completed projects. Contribute to cost database for use in future projects |

Source: Pheng & Ming (1997)

The crusade by GhIS clearly demonstrates the threat to the surveying profession by other professionals in the construction industry. Nevertheless, it enforces the importance of getting a professional touch in the industry to obtain value for money.

The quantum of projects outlined in Ministry of Finance and Economic Planning, (2013) to meet the infrastructure gap includes;

- i. There is a total of 66,200 km length of Ghana's road network, of which 42,192 km, 12,400 km and 11628 km are Feeder roads, Urban Roads and Trunk Roads respectively.
- ii. GOG has priority to rehabilitate and modernize the network in the railway network which linked Accra-Kumasi-Takoradi and is re-build portions of the Tema-Akosombo as the Eastern multimodal corridor and to further extend rail network from Kumasi to the North to create an affordable access to natural resources and other economic potentials areas.
- iii. The extension and retrofit of the Takoradi and Tema ports is Ghana's priority on its seaport. Furthermore, the Volta Lake transport system currently on going.
- iv. Power generation has being prioritized to reach a capacity to above 4,000 MW by 2017. Also, to provide electricity to all its citizen by year 2020.
- v. Universal water and sanitation services is projected to be achieved by 2025.

The above listed planned projects' success partly rest on QSFs per GhIS call. The 160,000 demand in housing units annually, private, commercial and international demand for the services of QSFs regardless of the challenges in the surveying industries outlines it importance in QS Professionals in the construction industry.

2.2.2 Significance of QS in Non Construction Industries

QS professionals have diversified their practices into other sectors outside construction. Hanid et al., (2007) emphasize the need for QSs to delve into different industries to sustain and safeguard their future. Addai et al. (2009) admitted to the challenges, threats and opportunities within the oil and gas sectors and implore QSFs to evolve and reinvent itself in line with the emerging trends.

Hanid et al., (2007) identified the banking and petroleum sectors as new areas which the QS professionals can offer their services. They came out with specific duties QS Professionals can offer in these non-construction sector as shown in Table 2.3 below.

Table 2. 3 Current Potential and Future QS Service in Banking and Banking and Petroleum Sectors

| Category | Banking Sector | Petroleum Sector |
|---------------------------|--|--|
| Current | Insurance, Lending, Guarantees & Bond, Leasing, Investment | Project management, Asset maintenance, Civil & Structural Engineering, HSE, Quality management, Finance & Accounting, Cost Engineering & Estimations, Contracting & Commercial, Legal, Procurement |
| Potential | Security, Money Transaction services, Taxation | Business planning & development, Marketing & Trading, HRM, Administration, IT, Supply & distribution |
| Evolved and Future | Project management, Building maintenance management, Value management, ADR, Advise on funding, capital allowances and taxation | Facilities management, Risk management, Value management, ADR, Insolvency services |

Source: Hanid et al., (2007)

Furthermore, Hanid et al. (2007) recommended QS professionals to explore other sectors such as the manufacturing. Also, Hardie et al., (2005) added that, development of the profession will ensure its sustainability and survival in the construction and other new industries.

2.3 The Changing Face of QSFs

Historically, the construction industry has contributed significantly to meeting the social, economic and technological demands of developing civilization. QSs execute their duties in unification with the consultants, contractors and architects to protect the client's interests (Senevirante et al., 2008). QSs has grown to a highly reputable profession within the built industry with construction cost management for all stakeholder as their primary role (Ashworth & Hogg, 2002).

The responsibilities of the QSs has evolved constantly due to changes in society. The present QSs practice their expertise in diversified areas within the construction industry and non-construction industry (Brandon (1990) cited in Senevirante et al., 2008; Hanid et al., 2007; Addai et al., 2009). QSFs have seen expansion and modification of services to meet the demands of the industry (Smith, 2009). QSs of this age persistently diversify their knowledge base to involve into services including project management, value management, arbitration, adjudication and facilities management throughout the construction and other non-construction industries sectors namely banking sector and petroleum sector (Hanid et al., 2007). Today, QS professionals explore opportunities in the financial industry, insurance industry, manufacturing industry and real estate sectors (Perera et al., 2007) as well as oil and gas.

QSs are principally oriented to be the major handlers of information in the built industry. The flow of major information evolves around quantities and cost. The advancement of IT affords the profession massive opportunity to support the built industry. (Smith, 2004). QSFs must be ready to manage these variations and provide measures to resolve them (Hassan, 2010).

2.4

Challenges of QSFs/QS Profession

Among the most documented threats to the QS profession or practice is the undermining of traditional cost modelling by advancements in Information and Communication Technology (ICT) and Information Technology (IT) (Frei & Mbachu, 2009). Changes in the industry and technology present the quantity surveyor with various challenges, threats and opportunities (Addai et al., 2009). Davis et al., (2007) subscribed to the application of IT as critical to the success of managing knowledge in QSFs. Also Smith (2009; 2004) identified fee competition, professional indemnity, Information Technology (IT), conservatism to change, invasion by other professionals (Project managers, Accountants), poor marketing, quality of training and Continuous Professional Development (CPD)(On the Job Training).

Most QSs are conservative to the utilization of computing and ICT; the use of CAD and automatically generated quantities may therefore be a major threat to QSFs in the oil and gas industry, especially in areas related to the technical role of the quantity surveyor (Addai, et al., 2009). A study by Smith (2004) revealed that QSFs shy away from IT investment due to the high cost and time to acquaint and adapt into practice. However, technological cost is relatively low when compared to the salary cost of QSs and productivity and increased business opportunities.

2.4.1 Technological Advancement

Current technologies make obsolete some formal duties and greatly change others responsibilities. There are computer aided designed that automatically generate quantities and work pricing from 3D designs (Addai et al., 2009; Hardie et al., 2005). It is imaginable that there could be future IT programmes to take care of routine and repetitive works of QSs. However, Smith (2009) revealed that most QSFs disagree that

additional IT advancement could lead to the extinction of QSs as measurers and that upcoming QSs will be part of a multi-disciplinary practices. Obviously, the separated opinions with the proposition that, IT advancement will reduce the number of employees and only large QSFs with resources can take advantage of IT development (Smith, 2009).

Many QSFs have negative perception about technology, viewing it to be awkward, rather than an incredible opportunity to enhance business performance and to add to productivity and competitiveness (Smith, 2009). The QS profession needs to focus on value addition and effectively building institutional skills to enhance its sustenance and prosperity. Approximately, two thirds of professionals studied by Smith (2009) do not use electronic measurement but still use in traditional approaches to measurement. To maintain the expertise of QSs in the construction industry, due and proper recognition of their duties and responsibilities must be established among other elements in the industry (Hardie, et al., 2005).

2.4.2 Client Expectation and Demand

Clients have an increased expectation (complexity and its requirement) of the service, QSs must therefore arm and exhibit a variety of knowledge in their duties (Ofori & Toor, 2012; Hannah et al., 2008; Davis et al., 2007). There are significant market and client demand, unsteady economy within the built industry and intense competition among other professionals (Hanid, et al., 2007). Also, advancement in technology and education has increased societal affluence, leading to more discerning clients demanding value, quality and timeless services (Pheng & Ming, 1997). QS professionals need to upgrade their expertise faster to outwit their competitor (Davis, et al., 2007) to meet these demands.

2.4

.3 Attrition of Technical Staff

Employee leaving an establishment is termed as employee turnover or separations or attrition (Sanda & Ntsiful, 2013). Attrition can be internal (other better sectors or jobs in same country) and external (migration). The issues of internal and external attrition are major concern to all stakeholders (Adu, 2010). According to Amstrong (2012) and Cappelli & Hamori (2006), attrition of key employees can create an inconsistent impact on businesses due to the substantial quantum of resources (cost and time) required to re-train and develop employee's capacity; which QSFs can have its fair share. Generally, dissatisfied employees become less committed to their work and seek alternative opportunities elsewhere to quit. These kinds of employees may mentally or emotionally withdraw themselves from the organisation if they fail to grasp an opportunity (Sanda & Kuada, 2013).

Research has revealed attrition in the Health Industry (Antwi & Phillips, 2013), Education Service (Baah, et al., 2009), Hospitality Industry (Honyenuga & Adzoi, 2012), Public and Civil Service (Sanda & Ntsiful, 2013; Mensah & Alemna, 1997), Media Industry despite their recent growth (Quartey, 2012) etc. Ghanaian workers have quality education, proficient in English language and beset with low salaries has led to brain drain of professional (Antwi & Phillips, 2013). Small Ghanaian businesses are beset with many challenges including high employee separation leading to lose of experienced professionals to big firm, who are wooed with higher wages (Bamfo, 2012).

Like many developing countries, Ghana is faced with deteriorating employment issues. There are some changes in the labour market due to globalisation and withdrawal from direct involvement of government from productive economic activities. Trade liberalisation coupled with the depreciation of the Cedi led to the collapse of many

enterprises and subsequent loss of jobs of many people. Employment performance decline averagely by 3.7% annually (Baah-Boateng, 2004). This was due to the sudden decline of the state from direct employment (Obeng-Odoom, 2012) and privatizing more than 300 government enterprises between 1987 to 2000. This has led to the decline formal sector employment from 18% in 1987 to 13% in 1999 (Baah-Boateng, 2004). This has made the informal sector the majority to the sluggish growth of the formal sector employment where the public sector play a greater portion of the workforce.

There is an increasing shortage of built industry professionals, and the need for cost experts and financial manager (Ofori & Toor, 2012). Fanous, (2012) argued that QSs currently have unmet supply and demand problems. This has led to an unmatched and unfulfilled demand for them in North America, Australia, New Zealand and also in some European Union countries. In Sri Lanka, the local firms are short of experienced quantity surveyors due to brain drain. However, QSs are not given due recognition and, thus, cripple their prospects in knowledge enhancement (Senaratne & Sabesan, 2008).

There are shortage of QS professionals in leading QSFs due to low wages in the QSP. However, large institutions have very brief policies in maintenance of talents they harness. It behooves on the organisation to identify measures to attract young QS professionals, to be groomed and retained. Young QS professionals are unwilling to painstakingly build their expertise to senior levels but rather wants it quick (Ofori & Toor, 2012).

.3.1 Type of attrition

Studies show that attrition can be divided into several types. Retirement and pursuant for better job are types, and each affect human and social capital on both the firm and the economy differently (Baah, et al., 2009). Sanda & Ntsiful (2013) and Ho et al.,

2.4

(2010) opined that the two kinds of attrition categories are voluntary and involuntary. Gomez-Mejia et al., (2012) cited in Sanda & Ntsiful (2013) described voluntary attrition as when an employee terminate his/her appointment for personal or professional reasons. However, in a situation where the employer terminates his/her appointment with an employee attrition becomes involuntary. This could be caused by the business demands (poor fit between them) or economic reasons.

Ho et al. (2010) further attributed employee attrition to push and pull factors. With the push factors, a worker aims to change jobs due to situational elements emanating from job dissatisfaction. Conversely, Pull factors are specific individual necessities that attract worker to alternative works. This research accepts the views of Sanda & Ntsiful (2013) and Ho et al., (2010) and classify the types of attrition to be voluntary and involuntary.



Table 2. 4 Findings on Factors that Leads to Attrition

| S/N | SOURCE | SECTOR | FACTORS OF ATTRITION | REASONS/ TYPES |
|-----|---|----------------------|---|--|
| 1 | Baah et al., (2009) | Teacher Education | Job Satisfaction, Salary Level, Working Conditions, Worker relationship with Colleagues, and with Superiors | Retirement and Pursuant for Better Job |
| 2 | Gomez-Mejia et al., (2012) cited in Sanda , A. & Ntsiful, A., 2013. | SMEs | Career Change, Better Job Offer, Family Reasons, Poor Working Conditions, Low Pay and Benefits and Bad Relation with a Supervisor | Voluntary and Involuntary |
| 3 | Mensah & Alemna, (1997) | Library Board | Managerial Style and Organisational Structure, Low Pay, Low Status, Delayed and Promotional | — |
| 4 | Honyenuga & Adzoi, (2012) | Hospitality Industry | Low Salary, Poor Condition of Service, and Lack of Expertise of Owner or Manager | — |
| 5 | Cappelli & Hamori, (2006) | Executive Turnover | Unhappiness, employee mismatch with job requirement, interpersonal relationships or organizational values, | Voluntary and Involuntary |
| 6 | Anderson, (2006) | Service Industry | interference with work-family-lifestyle balance, poor relations with co-workers, high work demand, unsatisfactory supervisory relations and perceived inequity in remuneration or work assignment | Voluntary and Involuntary |
| 7 | Ho et al., (2010) | Service Industry | work-family lifestyle, co-workers relationship, work stress, and supervisory relationships | Push and Pull Factors |

2.4.3.2 Factors that account for Attrition

An overwhelming evidence in contemporary research in various work sectors are the main factors that affect attrition. Baah et al. (2009) identified job satisfaction, salary level, working conditions, worker relationship with colleagues and superiors. Enhanced wage and welfares elsewhere, lack of promotion chances, deprived professional enhancement avenues, continuation of academic studies and poor governance, work-family lifestyle, co-workers relationship, work stress, and supervisory relationships have been identified by various researchers to be leading factors of attrition (Honyenuga & Adzoi, 2012; Ho et al., 2010; Baah et al., 2009; Anderson, 2006; Cappelli & Hamori, 2006; Mensah & Alemna, 1997). The Table 2.4 above presents the various factors that account for attrition.

A summary of all the possible factors that could lead to attrition in any firm or organisation are illustrated in the Table 2.5 below under the two categories identified from the extent of literature.

Table 2. 5 Factors that Account for Attrition

| Summary of Factors that Account for Attrition | |
|--|---|
| Voluntary Factors | Involuntary Factors |
| Job Dissatisfaction | Lack of Expertise |
| Work Demands | Retirement |
| Low Salary | Employee Mismatch with Job Requirement |
| Poor Working Conditions | Work Assignment |
| Relationship with Colleague Workers | Unsatisfactory Supervisor-Employee Relationship |
| Relationship with Supervisor/Managers | |
| Employees Benefits | |
| Organisational Culture and Structure | |
| Work-Family-Lifestyle Imbalance | |
| Work Stress | |
| Unhappiness/Career Change | |
| Poor Career Development Opportunity | |
| Return to Academic Studies | |
| Promotional Opportunities | |

2.4.3.2 Effects of Attrition

Understaffing is one effect of high skilled employee attrition noticed in developing economies (Antwi & Phillips, 2013). Also, it is a major cost to companies that are springing speedily. The cost of skilled employee attrition includes the following: companies lose the expertise of employees obtained from the company. Also, they incur cost of selection, recruiting and training new employees (Sanda & Kuada, 2013).

Attrition have effects on firms, which include wage inflation due to upward spiral of wages pursuant to maintaining existing staff and attracting young professional (Economist Intelligence Unit (EIU), 2007 cited in Ho et al., 2010).

2.4.4 Creativity and Innovation

The lack of innovation, the QSs resist changing and may be sidelined in the industry (Hardie, et al., 2005). QS Professionals need additional training to develop their skills base and proficiency to attain sustainable construction (Ofori & Toor, 2012). These challenges are the movement for corporate sustainability. Cost and other important data of projects can be technologically integrated for ease accountability stakeholders within the industry. Statistically, QS Professionals held that “government regulators, insurers and one-off clients” were the most common blockers of innovation. The role of the various professionals is likely to fluctuate and change in an industrial setting (Hardie, et al., 2005).

QSs are now using lower fee to draw more business (Smith, 2009; Smith, 2004; Boon, 2001). Various duties and roles for QSs may be due to the present world wide financial predicaments (Fanous, 2012). According to Smith (2004), QSs have taken up to diversify to be well positioned to meet the industry’s demand as they venture to non-building areas (civil, infrastructure, transport, mining sectors etc.)

2.5 Opportunities of QSs

Senaratne & Sabesan (2008) opined that in order to meet current and future needs, quantity surveying professionals must productively adapt to the sociological, technological, economical and environmental changes quickly (RICS, 1992). In addition, having complete information and knowledge about the client’s working environment, aspirations, strategic dilemmas, values and the institutional culture are key requirements of future QSs (Pathirage, et al., 2007). Meeting these requirements will enable QSs to innovate through knowledge management and expertise upgrading to survive and compete in an ever changing industry (Senaratne & Sabesan, 2008).

Through diversification, professionals would be able to reduce the risk posed to their profession from the unstable construction industry. Notable areas where QSs can diversify services include the financial industry, insurance industry, manufacturing industry and real estate sector (Perera, et al., 2007; Hanid, et al., 2007). These are better way to safeguard and sustain the future of QSFs. The QSP should take the initiatives if they intend to expand their roles in the new sector. To achieve this, they should learn and comprehend knowledge of the new sectors they intend to venture into (Hanid et al., 2007).

Several services can be provided by QSs in the financial sector including security, indemnity and insurance, guarantees and bonds and also taxation. Services such as security, money transmission services and acceptance of deposit are also being provided by QSs. Currently, a taxation service is yet to be provided by QSs (Hanid, et al., 2007). As stated by Ashworth & Hogg (2002), valuation is one of the main skill bases for QS and therefore valuation may be required for a variety of purposes such as sale, lease, insurance, investment or loans and for a range of different clients such as developers, purchasers and property owners.

The trend of demands and evolution of QSs expertise, make it more important for projects to be more financially effective. Project planning and management, investment appraisal, facilities management, analysis of financial risks, arbitration, insurance valuations, measuring environmental impact, providing insolvency services and costs, managing maintenance programs and cash flow accounting forecasts are areas among others constitute the evolved changes within the quantity surveying profession. However, not much is known about how these aspects have been embraced by professionals in recent times. (Fanous, 2012; Perera, et al., 2007).

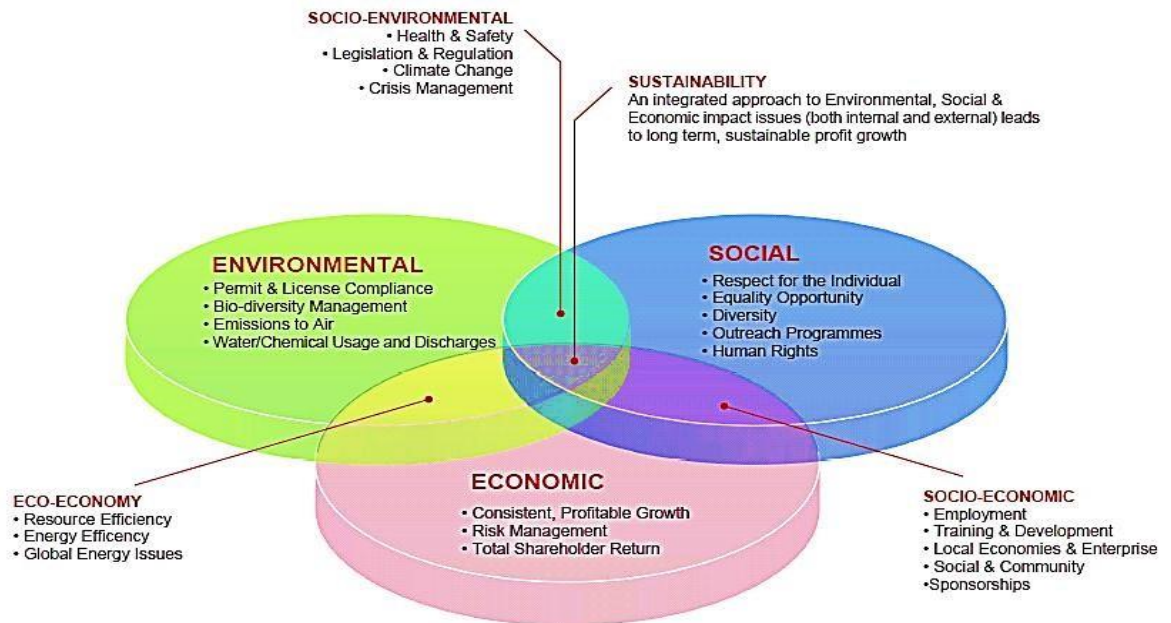
The petroleum sector holds complex activities which require various professional intellect to undertake. Normally, the works schedules within the this sector involves various practices inclusive cost engineering and estimating, quality and project management and engineering, contracting and commercial. Procurement of each role is very significant in ensuring achieving the petroleum activities (Hanid, et al., 2007). The future roles of QSP in the petroleum industry include facilities management, value management, risk management, insolvency service, arbitration or litigation or alternative dispute resolution. These roles however have existed in the construction industry. (Hanid et al., 2007; Addai et al., 2009).

2.6 Sustainability

Sustainability emerged as a planning concept and is currently a prominent mantra.

The report of the World Commission for Environment and Development (WCED) 1987 is considered to be the start of the most recent deliberations on sustainable development and its concept (Mebratu, 1998). This report led to a worldwide partnership which established political turnoff point for sustainable development. However, this is neither its possible start nor end of deliberation on the concept of sustainable development.

Accordingly, aspects of sustainability interconnects the human and bio-physical, current and forthcoming, local and global, active and precautionary, critique and alternative vision, concept and practice, and universal and context-specific (Gibson, 2006). Sustainability is usually represented as the juncture of social, economic and ecological issues and initiatives (Gibson 2006; Sara 2013; Jeffrey 2010; Limpho et al., 2010; Robert 2006; Bansal 2002). This is illustrated in Figure 1 below.



Source: computing for sustainability (2015)

Figure 2. 1 Sustainability Pie

Sustainability has been skewed to few experts within their disciplines (ecologist, biologist, economists, sociologist) working in those areas, which has led to the over 50 definitions of sustainability different to compare (Faber, et al., 2005). In relations to other disciplines little is known about sustainability (Tyteca, 1998). Most theories and working concepts on sustainability make clear attributes to protecting and maintaining the immediate physical environment. Presently, where empirical studies on sustainability have been undertaken, attention have been drawn to sole industries (Bansal, 2005; Shrivastava, 1995) or particular scope, like environmental approach (Sharma & Vredenburg , 1998).

2.6.1 Theoretical Concept of Corporate Sustainability

Corporate sustainability is considered the right choice for companies in all situation and prudently enhance particular circumstances for specific firms (Salzmann et al., 2005).

Corporate sustainability was defined by Dyllick & Hockerts, (2002) as

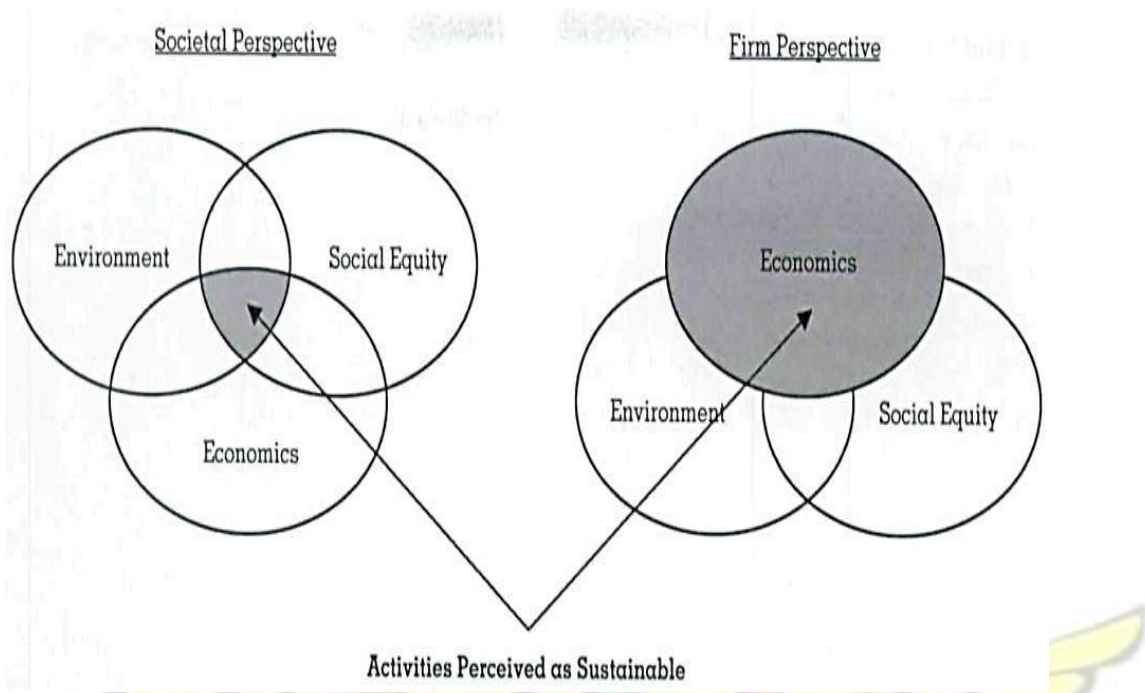
“meeting the needs of a firm”s direct and indirect stakeholders without compromising

its ability to meet the needs of future stakeholders as well". This suggests limited environmental resources and the biosphere's capability to cater for human activities. The World Commission on Environment and Development (WCED), (1987) also defined *Sustainable development* as meeting "the [human] needs of the present without compromising the ability of future generations to meet their own needs". Bansal, (2002) sees the definition in two separate forms; while societal actors considered *sustainable development* as the juncture of economic, social-equity, and environmental principles, the corporate construal is relatively different. They defined *corporate sustainability* as principally on economic principle, which is entrenched in neoclassical economics.

Faber et al., (2005) confirms the varying number of definitions for sustainability and the difficulty to compare. Bansal (2002) opines that the slow advancement of sustainable development is credited to the differences in meaning associated with the term. Bansal (2002) argued the definition of Sustainability by WCED assumption that, people ought to maintain a rational quality of indefinite life. Nevertheless, Mebratu, (1998) sees the definition of WCED sustainability development as vague and ambiguous whilst Starik & Rands, (1995) see it to be problematic for several reasons. Bansal (2005) reasoned that the WCED affirmed sustainable development needed a concurrent adoption of environmental, economic, and equity principles. This affirmation led to skepticism as it defied the deep-rooted concept that, environmental integrity and social equity were at odds with economic prosperity.

The numerous definitions can be classified into two, corporate sustainability and sustainable development. The environmental related dominate as to the corporate sustainability. The corporate's or firm's interest in sustainability is in the economics aspect. Starik & Rands, (1995) shares the opinion that, sustainable development and sustainability are multilevel and multisystem in character and Harvey (1996: 148) as

cited in (Banerjee, 2003) confirms that they are used interchangeably in both academic and popular discourse. The perceived meaning of sustainability by firms or organisations and the society is depicted in the Figure 2 below.



Source: Bansal, (2002)

Figure 2. 2 Societal and Corporate Perspective of Sustainability

2.6.2 Corporate Sustainability of Firms

Firms in the 21st century compete in a complex and challenging context that is being transformed by many factors dire to globalization. The definition of WCED adopts development is sustainable, if firms“ current needs are achieved and not denying future generations the ability to achieve their own needs” (WCED 1987). Bansal“s (2005) opinion on the economic dimension of corporate sustainability is economic affluence by creating value: that “companies create value production of goods and service to clients. Therefore, how effective these goods and services are improved determines the firms“ value addition” (Montiel, 2008; Perrini and Tencati, 2006).

There are a lot of definitions on Corporate Sustainability as shown in Table 2.6. Explicitly, latest definitions cover issues organizations ought to resolve. These include financial, social, and environmental effects of their actions to strive for full “sustainability” (Montiel, 2008). Presently, there are no research which focuses on firms’ characteristics and how the concept of sustainability is defined. Few researches report on corporate sustainability (Gallo & Christensen, 2011).

This is a clear indication that, despite the numerous research on sustainability, none articulates a general concept for assessing corporate sustainability of firms that is easily integrative. Though there are concepts which streamline corporate sustainability in the manufacturing and business sectors, the services sector is yet developing. Typically, sustainability is considered as an operating framework used in manufacturing industries. This is due to the industries operations and its effects (pollution, emissions, waste creation) to the immediate environment. Also, conventional wisdom proposes that companies seldom use sustainability augment its turnaround, normally it is perceived as a goal after attaining financial goals (Goodman, 2000). Sustainability of a firm is dependent on the sustainability of its stakeholders’ relationship, managerial tools adopted and improving reputation and employee recruitment and retention (Salzmann et al., 2005; Perrini and Tencati, 2006).

Table 2. 6 Corporate Sustainability-Related Definitions

| References | Definition |
|-------------------------------------|---|
| Gladwin & Kennedy (1995) | Sustainable development, Process of achieving human development in an inclusive, connected, equitable, prudent, and secure manner. Sustainable development components are 1. Inclusiveness (environmental, human systems, near and far, present and future); 2. Connectivity (World's problems interconnected and interdependent); 3. Equity (Fair distribution of resources and property rights); 4. Prudence (duties of care and prevention); 5. Security (safety from chronic threats) |
| Shrivastava (1995a) | Ecological Sustainability. It can be achieved through four different mechanisms: 1.Total quality environmental management; 3. Technology for nature swaps; 4. Corporate population impact control. |
| Starik and Rands (1995) | Ecological Sustainability. Ability of one or more entities, either individually or collectively, to exist and flourish (either unchanged or in evolved forms) for lengthy timeframes, in such a manner that the existence and flourishing of other collectivities of entities is permitted at related levels and related systems |
| Banerjee (2003) | Sustainable development. States that the Brundtland definition is not really a definition but slogan. Emphasizes that sustainable development is managed through ethnocentric, capitalistic notion of managerial efficiency (sustainable capitalism) |
| Sharam and Henriques (2005) | Corporate Sustainability. Refers to Brundtland definition: development that meets the needs of the present without compromising the ability for future generations to meet their own needs |
| Bansl (2005) | Corporate Sustainable Development (CSD). Introduces the new CSD construct based on three principles; 1. Economic Integrity; 2. Social equity; 3. Environment Integrity |

Development of Sustainability Business Model (SBM) draws its emphasized on economic, environmental and social aspects of the firm's purpose. The purpose, mission and vision of a sustainable organization is expressed with social, environmental and economic outcomes (Stubbs & Cocklin, 2008). Developed concepts by extant of authors on corporate sustainability resolved on the Triple Base Line (TBL), and also classified as the three pillars of sustainability (social, economic and environment) (Bansal, 2005; Gallo & Christensen, 2011; Gallo & Christensen, 2011; Stubbs & Cocklin, 2008). This perception targets a balance between people, planet and profit (i.e. the so-called three P's) (Kiewiet & Janita, 2007). The understanding of SBM and how to put firms into sustainable development is weak (Bansal, 2005).

2.6.2.1 Definition of Sustainability of the Service Industry

Shrivastava, (1995) identified four main mechanisms by which firms contribute to ecological sustainability, competitive strategies, total quality environmental management [TQEM], technology-for-nature swaps [transfers], and corporate population impact control. These four mechanisms were practically feasible. The inputs (natural resources) and outputs (products and waste) have systemic interconnections between themselves, adding social, economic and environmental and organizational variables. Corporate institution will be sustainable through a simultaneous interconnections of these variables towards ecological performance.

The activities of ecological sustainability can be tested on the degree of continuity of its activities by not altering factors that permit the existence and well-being of other groups (Starik & Rands, 1995). Banerjee (2003) rejected the submission on sustainability by WCED and rested on sustainable capitalism, which emphasize sustainable development by capitalistic notions of managerial efficiency ethnocentric. Furthermore, Gladwin et al., (1995) believes that sustainability goes beyond ecological efficiency, social sufficiency and economic steps. The process of achieving human development in an inclusive, equitable, connected, prudent and secure manner describes sustainability.

The varying nature of sustainability confirms Starik & Rands, (1995) submission of no shortage of definition of sustainability. Sustainability has been defined to suite all aspects of life, and can be confirmed as primarily on economic principles (Bansal, 2002; Faber et al., 2005), where indicators (inputs and outputs) must systematically interconnect for continuity (Kiewiet & Janita, 2007) to survive and flourish (Starik &

Rands, 1995) in a secure (safety from chronic threats) (Gladwin, et al., 1995) operational environment to meet current and future stakeholders value and organisational goals (Bansal, 2002; Dyllick & Hockerts, 2002)

Corporate sustainability has been approached in many different ways to prove or disapprove the sound economic rationale (Salzmann, 2005). Each firm identifies their own approach towards corporate sustainability, corresponding the firm's targets and intention to its strategy to correctly attend to operational circumstances (Marcel and Marco, 2002). Therefore, corporate sustainability of the service industry is *“primarily on economic principles; where indicators must systematically interconnect for continuity to survive and flourish in a secure operational environment to meet current and future stakeholders value and organisational goals”*.

2.6.2.2 Sustainability Indicators

Per the definition of sustainable service industry where QSFSs are actively represented, the sustainable criteria are classified under two headings. First is secure operational environment which includes legal issues, economic, political, corruption and regulations. The second aspect is managerial issues which include human, firm finances and managerial aspects. Identifying sustainability indicators of any firm starts from a careful understanding of the firm's values, policies, commitment, benchmarks, performance and the expectation of stakeholders.

Spangenberg & Bonniot (1998) agreed that for companies to achieve a strategic level of operations towards growth, management need to actively support and advance towards sustainability; determinants of sustainability differs from market to market. Also, the economic sustainable indicators are *liquidity of solvency ratio* (working capital, level of indebtedness), *profitability ratio* (returns on investment capital (RoI),

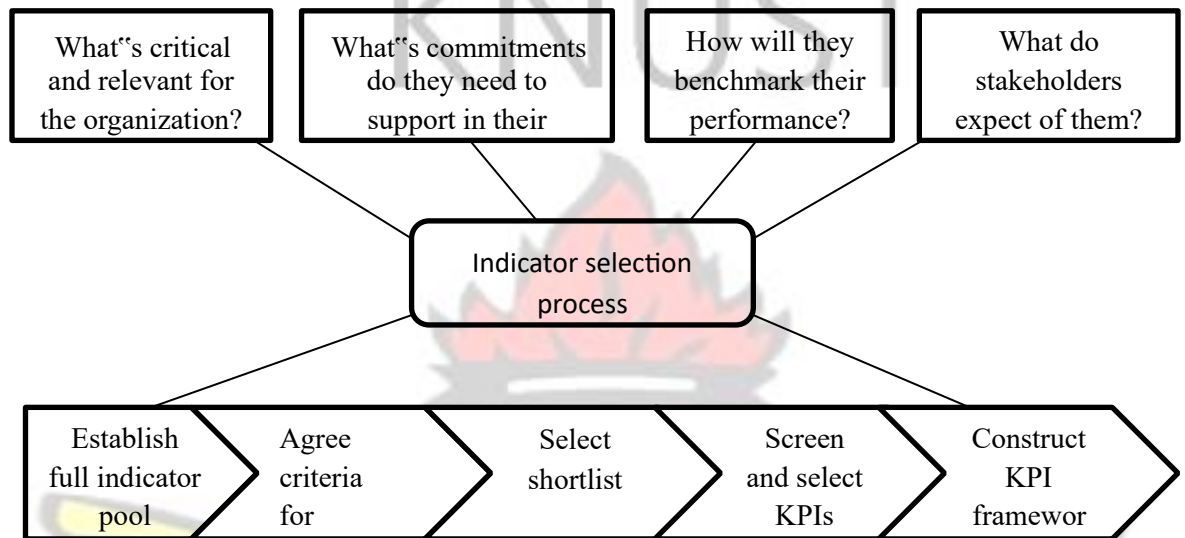
labour efficiency, price earning ratio) and *growth ratio*. The firm's economic performance influence sets capability to undertake corporate sustainability programmes (Artiach, et al., 2010).

According to Fugar et al. (2013), in unstable economies with severe competition, the development of human capital is a genuine and predictable way to nurture thoughts for the activation of innovation, continuous improvement of quality including important inputs for business success. Penrose (1995) consider the firm to be an administrative organisation and also seen as a collection of physical and human resources. Warhurst (2002) argued that managerial expertise at all level of the firm reassure investors and sustainable management system are important facet of managerial capacity. Moreover, Gallo & Christensen (2011) agree that firm's perception of sustainability reflects in its policies and practices. It is therefore important to note that a sustainable firm enjoys good and effective human capital well groomed and managed.

The QSFs is like other institutions as in Warhurst (2002) can choose the most attractive political climate within which to operate. The legal legislation of the firm and locality are factors that promote survivability and growth of firms. All aspects of the built industry is being diversify. Loosemore et al., (2003) cited in Fugar et al., (2013) stated that, there has been a remarkable change in technology, regulation, procurement practices and demands from clients within the past two decades. A suitable work environment supports corporate sustainability and it is achieved through the creation of work culture related to sustainability behaviours (Gallo & Christensen, 2011).

Keeble et al., (2003) agree to sustainable indicators from various levels in a firm. The type of indicators at the in-house consider, what management consider to be indicators and how stakeholder perceives the indicators. It is important for indicators to correspond to the

values, culture, visions and business realities of the firm. However, sustainability indicators could be obtained through a scientific way. This gives credence to the fact that indicators in a particular firm with a type of service will defer from another with differences in services/products.



Source: Keeble et al., (2003)

Figure 2. 3 The Process Used to Determine the Set of Indicators

A careful analysis of Keeble et al., (2003) scientific way of developing indicator of any firm, led to the developing of sustainable indicator for the QSFs is shown in the figure 2.4 below. These indicators were developed through literature.

Table 2. 7 A Typical Sustainable Indicators for Firms

| SUSTAINABLE INDICATOR OF FIRMS | |
|---|---|
| Secure Operational Environment | Managerial |
| Legal and Regulation (Constitution, Bye –laws, Code of Ethics, Rules of Conduct) | Human (Staff Strength, Qualification and Experience, Knowledge Management, Additional Skills, Salary) |
| Economic (Capital Efficiency, Growth Enhancement, Risk Management, Security, Innovation, Job Creation) | Financial Standing (Cash Flow, Financial Unit, Annual Turnover, Balance Sheet Report, Relations with Financial Institutions) |

| | |
|--|---|
| Political and Corruption (Stable Political Environment, Flexible Culture, Working System of Operation) | Management (Good Governance, Strategic Planning, Capacity Building, Innovation and Continuous Improvement) |
| Security (Work Load, Job Market, Competitiveness, Number of Projects, Alternative Jobs, Rate of Demand) | |

2.6.3 Sustainability and Survival of QSFs/Profession

It is paramount that the service industry's survival and flourishing is the key to its sustainability. It is widely recognised that firms make a significant contribution to economies and so there are persistent empirical research to address issues of growth of firms (Macpherson & Holt, 2007) and their sustainability. The indicators that ensure the survivability are the inputs and the expected outputs of the firms' operations. A sustainable strategy comprises no reduction in total assets and involves value creation. This perception about sustainability fundamentally links and preoccupy business managers in the pursuit for high investment, productivity and maximizing profit (Reinhardt, 2000). Corporate sustainability is also dependent on the effectiveness of institutional factors including political perception, inefficient legal systems, weak law enforcement, lack of transparency in awarding contracts, property right among others (Hogarth-Scott & Owusu, 2007).

2.6.3.1 Characteristics of Services in the QSFS to establish their sustainable criteria

The resources of corporations determines its sustainable growth and influences the characteristics of that industry. Below are characteristics of the industries as well as the services industry:

A. Characteristics of Services and Services

Industries □ Equipment Intensive or People

Intensive

- Complexity of Assets needed (High or Low)
- Number of co-specialized assets needed (Many or Few)
- Relative salience of intangibles vis-à-vis tangibles (High or Low)
- Salience of experience attributes (High or Low)
- Salience of credence attributes (High or Low)
- Service delivery process (Centralized or Decentralized)

B. Service (QS) Firms Characteristics □ Size

- Business portfolio composition
- Order by entry into market

The principal focus here is on skills and resources that could impact differently on survival and continuity of the service industries (Bharadwaj, et al., 1993) and to be precise the QSFS.

2.6.3.2 Equipment Intensive or People Intensive

The QS is a skill which a person or group of persons have acquired over years of academic and professional training. Davis, et al., (2007) argues that QS is a professional who ensures and renders service to client. Cartilage (2002) added that the QS profession is faced with forward-thinking policies to which has to be adopted to ensure their survival, creation of new scenario in this and the future decade. The interlectual capital of employees and administrative staff determines the competitive edge of the firm (Davis, et al., 2007).

The QS is human intensive in nature. Ofori & Toor, (2012) gave a revelation of scarcity of human resources. They confirmed in their study that, executive have problems of

getting QSP for their works though the industry was booming. This gives a clear credence to emphasize the human intensiveness of the QSFs. The QS posses the knowledge, skill, and expertice needed for a project. Though works can be done manually, but it consumes time.

The increasing demands of clients²² in the current modern complex construction industry and rise in competition has led to computerization to aid the work of QSP. QSP uses basic equipment like computers, laser measuring technology equipment, calculators etc. to speed up their of work. The advent of computer aided programmes has only taken over repetitive and routine works of QS (Hardie, et al., 2005). Hence the generic term in computer science in computing, “Gabbage in, Gabage out” (GIGO) emphasize the fact that, these equipment can only function under the manupulation of a person (QS). There is not dought that QSP is a human intentive bais.

2.6.3.3 Complexity of Assets Needed (High or Low)

Assets are a useful or valuable property of a firm. They are usually classified into current and non-current. Harris & McCaffer,(2007) classified assets into fixed, current and working capital. Current assets comprises of assets to be used within a year, whilst non-current assets are to be used for more than a year of operation. According to Harris & McCaffer, (2007) work in progress, cash at the bank, bebtors and short term investment are all considered as current assets.

Table 2. 8 Classification of Assets

| Asset | Classification | Economic Benefit |
|-----------------------|-------------------------|---|
| Machine | Non Current/ fixed | Used for the production for sale to customer |
| Office Building, land | Non current/ fixed | Provides space to employees for administering company affairs |
| Vehicle | Non current/ fixed | Transportaion of company products and for commuting |
| Inventory | Current | Cash is generated from service |
| Cash | Current/working capital | cash |
| Receivables | Current | Inflow of cash |

The QSFS strive on all these types of assets but cannot function without the human capital. Strategically, QSFS greatest resource is human and the management of human's knowledge. It is vital for QSFS to identify their prospective assets, which is through effective Knowledge Management (KM) system to enhance their expertise. (Davis et al., 2007). Ofori & Toor (2012) saw the inevitable need of human capital to ensure the operations of QSFS. QSFS/QS Profession need all the kinds of asserts to start up, operate, survive and to flourish. The key asset is the human capital, then the followed by the current and the fixed assets. Hence the demand for asset in the QSFS is moderate.

2.6.3.4 Number of Co-specialized Assets Needed

There are a number of other specialists that support in the running of firms in general. The administrative staff (accountant, secretary, cleaner) is inevitable to the operations of QSFS. When it becomes a consortium, other professionals in the construction industry become part of the human capital or knowledge base asset for the firm to operate.

2.6.3.5 Relative Salience of Intangibles vis-à-vis Tangibles (High or Low)

Intangible assets are diverse, it business value is more valuable as compared to actual value. The intangible assets are of two types, namely goodwill and blue sky. The variation in the

book value and the price of the firm is the blue sky. Goodwill is the added value to a firm after professional valuator determination. QS Profession poses intangible knowledge assets (Green, 2013).

QSFs loose professional expertise to retirement and resignation from post of key personnel. DeLong (2004) opined that the loss of experience staff have impacts on tangible and financially quantifiable. Also, the impact can be intangible and difficult to quantify. Knowledge management system ought to be created to collected, stored and shared electronically to minimize knowledge loss. It confirms the rich knowledge and experience of QS Professionals to be highly significant to the success of QSFs and thus can hardly to be quantified.

The researcher agrees with Hardie et al., (2005) that QSP carry out their activities efficiently without interfering with other professionals' activities. As such they can tend to "slip under the radar" and never be acknowledge among members of the construction professionals. Nonetheless, significantly, they lead to savings and efficiency enhancements. Thus the invisible works of the QS results in concrete evidence for other professionals to witness.

Comparing QSs to accountants discovered a more reliable principled socialisation and surveyed attitudes of QSs than accountant. Notwithstanding the substantial likenesses of works performed (Hardie et al., 2005).

There are impeccable attribute of intangible worth of QS Profession. Their activities in bidding, contract billing, bonding and coupled with longevity in the industry are drivers that lead to intangible value of the profession.

2.6.3.6 Salience of Experience Attributes (High or Low)

The QSP is characterised by rich firsthand knowledge, tacit and can hardly be written down simply. The number of executed projects by QSs, the higher their experience gained. QSs render services to employers in both legal and financial problems in project delivery with these gained expertise (Davis, et al., 2007). As emphasised by Senaratne & Sabesan (2008) that QS Profession is key to the built industry. They address important contractual issues in relation to cost and finance during the execution of the project.

Knowledge is an important element to the portfolio of the QSs. It efficient management improves the expertise of the QSs (Hardie, et al., 2005). Quantity surveying is a knowledge-intensive profession (Ofori & Toor, 2012) and are highly rich in experience. Experience, which is the accumulation of knowledge or skill from a direct participation in an activity of event, is exactly what the QS Professionals do. Hardie et al., (2005) supported the claim QS Professionals are expertise in the field of work. Hence the QSFS is attributed with high level of experience in meeting clients needs.

2.6.3.7 Salience of Credence Attributes (High or Low)

Quantity surveyor is responsible to resolve cost related, financial and contractual issues during project execution, and greatly have a bearing on environmental parameters (Senaratne & Sabesan, 2008; Hanid, et al., 2007). The QS Profession has diversified to areas like arbitration, valuation, feasibility studies, expert witness/appraisal, adjudication, mediation, facilities and project management (Hanid, et al., 2007; Addai, et al., 2009).

With the expertise and credence in executing works with the construction industry, researchers (Hanid, et al., 2007; Addai, et al., 2009) believed in the credencial of the

profession in their studies, and is confirmed that QSP are needed in the banking and oil industry. This confirms the high level of their credentials.

2.6.3.8 Service Delivery Process (Centralized or Decentralized)

From a survey on some QSFS in Ghana, QSFS operations are centralised. Hardie et al., (2005) emphasizes that most quantity surveying firms are small businesses. Due to their small nature and how disperse the construction industry is, they normally operate from a central office for consulting work to both public and private clients.

2.6.3.9 Service (QSFS) Firms Characteristics

The performance of QSFS is tied to the five principles adopted in GhIS (2007, c) as proportionality, accountability, consistency, targeting and transparency in service delivery their client to protect the public and their professionalism. The QSFS can be characterized in three main areas being size, business portfolio composition and order of entry into the market.

2.6.3.10 Size of Firm

The most common criteria for establishing the size of a firm is placing a threshold on the number of employees and value of fixed assets. Various forms of classifying the size of firms are adopted by lots of researchers. The Ghana Statistical Services (GSS) classified the size of firms per the numbers of its employees. Firms with more employees below 10 was classified as small and above 10 employees was classified as medium of large. Appiah-Adu, (1998) opined that firm size varies from those employing between 10 to 50 staff to those over 500 employees. Ranging from as wide as a cross section of manufacturing and service organisations through different firms with the same industrial sector.

The construction industry is extremely fragmented globally (Hassan, 2010). The industry is classified by over 100,000 units of small firms operating to achieve a common goal (Hassan, 2010; Smith, 2004). These firms have staff strength less than 20 representing 98% whereby 85% of them with less than 4 staff (Hutt 2000 cited in Smith, 2004). These firms include developing firms, consultant-service firms, construction firms and manufacturing firms (Hassan, 2010). However, Smith (2004) revealed that most of QSFs in the industry are small with staff strength less or equal to 5 employees and mostly made up of sole practitioners. Furthermore, each firm has its own institutional systems with a variety of technological packages in use. Majority of QSFs are small and medium in size with a single manager's control. These firms hardly operate specialised services (Hassan, 2010).

Research has shown an opposite connection between firm's growth and size. Small and new firms have a faster growth rate as compared to large and old firm. Data obtained from Hogarth-Scott & Owusu (2007) gave slight proof to credit the outcome that small firms grow faster than large ones. It becomes obvious to QSFs on issues relating to size to their sustainability. There are more drivers to survivability and sustainability than firm size. Hogarth-Scott & Owusu (2007) confirmed growth to be more delicate to firm's barriers, strategies and owner characteristics to growth variable notwithstanding geographical location. The most obvious difference between the size of the firm to challenges to growth were linked to lack of credit, cost of borrowing, impact of corruption and high bureaucracy.

2.6.3.11 Business Portfolio Composition

Knowledge is considered a valuable asset to the portfolio of QSs. Prudent management of this knowledge and skills will advance QS expertise. Practitioners acquire it from a continuous process for experience (Nor & Egbu, 2010; Davis et al.,

2007). GhIS (2007 a) consented members to undergo Continuing Professional Development (CPD) yearly to systematically maintain, improve and broaden their personal skill necessary to execute work professionally and technically. QS or QSFs are liable to disciplinary actions if found to engage in serious professional incompetence (GhIS, 2007 b). Smith (2004) argued that speed and regularity of change calls for significant development of personnel to enhance employees value to the firm through CPD. Therefore, CPD fundamentally becomes a requirement for all QSs to build their knowledge portfolio.

This gives a clear dimension to the gravity of knowledge, skills and competences as a major portfolio in QSFs/QS Profession. It is eminent that the profession ensures an adequate professional know-how, core competencies and skills and continuous development QSs skills. Acceptable "in-service" training worth implementing for green staff and to augment tertiary education (Smith, 2009).

The owner's/manager's role in influencing firm growth is prominent. This support the generally accepted opinion that managers of small firms are normally owner and normally are responsible for growth. The firm's decision on growth is based on them (Hogarth-Scott & Owusu, 2007).

2.6.3.12 Order by Entry into Market

Many developing countries are faced with uneven influence of external competition and mostly depend on imported inputs, likewise Ghana (Baah-Nuakoh & Tutu, 2003).

Ease access into the market leads to possible new market entrants and shows a disadvantage to immediate competitors with a negative relation to expected performance. But market growth indicates benign environment, a positive relationship is anticipated with performance (Appiah-Adu, 1998). Entry of both small and medium

firms into the market is important as studies of firms' survival and factors that hinder their survival should be of greater concerns in terms of meeting long-term policy objectives linked to employment and growth of the economy (Ghaffar, 2011) . Competition intensifies when new firms entrant into the market is more.

Firms enter markets at a low efficient scale and alongside with a learning process increase efficiency level through human capital formation (Sleuwaegen & Goedhuys, 2002). Early market entry is positively associated with growth in market share, relative cost is related negatively to profit margins, market growth is positively related with profit margins and technological change is positively related to new product success (Appiah-Adu, 1998). Hence a gradual entry into the market is preferred to enhance adaptability and reduce to cost of entry and its possible risk.

The QSFs just like any other firm in Ghana, upon a successful registration of business from the Registrar General Department under the Act (1963) of the companies' registration code and in collaboration with the Ministry of Water Resources, Works and Housing (MWRWH) or the appropriate ministry or department and sometimes the firms' affiliated association or regulator can start operation if all conditions are met.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.0 Introduction

The discussions on how this research was carried out to meet the stated aim and objectives is found in this chapter. The research are conducted in varied ways. However, the rules and standards governing researcher's beliefs and actions were adhered to.

These standards are referred to as paradigm. It further gave better understanding to reasons for the methodology adopted for the study.

3.1 Research Process

The relevant theoretical background to enable the study to be undertaken is developed in the literature review. Literature on the corporate sustainability of firms is generally scanty. Based on the literature review, the research was designed given consideration to the research strategy, research approach and data collection methods. This was by an in-depth literature review of relevant to corporate sustainability of firms in general and particularly QSFs. This was followed a pilot survey of QSFs who have been active in operations for more than five (5) years. The issues emerging for these processes justified the need for the study and appropriateness of the research questions and objectives. These objectives was developed to achieve the aim of the research. Figure 3.1 below depicts the step by step procedure used for the study.

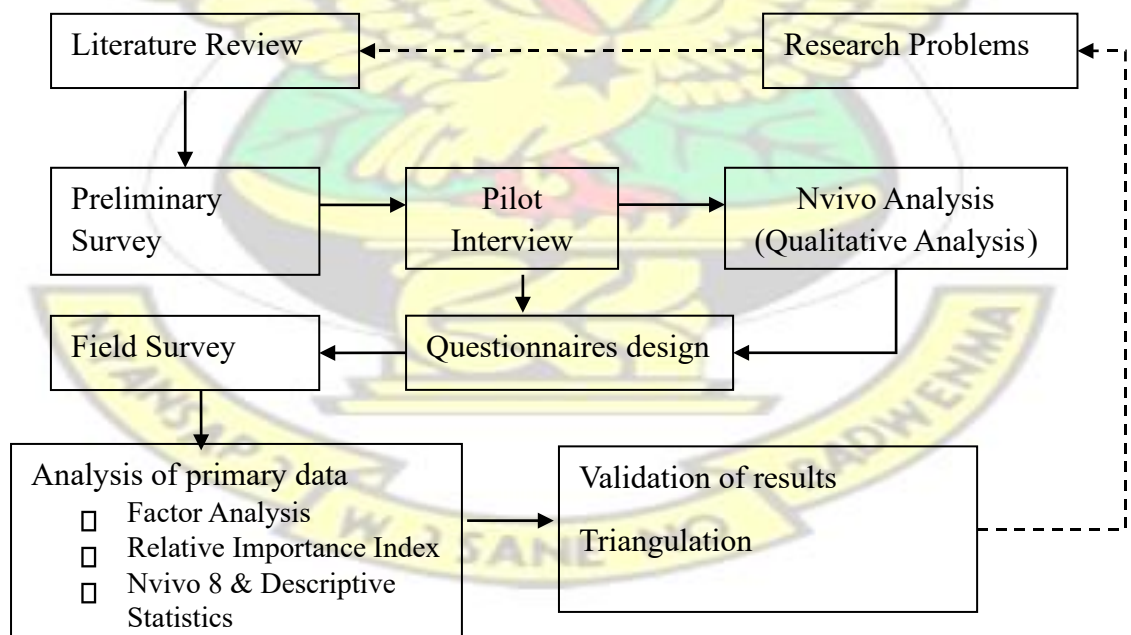


Figure 3. 1 Research Process of the Study

3.2 Research Design

Yin (2003) consented to a reasonable order of steps to link the research questions to the data collected and eventually to a number of conclusions drawn. It is a fact that an appropriate research method is key to meeting the primary aim of the study. Also, to aid organize ideas for possible identification of flaws and inadequacies in the methods arrived (Kothari, 2004). A research design that limits bias and increases consistency of the collected and analysed data is adequate good for use. Also, the design takes root from the philosophical stand point of the study as presented in Figure 3.2.

3.2.1 Research Philosophical Stand Point

Research philosophy, the over-arching term, which relates to the development of knowledge and the nature of that knowledge (Saunders et al., 2009). It is inevitable to consider the ontological, epistemological and axiological assumptions when positioning a research philosophy (Adinyira, 2010). Greener (2008) opined that ontology is like epistemology but doesnot deals with nature of what we can know or reveal as „true“ but with the nature of social entities such as organisations. Dawson (2002) argues epistemology as a study of nature of knowledge and justification. However, ontology and epistemology are summarised as theoretical conventions about „what“ can be known and theoretical conventions about „how“ knowledge is derived respectively (Creswell, 2009; Greener, 2008; Dawson, 2002). Axiology is a division of philosophy that examines judgments about value. The study is hinged on the research philosophies namely positivist and interpretivist. Although there are many other philosophies or positions like Constructivism, Modernism, Feminism, etc; only two that are of interest to the present work are discussed namely positivism and interpretivism.

Positivism adopts a clear quantitative approach to investigating phenomena (Creswell,

2009; Greener, 2008). Positivist argue that this research based on this approach can be “value free and objective” rather than subjective and value-laden (Greener, 2008). In contrast, Interpretivism aims at viewing the world through the perception of the people under study. It gives room for varied perspectives of reality rather one objective reality of positivism (Greener, 2008). This philosophy admits multiple interpretations of reality, but also maintains the scientific nature of the knowledge they are pursuing. The interpretivist argument endorses the ideas of subjective thought and ideas are valid (Greener, 2008) and employ qualitative methods (Abdur-Rahman, 2010).

Literature and the preliminary study informed the researcher of the challenges and impeding elements that mitigate the survival of QSFs. The symbolic discourse and functionalism, together with the survey nature of this research clearly bears a resemblance to realistic assumptions. However, it does not accept extreme idealism of the phenomenologist method. The aim suggested the study not to assume any preexisting realities. It rather focused on the collected deterministic phenomena and closely resembles the ideas of positivist. Considering the realist view in ontological assumptions; the appropriate research approach is considered under the influence of this philosophy and more deductive, more structured with less subjective. Figure 3.2 below is a flow chart of the philosophical position of the study.

The two traditional research approaches offers a typical kind of evidence. The use of these two offer a powerful resource to informed and illustrate strategies (Agbodjah, 2008).

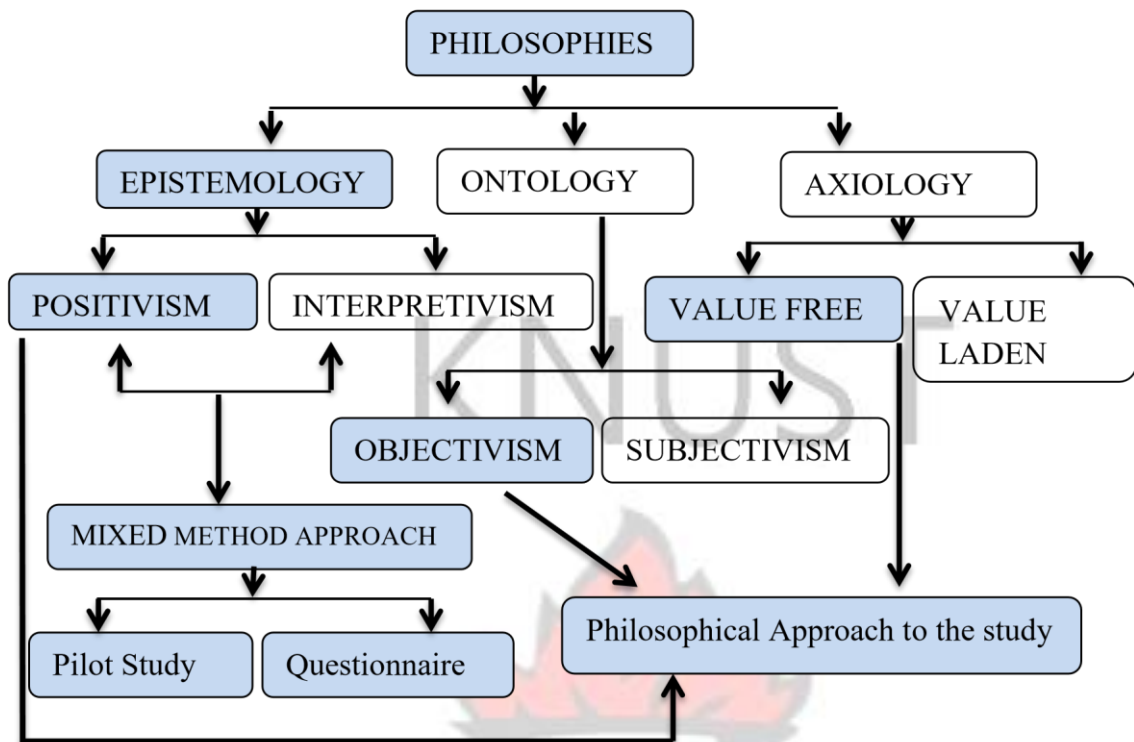


Figure 3. 2 Research Philosophy Adopted

3.2.2 Existing Research Strategy and Design Process

From Table 3.1 below, Sara (2013) adopted the inductive research strategy in a study on the Conceptual Understanding of Sustainability in the Australian Property Sector. As good as the findings of the study, this strategy was the best due to the nature and requirement of the study. However, respondents were limited to only the best 10 property firms. Dada & Jagboro (2010) argued that, for a full yardstick of a true reflection of findings, perceptions of all stakeholders and total coverage of the gamut activities should be considered. Ofori & Toor (2012) and other researchers working in areas of QS adopted inductive strategy. Frei & Mbachu (2009) adopted the mixed approach while Smith, (2009), Senaratne & Sabesan, (2008) and Smith (2004) adopted deductive approach to their study. For the countless reasons and benefits of mixed approach made this study to adopt it by employing survey strategy.

Table 3. 1 Summary of Methodology of Similar Studies

Table 3. 1 Summary of Methodology of Similar Studies

| Reference | Research strategy | Sampling & data collection methods | Analysis | Lag |
|-----------------------------|-------------------------|---|-------------------------------|---|
| Sara, (2013) | Inductive | 5 companies (Pilot Study & Interviews) | Content Analysis | No opportunity to explore the underlying reasons for what is found, conscious or sub-conscious. |
| Senaratne & Sabesan, (2008) | Deductive / Exploratory | Case Study, Investigation | Coded Based, Content Analysis | Many systems are highly complex and insufficiently understood |
| Ofori & Toor, (2012) | Inductive | 45 QSFs & Interviews | Thematic Analysis | Audio-recorded, transcribed and analysed. |
| Tang, et al., (2011) | Inductive | 30 Interviewed, Pilot Survey (Unstructured questionnaire) | Coded, Thematic | OK, 3 Phases of Interviews conducted, with questionnaires |

3.2.2.1 Research Approach

This research combined the inductive and deductive research approaches to theory. The formation of orderly links between theory and data was realized through two general strategies (Abdur-Rahman, 2010). These were:

- **Research–then–Theory:** this is inductive approach, data is instrumental in the development of this theory. Data used are typically unstructured at the point of its collection. Themes, categories emerge from the analysis of the data. This approach aided in gaining a clearer picture of QSFs.
- **Theory–then–Research:** this is deductive reasoning and forms the foundation of positivist scientific enquiry. This is characterized by a tightly structured design.

Questions are highly specific and takes the form of hypotheses. The setting of categories in advance assumes previous knowledge and understanding on issues; more importantly, the research categories mirrors the researcher's perspective.

3.2.3 Research Strategy

Considering the philosophical position of this study thus positivist on one hand, and the nature of the problem identified in literature as well as the pilot interview on the other hand, survey strategy emerges as more appropriate. Baker (2003) cited from Tull and Hawkins (1987) defined a survey research as an orderly gathering of information for the purpose of understanding and/or predicting some aspect of the behaviour of the population of interest. Surveys are classified under longitudinal and cross-sectional studies. Questionnaires or structured interviews are used for data collection, with the intent of generalizing the outcome (Babbie, 1990 cf Creswell, 2003, p 14). A number of studies for qualifications are generally cross-sectional due to the limited time allocated to complete the study (Greener, 2008), hence a cross-sectional survey was used.

Survey was appropriate for this study because of the following reasons : i) it allows researcher to solicit for data about situations, practices or views at a particular time frame through questionnaires or interviews; ii) it also permits a researcher to study more variables at one time; iii) survey allows the use of quantitative analytical techniques to draw conclusions. Furthermore, survey is the strategy that responds suitably to all the research questions which are of the type of what, who, what, where, how much and how many (Saunders, et al., 2009). Before the selection of data collection instruments, there is a need to understand qualitative and quantitative research approaches.

Considering the epistemological and positivist stance of this study, a mixed strategy was adopted.

The concept of mixed methodology probably originated in 1959, when it was used to study the validity of psychological traits by Campbell and Fiske (Creswell, 2003). Recognizing limitations of all methods, biases inherent in any single method could be neutralize or cancel the biases of other methods. The mixed method is increasingly used in business research (Greener, 2008). It also involves in the use of multiple data collection methods, either quantitative or qualitative or both and for analysis methods.

3.2.3.1 Survey Strategy

A survey is a very old research technique commonly used method in social science research (Babbie, 2001). Its purpose is to realize underlying relationships or to create accurate quantitative description of one or more aspect of the universe (Simon & Burstein, 1985). According to Babbie (2001), survey can be used for either descriptive, explanatory or exploratory purposes. Also, Simon & Burstein (1985) claim that survey is either by observing or asking questions about people or things. Furthermore, surveys are excellent vehicles for measuring attitudes and orientation (Babbie, 2001) as well as opinions, beliefs and interests of a large population (Simon & Burstein, 1985).

Surveys can be conducted using different methods like questionnaire, interview and observation. A questionnaire survey was the main approach. This was complemented with a pilot interview to constitute the mixed method approach in this study. Babbie (2001) confirms questionnaire to be frequently used in surveys. Simon & Burstein (1985) opined that, the choice between observing and questioning is a matter of convenience and feasibility of the researcher. However, a poorly designed and executed survey research is of little or no value (Malhotra & Grover, 1998).

3.2.3.2 A Pilot Interview

Interviews was adopted to solicit full information about respondents' experiences and impression about the need to sustain the survivability of QSFs and their general impression about GQSP.

3.2.3.3 Questionnaire

Structured questionnaire is possibly the most extensively data collection technique for conducting surveys to find facts, opinions and views (Naoum, 1998). Questionnaire survey is adopted to get feedback on opinions of respondents' about sustainability of QSFs.

3.2.4 Research Techniques

Data collection and data analysis techniques describes research techniques (Adinyira, 2010). Researchers gather data using an instrument or test or gather information on a behavioral check list. Also data collection for the survey involved visiting a research site and conducting an interview (Creswell, 2009). A cross sectional study of the given phenomenon is adopted due to constraint of time and resources.

Based on the research objectives, both open and closed ended questions, both emerging and predetermined approaches and both quantitative and qualitative data and analysis (Creswell, 2009) was employed. This strategy begins with focus group discussion and culminates to a quantitative analysis of closed ended survey items that was administered nationwide sample of QSFs. Data collection instruments on obtaining the required data for the survey will be discussed in the proceeding section.

3.3 Data Source

The study depended on primary and secondary data. Primary data was obtained from first-hand data collection by the researcher through the use of pilot interview and

questionnaire. Through the review of relevant literature, secondary data was obtained. This data was sourced from published relevant text books, journals, magazines, research papers both print and electronic and other publication vital to the study.

3.4 Research Scope and Boundaries

This study was limited to non-registered QSFs operating in Ghana, registered QSFs under the Ghana Institution of Surveyors (GhIS) which are in good standing according to GhIS-QS Division, (2013) and QSFs that have registered with GhIS before either existing or not, to identify their sustainability considering and their organizational cycle (starting up, survival, growth and succession).

3.5 Sampling Techniques and Sample Frame

Choosing a study sample is an important step in any research project since it is rarely practical, efficient or ethical to study whole populations (Saunders et al., 2009; Marshall, 1996). The right choice for the element of the sample so as to make it representative of the population is important. A single-stage sampling procedure was adopted because it enables the researcher to have access to names in the population and sampled the people directly (Creswell, 2009).

To achieve the overall target, probability and non-probability sampling techniques was adopted for this survey. The targeted population is QSFs in Ghana registered and non-registered with GhIS; hence the sample is purposely on a targeted group. Probability sampling with simple random without replacement was used on the registered QSFs with the GhIS whilst the non-probability sampling techniques was used to snowball the non-registered QSFs in Ghana. Constructively, Saunders et al., (2009) opine probability sampling to be most normally related with survey based research strategies, where interpretations were made from the sample about a population to answer your research question(s) or to meet the objectives.

The best sample size is dependent on the parameters of the phenomenon under study (Marshall, 1996). GhIS-QS Division, (2013), had a total of seventy-three (73) QSFs registered members where thirty-eight were in good standing. The distribution of QSFs in Ghana is skewed towards the national capital; with a total of eighty-six percent of them in Accra, eight percent in Ashanti and two and half percent in both the Western and the Northern regions. These techniques was used because it has the added advantage of getting the key respondents, who possessed the required characteristics and information for this survey. Data was collected through interviews and questionnaire and responses served as the main source of data.

3.5.1 Sample Size Determination

The significance of sampling is well established however, the challenge was how large the sample should be to make legitimate inferences to a general QSFs population. Due to the size of the registered QSFs in Ghana, a total population of 51 QSFs was used to estimate the sample size, because 10 was sampled for the pilot interview and twelve (12) had folded up. Three specific criteria are usually used in determining the appropriate sample size of a population: the level of precision, the level of confidence or risk, and the degree of variability in the attributes being measured (Israel, 1992 *cf* Miaoulis and Michener, 1976).

The recommended precision rate of $\pm 5\%$ with a risk level of 95% was considered. There are various methods in determining the sample size of the population. These included using census, application of statistical formulae, well established sample determination tables and the use of sample size in similar research (Israel, 1992). The sample size for QSFs in Ghana was determined using the recommended formulae for such studies by Israel (1992).

The Formulae states that:

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

Where;

n – is the sample size of QSFS N – is the total population of QSFS e – is

the desired level of precision ($\pm 5\%$) at a confidence interval of 95%

Hence
$$n = \frac{51}{1+51(0.05)^2}$$

$n = 45.23$, an approximate minimum sample size of QSFS is $n = 46$ With the minimum of 45 QSFs to be sampled, an additional snowballing on unregistered QSFs added up to cater for any uncooperative subject in the data collection.

3.6 Data Collection

The quality of research findings is inextricably linked to the quality of data collected. Emphasis was placed on sample selection, participation acquisition, data collection, data management and analysis (Adinyira, 2010). However, to allow for the depth of information needed from QSFSs, a cross-sectional survey comprising questionnaires and interviews documents was used. For reliability of and validity of the data collection procedure, adequate consideration were considered as below;

- **Mixed methods** research is formally defined here as the class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study (Johnson & Onwuegbuzie, 2004). It is an expansive and creative form of research, not a limiting form of research. It however reduces the risk of distortion inherent in the use of only one data collection method and all vulnerable to self-report ideological distortion (Adinyira, 2010).

- **Peer review/feedback** to aid in the soliciting of feedback from key QSPs and academicians on the valuable method of testing researchers bias, assumption and flaws in methods. This will be accomplished through Conferences proceedings and preliminary interview survey on Employers in QSFs. It is important to note however that, irrespective of the method employed, rigor and objectivity are principal (Agbodjah, 2008). The research data will be collected mainly through interviews and questionnaires.

3.6.1 Data Collection Instruments

These are tools used to collect and structure data and hence transforming into usable information. There are a lot of instruments for data collection, but people transcribe to such instruments as interviews and questionnaire (Leedy & Ormrod, 2010). The objectives of the study and the nature of the data required to meet them was determine which methods and strategies to combine. The surveys comprised a number of questions concerning general practice details, information technology, utilisation and future directions of the profession (Smith, 2009).

The data was collected with the aid of interview and structured questionnaire. As a working rule of thumb, unstructured questionnaire which is mostly appropriate in qualitative research and it enable in the development of structured questions which best suite survey and quantitative research. The benefits of structured questionnaires in terms of speed of completion and analysis, accuracy and comparability of data are self-evident. Structured questionnaires are preferable in self-administration and selfcompletion. The respondent has a clear indication of the scope of possible answers to the question which helps to ensure that they are on the same wavelength as the researcher (Baker, 2003).

3.6.1.1 Interviews

A structured interview are mainly used in survey research, where respondents are likely to answer standardized set of questions. Qualitative interviewing methods however, are much less structured and the focus is on the interviewee's point of view than the researchers concern. In semi-structured interviews, the researcher had a list of fairly specific topics to be followed which serves as a guide to the interview (Agbodjah, 2008). A desire to secure a maximum of information from respondents and the need to keep the interview clear, straightforward and of a reasonable length for ease of administration and maintenance of respondent interest was considered in the design of interview questions (Baker, 2003)

This instrument was used to collect the preliminary qualitative data from the ten QSFs purposively on the first phase of the study. Semi-structured interview was conducted on Senior QSPs and CEO's of QSFs to elicit more information on the four key research questions. Each interview typically lasted for 30 minutes and was guided by a prepared open ended interview guide (see appendix). Prior the interview, interviewees were briefed on the subject matter on phone. Due to the compliance of ethical considerations, the interviewee answered each question to best of understanding in their own writing to avoid wrong transcription of data. However, the interview was successful and the data was screened and analysed with nvivo statistical tool.

3.6.1.2 Questionnaires

A questionnaire is a formalized set of questions for obtaining information from respondents. It includes instruction for its completion, response alternatives where appropriate and specific means for recording responses (Frazer & Lawley, 2000). Also, it is a survey instrument that can be very beneficial to a study; particularly respondents can be more truthful than they would normally be in a personal interview, essentially

when talking about sensitive or controversial issues (Leedy & Ormrod, 2005). Hence, a crucial part of good research design concerns making sure that the questionnaire design addresses the needs of the research.

Questionnaires could be open-ended, close-ended or a combination of the two (Baker, 2003; Dawson, 2002; Frazer & Lawley, 2000), based on the expected outcome.

According to Dawson (2002), closed-ended questionnaires are the most familiar and used to generating statistics in quantitative research; it's also ease to analyse. On the other hand, open-ended questionnaire is used in qualitative research to solicit opinion of respondent; although the data collected can be quantified but its data analysis is more complex. Hence fewer questionnaire need to be distributed. Frazer and Lawley (2000) described four main methods of questionnaire administration: mail questionnaire; personally administered questionnaire; telephone questionnaire; and internet questionnaire.

The pilot survey above, were the basis for the next phase of the research. Closed ended questionnaires were then designed and structured to reflect the preliminary results and literature. These questionnaires were purposively piloted among notable QSFs and professionals in Kumasi metropolitan area to limit the flaw in it. Clarity of the questionnaire, ambiguity and the use of unfamiliar words and overloading respondent's memory was avoided with a careful consideration of J M Bowen for major bearing on questionnaire design; length, complexity, layout and wording (Baker, 2003). The use of multiple choice questions and rating scales were used in the design. Hence the questionnaire was suitable for easy data processing due to how it was structured in the first place.

The questionnaire was designed into five main sections with a preamble to explain the major purpose of the study to the prospective respondents. The demographical section

was the first, which was to add reliability and credibility of the respondents; descriptive statistics will be used to analyse this section. The second section is to solicit for current scope of practices of QSFs, Challenges in sustaining QSP was the third sectional questions, the fourth and fifth sections were factors that lead to attrition of technical QS staff and factors to promote sustainable QSP.

3.7 Data Analysis

The analyses were in two parts that is qualitative and quantitative. A set of computerized statistical tools were used to analyse the data. Statistics are typically more useful in some academic disciplines than others. Statistics functionally helps researchers to describe data and draw inferences from the data. Inferential statistics help the researcher make decisions about the data while Descriptive statistics summarize the general nature of the data obtained (Leedy & Ormrod, 2010).

The qualitative data for the first phase of the study was analysed with the use of nvivo statistical software tool version 8. Nvivo 8 is works with a very rich text based information, where an in depth level of analysis on either small or large data are required. It involves in classifying , sorting and organising information; either relationships in the data; and combine analyses with liking, shaping, searching and modeling to test theories, identify trends and cross examination of information using the search and query functions (Lyn, 2008). Data from interviewee where first transcribed, converted file format to promote rich text format for easy Nvivo reading; the data was then coded based on initial categories develop through literature; it was then linked to element of data using Nvivo commands to enable comparisons and identifying emerging trends and finally reporting on qualitative data through writing, narratives, tables and frequencies.

The last part of the primary data (quantitative) were subsequently analysed with the aid of SPSS Factor Analysis, Relative Importance Index (RII) and Descriptive statistics. Factor Analysis was adopted to reduce the large number of variables to a smaller set of underlying factor summarise the essential information contained in developing the criteria for sustainability determination of QSFs (Saunders, et al., 2009). Also, RII is an index that tells how each of the variables asked are faring in relation to the others in terms of weight or importance. This helped in comparison among given options, within pairs of options by cardinality of importance or that score items one at a time using a common scale; and to determine the importance of that variable (Fowler, 1995). This tool was used to determine the significance of quantity surveying services, possible factors that led to attrition of staff and their effects on QSFs, and to further identify the challenges these firms meet in their the course of their operations. All was possible by the use of an ordinal scale to aid analysis with these tools.

The returned completed questionnaires were edited to ensure completeness, consistency and readability. Statistics help condense an overwhelming body of data into an amount of information that the mind can more readily comprehend and deal with (Leedy & Ormrod, 2010).

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSIONS

4.0 Introduction

This chapter presents the analyzed data and discusses the results obtained. The analyses comprise of profile of respondents, descriptive statistics, development of relative importance index of determinants of criteria of sustainable QSFs in Ghana, to identify

relevant scope of QSFs practices, attrition of QSPs and challenges impeding sustainable QSFs, included is Factor Analysis to identify components to develop a criteria for sustaining QSFs in Ghana.

Review of previous studies in literature identified 27 services QSFs mostly undertaken in project delivery, 22 challenges that oppose sustainable QS operations, 18 factors that lead to attrition of workforce and 7 effects of attrition to firms, and 25 factors that promotes sustainable business operations with emphasis on the usual conditions in Ghana.

The identification of highly influential determinants of a sustainable criteria for QSFs in Ghana, to address the challenges from sampled QSFs using survey questionnaires in section 4.3.3 was the next step.

Forty-six questionnaires were distributed to the various targeted QSFs across the length and breadth of Ghana and 25 questionnaires signifying 55% were retrieved and used in the analysis accordingly. Also, ten (10) QSFs were purposively sampled for the preliminary survey totaling thirty-five (35) firms surveyed.

4.1 Qualitative Data Analysis

The main characteristics of paramount interest to identifying an active and vibrant QSFs in operation was considered (Mensah, 2004; Eyiah & Cook, 2003) as detailed in the survey questionnaire.

4.1.1 Profile of the Respondents

From the survey, all the CEO'S of the ten firms interviewed were of building technology background and professional members of GhIS-QS Division, also, two had international professional membership with Royal Institution of Chartered Surveyors (RICS) and Member of Chartered Institution of Arbitrators (MCI Arb). These QSFs experience ranges from ten to twenty-five years; with average of 10 years of service to the Ghanaian construction industry. In addition, two of the firms were classified as medium and the rest, small set ups with employees totaling up to 10 as per the firms clasification by Mensah, (2004), UNIDO (2002) and Page & Steel (1984). All the surveyed firms had technical personnel with QSP background.

4.1.2 Scope of QS Practices

The actual scope of works is best identified by the quantum of works, type of client and specialty of firms. It was revealed that, the surveyed firms are in active business with three (3) new projects averagely in a year and actual number of projects ranging between two to ten; their major client is the public sector thus government or Metropolitan, Municipal and District Assemblies (MMDAs), apart from the public sector, the private sector and institutions are usually one off clients. This confirms assertion by Eyiah & Cook (2003) who indicated that government remains sole employer to consultancy or construction firm within the Ghanaian section.

The QS practices undertaken by respondents in their various project comprised both pre and post contract services illustrated in **table 4.1 below**. Most of these firms were into the general QS practices and non-traditional services. Only two firms provided specialized services to prospective clients. Obviously, Contract Administration, Tender documentation, preparation of bills of quantities and Preliminary cost estimation were major services they employed.

Table 4. 1 Summary of QS Practices from Respondents View

| Traditional Services | Non-Traditional Services | specialize services |
|---|---|---------------------------------------|
| <p>Pre-Contract Services Tender Documentation Preparation of BOQs Preliminary Cost Estimate Preliminary Cost Advise Cost Planning Tender Action and Evaluation Approximate Estimation Feasibility studies and advise</p> <p>Post-Contract Services Contract Administration Valuation and Final Account Cashflow preparation and Forecast Valuation and Interim - Payment Certificate-Preparation Variations Periodic Cost Reports Evaluation of Contractors' Claims Conflict resolution and Negotiation</p> | <p>Project Management Procurement Advise and Documentation Cost Advisory/Monitoring of Design and Build Projects Procurement</p> | <p>Procurement Cost Auditing</p> |

The study revealed the commonness practices of QSFs as confirmed by large research of QS practices (Nayalingam, et al., 2013; Addai, et al., 2009; Hanid, et al., 2007; Pheng & Ming, 1997). In the attempt to innovate and diverge to vary activities, project management was practice by most firms while Procurement and advise and Cost Auditing were specialize services rendered to clients.

Respondents were of the view that there are some obsolete practices QS undertake, thus *“manual taking off works and valuation of works, traditional methods of measurements/preparing Bills of Quantities, Site Measurement of Work done,*

Preparation of Bills of Quantities through taking Off”. Which they know technology have simplified all these processes.

4.1.3 Challenges of QSFs

The survey results indicate that **delay of payment of claim**, delay of honouring of certificate, **funding**, poor contract planning were the major problems QSFs faced. Arguably this assertion has been confirmed by most researchers and remain the bane to the development of the construction industry in general. Notwithstanding, there were other problems, *competence of contractors, cashflow of contractors, poor pre contract planning, lack of commitment of workers, logistics challenges, Lack of Adequate Financial resources and Understanding of Project Management Issues by Clients* else an additional problems.

Sustainable operations of QSFs is being undermined by various obstacles including *difficulty in seeing purely QS services, remuneration of QSPs increase with increase experience, loss of commitment of professionals with time, funding of works, fees are so small, few jobs, maintenance of Technical staff, low patronage of services by individuals, difficulty in payment staff “no works, no salaries”, unfair competition for jobs, clients unwillingness to pay professional fees, lack of jobs, clients unwilling to patronize QS services, job acquisition, payment of fees, payment for workdone, lack of knowledge of contractors on technical matters, No- payment of Professional Fees promptly* (Respondents view).

From the survey, the major threat to the survival of QSP are mainly the “*nonavailability of jobs, incompetent young professionals who want to go up the ladder without using the ladder, invasion of other professionals, lack of surveyors bill to enforce the practice of QS profession in Ghana, Job crunch leading to firms folding up, professional*

attrition, unfair competition resulting in skewed projects to some QSFs (jobs are not on merit basis), proliferation of uncertified practitioners, unprofessional requests from clients and other professionals, lack of interest in the profession by experience professionals, lack of development and research, nonapplicable/limited use of IT, Lack of Jobs as a result of non-patronization of services by Client due to non-preparedness to pay Fees for Professional services, influx of International QSFs” (Respondents view).

The CEOs acknowledged the faster pace of development linked to Information Technology and counted the numerous benefits it could bring to their services (Smith, 2009; Addai et al., 2009; Davis et al., 2007; Smith, 2004) and recounted benefit inclusive of *promoting efficiency and speedy delivery of services, speed up work processes, quick delivery of services to clients, high productivity, less errors, faster work delivery, quick and reliable, high efficiency and quality of service, aid in running site far – off and Speed Of delivery of services.* According to the Respondents, *“the impact is great and future QS Profession will be dependent on IT and ICT”.*

It was revealed that all interviewed firms used aspects of Microsoft office suite. Thirty percent of firms still undertake manual and repetitive works as like the genesis of the profession in the 1700s (Senevirante, et al., 2008). These firms had no specialized computerized applications to automatically take off and do most of these repetitive works. According to the respondents” it was so *“due to the inability of old fork professional to adapt and inability of management to invest into Information Technology (IT) coupled with limited number of refresher coursed within firms due to pressure of work”.* Below are the list of general and specialize computed aided application that aided respondents in their works.

Table 4. 2 Computer Aided Programmes Respondents Firms Use

| General Office Applications | Specialized Application Software |
|---|---|
| Microsoft Office Suite (Word, Excel, PowerPoint, Outlook, Corel Draw Internet Applications | AutoCAD Microsoft Project QS Card ArchiCAD Win QS |

These specialized software aided in takeoff and automatically generating quantities for bill preparation and other repetitive valuations. It also helps in programming and tracking progress, cost, and resources spent and needed to complete works.

4.1.4 Attrition of QS Professionals in QSFs

There was a revelation of attrition of technical staff and graduate professionals which could possibly threaten the existence of QSFs if actions are not taken. Almost one thousand Quantity Surveying graduate are jointly turn out by the Kwame Nkrumah University of Science and Technology (KNUST), the ten polytechnics and other private tertiary institutions in Ghana in a year. Surprisingly, less than a quarter enter into the built industry and few into the QSP. One to three professionals leave within a year and at time without replacement. According to the respondents, they are challenged financially to meeting remuneration of technical staff due to lack of new projects and has led to situation where they cannot employ more QSP or replace those who have left their firms. There are various attribute to staff attrition from the respondents mainly due to *lack of new jobs, hard economic reasons, further studies, lack of interest by experienced QS professionals, redundancy, unfair competition of job leading to proliferation of uncertified QS practitioners and low expertise*. The industry is not expanding enough to accommodate the tons of graduates produced yearly and have remain the reason to attrition of graduates to other sectors.

4.1.5 Measures to Sustain QSFs

Sustainability has become a world acclaimed word in recent times where every organisation is developing measures to attain their existence in the business world. Within the field of business, environment, educations. This growing phenomenon give no room to either colour or race hence, the study examined measures for sustaining the existence of QSFs.

The need to sustain QSFs was confirmed by informants'' to enhance QS practices due to the uniqueness of services they render. Most firms were performing fairly well with collaborations from other professionals'' in spite of the influx international QS firms which threaten the survival of local QSFs. Surprisingly, the *Government only recognizes and engages QSFs/P on public projects and No(Limited) support from Government in the form of legislation and regulation, finance (grants, subsidies, benefit or taxations) and provisions/influence*. Expert QSPs call government for surveyor''s bill enforceable on GhIS to sustain local QSFs and encourage fair competition from expatriate firms.

Ten percent of surveyed firms have no measures to sustain and survive in the wake of the elaborated challenges; whilst strategic plans employed by others is mainly in *grooming younger QSPs, staff training and development, application IT solution (QS Software) and succession planning to ensure sustainability of the firms*. Notwithstanding, *marketing the profession to attract individual developers, partnership with other international firms, diversifying services to other sectors, and good customer relationship were measures taken for sustaining their firms* (informants'' view).

From the survey, the following came to bare by respondents namely, staff development, use of IT, continuous of processes associated with contract administration, relation,

adapting professional services marketing strategies, adapting new project management techniques, To maintain the operations of QSFs, opinions from respondents show that firms should diversify their services into area of project management, facility management, health and safety, arbitration, procurement, investment appraisal, financial engineering/sourcing for funds, projects identification from society needs of development, public – private partnership, oil and gas, manufacturing,

It was further revealed that QSFs/Ps form consortium with other professionals in the construction industry, desire to adapt to the changing global trends, focuses on continuous professional development, improved professional fees requirement, efficient introduction of IT into practices, seeks for legislation to protect sound practices, diversify in other areas and Endeavour to Upgrade themselves in the provision of Contemporary Services.

4.2 Quantitative Data Analysis

Having discussed the first phase data, this section is dedicated to the analysis of the second phase data. Descriptive statistics was used in the analysis of both the demographic data and Relative importance index of factors that contribute to determining the objectives of the survey. Also, Factor Analysis was used to meet the aim of the aim of the study.

4.2.1 Demographic Data

4.2.1.1 Professional Membership of Firms

This shows firms' professional membership status with GhIS in Ghana. It was observed in Figure 4.1 that greater percentage (92 percent) of the firms have registered their firm with GhIS and duly recognized by the institution. However, only 8 percent (exactly, 2 firms) of the respondents had no membership with the surveying profession regulator

in the country. This confirms the assertion of some of the QSFs that “*there are proliferation of Uncertified practitioners*” in the country (informant view).

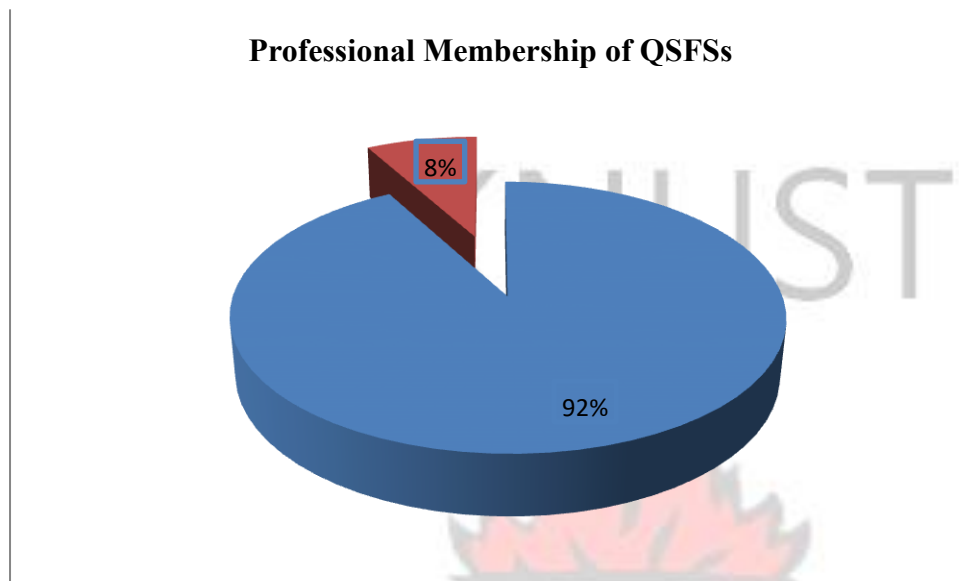


Figure 4. 1 GhIS Membership of QSFs in Ghana

4.2.1.2 Legal Status of GQSFs

Owusu-Manu (2008) emphasize the importance of legal status of firms, which enables ease classification of firm’s activities. Most jurisdiction requires businesses to legalize to enhance ease regulation. The legal status of the QSFs in Ghana was observed to be Limited Liability Firms. It was revealed that 76 percent of the QSFs are limited liability companies, 12 percent was partnership, sole proprietors and enterprise represent 8 percent and 4 percent respectively (see figure 4.2). Hence GQSFs is classified to be Limited Liability. However, research have proven that firms are sustainable when risks and benefits are shared but in the case of GQSFs it is not so.

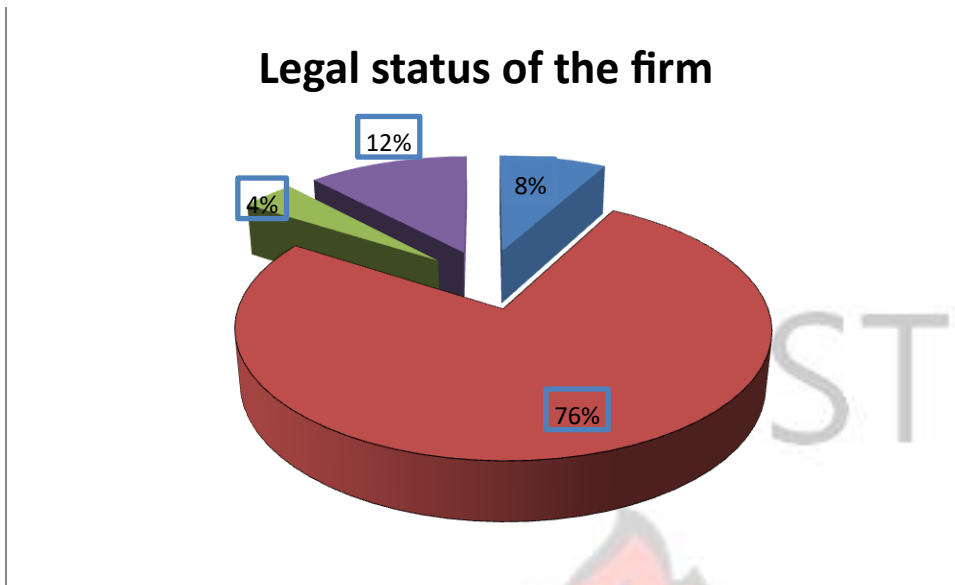


Figure 4. 2 Legal Status of QSFs in Ghana

4.2.1.3 Experience of Responded QSFs in Practice

Ho and Ng (2003) *cf* Ofori & Toor, (2012) discovered experience as one of the important attitude of quantity surveyors towards sacrificing their self-interest for the greater good. Bakar et al., (2011) also recounted experience as one of the the top ten that promote firm growth. The level of experience provides a solid foundation for the survey (Smith, 2009) and it's a matter of age of the firm. Older firms are more experienced because they have learnt over years, not susceptible to the liabilities of newness and have the benefits of better performance.

Figure 4.3 illustrate from the findings that, majority of the QSFs surveyed have operated for over a decade and had the requisite experience in the pros and cons of the surveying industry. A total of nineteen (19) out of the twenty-five (25) surveyed QSFs had practiced over eleven years, representing 76 percent. Firms which has been practicing QS for 1-5 years and 6-10 years represent 24 percent.

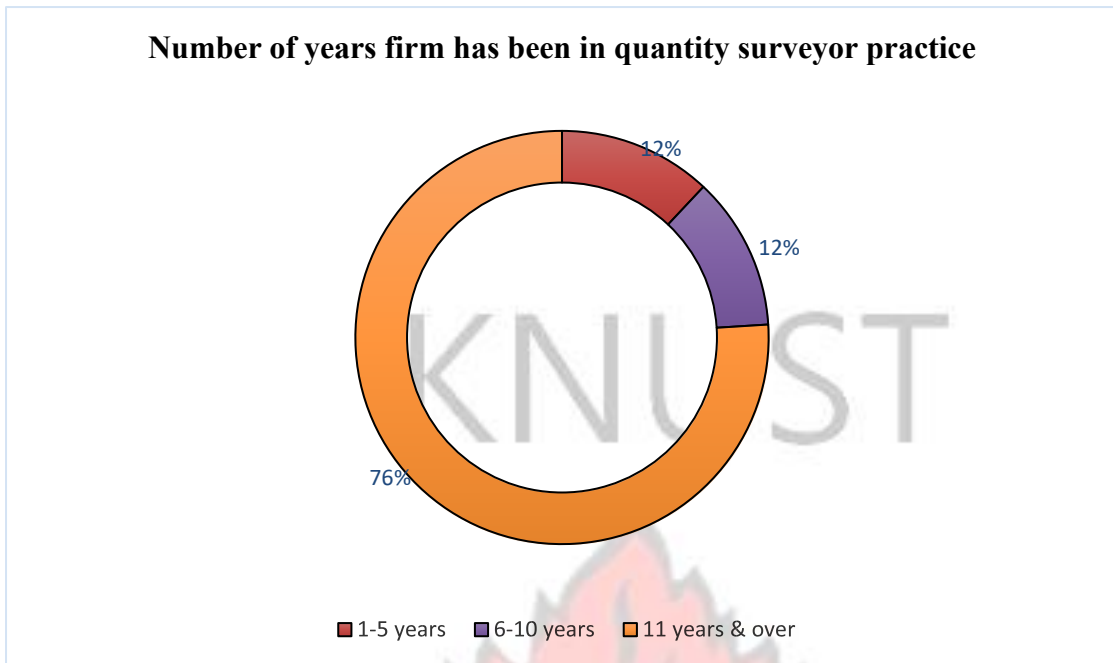


Figure 4. 3 Experience of QSFs in Practice

4.2.1.4 Number of Employed Workers

Human Capital is vital to the success of enterprises or firms. The number of employees determines the size and success of the firm's operation. According to Bakar et al., (2011) the number of employees in a firms is a major dependent variable in developing a research model for firm growth. It was observed that most of the QSFs surveyed had employees up to 10 number, representing 76 percent, followed by those with employees between 11-50 and then over 51 personnel with respective percentages of 20 and 4 respectively (see figure 4.4). This gives a clear indication that QSFs in Ghana are classified in size as small firms per the number of employees as the classifications by Mensah (2004), UNIDO (2002) and Page & Steel (1984) posit small firms have 10-29 employees.



Figure 4. 4 Size Classification of QSFs in Ghana

4.2.1.5 Annual Volume and Value of Works

The volume and value of works of firms determines their level of experience and their contributions to the socio – economic development of the nation. Also it further signifies the competence and reliability of the data solicited from these firms to the success of study. Majority of the respondents were in active business with the government as the major client as confirmed by Eyiah & Cook (2003). It was revealed from the study that 18 of the QSFs execute below 5 number projects within a year whereas 84% of these firms confirmed that their value of these projects exceeds One Million Ghana cedis (GHS1,000,000.00) per projects. Figures 4.5 and 4.6 shows the volume and value of works below respectively.

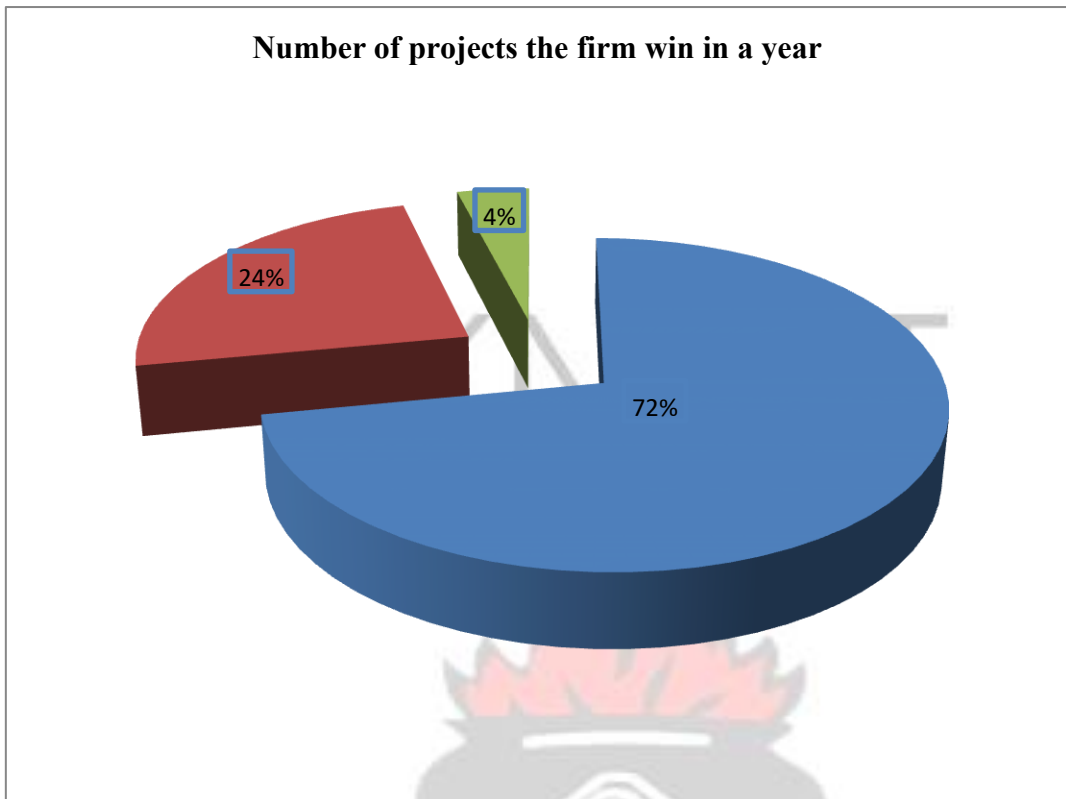


Figure 4. 5 Volume of Works QSFs Undertake in a Year

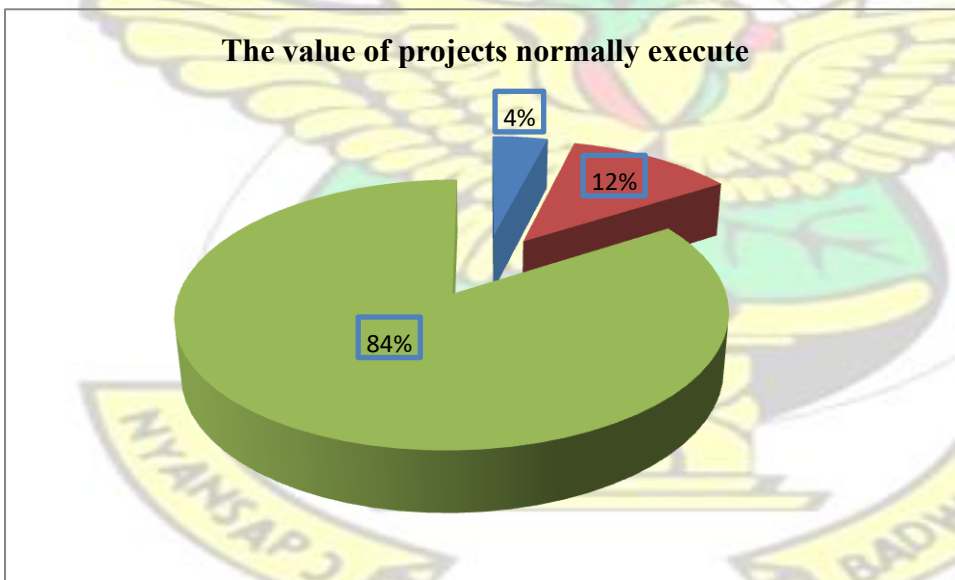


Figure 4. 6 Value of Projects Executed by QSFs

4.2.2 Identified Scope of Activities and Practices of QSFs

The current state of QSP in service delivery to clients in Ghana was sought to understand the latest practices QSFs are into and to aid in determining the obsolete practices, the areas of diversification as compared to the practices of QS when the profession was born in the 17th

century and for upcoming young professionals, researchers and academicians to appreciate the current trend of practices in the industry. Practices, services and duties QS rendered to clients by large research are spelt out in Section 2.1 and Table 2.2 (also see Senevirante et al., (2008); Hanid et al., (2007); Smith, (2009); Smith, (2004). Also, it was revealed in literature and classified services by QS to traditional and non-traditional (Addai, et al., 2009) and so current practices revealed by the study also classified.

The statistical tool used for the identification of these practices is Relative importance index. This tool was used to determine the significance of the quantity surveying services respondents undertake mostly on project delivery. Enshassi et al, (2007) asserted that to analyse data on ordinal scale, the application of relative importance index is suitable.

4.2.2.1 Traditional Services of QSP or QSFs

The Table 4.3 below shows the results of the relative index on traditional service (activities) of quantity surveying services ranked by the respondents in all demographic sectorial of this research.

Table 4.**3 Traditional Services (Practices) Description - Relative Importance Index (RII)**

| Descriptive Statistics | N | Sum | RII | Ranking |
|---|----|-----|-----|---------|
| Preparation of Bills of Quantities | 25 | 122 | 98 | 1 |
| Valuation and Final Account | 25 | 116 | 93 | 2 |
| Valuation and Interim Payment Certificate Preparation | 25 | 115 | 92 | 3 |
| Preparation of Contract Document | 25 | 114 | 91 | 4 |
| Estimation, Cost Planning and Budgeting | 25 | 114 | 91 | 5 |
| Contract Administration | 25 | 111 | 89 | 6 |
| Tendering/Tender Evaluation | 25 | 103 | 82 | 7 |
| Specification Preparation | 25 | 89 | 71 | 8 |
| Builder's Quantities | 25 | 88 | 70 | 9 |

It was clearly shown that the traditional activity mostly undertaking on project delivery was *Preparation of Bills of Quantities* with an index of 98 percent as 22 respondents confirm its usage as very often and 3 practice it often; followed by *Valuation and Final Account* with index of 93 percent as 18 respondents confirmed this as practiced very often and 5 practice it as often, then *Valuation and Interim Payment Certificate Preparation* with index 92 percent as 18 firms practice it very often and 5 practice it as often, *Preparation of Contract Document and Estimation, Cost Planning and Budgeting* with index of 91 percent each per RII where 18 and 15 firms responded to these services as very often and 4 and 9 firms responded as services often rendered respectively. These five traditional quantity surveying practices were highly significant (see Table 4.3). These five traditional quantity surveying services were generally indicated by the respondents that they often undertaken on project delivery.

Table 4.
4 Traditional Services (Activities) of QSFs Description - Statistics

| Descriptive Statistics | N | Sum | Mean | Std. | Std. |
|---|----|-----|------|-------|-----------|
| | | | | Error | Deviation |
| Preparation of Bills of Quantities | 25 | 122 | 4.88 | 0.066 | 0.332 |
| Contract Administration | 25 | 111 | 4.44 | 0.154 | 0.768 |
| Preparation of Contract Document | 25 | 114 | 4.56 | 0.164 | 0.821 |
| Estimation, Cost Planning and Budgeting | 25 | 114 | 4.56 | 0.117 | 0.583 |
| Specification Preparation | 25 | 89 | 3.56 | 0.277 | 1.387 |
| Builder's Quantities | 25 | 88 | 3.52 | 0.265 | 1.327 |
| Tendering/Tender Evaluation | 25 | 103 | 4.12 | 0.211 | 1.054 |
| Valuation and Final Account | 25 | 116 | 4.64 | 0.128 | 0.638 |
| Valuation and Interim Payment Certificate Preparation | 25 | 115 | 4.6 | 0.153 | 0.764 |

Contract Administration and *Tendering/Tendering Evaluation* were all considered as practices often engaged by QSFs in services rendered to clients; with an index of over 80 percent. However, it was clear from the responding firms that *Specification Preparation* and *Builder's Quantities* were hardly services rendered by QSFs, their mean value was classified on an average demand by clients as shown trailing on Table 4.4.

4.2.2.2 Non – Traditional Services of QSFs – Relative Importance Index (RII) As Addai et al., (2009) and Hanid et al., (2007) called for QSs to acquiring new knowledge areas and skills to influence their growth, QSFs undertook some additional services that add value to the services rendered to clients. It is indeed true for organisations to readjust within its environment to maintain effectiveness (Lui, et al.,

Table 4.
2006).

5 Non - Traditional Services of QSFs - Relative Importance Index

| | N | Sum | RII | Ranking |
|---------------------------------|----|-----|-----|---------|
| Project/Construction Management | 25 | 81 | 65 | 1 |
| Cost Planning | 25 | 81 | 65 | 2 |
| Programming | 25 | 77 | 62 | 3 |
| Value Management | 25 | 67 | 54 | 4 |
| Feasibility Studies | 25 | 62 | 50 | 5 |
| Life Cycle Cost Analysis | 25 | 60 | 48 | 6 |
| Cost Benefit Analysis | 25 | 55 | 44 | 7 |
| Quality Management | 25 | 53 | 42 | 8 |
| Risk Management | 25 | 52 | 42 | 9 |
| Investment Appraisal | 25 | 51 | 41 | 10 |
| Adjudication | 25 | 47 | 38 | 11 |
| Insurance Valuation | 25 | 45 | 36 | 12 |
| Arbitration/Mediation | 25 | 45 | 36 | 13 |
| Facility Management | 25 | 44 | 35 | 14 |
| Post Occupation Evaluation | 25 | 41 | 33 | 15 |
| Premises Audit | 25 | 38 | 30 | 16 |
| Insolvency Services | 25 | 37 | 30 | 17 |
| Taxation Advisory Service | 25 | 32 | 26 | 18 |

Table 4.5 above, highlights the non-traditional QS services firms mostly undertake in their project delivery. From the responding firms' practices, five (5) of these practices were considered to be practiced on average as outlined in literature in Table 4.6 below. *Project/Construction Management* was ranked highest with a mean value of 65 percent and standard deviation of 1.393 and *Cost Planning* with mean value of 65 percent and standard deviation of 1.268 where practices often practiced. *Programming*, Value Management and Feasibility Studies with indexes 62, 54, and 50 with standard deviation of 1.265, 1.345 and 1.262 respectively considered from the study to be averagely practiced in major project delivery. It was however observed that GQSFs hardly practice services with mean values from 6 to 18.

Table 4.

6 Non - Traditional Services - Statistics

| | N | Sum | Mean | Std. Error | Std. Deviation |
|---------------------------------|----|-----|------|------------|----------------|
| Cost Benefit Analysis | 25 | 55 | 2.20 | 0.224 | 1.118 |
| Facility Management | 25 | 44 | 1.76 | 0.254 | 1.268 |
| Quality Management | 25 | 53 | 2.12 | 0.267 | 1.333 |
| Value Management | 25 | 67 | 2.68 | 0.269 | 1.345 |
| Project/Construction Management | 25 | 81 | 3.24 | 0.279 | 1.393 |
| Risk Management | 25 | 52 | 2.08 | 0.23 | 1.152 |
| Insurance Valuation | 25 | 45 | 1.80 | 0.265 | 1.323 |
| Arbitration/Mediation | 25 | 45 | 1.80 | 0.231 | 1.155 |
| Cost Planning | 25 | 81 | 3.24 | 0.254 | 1.268 |
| Life Cycle Cost Analysis | 25 | 60 | 2.40 | 0.306 | 1.528 |
| Taxation Advisory Service | 25 | 32 | 1.28 | 0.169 | 0.843 |
| Post Occupation Evaluation | 25 | 41 | 1.64 | 0.223 | 1.114 |
| Premises Audit | 25 | 38 | 1.52 | 0.193 | 0.963 |
| Feasibility Studies | 25 | 62 | 2.48 | 0.252 | 1.262 |
| Programming | 25 | 77 | 3.08 | 0.251 | 1.256 |
| Adjudication | 25 | 47 | 1.88 | 0.211 | 1.054 |
| Insolvency Services | 25 | 37 | 1.48 | 0.193 | 0.963 |
| Investment Appraisal | 25 | 51 | 2.04 | 0.22 | 1.098 |

4.2.2.3 Summary of Activities of QSFs

The tables above presents the descriptive statistics of the traditional, non – traditional services and specialize services undertaking by the QSFs in Ghana. Non-parametric Relative Importance Index test was used to test the significance of the responses by the respondents for the quantitative data. Also, the qualitative data was analysed with Nvivo 8 as described in Section 4.2.2

It was observed that *Preparation of Bills of Quantities, Valuation and Final Account, Valuation and Interim Payment Certificate Preparation, Preparation of Contract Document, Estimation, Cost Planning and Budgeting and Contract Administration* had high mean values ranging from minimum of 4.44 to maximum of 4.88 for traditional services. Also, *Project/Construction Management, Cost Planning, Programming, Value*

Table 4.

Management and Feasibility Studies were also non-traditional services with mean values ranging from 2.48 to 3.4 of service averagely engaged into.

KNUST



These variables showed high significant importance in activities of quantity surveyors on their project delivery. Firms most often use these services in their project undertakings. Hence it is concluded that QSFs are actively engaged in traditional, non-traditional services which includes itemized in Table 4.3 for their survival, growth and sustainability.

KNUST

4.2.3 Challenges Impeding the Corporate Sustainability of QSFs

To survive and flourish in a secure operation to meet the current and future needs of the organization (Bansal, 2005; Starik & Rands, 1995), challenges must be identified to enable adequate measures to be employed to enhance sustaining the firm/organization (Spangenberg & Bonniot, 1998). From Literature, there are several challenges QSFs face in their service delivery (see section 2.5.0). QSFs are confronted with challenges of different sort as in literature that impede their smooth operation and growth. Paramount among these challenges is *Delay in Payment of Service* with an index of 74 and deviation of 1.100 and was considered high among all the challenges in Table 4.8. Ansah (2011) acknowledge delay payment has a devastating knock-on effect down the contractual payment chain.

7 Challenges Associated with Operation of Firms - RII

| | N | Sum | RII | Ranking |
|---|----|-----|-----|---------|
| Delay in Payment of Service | 25 | 93 | 74 | 1 |
| Professional Fee Competition | 25 | 86 | 69 | 2 |
| Poor Remuneration for Services rendered | 25 | 84 | 67 | 3 |
| Poor Marketing of Profession | 25 | 82 | 66 | 4 |
| Lack of New Jobs | 25 | 77 | 62 | 5 |
| Individuals do not engage QSP | 25 | 76 | 61 | 6 |
| Maintenance of Technical Staff | 25 | 76 | 61 | 7 |
| Invasion of other Professionals | 25 | 73 | 58 | 8 |
| Traditional Cost Model | 25 | 71 | 57 | 9 |

Table 4.

| | | | | |
|--|----|----|----|----|
| Low Recognition | 25 | 71 | 57 | 10 |
| Knowledge Management | 25 | 69 | 55 | 11 |
| Conservation to Change | 25 | 69 | 55 | 12 |
| Quality of Graduate Professionals | 25 | 66 | 53 | 13 |
| Professional Indemnity | 25 | 64 | 51 | 14 |
| Information Technology/ Advance Technology | 25 | 63 | 50 | 15 |

Also, there were other high challenges associated with their operations (see Table 4.7) as ranked to show the effects that have the most impact on their sustainability. These includes *Professional Fee Competition* with index 69 percent, which Smith (2009; 2004) identified it (fee cutting and bidding) as a major threat amongst QSFs; *Poor Remuneration for Services rendered* was ranked 3rd to the challenges with an index of 67 percent; *Poor Marketing of Profession, Lack of New Jobs, Lack of Individual engaging QSPs* and *Maintenance of Technical staff* with indexes 66, 62, 61 and 61 and deviation of 1.487, 1.256, 1.241 and 1.172 respectively. This confirms that, there are challenges associated with operations of QSFs in Ghana.

8 Challenges Associated with Operation of Firms - Statistics

| | N | Sum | Mean | Std. Error | Std. Deviation |
|--|----|-----|------|------------|----------------|
| Delay in Payment of Service | 25 | 93 | 3.72 | 0.22 | 1.1 |
| Individuals do not engage QSP | 25 | 76 | 3.04 | 0.248 | 1.241 |
| Lack of New Jobs | 25 | 77 | 3.08 | 0.251 | 1.256 |
| Poor Remuneration for Services rendered | 25 | 84 | 3.36 | 0.27 | 1.35 |
| Maintenance of Technical Staff | 25 | 76 | 3.04 | 0.234 | 1.172 |
| Quality of Graduate Professionals | 25 | 66 | 2.64 | 0.207 | 1.036 |
| Knowledge Management | 25 | 69 | 2.76 | 0.202 | 1.012 |
| Conservation to Change | 25 | 69 | 2.76 | 0.194 | 0.97 |
| Professional Fee Competition | 25 | 86 | 3.44 | 0.239 | 1.193 |
| Poor Marketing of Profession | 25 | 82 | 3.28 | 0.297 | 1.487 |
| Information Technology/ Advance Technology | 25 | 63 | 2.52 | 0.201 | 1.005 |
| Professional Indemnity | 25 | 64 | 2.56 | 0.239 | 1.193 |

Table 4.

| | | | | | |
|--|-----------|-----------|-------------|--------------|--------------|
| Traditional Cost Model | 25 | 71 | 2.84 | 0.263 | 1.313 |
| Low Recognition | 25 | 71 | 2.84 | 0.243 | 1.214 |
| <u>Invasion of other Professionals</u> | <u>25</u> | <u>73</u> | <u>2.92</u> | <u>0.251</u> | <u>1.256</u> |

Furthermore, the study revealed that QSFs were further challenged within their services delivery to client. These were considered as internal challenges to the firms. However, from the respondents' view point as shown in Table 4.10, the mean value of these challenges ranges between 2.76 to 2.96. The response was normally distributed and clearly indicates that, fairly, these challenges are normal to firms in their services delivery and hence its impact to their sustainability is medium. However, from Table 4.9, *Developing services to meet clients' needs* and *delivery services effectively* had mean values of 2.96 each and of standard deviation of 1.241 and 1.296 respectively and ranked 1st and 2nd in the index. Also *pricing services*, *understanding clients' needs*, *ensuring satisfaction of services rendered*, *the nature and complexity of work* and *technical expertise* as ranked in the descending order in respect to their mean values, sums and indexes (see Table 4.9; 4.10) confirming that their impact is relatively medium in regards to sustainable service delivery.

9 Challenges in Services Delivery to Client - RII

| | N | Sum | RII | Ranking |
|--|----|-----|-----|---------|
| Developing Services to meet Clients needs | 25 | 74 | 59 | 1 |
| Delivery Services effectively | 25 | 74 | 59 | 2 |
| Pricing services rendered to clients | 25 | 72 | 58 | 3 |
| Understanding Client needs | 25 | 71 | 57 | 4 |
| Ensuring Satisfaction of Services rendered to Client | 25 | 71 | 57 | 5 |
| Nature and Complexity of work | 25 | 70 | 56 | 6 |
| Technical Expertise | 25 | 69 | 55 | 7 |

Table 4.

Table 4. 10 Challenges of Service Delivery to Clients - Statistics

| | <u>N</u> | <u>Sum</u> | <u>Mean</u> | <u>Std. Error</u> | <u>Std. Deviation</u> |
|--|----------|------------|-------------|-------------------|-----------------------|
| Challenges in Service Delivery | | | | | |
| Understanding Client needs | 25 | 71 | 2.84 | 0.269 | 1.344 |
| Developing Services to meet Clients needs | 25 | 74 | 2.96 | 0.248 | 1.241 |
| Pricing services rendered to clients | 25 | 72 | 2.88 | 0.233 | 1.166 |
| Delivery Services effectively | 25 | 74 | 2.96 | 0.255 | 1.274 |
| Ensuring Satisfaction of Services rendered to Client | 25 | 71 | 2.84 | 0.269 | 1.344 |
| Nature and Complexity of work | 25 | 70 | 2.8 | 0.231 | 1.155 |
| Technical Expertise | 25 | 69 | 2.76 | 0.266 | 1.332 |

4.2.4 Factors that Lead to Attrition in QSFs

Success story of firms is built on human capital. Prominently, the number of employees in a firm is a major dependent variable in developing a research model of firm growth (Bakar, et al., 2011) among others in which every firm, organisation and industry. Effective human capital enhance the sustenance and existence of enterprises from a succession to another. Attrition of staff is known to derail the smooth growth and sustenance of enterprises. According to literature, eighteen (18) variables were identified to be factors that possibly lead to attrition of staff in general. From the Table 4.11, the mean distribution highlight these variables that lead to attrition of

technical staff of QSFs. Considering the objective and the scale of rating the responses, an average of 3.0 was considered as an average cause of attrition in the QSFs. The highest mean score of 3.64 agreed *Low Salary Level and Benefits* was attributed to attrition of technical staff. *Job Dissatisfaction, Poor Working Condition and Return to Academic Studies* with mean score of 3.32, 3.08 and 3.00 with importance index of 73, 66, 62 and 60 were considered as the major causes of attrition of QSPs.

From the output of Table 4.12 shows additional causes of attrition in QSFs; *Lack Promotional Opportunities, Demands of the work, Work Stress, Worker's Relationship with Colleagues and Supervisors, Work – Family Lifestyle, managerial styles, Poor Career Development Opportunities, Advancement in Technology, and Lack of Expertise* was the bane to QS attrition with an average mean important index of 50 percent. Also, respondents did not agree that retirement, employee mismatch to job requirement and the complex organizational structure was the cause of staff attrition because these variables were ranked on average of 2.3 mean value depicting that their contribution to QS attrition is low and hence not considered as a possible cause of QS attrition.

Table 4.

11 Attrition of Technical Staff (Qs) - Statistics

| | N | Sum | Mean | Std. Error | Std. Deviation |
|---|----|-----|------|------------|----------------|
| Factors that lead to Attrition of staff | | | | | |
| Advancement of Information Technology | 25 | 67 | 2.68 | 0.256 | 1.282 |
| Job Dissatisfaction | 25 | 75 | 3.00 | 0.258 | 1.291 |
| Low Salary level and Benefits | 25 | 91 | 3.64 | 0.321 | 1.604 |
| Poor Working Conditions | 25 | 83 | 3.32 | 0.304 | 1.52 |
| Worker's Relationship with Colleagues and Superiors | 25 | 70 | 2.80 | 0.258 | 1.291 |
| Poor Career Development Opportunities | 25 | 69 | 2.76 | 0.24 | 1.2 |
| Return to Academic Studies | 25 | 77 | 3.08 | 0.215 | 1.077 |
| Work – Family Lifestyle Imbalance | 25 | 70 | 2.8 | 0.231 | 1.155 |
| Work Stress | 25 | 73 | 2.92 | 0.215 | 1.077 |
| Complex Organisational Culture and Structure | 25 | 60 | 2.40 | 0.208 | 1.041 |
| Unhappiness/ Career Change | 25 | 67 | 2.68 | 0.229 | 1.145 |
| Promotional Opportunities | 25 | 74 | 2.96 | 0.227 | 1.136 |
| Lack of Expertise | 25 | 62 | 2.48 | 0.201 | 1.005 |
| Employee Mismatch with Job Requirement | 25 | 57 | 2.28 | 0.227 | 1.137 |
| Unsatisfactory Supervisor-Employee Relationship | 25 | 63 | 2.52 | 0.217 | 1.085 |
| Retirement | 25 | 58 | 2.32 | 0.222 | 1.108 |
| Managerial Style | 25 | 70 | 2.80 | 0.245 | 1.225 |
| Demands of the Work | 25 | 74 | 2.96 | 0.241 | 1.207 |

Table 4. 12 Attrition of Technical Staff (Qs) - RII

| | N | Sum | RII | Ranking |
|---|----|-----|-----|---------|
| Factors that lead to Attrition of staff | | | | |
| Low Salary level and Benefits | 25 | 91 | 73 | 1 |
| Poor Working Conditions | 25 | 83 | 66 | 2 |
| Return to Academic Studies | 25 | 77 | 62 | 3 |
| Job Dissatisfaction | 25 | 75 | 60 | 4 |
| Promotional Opportunities | 25 | 74 | 59 | 5 |
| Demands of the Work | 25 | 74 | 59 | 6 |
| Work Stress | 25 | 73 | 58 | 7 |
| Worker's Relationship with Colleagues and Superiors | 25 | 70 | 56 | 8 |
| Work – Family Lifestyle Imbalance | 25 | 70 | 56 | 9 |
| Managerial Style | 25 | 70 | 56 | 10 |
| Poor Career Development Opportunities | 25 | 69 | 55 | 11 |
| Advancement of Information Technology | 25 | 67 | 54 | 12 |
| Unhappiness/ Career Change | 25 | 67 | 54 | 13 |
| Unsatisfactory Supervisor-Employee Relationship | 25 | 63 | 50 | 14 |
| Lack of Expertise | 25 | 62 | 50 | 15 |
| Complex Organisational Culture and Structure | 25 | 60 | 48 | 16 |
| Retirement | 25 | 58 | 46 | 17 |
| Employee Mismatch with Job Requirement | 25 | 57 | 46 | 18 |

4.2.4.1 Effects of Attrition

Research have highlighted several effects of attrition to firms worldwide inclusive are high unemployment rate and folding up of firms. QSFs are also challenged by the numerous effects of excessive staff attrition (human capital, social capital, wage inflation, loss of experienced staff, delay in meeting work demand and additional cost to firms but folding up of firms). As illustrated in the histogram in Figure 4.7 below, *Lose of experienced staff* had the highest index of 68, followed by *Human Capital* of 65, *Delay in meeting Work demand, cost to firm, wage inflation* and *social capital* of 62, 61, 67, 56 indexes respectively. These showed the severity of attrition to the QSFs, construction industry and in sustaining the economy of Ghana.

Table 4. 13 Effects of Attrition on Firm's Operations

| | N | Sum | Mean | Std. Error | Std. Dev. |
|------------------------------|-----------|-----------|-------------|--------------|--------------|
| Lose of Experienced Staff | 25 | 85 | 3.40 | 0.283 | 1.414 |
| Human Capital | 25 | 81 | 3.24 | 0.247 | 1.234 |
| Social Capital | 25 | 70 | 2.80 | 0.252 | 1.258 |
| Wage Inflations | 25 | 71 | 2.84 | 0.229 | 1.143 |
| Delay in Meeting Work Demand | 25 | 77 | 3.08 | 0.251 | 1.256 |
| Cost to Firm | 25 | 76 | 3.04 | 0.241 | 1.207 |
| <u>Folding up of Firm</u> | <u>25</u> | <u>59</u> | <u>2.36</u> | <u>0.251</u> | <u>1.254</u> |

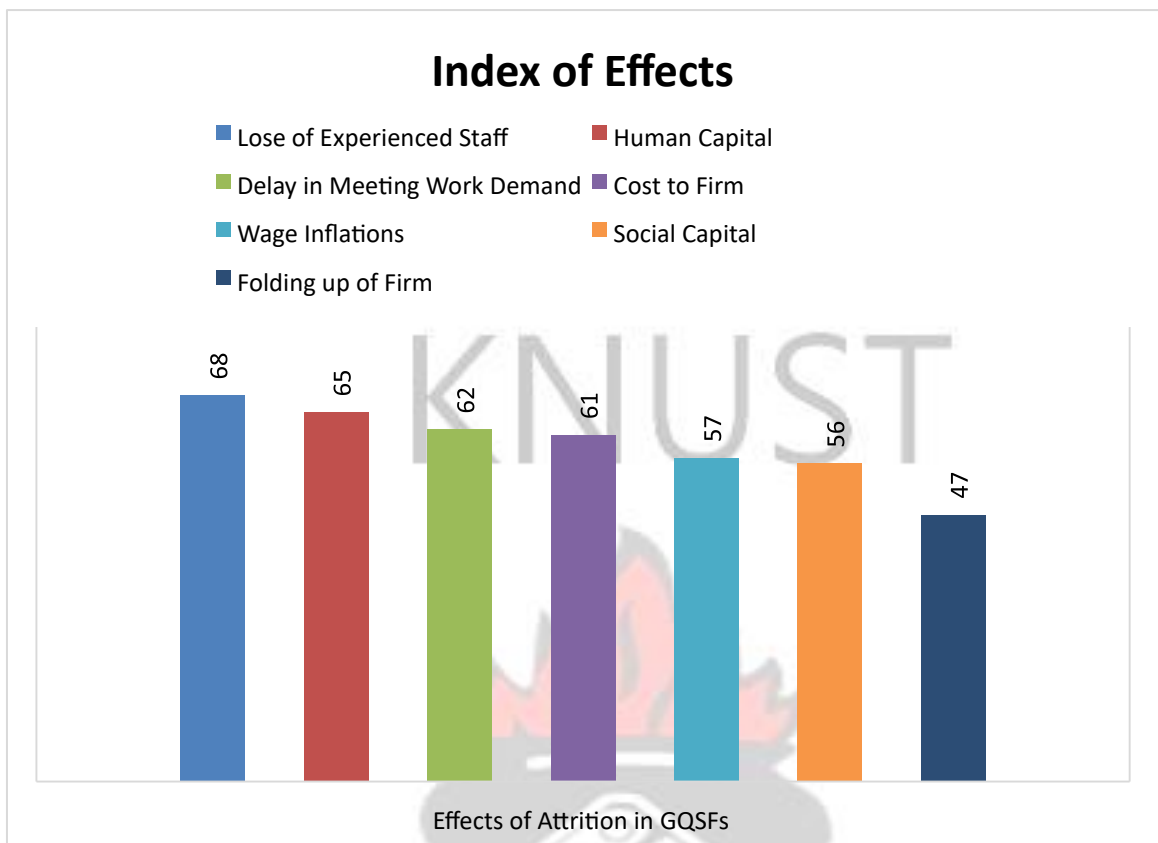


Figure 4. 7 Effects of Attrition in Ghanaian Quantity Surveying Firms

4.2.5 Factors Promoting QSFs to Corporate Sustainability and Competiveness

As a generic mantra sustainability has gained, the QSFs' survival and sustenance is important as the respondents confirmed the research growth models (Bakar, et al., 2011) to their own sustainability in Ghana in the study. Table 4.15 outlines the various factors that contribute to a sustainable firm from literature, where respondents ranked to the interest of their firms. Accordingly, the mean value from the respondents ranges between 2.52 to 4.04, showing the level of importance the variable contribute to their sustainability as high. *Education and Upgrading Staff*, *Economic Conditions and Policies and Logistics* had a mean value of 4.04, 3.60 and 3.52 and ranked 1st to 3rd respectively from the index in Table 4.14.

Also there were other variables that respondents considered to significantly contribute to promoting sustainability on high rate of importance, which includes,

Diversification of Services, Safety and Security, Technological Edge, Good Financial Standing, Organisational Skills, Technical Expertise and Legal Regulation with a mean value of above of 3.00

Adding on to the above 10 variables, the study further confirmed *Environmental Role, Political, Competition from other Professionals, Organisational Management, Joint Venture, Client Expectation and Satisfaction, Research and Development and Market Specialization* which recorded mean value approximately 3.00 (see Table 4.15) representing average importance to promoting sustaining QSFs in Ghana. On the contrary from the survey, none of the QSFs is in any joint venture-ship, they are generally Limited Liability (see Figure 4.2).

Table 4. 14 Factors Promoting QSFs to Sustainability and Competitiveness - RII

| | N | Sum | RII | RANKING |
|---------------------------------------|----|-----|-----|---------|
| Education and Upgrading Staff | 25 | 101 | 81 | 1 |
| Economic Conditions and Policies | 25 | 90 | 72 | 2 |
| Logistics | 25 | 88 | 70 | 3 |
| Diversification of Services | 25 | 84 | 67 | 4 |
| Safety and Security | 25 | 84 | 67 | 5 |
| Technological Edge | 25 | 80 | 64 | 6 |
| Good Financial Standing | 25 | 80 | 64 | 7 |
| Organisational Skills | 25 | 79 | 63 | 8 |
| Technical Expertise | 25 | 79 | 63 | 9 |
| Legal and Regulations | 25 | 77 | 62 | 10 |
| Environmental Role | 25 | 75 | 60 | 11 |
| Political | 25 | 75 | 60 | 12 |
| Competition from Other Professionals | 25 | 73 | 58 | 13 |
| Organisational Management | 25 | 73 | 58 | 14 |
| Joint Venture | 25 | 68 | 54 | 15 |
| Client's Expectation and Satisfaction | 25 | 67 | 54 | 16 |
| Research and Development | 25 | 65 | 52 | 17 |
| Market Specialization | 25 | 63 | 50 | 18 |

Table 4. 15 Factors Promoting QSFs Sustainability and Competitiveness - Statistics

| | N | Sum | Mean | Std. Deviation |
|---------------------------------------|----|-----|------|----------------|
| Organisational Skills | 25 | 79 | 3.16 | 1.281 |
| Technological Edge | 25 | 80 | 3.20 | 1.080 |
| Education and Upgrading Staff | 25 | 101 | 4.04 | 1.172 |
| Economic Conditions and Policies | 25 | 90 | 3.60 | 1.080 |
| Environmental Role | 25 | 75 | 3.00 | 1.155 |
| Diversification of Services | 25 | 84 | 3.36 | .952 |
| Technical Expertise | 25 | 79 | 3.16 | .943 |
| Competition from Other Professionals | 25 | 73 | 2.92 | .954 |
| Good Financial Standing | 25 | 80 | 3.20 | .866 |
| Client's Expectation and Satisfaction | 25 | 67 | 2.68 | 1.030 |
| Safety and Security | 25 | 84 | 3.36 | .995 |
| Political | 25 | 75 | 3.00 | .957 |
| Research and Development | 25 | 65 | 2.60 | 1.080 |
| Market Specialization | 25 | 63 | 2.52 | 1.046 |
| Joint Venture | 25 | 68 | 2.72 | 1.100 |
| Legal and Regulations | 25 | 77 | 3.08 | 1.077 |
| Organisational Management | 25 | 73 | 2.92 | 1.077 |
| Logistics | 25 | 88 | 3.52 | 1.046 |

4.2.5.1 Extension of QS Services in Related Construction Fields

Adding on the measures to sustain QSFs, extension of services was noted to be an important element preached by Addai et al., (2009), Smith (2009) and Hanid et al., (2007) to both construction and non – construction sectors. The study identified Construction, Project Management, Civil and Industrial Engineering and Mechanical and Electrical Engineering Services from literature as other sectors to evolve in the construction sector (see Table 4.16). Not surprisingly, respondents revealed that QSFs are actively involved in *Construction, Project Management and Civil and Industrial Engineering* with indexes 85, 83 and 80 percent respectively and each with a mean value more than 4.00 showing the level of involvement is high in the bid to grow. This findings confirms Pheng & Ming (1997) assertion that QSs are normally appointed as project managers, hence the reason for GQSFs extending into Project Management. Also, Construction is a general practice of the profession inclusive of civil works. However, Mechanical and Electrical Engineering Services was rated with index 70 and

mean value of 3.48 showing medium involvement of QSFs into that sector. The Figure 4.8 graphically highlights the areas QSFs are evolving into in Ghana.

Table 4. 16 Extension of QS Services into Other Construction Industry

| | N | Sum | RII | Ranking |
|---|----|-----|-----|---------|
| Construction | 25 | 106 | 85 | 1 |
| Project Management | 25 | 104 | 83 | 2 |
| Civil and Industrial Engineering | 25 | 100 | 80 | 3 |
| Mechanical and Electrical Engineering Service | 25 | 87 | 70 | 4 |

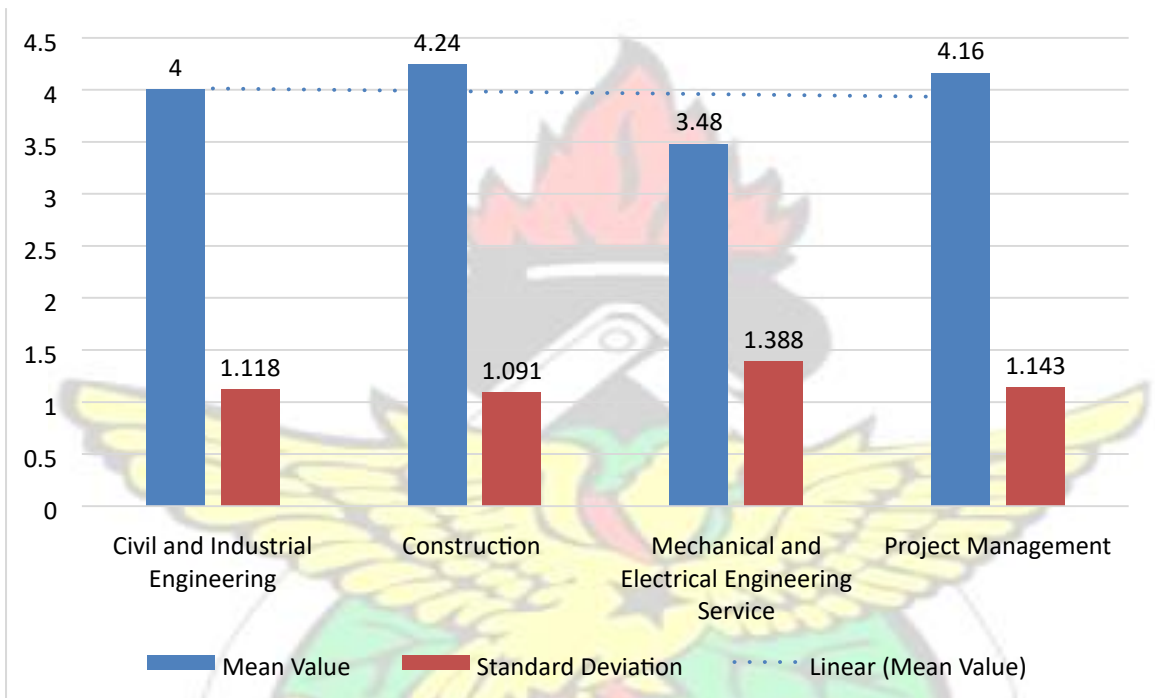


Figure 4.8 Extension of QS Services into Other Construction Sectors

4.2.5.2 Diversification of QS Services into New Areas

Also, diversifying to other sectors contribute to promoting sustainability and widening the scope of practices to the economic and social development of QSFs. Inclusive to the findings from literature (see Section 2.3.2), the possible areas to diversify into is captured in Table 4.17 below. The findings from the research revealed in Table 4.17 and Figure 4.9 that, GQSFs diversify mostly into Real Estate sector with a mean value

of 4.64 and index of 93; followed by Banking and Finance as commended by Hanid et al., (2007) with mean value of 4.04 and index of 81; Oil and Gas of 3.92 and index of 78 came 3rd in support of Addai et al., (2009) and Osei-Tutu et al., (2009) that the QS – Division is well placed to benefit immensely from the oil and gas industry. Also, Mining with 3.8 and index of 76 and Insurance mean value 3.64 and index of 73 percent all in affirming Hanid et al., (2009) as possible areas for QSFs can diversify into with their practices or professionalism.

However, the findings was in contrary to Addai et al., (2009) that QSP have evolved into Manufacturing and Transport and Aviation sectors. The findings revealed that, GQSFs are yet to massively look into Manufacturing and Transport and aviation sectors because they were ranked as medium with a mean value averagely of 3.0 to the other areas of diversification as shown in Figure 4.9.

Table 4. 17 Diversified New Area of Services - RII

| | N | Sum | RII | Rankings |
|----------------------------------|----|-----|-----|----------|
| Real Estate Sector | 25 | 116 | 93 | 1 |
| Banking / Financial Institutions | 25 | 101 | 81 | 2 |
| Oil and Gas Industry | 25 | 98 | 78 | 3 |
| Mining | 25 | 95 | 76 | 4 |
| Insurance | 25 | 91 | 73 | 5 |
| Transport and Aviation | 25 | 83 | 66 | 6 |
| Manufacturing | 25 | 81 | 65 | 7 |

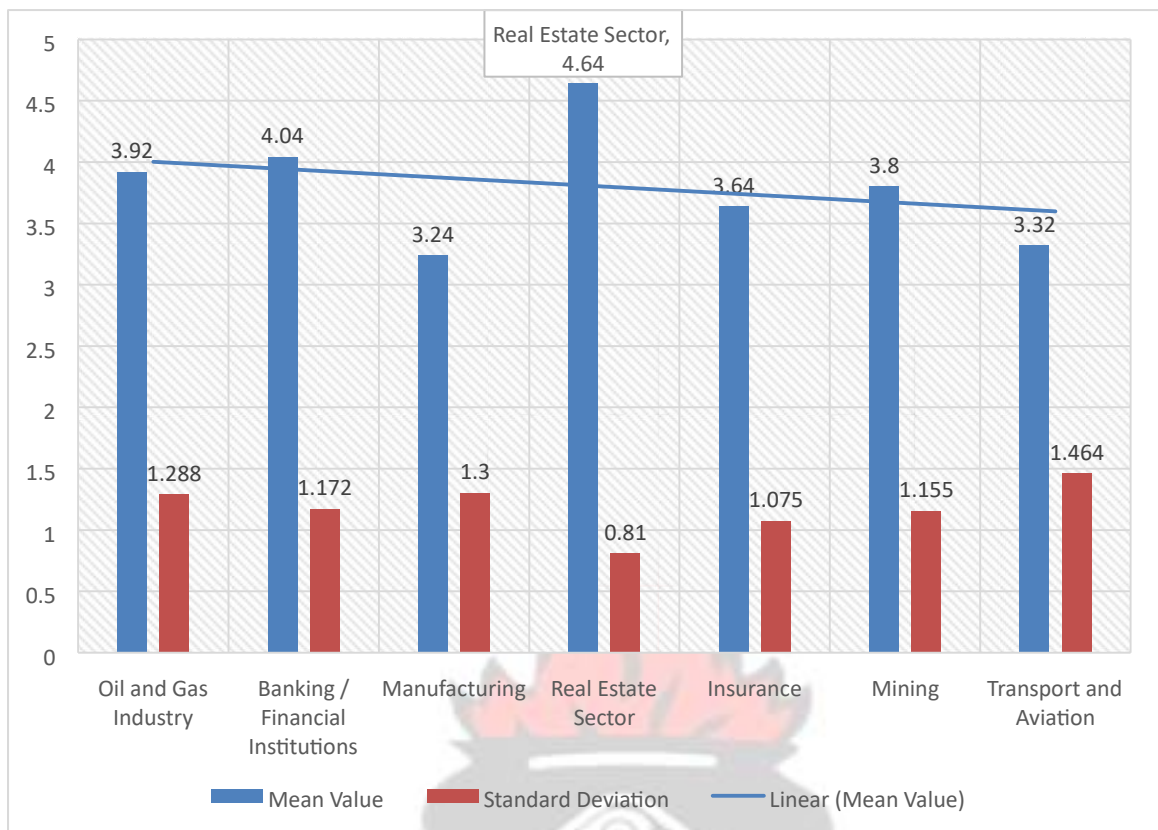


Figure 4. 9 Diversification of QS Services into Other Sectors

4.2.5.3 Government Intervention

It behooves on the government to provide a peaceful political and economic environment for business to thrive, hence government intervention is paramount to sustainability criteria determination of firms. Figure 4.19 below confirms that the Government of Ghana's contribution to the success of QSFs operation is medium per firm's ratings. QSFs unvaryingly consented to government support in regards to influence/provisions as low, finance as medium and legislation and regulation as medium all with mean values of 2.72, 3.16 and 3.4 respectively.

This shows that the government's position on helping to promote a sustainable QSFs in Ghana is not in full flesh, much ought to be done. In pursuant of the government to achieve macro-economic environment and implementing decisive structural

transformation to foster strong economic growth and a broad-based improvement of living standards, an establishment of a clear national policies and regulations, acceptance and integration into national quality management system are initiatives to encourage promote development (Osei-Tutu, et al., 2009).

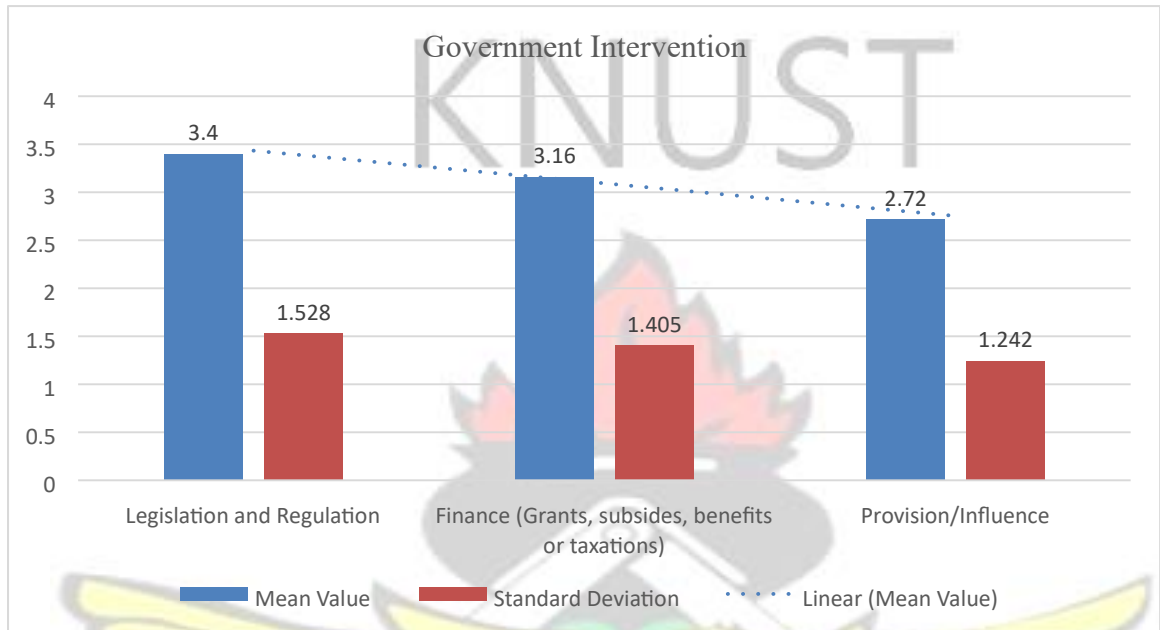


Figure 4. 10 Government Intervention into Promoting QSFs

4.2.5.4 Factor Analysis

There are eighteen (18) variables for a sustainable criteria development for QSFs. In view of the numerous variables involved in this research, a possible number of significant variables will measure the same sustainable criteria. Hence, the fundamental concept underlying the factor analysis is the ability to statistically manipulate the empirical relationship among several variables to help reveal conjectural constructs of relationships (Neuman & Kreuger, 2003) was adopted to reduce a large number of variables to a smaller set of underlying factors that summaries the essential information contained in the variables (Pallant, 2010; Coakes & Steed, 2001). As per Coakes & Steed (2001), the most frequent used Principal Components was used.

The reliability of factor analysis is determined by the sample size as correlation coefficients change from one set to another. In factor analysis, Kaiser-Meyer-Olkin is used to measure of sampling adequacy (KMO – test) which is estimated to be adequate when it is greater than 0.5. From Table 4.18, the KMO measure of sampling adequacy was approximately 0.6 signifying the adequacy of the sample size of the data for the factor analysis to be conducted. This give credence for factor analysis to be used in identifying the factors to enable the conjectural construct. Similarly, the Bartlett’s test of sphericity was also significant suggesting that the population was not an identity matrix (Coakes & Steed, 2001).

Table 4. 18 KMO and Bartlett's Test

| | | |
|---|---------------------------|----------------|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .623 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 233.349 |
| | Df | 153 |
| | Sig. | .000 |

In a bid to further strengthen the adequacy of the sample size, communality which describes the total amount of original variables share with all other variables in the analysis and useful in determining the final variables extracted was first established. The average communality of the variables after extraction was 0.78. Hence the communalities from Table 4.19 are significant due to the conventional rule that extraction value (eigenvalues) of more than 0.5 at the initial iteration indicates significance for further analysis.

Table 4. 19 Communalities

| Factors that Promote Sustainability of firms | Initial | Extraction |
|--|----------------|-------------------|
| Organisational Skills | 1.000 | .801 |
| Technological Edge | 1.000 | .671 |
| Education and Upgrading Staff | 1.000 | .788 |
| Economic Conditions and Policies | 1.000 | .806 |
| Environmental Role | 1.000 | .712 |
| Diversification of Services | 1.000 | .780 |
| Technical Expertise | 1.000 | .831 |
| Competition from Other Professionals | 1.000 | .780 |
| Good Financial Standing | 1.000 | .820 |
| Client's Expectation and Satisfaction | 1.000 | .840 |
| Safety and Security | 1.000 | .652 |
| Political | 1.000 | .913 |
| Research and Development | 1.000 | .756 |
| Market Specialization | 1.000 | .809 |
| Joint Venture | 1.000 | .897 |
| Legal and Regulations | 1.000 | .646 |
| Organisational Management | 1.000 | .816 |
| Logistics | 1.000 | .815 |
| Extraction Method: Principal Component Analysis | | |

Moving on, from Table 4.21 (total variances explained) and the scree plot in Figure 4.11 below; six (6) components with eigenvalues greater than one (1.0) were extracted using the factor loading of 0.5 as the cut – off point to represent factors that promote sustainability of QSFs. Considering the extracted 6 components cumulatively explained 79% of the variation in the data, which supports the proportional variance criterion that, extracted components should altogether explain at least 50% of the variation (Pallant, 2010; Coakes & Steed, 2001).

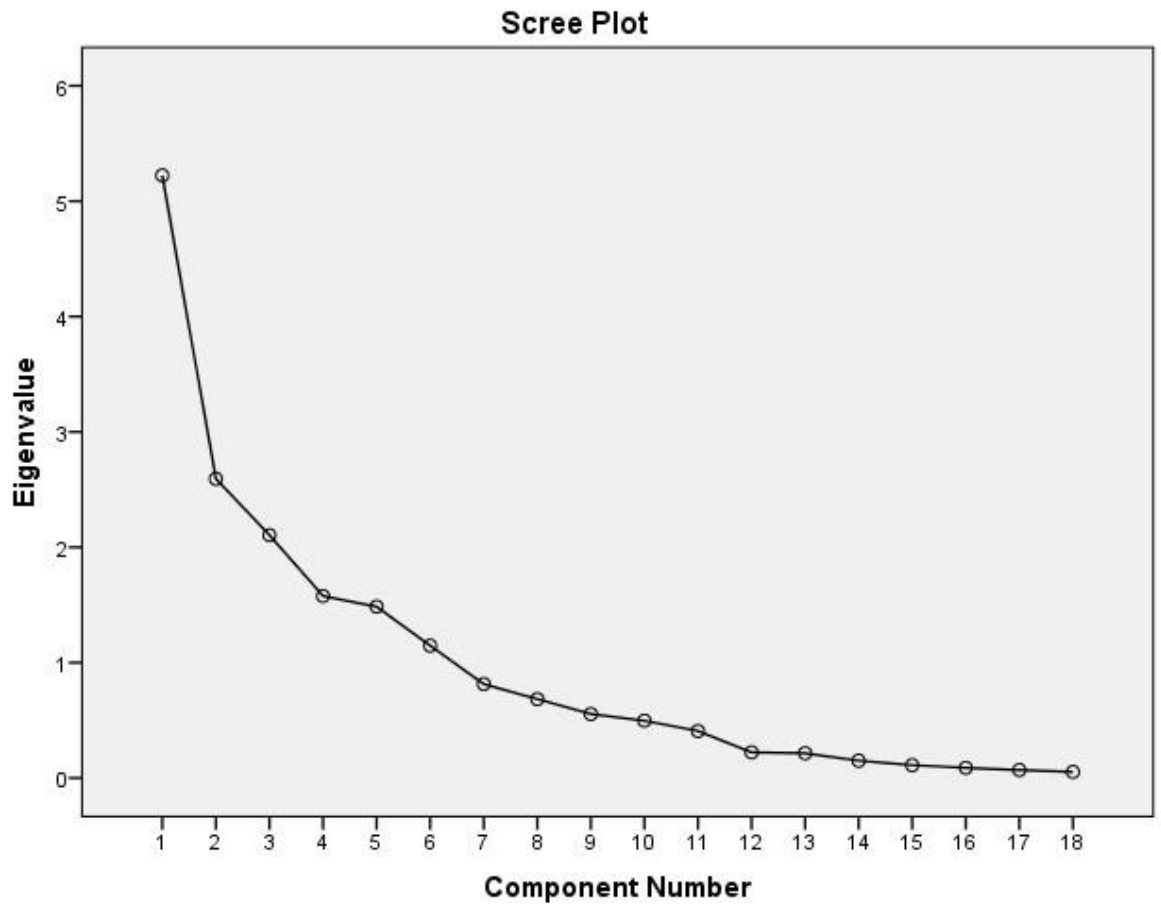


Figure 4. 11 Scree Plot

Adding on, rotation component matrix is vital to factor analysis in the effort to achieve a simple structure from the large loadings factors in absolute value for only some of the variables; hence making it easier to identify and interpret. It is further desirable for each variable to have a large factor loadings to enable few and preferable ones, helping to differentiate the factors from each other to emerge (Table 4.20).

Table 4. 20 Rotated Component Matrix^a

| | Component | | | | | |
|---|--------------|--------------|--------------|--------------|--------------|--------------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| Organisational Skills | 0.005 | -0.354 | 0.648 | 0.15 | 0.178 | 0.449 |
| Technological Edge | 0.661 | 0.373 | 0.203 | 0.215 | 0.085 | 0.006 |
| Education and Upgrading Staff | 0.849 | 0.015 | 0.026 | -0.075 | 0.243 | 0.023 |
| Economic Conditions and Policies | 0.734 | 0.229 | 0.144 | -0.264 | -0.181 | 0.305 |
| Environmental Role | 0.095 | 0.261 | 0.734 | 0.106 | -0.008 | 0.293 |
| Diversification of Services | 0.729 | -0.336 | -0.104 | 0.336 | 0.023 | 0.105 |
| Technical Expertise | 0.401 | -0.08 | 0.108 | -0.075 | 0.053 | 0.802 |
| Competition from Other Professionals | 0.151 | 0.849 | 0.149 | 0.01 | -0.006 | 0.114 |
| Good Financial Standing | -0.003 | 0.81 | -0.238 | 0.312 | 0.085 | -0.045 |
| Client's Expectation and Satisfaction | 0.008 | 0.147 | 0.051 | -0.226 | 0.842 | 0.239 |
| Safety and Security | -0.17 | 0.425 | 0.178 | 0.24 | 0.224 | 0.55 |
| Political | 0.015 | 0.382 | 0.164 | 0.751 | -0.201 | 0.368 |
| Research and Development | 0.659 | 0.296 | 0.436 | 0.171 | 0.094 | 0.079 |
| Market Specialization | 0.302 | 0.01 | 0.132 | 0.106 | 0.83 | -0.002 |
| Joint Venture | 0.503 | 0.668 | 0.343 | 0.272 | 0.007 | -0.077 |
| Legal and Regulations | -0.162 | -0.196 | 0.424 | 0.226 | 0.508 | -0.305 |
| Organisational Management | 0.242 | 0.048 | 0.846 | -0.03 | 0.178 | -0.08 |
| Logistics | 0.13 | 0.152 | 0.073 | 0.869 | 0.054 | -0.111 |
| Extraction Method: Principal Component Analysis. | | | | | | |
| Rotation Method: Varimax with Kaiser Normalization. | | | | | | |
| a. Rotation converged in 9 iterations. | | | | | | |

With reference from Table 4.21 (Total variance explained) six component have been extracted to represent the factor that promote sustainability variables. The total variance explained by each component extracted include; the first principal component (component 1) version is 29.016% of the total variance; second principal component (component 2) version is 14.407% of the remaining variance not accounted for by the first component while the third component (component 3) version is 11.695% of the remaining variance unaccounted for by the first and second component; the fourth component (component 4) accounted for 8.763% of the remaining variance not explained by the previous components; also, the fifth component (component 5) accounted for 8.253%; and finally, the sixth component (component 6) accounted for

6.377% of the remaining variance not explained by the previous five principal components. In all, the six (6) components extracted cumulatively accounted for 78.512% of the variation inherent in the data. Therefore, the variables can be reduced to these set of variable with a loss of about 21% information.

Table 4. 21 Total Variance Explained

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|-----------|---------------------|---------------|--------------|-------------------------------------|---------------|--------------|-----------------------------------|---------------|--------------|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 5.223 | 29.016 | 29.016 | 5.223 | 29.016 | 29.016 | 3.331 | 18.504 | 18.504 |
| 2 | 2.593 | 14.407 | 43.423 | 2.593 | 14.407 | 43.423 | 2.829 | 15.714 | 34.218 |
| 3 | 2.105 | 11.695 | 55.118 | 2.105 | 11.695 | 55.118 | 2.408 | 13.380 | 47.598 |
| 4 | 1.577 | 8.763 | 63.882 | 1.577 | 8.763 | 63.882 | 1.964 | 10.913 | 58.511 |
| 5 | 1.486 | 8.253 | 72.135 | 1.486 | 8.253 | 72.135 | 1.931 | 10.727 | 69.238 |
| 6 | 1.148 | 6.377 | 78.512 | 1.148 | 6.377 | 78.512 | 1.669 | 9.274 | 78.512 |
| 7 | .815 | 4.525 | 83.037 | | | | | | |
| 8 | .684 | 3.800 | 86.837 | | | | | | |
| 9 | .555 | 3.081 | 89.918 | | | | | | |
| 10 | .497 | 2.759 | 92.678 | | | | | | |
| 11 | .408 | 2.266 | 94.943 | | | | | | |
| 12 | .223 | 1.237 | 96.180 | | | | | | |
| 13 | .215 | 1.194 | 97.374 | | | | | | |
| 14 | .151 | .837 | 98.211 | | | | | | |
| 15 | .111 | .618 | 98.829 | | | | | | |
| 16 | .089 | .492 | 99.322 | | | | | | |
| 17 | .069 | .384 | 99.706 | | | | | | |
| 18 | .053 | .294 | 100.000 | | | | | | |

Extraction Method: Principal Component Analysis.

4.2.5.4.1 Sustainability Criteria of QSFs Development

This section entails the discussion and interpretation of the results. It combined the inferential analysis and factor analysis meant to classify and reduce variables for development of the sustainable criteria for QSFs. This section would adopt the procedure of Leedy and Ormrod (2005) for the discussion and interpretation of results by relating the findings relating to the findings to extant literature, concepts, theories and research studies; determining if the findings have practical and statistical significance; and identifying the limitations of the research.

Table 4.22 summarizes the variables extracted from the factor analysis and the various labels to best identify the variables in the six (6) components for the criteria development. Also, corporate sustainability in the interest of the study was defined as “primarily on economic principles; where indicators must systematically interconnect for continuity to survive and flourish in a secure operational environment to meet current and future stakeholders value and organisational goals”. **Table 4. 22 Summary of Extracted Variance Explained**

| Description of Components and Variables | Factor Loading | Variance Explained |
|--|-----------------------|---------------------------|
| Component 1: <u>Business Management (Continuity, Surviving and Flourishing)</u> | | |
| 1. Technological Edge | 0.661 | |
| 2. Education and Upgrading of Staff | 0.849 | |
| 3 Economic Conditions and Policies | 0.734 | 29.02% |
| 4 Diversification of Services | 0.729 | |
| 5. Research and Development | 0.659 | |
| Component 2: <u>Market Factors (Success Factors)</u> | | |
| 1. Competition from the other Professionals | 0.849 | |
| 2. Good Financial Standing | 0.81 | 14.41% |
| 3. Joint Venture | 0.668 | |
| Component 3: <u>Management</u> | | |
| 1. Organisational Value | 0.648 | |
| 2. Environmental Role | 0.734 | 11.70% |
| 3. Organisational Management | 0.846 | |
| Component 4: <u>Corporate Risk (Indicators)</u> | | |
| 1. Political | 0.751 | 8.75% |
| 2. Logistics | 0.869 | |
| Component 5: <u>Stakeholders Value and Organisational Goals</u> | | |
| 1. Client's Expectation and Satisfaction | 0.842 | |
| 2. Market Specialisation | 0.83 | 8.25% |
| 3. Legal and Regulations | 0.508 | |
| Component 6: <u>Security</u> | | |
| 1. Technical Expertise | 0.802 | 6.38% |
| 2. Safety and Security | 0.55 | |

Component 1: Business Management

This component comprises of five (5) variables, which accounted for the most variance contribution in the variable extraction as detailed in Table 4.22 above; showing their factor loadings and variance explained. This component contributed

29.02 percent to the explained variance of the factors analysed. As espoused by Reinhardt (2000) that sustainability is fundamentally linked to business managers and also confirmed by Warhurst (2000) that expert firm/business management leads to investors and sustainable management. These five variables which includes *Technological Edge, Education, Economic Condition, Diversification of Service and Research and Development* are Business Management oriented practices engaged to boost the operation of firms just as QSFs.

Technological inclusion is positive to sustainability for QSFs because Hardie et al., (2005) affirms that, it has taken over repetitive and routine works which mostly is the case in QSFs practices. The nature of technology also shapes the likelihood of the firms' survival (Cefis & Marsili, 2005). Knowledge is a key element that is hinged to education. In that Green (2013) and Ofori & Toor (2012) were of the view that QS is a knowledge – intensive profession; also Hardie et al., (2005) espoused that knowledge is a key surveyors' portfolio, thereby education and research deem it a major criteria to QSFs sustainability criteria and further to lead to diversification. Nor & Egbu, (2010) and Davis et al., (2007) confirms that the profession is about continuous learning. In the case of Ghana, GhIS support this by instituting a CPD to upgrade the intellect of practicing professional to the discharge of their works (GhIS 2007 a). Effective education and upgrading of staff enables a company to 'know what it knows' (Davis et al., 2007) in service delivery. Furthermore, the enhancement of education, increase in knowledge and affluent society, according to Pheng & Ming (1997) have increased demand for quality and timeliness of services.

Large research shows the intense diversification of QSP to construction and non construction sectors (Addai, et al., 2009; Hanid, et al., 2007). Surprisingly, it is research that leads to the identification of new areas for further diversification. Diversification

continues to expand as quantity surveyors continue to explore new markets and niches for competitive advantage (Smith, 2004). Organizations in all sectors of the economy are under increasing pressure to offer value added services, innovate, and learn to survive and grow in the face of increased competition and rapid change (Ofori & Toor, 2012). However, unstable economic conditions and policies have a tone on the field of construction and indirectly affect QSFs (Hanid, et al., 2007). It is evident that the economic recession in the early 2000s lead to the downturn of industries, firms and corperation throughout the world, in which the construction industry as well as QSFs were greatly affected.

Therefore in Figure 4.12 below, a sustainable criteria for QSFs should critically involve effective Business Management as espoused. These five component under the business management are for the development QSFs to achieve success, survivability and sustainability.

Component 2: Market Factors (Success factors)

Component 2 also had three (3) variables and with detailed explanation (Table 4.22).

It is labeled Market Factors to the sustainability criteria development of QSFs in Figure 4.12. This market factors had a 14.41 percent contribution to the total variance explained for the criteria determination for QSFs. These variables are *Competition from other Professionals, Good Financial standing of Firms and Joint Venture*.

Research have it that, market competition distinct types of innovation and services at different levels in industrial evolution; where innovation is critical to survival (Tishler & Milstein, 2009; Cefis & Marsili, 2005). Also, market competition is a force that increases mortality of inefficient firms (Geroski, et al., 2007) and creating a strong disciplinary effective firms. Competition is vital in QSFs because it helps them to

learn to survive and grow in these era of rapid change (Ofori & Toor, 2012). The study have duly confirmed competition in the construction industry among technical staff especially within the QS sector where other professionals turn to practice QS without technical expertise. This have led to the slow innovation in QSFs (Hanid, et al., 2007).

With the increasing attributes of uneven impact of foreign competition in construction (Baah-Nuakoh & Tutu, 2003), it is important that some firms technological transfers are inculcated into the QS firms by Joint Venture with these international firm to avert loosing twice; as in internationals taken over the market and locals not gaining any new knowledge of practice. In the case of Ghana, joint venture is missing in QSFs and perhaps contributed to extinction of 16 firms since the late two decades. Joint venture in Ghana is gradually taken root due to the current Public Private Partnership (PPP) in project delevivery. It is extreme welcoming when Joint venture generate new knowledge, expertise and technological transfer to both firms.

Good financial standing is the basis for any successful firm worldwide. Access to finance remain the greatest challenge to small firms across the world (Malongane et al., 2014; Ofori & Toor, 2012) and consequently resulted to poor cash flow. Issues such as poor marketing, lack of technical skills, weak management often aggravate the financial position of small enterprises and hamper their access to funds (Malongane, et al., 2014). Late payments by clients contribute to challenges facing QSFs as confirmed in the study. Smith (2009) recommends a strong financial management within firms to reduce risk from finance providers. This give reason that sustainable firms cannot survive without a good financial standing, management and good source of funding.

Component 3: Management

Three (3) variables were loaded into component three (3) (Table 4.22) with explained variance of 11.70 percent to the total variance. These variables namely *Organisational Value/Skill, Environmental Role and Organisational Management* was labeled Management for sustainability criteria development of QSFs (Figure 4.12) to sustain and grow. Research have it that the QS profession have evolved to take up management portfolio as in project management, value and facility management, risk management etc. (Addai et al., 2009; Hanid et al., 2007). Effective management promotes good governance, strategic planning, capacity building, innovation and continuous improvement. For firms to achieve these, top management support is extremely vital to develop a strong marketing orientation (Pheng & Ming, 1997). Their ideology, working climate within firm and operating with a simple organisational structure enhance and maintain functionality of firms“ vision and mission. The research identified “organisational management” is of great importance to the sustainability of the QSFs thereby having the most loading factor of 0.869

Also, sustainability have linked and inter connectively linked to the present, future, local and global, active and precautionary, concepts and practices, critique and alternative vision and universal and context specific activities of QSFs (Gibson, 2006); this is inherent to manage the organisation, its values and skills and environmental role prudently to enhance effective operation of QSFs from sucession to sucession. Pathirage et al., (2007) proposed thorough knowledge, client operational environment, value and organisational culture which enables the growth of firms are all tided to management.

Environmental role and organisational values are interconnected. Their determinants are stable political environment, flexible culture, working systems of operations.

Obviously, Gallo & Christensen, (2011) believed the possible way to create work environments that are supportive of sustainability is to create work cultures supportive of sustainability-related behaviours. The environmental role to firm's success and sustainability cannot be over emphasized, because research establishes that the values of the firms coupled with the environment it operates determines the methods and standards of work (Keeble et al., 2003). But market growth signifies benign environment, a positive relationship is expected with performance (Appiah-Adu, 1998).

Component 4: Corporate Risk (Indicators)

Component 4, as detailed and explained in Table 4.22, was labeled corporate risk to firms' sustainability. This had a contribution to the total explained variance of 8.75 percent. These two variables are *Political* (0.751) and *Logistics* (0.869) with their factor loadings. They directly affect the success and sustainability of QSFs operations hence identified as corporate risk (Figure 4.12) that when successively achieved will promote survivability, growth and succession of QSFs in Ghana.

Political persecution has eaten into all sphere of life in Ghana. It is seen to be deep rooted into the institutional structure of the built industry from the survey. As postulated by Hogarth-Scott & Owusu (2007) that political persecution, inefficient legal system and lack of transparency in contract awards affect institutional factors to sustainability. In contrast, political will is most needed to the development of firms through political regulations, legislation and management instrument. A stable political environment, flexible culture, working systems of operations, developing economy are dependent on political influence and hence foster sustainability of QSFs.

Research have confirmed the need for logistics for effective QSFs operations. QSFs need all kinds of asserts to start-up, operate, survive and to flourish. The inevitable

human capital is the greatest asset to QSFs, followed by current and fixed assets as literature has spelled out in section 2.7.3.1.2 and 2.7.3.1.3. No firm can strive to operate without logistics so is QSFs. QSFs looking forward to operate well, survive, flourish and sustain should acquire the basic logistics.

Component 5: Stakeholders Value and Organisational Goals

The fifth component (5) had three (3) variables with 8.25 percent contribution making up the total explained variance and namely *Clients Expectation and Satisfaction*, *Market Specialization and Legal and Regulation*. These extracted variables were labeled Stakeholders Value and Organisational Goals which are the basic concerns for them as in Figure 4.12.

It is the basic vision for stakeholders to meet all the desired needs of their client and satisfy them for the value of their monies. One of the issues Smith (2009) related the significant change in the built industry is change in client demand; undoubtedly, QSFs provide services to client which is tied to satisfaction. Also, Ofori & Toor (2012) seconded to the rapid change in the world relates to the demands on the professions, and hence the role of professionals to provide clients with their demands.

Legislation and regulations provide a basis for employment and enforcement of good firm practices (Opaleye & Talukhaba, 2014). Any corporate organisation in the world is governed by a constitution, bye – laws, code of ethics, rules and conducts coupled with the nations constitution to promote good governance of the institution. From Zakari (2014), companies are required to comply with regulations to meet construction laws, this fosters effective service delivery to clients and protect their interest as firms (Ngquba et al., 2014 cf Danny F., 2010). Surprisingly, Ghana like other African countries have incorrect practices in the part of government regulations bodies and have

gradually passed it on the corporate firms (Zakari, 2014) . The study confirms lack of adequate legislation and support from the GoG to promote the sustainability of QSFs. These are key variables that need adequate consideration in determining the sustainability of a QSFs.

Research have shown a positive trend of diversification of QS Profession as well as the construction industry (Smith, 2009). Diversification and specialization appears set to continue and expand as quantity surveyors continue to explore new markets and niches for competitive advantage (Smith, 2004). This shows the level of growth and prospects of the firm. There are significant diversification of the industry since it began. Market specialization will promote effective services to clients. The survey revealed low specialization of GQSFs, hence it is important the QSFs diversify and specialized to be well noticed, marketed and positioned to survive, to foster growth and sustainability in the present ever changing and complex demand of clients.

Component 6: Security

The final components to the sustainable criteria, component 6 was with two (2) variables contributing 6.38 percent to the total explained variables. These two variables, *Technical Expertise and Safety and Security* were named Security (Figure 4.12) to QSFs sustainability due to its contribution to the firms" growth.

Technical expertise is the wheel the runs QSFs due to the kind of services rendered. Without it the objectives of QSFs is lost. It therefore, behooves on QSFs to have good technical personnel, promote technical training and retrain them. Smith (2004) recommended CPD for QSP to abreast their expertise and adjust to the speed change in the construction industry. Management is required to maintain an adequate staff strength of good qualification and experience, manage their knowledge to add

additional skill to QSP, provide them with well-deserved salary and well-motivated to promote effective service delivery to client thereby growing and sustaining the firm.

Another, variable of great importance is the safety and security of QSFs. The safety element is discussed previously in component 4 & 5. By maintain a stable political environment which promote job security, adequate legal and legislation to protect the service been rendered and support them and a vibrant economy where jobs are readily available. The security aspects deals the work load for QSFs to survive, the kind of job market, competitiveness, number of projects, alternative jobs, rate of demand for QSFs services and their ability to exercise control on the services they provide.

Security and social needs of professionals should be considered seriously.

4.3 Corporate Sustainability Criteria for QSFs

The espoused definition of corporate sustainability rest on economic principles, continuity to survive and flourish which is considered to be growth, survival and succession respectively as represented in Figure 4.12 as contributing components to sustaining QSFs which have a direct bearing on economic principles of the firm.

Empirical evidence suggests that the quality of economic principle of firms affects the level of GDP per capita, the growth of GDP per capita and the volatility of growth (Jane, 2004). Large research growth to be increase in firm size, asset, and number of employees, performance, competitiveness and diversification of services (Bakar, et al., 2012; Bakar, et al., 2011; Wijewardena & Cooray, 1994). Firms need a continuous inflow of resources in order to operate and survive. Survival is, at least in the long term, a prerequisite for success (Suarez & Ulterback, 1995). This is by appreciating the challenges and opportunities associated to QSFs operations and adapting to effective strategic planning in operations by grooming young professionals, upgrading staff interllect, partnership, diversification and succession planning for QSFs to survive.

The criteria developed fundamentally on the Economic principles which have direct influence on stakeholders value and organisation goal, management and market factor which country. These three components have also a strong relation with how QSFs are managed, with consideration on corporate risk and security of operations (Figure 4.12)

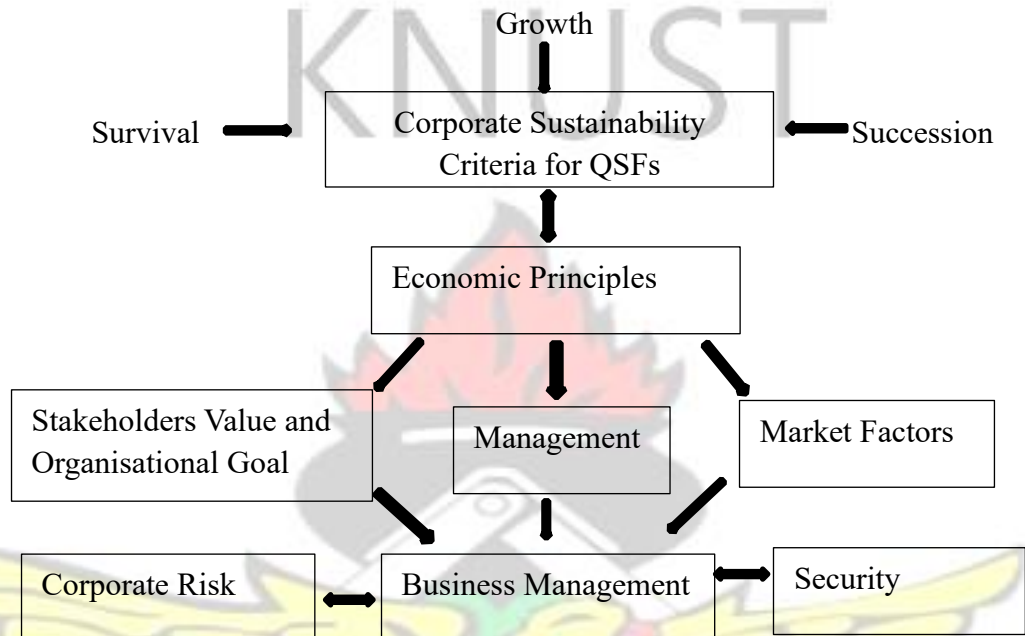


Figure 4.12 Sustainability Criteria for QSFs

CHAPTER FIVE

SUMMARY OF FINDING, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This research commenced with the goal of extensively and empirically delving into the dynamics of quantity surveying to bring to fore the understanding of corporate sustainability of QSFs towards appreciating challenges and opportunities to survive and successively grow. This has become necessary because of the lack of a generic criteria to assess the corporate sustainability the operation of GQSFs and the services rendered by professional quantity surveyors for their clients as pertaining to other corporate establishments like manufacturing companies. The preceding four chapters have concentrated on literature and conceptual milieu of sustainability on the research

agenda, the methodological dimensions including philosophical underpinnings of the research, and analysis and discussion of results leading to the development of sustainability criteria.

This final chapter is the summary of the entire research endeavour and addresses only the main points throughout the study. It commences by reviewing the objectives of the research study; findings; recommendations; and limitations of the research. The curtain to this research journey so far would be drawn on future research agenda emanating from this research.

5.1 Summary of Findings

The fundamental concept of the study revolves around Kiewiet & Janita (2007) on the importance issues of developing organisational agendas for sustaining firms. Factually, the true growth and success of QSFs or firms is a multidimensional construct that can include increases (1) in asset and employment size, (2) in sales volume and profitability, as well as (3) in the variety of business functions, products and services (Bakar, et al., 2011).

The aim of the research was to help develop a criteria to aid in sustaining QSFs in Ghana by exploring operations, set ups, opportunities, challenges and sustainable factors of practicing QSFs to fulfil the objectives of the research. Four specific objectives were set to effectively drive the agenda as follows. These are explained in the sections below.

5.1.1 Scope of Activities for QSFs

The study classified the practices of QSFs in Ghana under three main headings namely; Traditional, Non-traditional and specialized services as detailed in Table 4.1 above. These practices included preparation of Bills of Quantities, Valuation and final account,

Valuation and Interim Payment Certificate Preparation, Preparation and Contract Document and Estimation, Cost Planning and Budgeting under the traditional suite whereas Project/Construction Management, Cost Planning, Programming Value Management and Feasibility Studies as non – traditional activities.

However, there were obsolete practice QSFs identified in the research, which included manual taking off works, valuation of works, traditional methods of measurements/preparing Bills of Quantities, Site Measurement of Work done, Preparation of Bills of Quantities through taking off.

5.1.2 Challenges to Corporate Sustainability of QSFs

The achievement of this objective was possible through the qualitative and quantitative analysis of data obtained from the study. Section 4.3.3 discusses the various challenges revealed in the research confronting QSFs. Two proposition were developed in relation to the challenges to sustainability, which are challenges associated with the operation of QSFs and challenges associated with service delivery. Fifteen (15) challenges were identified in to former proposition and seven (7) to the latter. The major challenge to corporate sustainability of QSFs are delay in Payment of services, Professional fee Competition (fee cutting in bidding), Poor remuneration of services, Poor marketing of profession and lack of New jobs. However, information technology which has received the mantra as a challenge to growth and survival of firm was in contrary to QSFs operation, IT was identified to be the least challenge to their sustainability.

5.1.3 Factors that Lead to Attrition in QSFs

The study revealed attrition of technical QS professionals in QSFs in Ghana at a rate of one to three within firms in a year. These factors that lead to attrition in general as

identified in literature were eighteen (18) and those that contributed to diverse forms to attrition of QSFs in Ghana are fifteen (15) all tabulated in Table 4.12 with the aid of the mean value and Relative Importance Index, complexity of organisational cultures, retirement and employee mismatch with job requirement impact on this objective was very minimal.

5.1.3.1 Effects of Attrition in the Ghanaian Economy

Employee attrition has several effects on the success of corporate institution and the economic growth of a country as a whole. This has led to the tattered growth of some QSFs with others at the verge of extinction. QSFs have since remained small per the classification of sizes of firms posited by Mensah (2004), UNIDO (2002) and Page & Steel, (1984:42); and even deteriorate. Lose of experienced staff, human capital, Delay in meeting work demands, cost to firm, social capital and wage inflation were the major effects on attrition of QSPs. Folding up of QSFs was the least effect.

However, the study confirms that from the past one and half decade, twelve (12) GQSFs have foldered up out of seventy-three (73) firms.

This concurs with Sanda & Ntsiful, (2013) and Ho, et al., (2010) on the types of attrition. QSFs in Ghana are faced with both voluntary and involuntary attrition. The study reveals that QSPs join the long train of attrition of technical staff within the Ghanaian economy (teachers, nurses, doctors, librarians, media men, pharmacist etc) (Sanda & Ntsiful, 2013; Quartey, 2012; Baah, et al., 2009; Mensah & Alemna, 1997). Inclusively, this has resulted in ineffectiveness, high unemployment, brain drain, slow pace of national development, reduced gross domestic product, economic hardships and slow growth and sustainable QSFs.

5.1.4 Criteria for Assessing Corporate Sustainability of QSFs

This objective constituted the spine of the research and was achieved by summing the various objectives, determination of factors that promote corporate sustainability and competitiveness and allied concepts to develop a robust criteria for sustaining QSFs. In an attempt to clarify the aspect of sustainability being dealt with, was defined as, corporate sustainability of the service industry is *“primarily on economic principles; where indicators must systematically interconnect for continuity to survive and flourish in a secure operational environment to meet current and future stakeholders value and organisational goals”*.

Corporate sustainability criteria was developed to aid QSFs to consider in progressing of services to clients and to foster their growth and survival. The developed sustainable criteria influences the survival, growth and succession of QSFs, which is dependent on economic principles. These economic principles are also influenced by stakeholders’ value and organisational goals, management and market factors; which is further related to business management. Business management is also, interrelated and interconnected with corporate risk and security and broadly leads to sustainable QSFs if business is well managed.

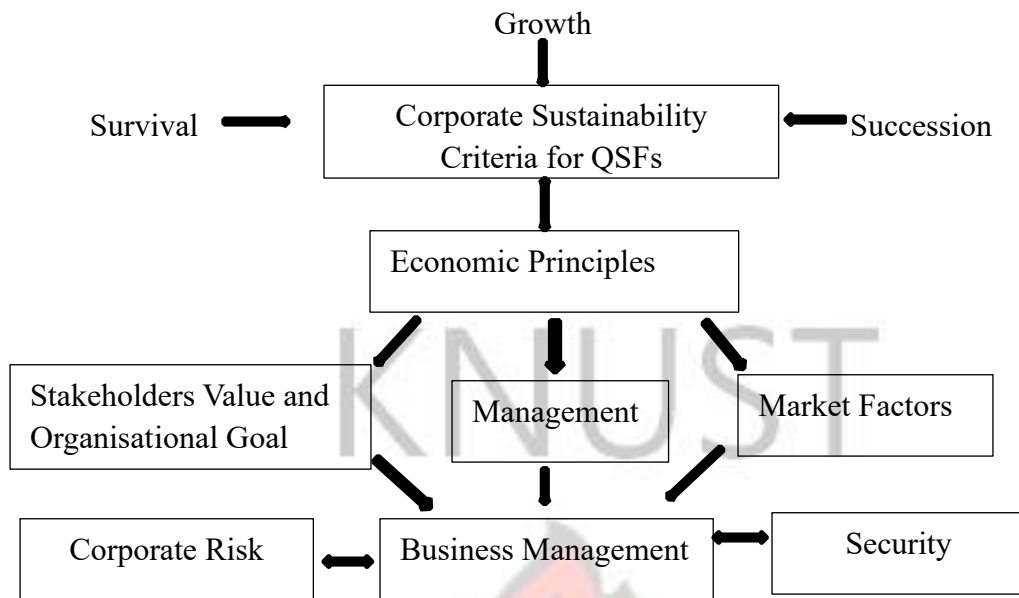


Figure 4. 13 Corporate Sustainability Criteria for QSFs

5.2 Recommendations and Criteria Implications

Overall, this study has achieved the aim and objectives that were determined earlier.

5.2.1 Recommendations to GQSFs and QSPs

To survive, grow and sustain from succession to succession, QSFs should adopt the sustainability criteria and put in measures to attract young QSPs into the industry, by reducing work stress and simplifying structures within firms for them to rise to higher levels.

The submission of Ho et al. (2010) is exactly what QSFs need to sustain QSPs and attract graduate surveyors. Thus, attractive compensation package will influence attrition intention and help lure employees to move from current employment into QSFs.

Young professionals should acquaint themselves with the current practices in the industry. It is also important to submit to mentoring and patiently rise through the structures within the industry to acquire all the expertise to enhance their services delivery.

5.2.2 Recommendations to Government (Policy Makers and Other Bodies)

Government and policy makers play an important role in sustaining corporate institutions. It is therefore important that the state appreciates the contribution of QSFs to infrastructural development and economic growth of Ghana and to promulgate legislations to protect and enhance QSs to develop their full potential and growth.

The business environment is driven by politics and the practice is frustrating and affects contractors' cash flows and businesses. Hence the call for the passage of the Surveyors' Bill which GhIS believe will give legal backing to operations. It will also increase regulation of the professions in the country and enforcement of the Public Procurement Act (PPA 663) in award of contracts to ensure equitable distribution of works to deserving QSFs. This will help consolidate the QSP and eliminate unfair competition, quack professionals to enable clients to achieve value for money.

Government is called upon in the study to support QSFs in the form of legislation and regulation, positive influence and financial benefits in the form of subsidies in taxes and grants to increase their growth and survival rate.

5.2.3 Recommendation to Academic Institutions and Researchers

It is prominent to stay abreast with current trend of QS operations. Educators should acknowledge rapid change in the industry and readjust the school curriculum to include entrepreneurial skills and business management course content. Also, practical training should be intensified to build young surveyors' expertise.

In addition, the observation from the study that there is – collaboration among professional in the built industry (Architects, Engineers, Electrical Mechanical and Plumbing, etc.) further worsens attrition of QSPs into other non-quantity surveying

professions. Hence a call on further studies into curricular reforms, entrepreneurial development and other models to reorient the intent of the QSPs.

Researchers should look into new areas that QSPs and QSFs can diversify in terms of services to improve and consolidate their sustainability.

5.3 Contribution to Knowledge

It has been established that there are levels of professional attrition in the QSFs as well as graduate attrition into other institutions, their possible causes and possible ways of resolving it. Some QSFs have folded up in the country as a result of factors including attrition, management and lack of new job among others. This confirmed the fact that various challenges faced QSFs are on the bare for effective measure to be taken to curtail it.

Also, the study established the most significant services rendered services by QSFs to clients as well as obsolete practices in the industry's operations.

The key findings of the research regarding sustainability criteria emphasize the need for QSFs to continue to provide services through a systematic management of the criteria through business management.

5.4 Directions for Future Research

This study has its own shortcomings as it could not cover all aspects of the firms sustainability agenda. It is therefore appropriate to turn these shortcomings into future research to be undertaken. Future researches as far as this study is concerned emerges from the analysis and discussion of the research results (see for instance chapter five) include:

- Building a sustainable Quantity Surveying Industry in Ghana

- Further studies into curricula reforms, entrepreneurial development and other models to reorient the intent of the QSPs within institution that trains QSs.
- Technology Transfer into the operations of Ghanaian Quantity Surveying Firms to Promoting Productivity, Profitability and Sustainability.

5.5 Conclusion

It is important to examine the various aspects of the sustainability criteria developed from this study viz-a-viz the circumstances surrounding a particular QSF operations, management and during service delivery to clients. It should be noted that the utilization of this criterial is subject to the kind of ownership and size of QSF since practitioners would operate under different ambience all the time. Preferably, this sustainability criteria should be used in all circumstances to promote sustenance, survival and succession of firms. (Amstrong, 2012)

The adoption of this criteria for practice has the potential of developing a formal innovative operations to help QSFs realise their true potential in this current complex and dynamic built industry and other sectors of the economy. Also, it will further curtail the espoused challenges the current industry faces to promote its sustainability.

Lastly, the study established attrition of both QSPs and graduate Professionals in the QSFs and also, answers the questions espoused by Ofore & Toor (2012) on how to curtail attrition of QSPs for the next generation of QSs. Therefore, attrition in QSFs will be eliminated if firms recruit, retain and groom young QSP.

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APPENDICES

APPENDIX 1: PRELIMINARY INTERVIEW GUIDE

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY –
KUMASI

COLLEGE OF ARCHITECTURE AND PLANNING

DEPARTMENT OF BUILDING TECHNOLOGY

INTERVIEW QUESTIONS TO SENIOR QUANTITY SURVEYORS OR CEO OF
QUANTITY SURVEYING FIRMS (QSF) IN GHANA

**PROJECT TOPIC: *SUSTAINABILITY OF QUANTITY SURVEYING FIRMS (QSF)
IN GHANA***

INTRODUCTION

These interview questions forms a preliminary part of a Master of Philosophy program being pursued by Awene Ayingura Emmanuel at the Department of Building Technology, KNUST. The significance of the study is to enable Ghanaian QSF the potential strategies for competitive re-positioning and re-engineering of the profession's status to maximise the opportunities and minimise the imminent threats, and to enhance the operations of QSF for practicing professionals and sustain it for upcoming QS students. These interview questions are intended to solicit your perceptions of the scope of activities of QS Profession and challenges impeding the survivability of QSF to sustain the practice in Ghana.

KEY OBJECTIVE OF THE STUDY

Seeks to develop a criteria for assessing the sustainability of Quantity Surveying Firms (QSF) in Ghana to enhance their survivability

RELEVANCE OF THE STUDY

- The findings would provide empirical prospects and challenges of QS to enable GQSF to potentially strategies for competitive repositioning and reengineering of the profession for sustained existence. The found parameters may then form part of the basics to develop a criteria for sustainability assessment of QSF.
- The findings would inform aspiring QS as well as the experienced ones on the aspects of QSP likely to grow to enhance their carrier planning and development.
- It will also inform QSF on measures to consider to survive and sustain the profession.

I recognize that, these interview would take part of your busy schedule nonetheless I would be very glad if you could spare me a little of your precious. You are well assured of the strictest confidentiality to any answers given.

Thank you.

1. May I kindly know your professional background?
.....
2. How long have your company been operating as a QSF?
.....
3. How many employees do you have in your company with their professional category?
.....
4. What kind of set up (**small** (0-10 employees), **medium** (10 -50 employees) or **large** (50 - upwards) is your firm and the basic control or ownership?
.....
.....
5. How many projects does your company win on average in a year?
.....
6. Who are normally your major clients?
.....
7. What problems are normally associated with these projects?
.....
8. What aspects of QS Practices or services are normally engaged in your projects?
.....
9. Please outline the QS services rendered in your firms as it appears on the table below?

| Traditional Services | Non Traditional Services | Specialist Services |
|----------------------|--------------------------|---------------------|
|----------------------|--------------------------|---------------------|

| | | |
|--|--|--|
| | | |
|--|--|--|

10. In your opinion what are the obsolete practices of QS Profession?

.....

11. Does your firm experience QS staff turnover (on the average the number that leave per year and the new employment per year),, if yes, how frequent is it and factors that lead to their turnover?

.....

12. Is your firm practicing any measures to sustaining its existence, if yes, what measures are they?

- a.
- b.
- c.
- d.
- e.
- f.
- g.
- h.

13. Does your firms employ ICT in service delivery, if yes, state these computer aided technology your firm uses as in the table below?

| General Office Application | Specialist Application Software(s) |
|----------------------------|------------------------------------|
| | |

14. What is the possible impact of IT, either its usage or not on services delivery to client and firm?

.....

15. Are there any challenges of operating a QSF, if yes what are they?

.....

16. Does the government support the QSF in growth, if yes, to what extent?

.....

17. In your opinion, how is the QSF doing in terms of surviving and sustaining the QS practices?

.....
.....
18. What are the major threats to the QS Profession if any?

.....
.....
19. In your opinion what are the prospective areas or sectors QSF/P should evolve into, to expand its scope of activities and survivability?

.....
.....
20. Can you please kindly state the role/s of QSP in your firm in ensuring success and continuity of existence and survivability?

.....
Thank you

APPENDIX 2: QUESTIONNAIRE

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY –
KUMASI

COLLEGE OF ARCHITECTURE AND PLANNING

DEPARTMENT OF BUILDING TECHNOLOGY

QUESTIONNAIRE FOR SENIOR QUANTITY SURVEYORS OR CEO OF
QUANTITY SURVEYING FIRMS (QSFs) IN GHANA

PROJECT TOPIC: *SUSTAINABILITY OF QUANTITY SURVEYING FIRMS (QSFs) IN GHANA*

PREAMBLE

My name is Awene Ayingura Emmanuel from the Department of Building Technology KNUST. I am conducting a Postgraduate research with the title “*Sustainability of Quantity Surveying Firms in Ghana.*” Please find a questionnaire to be completed by Managing Directors or Senior Managers and Quantity Surveyors in Quantity Surveying Firms in Ghana.

KEY OBJECTIVE OF THE STUDY

Seeks to develop a criteria for assessing the sustainability of Quantity Surveying Firms (QSFs) in Ghana to enhance their survivability

RELEVANCE OF THE STUDY

- Organisations with Quantity Surveying functions will benefit by employing strategic business decision regarding future directions.

- Individual QS will benefit from the awareness of the aspects of QSP likely to grow to enable informed decision regarding carrier planning and development.
- Recommend measures to promote sustainability of QSFs in Ghana to boost entrepreneurs and investor morale.
- Educational institutions that train QSs can use the findings to develop curricula relevant to industry.

I recognize that, these questionnaires would take part of your busy schedule nonetheless I would be very glad if you could spare me a little of your precious schedule in selecting the appropriate box to each item provided below. You are assured of the strictest of confidentiality to answers given. For further enquiries, recommendations and contributions to this research, please contact the researcher below. Thank you.

AWENE Ayingura Emmanuel Dpt. Of Building Technology Private – mailbag

KNUST- Kumasi

Email: ayingura@gmail.com

SECTION A: DEMOGRAPHY

Please select the appropriate options

1. Is your firm registered with the GhIS (QS-Division)?
 Yes No
2. State the legal status of your firm?
 Sole Proprietor Limited liability Enterprise Partnership Joint Ventureship
3. How long has your firm been involved in QS Practices?
 1 – 5 years 6 – 10 years 11 years and over
4. What is the total number of employees in your company?
 Up to 10 employees 11 – 50 employees over 51 employees
5. What is the value of projects your firm normally execute
 Less than GHC 500,000.00 GHC 500,000.00 to GHC 1,000,000 over GHC 1,000,000.00

6. How many of these projects does your firm win in a year?

Under 5 6 – 10 11 – 15 Over 16

| SECTION B | | | | | |
|--|----------------------------|----------|----------|----------|----------|
| SCOPE OF QS ACTIVITIES IN YOUR FIRM | | | | | |
| Which of the following Quantity Surveying Services does your firm undertake mostly on project delivery? | | | | | |
| Please rank by ticking the appropriate boxes | | | | | |
| 1= Not At All, 2= Not Often, 3 = Average, 4= Often, 5= Very Often | | | | | |
| | Levels of frequency | | | | |
| Traditional Service (Activity) Description | 1 | 2 | 3 | 4 | 5 |
| 1. Preparation of Bills of Quantities | | | | | |
| 2. Contract Administration | | | | | |
| 3. Preparation of Contract Document | | | | | |
| 4. Estimation, Cost Planning and Budgeting | | | | | |
| 5. Specification Preparation | | | | | |
| 6. Builder's Quantities | | | | | |
| 7. Tendering/Tender Evaluation | | | | | |
| 8. Valuation and Final Account | | | | | |
| 9. Valuation and Interim Payment Certificate Preparation | | | | | |
| 10. | | | | | |
| 11. | | | | | |
| | | | | | |
| Non Traditional Services | | | | | |
| 1. Cost Benefit Analysis | | | | | |
| 2. Facility Management | | | | | |
| 3. Quality Management | | | | | |
| 4. Value Management | | | | | |
| 5. Project/Construction Management | | | | | |
| 6. Risk Management | | | | | |
| 7. Insurance Valuation | | | | | |
| 8. Arbitration/Mediation | | | | | |
| 9. Cost Planning | | | | | |
| 10. Life Cycle Cost Analysis | | | | | |
| 11. Taxation Advisory Service | | | | | |
| 12. Post Occupation Evaluation | | | | | |
| 13. Premises Audit | | | | | |
| 14. Feasibility Studies | | | | | |
| 15. Programming | | | | | |
| 16. Adjudication | | | | | |

| | | | | | |
|--------------------------|--|--|--|--|--|
| 17. Insolvency Services | | | | | |
| 18. Investment Appraisal | | | | | |
| 19. | | | | | |
| 20. | | | | | |

| Kindly rank the various challenges your firm faces in sustaining its operations and services to survive in Ghana? | | | | | |
|--|----------------------------|----------|----------|----------|----------|
| Please tick the appropriate boxes | | | | | |
| 1= None, 2 = Low, 3= Medium, 4= High, 5= Very High | | | | | |
| Challenges Associated with Operation of Firm How often | Levels of Challenge | | | | |
| | 1 | 2 | 3 | 4 | 5 |
| 1. Delay in Payment of Service | | | | | |
| 2. Individuals do not engage QSP | | | | | |
| 3. Lack of New Jobs | | | | | |
| 4. Poor Remuneration for Services rendered | | | | | |
| 5. Maintenance of Technical Staff | | | | | |
| 6. Quality of Graduate Professionals | | | | | |
| 7. Knowledge Management | | | | | |
| 8. Conservation to Change | | | | | |
| 9. Professional Fee Competition | | | | | |
| 10. Poor Marketing of Profession | | | | | |
| 11. Information Technology/ Advance Technology | | | | | |
| 12. Professional Indemnity | | | | | |
| 13. Traditional Cost Model | | | | | |
| 14. Low Recognition | | | | | |
| 15. Invasion of other Professionals | | | | | |
| 16. | | | | | |
| 17. | | | | | |

| Diversified New Area of Services (Kindly rank the possible industries that QS can practice their profession for survivability of QSFs) | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. Oil and Gas Industry | | | | | |
| 2. Banking / Financial Institutions | | | | | |
| 3. Manufacturing | | | | | |
| 4. Real Estate Sector | | | | | |
| 5. Insurance | | | | | |
| 6. Mining | | | | | |
| 7. Transport and Aviation | | | | | |
| 8. | | | | | |
| Government Intervention | | | | | |
| 1. Legislation and Regulation | | | | | |
| 2. Finance (Grants, subsidies, benefits or taxations) | | | | | |
| 3. Provision/Influence | | | | | |
| 4. | | | | | |

| | | | | | |
|---|---------------------------|----------|----------|----------|----------|
| Challenges in Service Delivery | | | | | |
| 1. Understanding Client needs | | | | | |
| 2. Developing Services to meet Clients needs | | | | | |
| 3. Pricing services rendered to clients | | | | | |
| 4. Delivery Services effectively | | | | | |
| 5. Ensuring Satisfaction of Services rendered to Client | | | | | |
| 6. Nature and Complexity of work | | | | | |
| 7. Technical Expertise | | | | | |
| Extension of Service into Other Construction Industry | | | | | |
| Extension of Service into Other Construction Industry | | | | | |
| 1. Civil and Industrial Engineering | | | | | |
| 2. Construction | | | | | |
| 3. Mechanical and Electrical Engineering Service | | | | | |
| 4. Project Management | | | | | |
| SECTION D ATTRITION OF TECHNICAL STAFF (QSs) | | | | | |
| Kindly rank the various factors that lead to staff turnover and their possible effects on firms. Please tick the appropriate boxes 1= very low, 2= low, 3=average, 4=high, 5=very high | Level of Attrition | | | | |
| Factors that lead to Attrition of staff | 1 | 2 | 3 | 4 | 5 |
| 1. Advancement of Information Technology | | | | | |
| 2. Job Dissatisfaction | | | | | |
| 3. Low Salary level and Benefits | | | | | |
| 4. Poor Working Conditions | | | | | |

| | | | | | |
|--|--|--|--|--|--|
| 5. Worker's Relationship with Colleagues and Superiors | | | | | |
| 6. Poor Career Development Opportunities | | | | | |
| 7. Return to Academic Studies | | | | | |
| 8. Work – Family Lifestyle Imbalance | | | | | |
| 9. Work Stress | | | | | |
| 10. Complex Organisational Culture and Structure | | | | | |
| 11. Unhappiness/ Career Change | | | | | |
| 12. Promotional Opportunities | | | | | |
| 13. Lack of Expertise | | | | | |
| 14. Employee Mismatch with Job Requirement | | | | | |
| 15. Unsatisfactory Supervisor-Employee Relationship | | | | | |
| 16. Retirement | | | | | |
| 17. Managerial Style | | | | | |
| 18. Demands of the Work | | | | | |
| Effects of Attrition on Firm's Operations | | | | | |
| 1 Lose of Experienced Staff | | | | | |
| 2 Human Capital | | | | | |
| 3 Social Capital | | | | | |
| 4 Wage Inflation | | | | | |
| 5 Delay in Meeting Work Demand | | | | | |
| 6 Cost to Firm | | | | | |
| 7 Folding up of Firm | | | | | |

| | | | | | |
|--|----------|----------|----------|----------|----------|
| SECTION E | | | | | |
| FACTORS TO PROMOTE SUSTAINABLE QSFs OPERATIONS | | | | | |
| Kindly rank the various indicators that if achieved can promote the sustainability of QSFs and enhance its survivability | | | | | |
| Please tick the appropriate boxes | | | | | |
| 1= not important, 2 = less importance, 3= average importance, 4= high importance, 5= very high importance | | | | | |
| Levels of Importance | | | | | |
| Factors promoting QSF to Sustainability competitiveness | 1 | 2 | 3 | 4 | 5 |
| 1. Organisational Skills | | | | | |
| 2. Technological Edge | | | | | |
| 3. Education and Upgrading Staff | | | | | |
| 4. Economic Conditions and Policies | | | | | |
| 5. Environmental Role | | | | | |
| 6. Diversification of Services | | | | | |

| | | | | | |
|---|--|--|--|--|--|
| 7. Technical Expertise | | | | | |
| 8. Competition from Other Professionals | | | | | |
| 9. Good Financial Standing | | | | | |
| 10. Client's Expectation and Satisfaction | | | | | |
| 11. Safety and Security | | | | | |
| 12. Political | | | | | |
| 13. Research and Development | | | | | |
| 14. Market Specialization | | | | | |
| 15. Joint Venture | | | | | |
| 16. Legal and Regulations | | | | | |
| 17. Organisational Management | | | | | |
| 18. Logistics | | | | | |
| 19. | | | | | |
| 20. | | | | | |

Thank you

