KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

COLLEGE OF ARCHITECTURE AND PLANNING

DEPARTMENT OF BUILDING TECHNOLOGY

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A GENERIC FRAMEWORK FOR CONSULTANCY SERVICES PRICING IN GHANA: THE CASE OF QUANTITY SURVEYING PRACTICE

A Master's Thesis Submitted to the Department of Building Technology of the Kwame Nkrumah University of Science and Technology in partial fulfillment of the requirements for the award of a **MASTER OF PHILOSOPHY (MPHIL)** degree in **BUILDING TECHNOLOGY**

By

ADESI MICHAEL
BSc. (Hons.) Building Technology

MARCH, 2014

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SUPERVISOR

Dr. De-Graft Owusu-Manu

MARCH, 2014

DECLARATION

I declare that I wholly undertook this research under supervision and where other scholarly works have been used were duly acknowledged as such.

……. Date……

ADESI, MICHAEL

(STUDENT)

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I declare that I have supervised/assessed the student in undertaking the research reported herein and I confirm that the student has effected all corrections suggested.

……. Date……

DR. DE-GRAFT OWUSU-MANU
(SUPERVISOR)

……. Date…….

PROFESSOR JOSHUA AYARKWA
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ABSTRACT

The pricing of goods and services dates back to the pre historic era. It has metamorphosed into various forms over the decades manifesting in barter system and the use of substances like cowries to represent it. Among the marketing mix of people, place, promotion and price, pricing is the least researched. Similarly, in our modern world, much attention has not been paid to the pricing of services provided by consultants as compared to manufactured goods. Equally worst are the services provided by professionals and specialists notably quantity surveyors. The aim of the study was to develop a generic framework for pricing quantity surveying consultancy services. Methodologically, the study was positioned in the positivist tradition. Thus the quantitative approach was adopted in the conduct of this study. The data collection instrument was survey questionnaire which was administered to 79 respondents providing a response rate of 72 per cent. Twelve key hypotheses were postulated via theoretical framework based on pricing theories and concepts. The study adopted the chi square test and factor analysis for data analysis. The discussion and interpretation of results were supported by systematic synthesis leading to the development of the generic framework for pricing which demonstrated the foundational issues of client-consultant relationship; and demand and supply. Other findings demonstrated by the generic framework include the pricing spine; pricing management; pricing catalyst and pricing strategies. The study also found pricing relationship between pricing strategies and profitability; pricing objectivity; pricing strategy; time taken to render service to clients and business management including cost; and production of timely reports to be significantly related to business management, service cost management, technical and financial capabilities. The findings also have the prospect of much applicability in the pricing of

services provided by other consultants operating in the built environment to achieve sustainable prices for the services they render to clients. Numerous future studies were advanced to address the limitation of this study. Some of the future research agenda advanced include: an in-depth exploration of pricing objectives with much emphasis on their influence on price levels; a study to determine the willingness to pay (WTP) by clients for consultancy services; an empirical study to ascertain the relationship between economic development and demand for consultancy services *inter alia*.

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Key Words: Quantity, Surveying, Pricing, Services, Generic, Framework, Consultancy

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CHAPTER ONE

GENERAL INTRODUCTION

1.1 Introduction to the Research

This chapter presents an overview of the thesis which highlights the research in terms of the background of the study and the statement of the research problem. The aim and objectives of the study were also espoused and this is subsequently followed by the justification of the research, methodology to be adopted, limitations of the research and finally the organization of the research.

1.2 Background of the Research

The contribution of the construction industry to sustainable economic growth and development of a nation is very significant (Musa *et al*., 2010 and Ogunsemi, 2006). Apart from the fact that the construction industry plays a major contribution to Gross Domestic Product (GDP) and employment creation (Danso *et al*., 2011), it also provides the basic infrastructure needed to accommodate the inputs of all other sectors of the economy (Danso *et al*., 2011, Oforeh, 2006, Babalola, 2006). Clearly, the activities of the construction industry, particularly, the execution of construction projects and the implementation of infrastructural development projects require the services of built environment professionals (BEP) as well as engineering professionals mainly; Quantity Surveyors(QS), Architects, Planners, Valuers, Project Managers, Construction Managers, Engineers, Facility Managers and Builders (Musa *et al*., 2010). According to Musa *et al*., 2010 and Oladapo, 2006, these professionals are traditionally responsible for pre-contract planning services (i.e. project design, production of tender and contract documents and selection of suitable contractor etc), contract planning services (*including project supervision and management, claims*

management, etc) and post-contract planning services (*including project closure, commission, maintenance and facility management*).

Within the remits of these professional practices and services, Quantity Surveying Practice (QSP) plays a critical role in planning, managing and controlling project cost, and the QS is instrumental in relating and relaying project cost information to the client and other project parties including contractors and other professionals (Adebola, 2006). Right from conception, through the design and construction stages and indeed throughout the life of the project, the consultants and other stakeholders rely strongly on reliable cost information from the QS in order to discharge their contractual and technical obligations in a professional and objective manner (Musa *et al*., 2010).

In spite of the tremendous role that the QS plays on the project team to ensure successful delivery of projects within budget, the remuneration compensated to the QS stands accused of not being able to commensurate the efforts and services rendered by the QS compared to the other project professionals such as the architects and/ engineers (Oladapo, 2006). When looking at other professionals, the architects' fees increased with 16.9 % (average over the different categories) and civil/structural engineers have increased since 1992 by 13.7% (average over the different categories) (ASAQS, 2002 and Cruywagen & Snyman, 2005). This deficiency is as a result of the apparent lack of homogeneity in the pricing of QS services and the lack of transparency in the traditional process used in gauging consultancy fees of project professionals, particularly, the QS (Grosskrurth, 2008). In attempt to address

such deficiencies, a study designed to develop a generic framework to aid in the pricing of QS services is timely and necessary (Commonwealth of Australia, 2008 and ESCAP, 2008).

1.3 Statement of the Problem

At the turn of the 21st century, globalization has necessitated many construction firms and practicing consultants (professionals) to position themselves in the wake of competitive business environment (Anago, 2006 and Meyer, 2009). This global-wake of competition has prompted the quantity surveying professionals (QSP) to offer competitive professional pricing to their clients without losing sight of market forces (McGaw, 2007 and Cruywagen & Snyman, 2005). That is, the pricing should be set within the purview of perceived risk factors to avoid the obvious tendency of overpricing (which would cause rejection of bids) and under-pricing syndrome (which would affect profitability and future survival) (McGaw, 2007, Cruywagen & Snyman, 2005).

A recent empirical study by Adendorff *et al*. (2012) strongly highlighted the pricing challenges confronting built environment consultant for that matter quantity surveyors that consultants in the built environment are not remunerated for the actual services rendered to clients; there is inadequate remuneration for consultants in the built environment; developers and employers using the services of consultants of which the QS is inclusive in the built environment for no price paid (Chinyiou, 2011); Clark (2012) observed that clients use the services rendered by built environment consultants to their benefits and do not offer payment for the price of their services.

Traditionally, Quantity Surveyors and other professionals have depended on the recommended range of professional fees published by the various professional and regulating bodies such Ghana Institution of Surveyors (Awal, 2010). Many authors have frequently accused the published professional fees rates of inability to achieve value (Cruywagen and Snyman, 2005). Despite the perceived easy way of accessing and utilizing such published professional fees rates (PPFR), the PPFR stands accused of being outdated, as in many instances those in charge are unable to update the rates frequently (McGaw, 2007, Cartlidge, 2009 and SACQSP, 2010). Sadly, professionals who do not depend on the PPFR fix their professional rates arbitrarily without any basis, and the tendency of over-pricing and under-pricing poses potential threats. Within the developed world economy, significant researches have been enunciated, and recent reports have revealed evidences in technology-based advancements and computerized pricing models (softwares) of gauging consultancy services(Musa *et al*., 2010 and Oladapo, 2006).

Conversely, in developing countries, the potential lack of apposite and reliable quantity surveying consultancy pricing frameworks continues to present challenges to practicing consultants. To remedy this situation, and the need to lessen operational risk, pricing risk and financial risk associated with professional (consulting) practice has sparked the interest of many academics, policy-makers as well as practitioners the world over to explore alternative pricing frameworks to aid consultants in gauging professional fees rate (Nagy *et al*., 2006). It is also believed that the current practice of professional bodies setting the fee (pricing) levels have inherent pitfalls of underpricing or over pricing of consultancy services (Department of Finance, 2011). Consultancy firms for that matter QS firms have

been rendered bankrupt as a result of this practice by the setting of arbitrary fees in which professional members do not have much input (McGaw, 2007). In a free market economy where demand and supply determine price levels, it is incumbent that consultancy service providers be given the needed opportunity to set their own price with their clients (Porter, 2008). This will reflect the appropriate equilibrium or convergent of demand and supply (Smith, 2000).

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Ofori (2012) in a comprehensive study on the development of the construction industry in Ghana identified multifarious problems confronting consultants which include low level of fees, which thwarts the development of their technical support system; and insufficient operating cash flow. It is clear from the work of Ofori (2012) that the price that consultants for that matter QS consultants receive in Ghana are not sufficient to keep them in business as indicated clearly by the study that consultants for that matter quantity surveyors are experiencing problems with operating cash flow. Unfortunately, the study conducted by Ofori (2012) does not suggest modalities for improving the pricing of consultancy services provided in the construction industry. It is important to investigate the dynamics of consultancy services pricing which is a vehicle for revenue generation for consulting businesses in Ghana. It will therefore be noble and innovative to develop a generic framework for pricing quantity surveying consultancy services.

1.4 Aim and Objectives of the Research

1.4.1 Aim

The main aim of this research was to explore Quantity Surveying (QS) consultancy practice in Ghana, and to develop a generic framework for gauging QS professional consulting services pricing in Ghana.

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1.4.2 Objectives of the Research

In an attempt to achieve the above stated aim, the following specific objectives were set:

- To conduct a review of existing works on quantity surveying and general consultancy practice;
- To explore the underlying potential challenges confronting Quantity Surveying (QS) consultancy pricing;
- To identify the key determinants (indicators) in pricing QS consultancy service practice;
- To establish the relationship between the key indicators of QS consultancy services pricing; and
- To develop a generic framework for pricing QS consultancy service practice in Ghana based on identified indicators.

1.5 Justification of the Research

It is of no stretch of imagination that a well-developed and robust generic framework would inure to the benefit of consultancy practitioners particularly those in the built environment (BE) (Helmlinger, 2005 and Liang, 2008). This research has the capacity of playing several

roles in the operations of several organizations throughout the world and for that matter Ghana. Hence there is enough justification for engaging in a research of this nature. This justification can be viewed in the quantity surveying practice as an opportunity to receive better reward for services rendered and prices that commensurate the services rendered by quantity surveying (QS) professionals. On a typical project initiated by a client, the architect renders services such as preliminary design, detailed design and costing, drawings and specifications; the quantity surveyor (QS) renders services such as feasibility study, detailed design and costing, tender process and contract award, bills of quantities (BOQ), budget, contracts, planning, personnel control, materials control and equipment control and the engineer renders services such as detailed design and costing, tender process and contract award, bills of quantity (BOQ), contracts and planning (Murray *et al*., 2001).

From the revelations of Murray *et al*. (2001), it can be seen that the services rendered by the key consultants viz: the architect, the quantity surveyor (QS) and the engineer; the quantity surveyor (QS) provides ten (10) services toward the successful implementation of the project; the architect provides four (4) services and the engineer provides seven (7) services to the client. In some instances, quantity surveyors (QS) manage the tender and documentation processes as well as contract administration of engineered projects which are seen as the preserve of engineers. A typical example is the road sector project implementation in Ghana where the QS manage all the contract administration aspect of road projects at the Ghana Highways Authority and the Department of Feeder roads in Ghana. In the light of the above exposition, it can be realized that the pricing of services rendered by consultants will put the quantity surveying (QS) practitioners in a better

position and subsequently place the profession high on a pedestal among other consultants in the built environment.

The development and acceptance of a generic framework for pricing in quantity surveying practice will ensure the survivability of the quantity surveying consultancy practice in Ghana. This is because professionals will not underprice to make loses leading to bankruptcy and over price to lose customers/ clients. Similarly, a generic framework for pricing will inure to the benefit of the client as they will pay consultants for services rendered towards the successful implementation of the project and subsequently know the actual cost that will be incurred on consultancy services. Consultancy cost is one of the factors that scare potential clients from approaching the consultancy desk as a result of their lack of insight into consultancy costs for that matter price but a well-developed and robust pricing framework for quantity surveying consultancy pricing will be a panacea to this canker bedeviling the QS profession.

Furthermore, there is enough justification for a research of this nature as the government and MDAs are concerned, as this framework will aid them in the planning of infrastructural projects, estimation of the actual contribution of quantity surveying practice as a construction sub-sector to GDP. A generic framework will aid tax authorities such as the Ghana Revenue Authority in the determination of the tax obligations of consultants. This is because the framework will help them to identify the services rendered on a particular project and subsequently, the pricing model will help them to determine the quantum of income consultants receive for taxation purposes.

Finally, the justification for this research as far as the academia is concerned lies in the fact that the literature review will serve as a knowledge gathering exercise on consultancy services and pricing which are scattered in different writings in to one solid body for the development of the consultancy industry especially quantity surveying practice which will enhance teaching and learning as far as lecturers and students are concerned in universities and polytechnics.

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1.6 Scope of the Research

The research study captured majority of services rendered by quantity consultancy practitioners for the appropriate pricing of services (CIDB, 2005, Economic Commission for Africa, 2001 and Jaatmaa, 2010). In particular, this research will focus on the pricing of quantity surveying consultancy services (QSCS). The QS practitioners form a very crucial part, and play crucial roles in the delivery of construction projects hence the focus on the QS practitioners is of much vitality. Geographically, this research study would focus on registered quantity surveying practitioners operating in Accra, the capital city of the Republic of Ghana. The concentration of the study in Accra emanates from the fact that construction activities are highly skewed towards Accra (Ahadzie, 2007).

1.7 Research Methodology

In order to conduct a thorough and a robust research, the aim and objectives of the research were addressed by adopting the appropriate epistemological and positivist philosophies which led to the adoption of the quantitative approach to aid the collection of appropriate data and subsequently the analysis and interpretation of the findings. An extensive and elaborate literature review was conducted to identify the existing body of knowledge within

the purview and remit of the research to expand and reinforce a thorough understanding of the current pricing milieu as well as the quantity surveying practice environment. The theoretical framework concentrated on the theory of pricing and the various factors that affect pricing and formulation of hypothesis in which the dependent variable(DV) was mainly pricing levels and the independent variables (ID) were the various factors that affect pricing levels consisting of: value of a product or service, affordability, the government, media action, pressure group, seller's profit, customer's intrinsic value, customer's affordability, objectivity, failure, success, image, pricing strategies, cost, profit, demand, competition, time taken to solve the problem, materials used on the project, good financial control system, record of past project costs, accurate forecast of future cost, production of timely reports, finance, technical, experience, duration, capacity, reputation, business development, materials, labour/support staff, capital/plant, entrepreneurial and managerial talent/consultancy, associated business risks, financial risks, market related risks, logistical and infrastructure risks, managerial and operational risks, technological risks, organizational and societal risks, legal risks, regulatory risks, political risks, force majeure risks, personal income tax, VAT/NHIL, corporate tax, profit tax, local rates, property tax, input prices, inflation, production shortfall, effects of input market, government policies, international trade and trade barriers.

The quantitative approach was used to collect data from the quantity surveying (QS) practitioners in Ghana. In this vein, structured survey questionnaire was the main instrument used. The research philosophies adopted enable statistical tools such as factor analysis, chi-square test were used in the analysis, interpretation of data and discussion of results

culminating into the development of an empirical framework for gauging QS consultancy services pricing. The aim of factor analysis is to reveal any latent variables that cause manifest variables to covary (Costello and Osborne, 2005), and factor analysis is a collection of methods used to examine how underlying constructs influence the responses on a number of measured variables (DeCoster, 1998).

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1.8 Limitations of the Research

This research has its own limitations just like any other research in its conduct. It is envisaged that the limitations of this research were:

- The effect of sampling and measurement errors which might affect the collection of data and the kind of analysis to be carried out and the conclusions drawn;
- Only published literature were used in the analysis and review of literature; and
- The analysis and conclusions of this research were based on data collected from respondents by using questionnaire.

1.9 Organization of the Research

This research was divided into six (6) independent interrelated chapters. Chapter one contains the general introduction and background to the research. The problem has been presented and the research justified. The research aim and its specific objectives, the scope and limitations were also included. The literature review were covered in chapter two which consisted of general overview of the consultancy business, models for pricing professional consultancy practice. Chapter three dealt with theoretical framework which led to the construction of cogent hypotheses for the research. The chapter consists of an elaborate

review of various pricing theories spanning over some applicable fields such as economics, marketing and accounting. The independent variables(ID) used for the development of the theoretical framework include: value, affordability, pricing strategies, profit, cost, materials, time taken to solve problem, risk, taxation environment, overheads, inflation and input prices.

Chapter four consisted of the methodology adopted for the research viz: research philosophy, sample population, sample size determination, sampling technique questionnaire design and administration and statistical tools. Philosophically, the position of the research ontologically was objectivism. It is clear that the core issues that significantly affect the pricing of consultancy services are real and not the inventions of the researcher. Chapter five consisted of analysis and discussion of results. Chapter six dwelt on conclusion and recommendations, which consisted of review of research objectives among others. The simplified version of the conceptual framework of the research process for the study is demonstrated in ***figure 1.1*** below.

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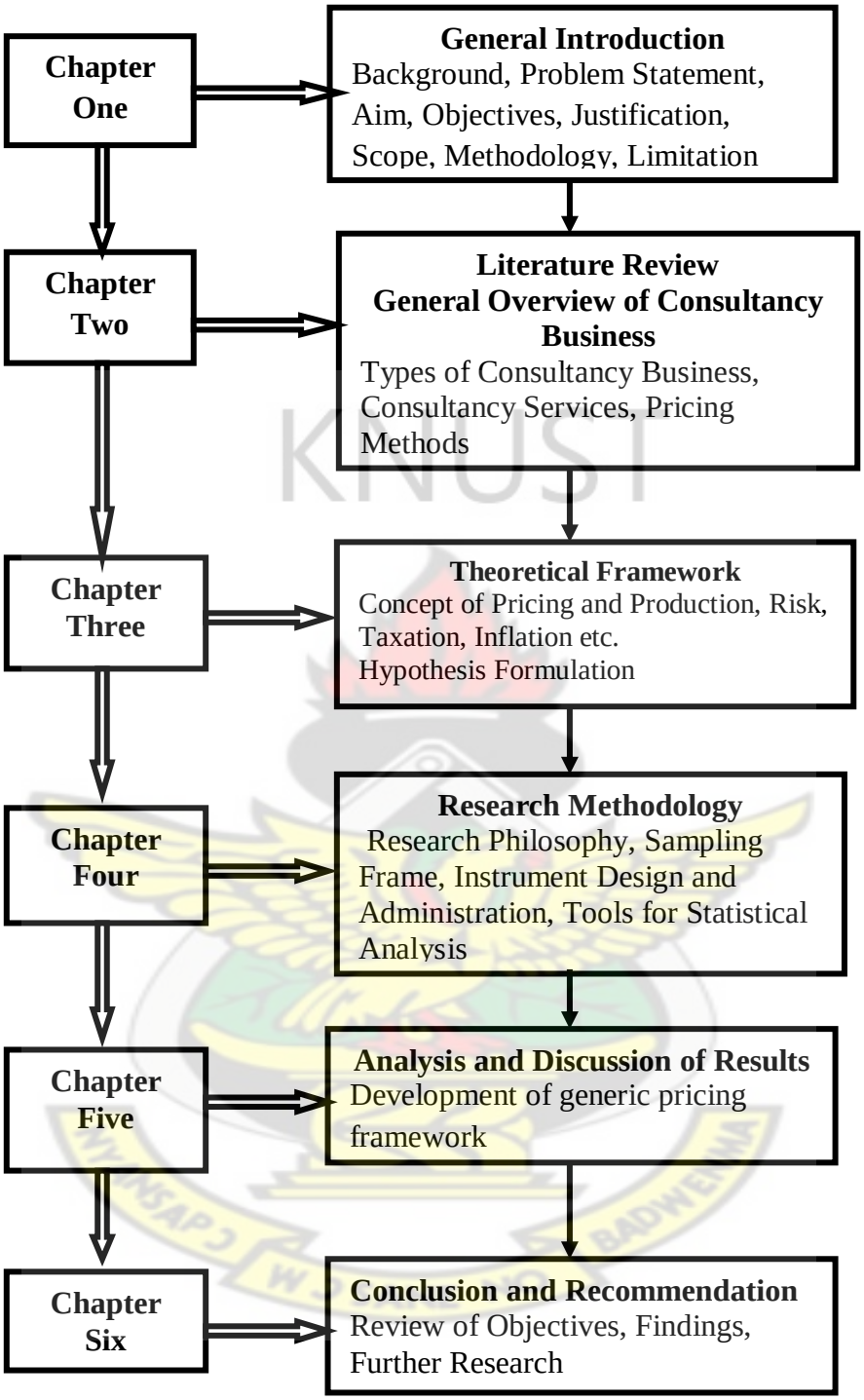

Figure 1.1*: Conceptual Framework of the Research Organization*

CHAPTER TWO

LITERATURE REVIEW

THE CONSULTANCY INDUSTRY: A GENERAL OVERVIEW

2.1 Introduction

The aim of this chapter is to thoroughly review existing literature on the consulting industry; and to identify the best practices in the industry and areas that need urgent improvement. In a bid to achieve the stated aim, this review shall assess critical issues such as: conceptual explanation of consulting; the segmentation of the consulting industry; the scope of consulting services; critical reasons for effective consulting assignment; the role of consultants for the achievement of an effective consulting; clients-consultants relationship; criticisms against consulting and arguments supporting consulting practice; factors critical for successful consulting; factors responsible for consulting failures; terms of reference; effectively pricing consulting services.

2.2 Conceptual Explanation of Consulting

Consulting involves the cross-fertilization of best practices like analytical techniques; change management and coaching skills, technology implementations, strategy development or even the simple advantage of an outsider's perspective (INSEAD, 2011). Greiner and Metzger (1983) opined that consulting is an advice-giving service contracted by an entity while Pittinsky and Poon (2005) perceived consulting as provision of specialized and professional services to an organization requiring it; Naarmala and Tuomi, (2006) claimed it is an art of recommending appropriate solutions to a client. Consultancy has been categorized into two main aspects comprising management consultancy and engineering

consultancy with their various nomenclature (Consultancy Development Centre, 2006). The demand for consulting services tends to increase with the economic development of a country (Weller, 2001). Consultancy services are required by multilateral organizations; government institutions and private organizations. (Consultancy Development Centre, 2006). In view of the above, especially the views of Weller (2001) a further empirical study on the relationship between economic development and demand for consultancy services would be a novelty to undertake at a higher level of research.

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2.3 The Scope of Consulting Services

The expression "consulting services" is defined as services of an intellectual and advisory nature provided by consultants using their professional skills to study, design, and organize specific projects, advice clients, conduct training, and transfer knowledge (The World Bank, 2002). Various category of consulting services exist in governmental; nongovernmental corporate organizations; and multilateral organization (ACENZ, 2004). These consulting services are in two main categories as noted earlier by (Consultancy Development Centre, 2006) and supported by Construction Industry Development Board (CIDB, 2005) that consulting services are categorized as management services and engineering services. In relation to this study, the works of ACENZ (2004); CIDB (2005); IFAD (2010); Islamic Development Bank (2005); and McDowell (2011) all identified quantity surveying consulting services. Within the domain of management Larsson (2007) advocated numerous management consulting services which include uncommon ones like lobbying and global analysis.

2.4 Reasons for Consulting

This section is intended to delve into the reasons clients engage consultants. Over the years various reasons have been adduced for consulting. To Gattiker & Larwood (1985) clients engage consultants primarily for new ideas, proficiency and objectivity. According to Bower (1982) consultants are engaged because of their experiences, competence, professionalism, independence and ability to recommend solutions. Other reasons identified by other works include knowledge transfer (The World Bank, 2002); performance improvement (Washburn *et al.*, 2002 and Lippitt & Lippitt, 1986); uncertainty (Wittreich, 1966); existence of management problems in organisations (Blunsdon, 2002). Similarly, Chapman (1998) identified versatility of consultants; and Massey and Walker (1999) observed that the desire of clients to meet that own expectations compel them to seek assistance from consultants. Other works which have advocated similar reasons as espoused above for engaging consultants include the works of Turner (1988); Lindon (1995); Steele (1975); Argyris and Schön (1978); Marra and Carlei (2011) and Canback (1998); Canback (1999, 1998); Papulova and Mokros (2007); Paroush(1985); Nippa and Petzold (2002); and Drucker (1979).

2.5 The Consultancy Industry: Its Criticisms

The role and efficiency of consultants is subject to numerous criticisms and one cannot write on consultancy without mentioning the main criticisms overwhelming the role of business consultants (Kakabadse *et al.*, 2006). Thus Williams (2001) affirms that consulting is never far from criticism; Ormerod (1997) claims that consultants are "opportunistic"; and further opined that as consultants secure one contract, they are thinking about the next one.

Consultants are perceived to be hypocritical in their pursuit to secure contract from clients (Bloch, 1999). De Burgundy (1995) also noted that consultants do not render any spectacular services and that their agenda is to continually keep a particular group of people in employment which of course does not inure to the relieve of client organizations from their problems.

Among the key criticisms of against consultants in extant literature include keeping clients in unstable state of mind (Kakabadse, *et al*., 2006); consultants are ignorant of organizational framework for consulting (Massey, 2003); unethical behaviour (O'Shea & Madigan, 1997; Wooldridge, 1997; Ashford, 1998 and Pinault, 2000); providing faulty advice (O'Shea & Madigan, 1997; Curtain, 2000 and Appelbaum & Steed, 2004); and selling standardized solutions to clients (Pringle, 1998). Other criticisms leveled against consultants include peddling of management whims (Gill & Whittle, 1993; Huczynski, 1993; Abrahamson, 1996 and Kieser, 1997); and folk-devils (Cohen, 1972).

2.6 Arguments Supporting Consultancy Practice

Arnaud (1998) advocated for consulting on the basis that the practice prevents clients from being used as guinea-pigs when consultants provide *pro bono*. Williams (2004) contends some criticisms against the consulting industry are simplistic and just popular views held by many people which have not thoroughly investigated the art of consulting. Prominent arguments supporting consulting include lack of understand of engineering projects by critics of consulting Crucini and Kipping (2001); and much of the consulting criticisms are borne out of exaggeration and hype and oversimplification of issues(Wright, 2004). The

new wave of consultants developing closer relationship with clients is a much testament for the importance of consulting in project delivery (Perry, 1987; Brizz, 1998 and Morris, 2000).

2.7 Clients - Consultants Relationship

Most consultancy assignments originate with request from the client. A useful technique for identifying the real decision-maker early in the project is to propose several reasonable outcomes for the client's problem which leads to a reaction creating relationship (IFC, 2007). The manner of putting together the consulting process by the consultant will affect the consulting relationship and its success (Appelbaum & Steed, 2004 and Curtain, 2000). In a consultant-client relationship, clients expect that consultants will make their competences available to them (Vogl, 1999). In any client-consultants relationship clients expect that consultants would provide tailor made solutions (Appelbaum & Steed, 2004). To both parties, an emotional support provided by the relationship (Lundberg & Young, 2001). Generally, it is expected of the consultant to work towards an improved relationship with the client and be able to turn strain emotional anguish into constructive organizational action (Chapman, 1998).

Significant proportion of extant literature has placed much responsibility on the consultant to ensure good client-consultant relationship by placing the interest of the client first (Shenson, 1990); connecting team and institutional market efforts (Stumpf & Longman, 2000). The most important thing in the work of a consultant is building and maintaining a relation with client (De Jong & Van Eekelen, 1999). McLachlin (1999) significantly

demonstrated that climate is important, if you find that your thinking and the clients are not on the same wavelength, do not hang around. Werr *et al*. (1997) claim that the consultant and client must be expected to have quite different schemas of the change process at the beginning of the project. The divergence of opinions forces consultants to cram to deal smoothly with frail situations (Kakabadse *et al*., 2006); and one has to develop the skill of telling clients they are wrong in such a way that they thank you for giving helpful advice; and one has to learn how to disagree without being disagreeable (Stumpf & Tymon Jr, 2001). It is of immerse importance that the consultant display an enormous proactive behavior which is necessary for an effective consultant-client relationship thus being upbeat in consulting implies that the consultant thinks even of those needs and necessities of which a client has not been aware, and helps the clients to realize all his or her possibilities, and needs (Kubr, 1996). The management of the consultant-client relationship cannot be underestimated thus care must be taken not to scare clients with an uninterrupted flow of words and ideas but rather you have to listen and try to understand what is their main concern before offering anything, and when you do that, always use the simplest way' (Crucini & Kipping, 2001).

2.8 Factors for Successful Consulting

The factors that will influence the selection of a consultant are very critical to the consulting process; and these are crucial for a thorough consultation exercise to occur; thus the key factors include breadth of experience that encompasses and goes beyond the situation as defined; demonstrated ability to complete assignments within budget and on schedule; demonstrated ability to develop practical recommendations and to have them implemented

successfully; demonstrated ability to work with people diplomatically and effectively and to minimize disruption of ongoing operations; and degree of trust and rapport established with management during initial contacts (Washburn *et al*., 2002). Schaffer (2002) developed a model of three specific results necessary for a consulting project to be regarded as a success: firstly, the consultant must provide a solution or a method new to the client; secondly, the client must accomplish measurable improvement in its results by adopting the client's solution; and thirdly, the client must be able to maintain the improvement over time.

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Based on anecdotes; conceptual frameworks; and empirical studies, consulting engagements are deemed to be successful when they are hinged upon the factors comprising the recruitment of competent consultants; an emphasis on client results versus consultant deliverables; clear and well communicated expectations and outcomes; visible executive support and adaptation to client readiness; an investment up front in learning the clients environment; defined in terms of incremental successes; real partnership with consultants; and inclusion of the consultants through the implementation phase (Appelbaum & Steed, 2004). Adding on to the critical factors necessary for successful consulting, Rynning (1992) advanced clarity in need/problem formulation; number/quality of new ideas; new knowledge; special planning; new ways of thinking; level of planning; level of co-operational abilities; management of time; planning capabilities; efficiency of execution; strategy formulation; problem solving; implementation; follow-up; and economy. Consultants gather information about their client to increase their understanding of the group they were working with and to develop their intervention, and interpret data for the client, and who provided feedback to the organization to enhance successful consulting

assignment (IFC, 2007). Consultants must exhibit integrity, in particular by always putting the client's best interest first; clients must be involved in the project, and ready to change (Stumpf & Longman, 2000 and IMCA, 2010). It is pertinent that there is a clear agreement, which may or may not be a formal contract, concerning project requirements and expectations; the client must ultimately control the engagement, partly by using clear and limited assignments; the consultants must be competent. Finally, there must be a good fit between clients and consultants along a number of dimensions, including models of consultancy, client expectations, consultant capabilities, and consultant type (McLachlin, 1999).

Drawing on from the above, it has been copiously demonstrated by the literature review that consulting success factors purely borders on both the efforts of consultant, the client and in some cases both the client and the consultant. Table 3.1 below summarizes the key factors responsible for successful consulting engagements.

Table 2.1: Summary of consulting success factors

CONSULTING SUCCESS FACTORS	**LITERATURE SOURCE**
A. Consultant	
1. Emphasis on client result	Appelbaum and Steed(2004)
2. Clear and well communicated outcomes	Appelbaum and Steed(2004)
3. Efficiency of execution	Rynning (1992)
4. Gathering information about the assignment and interpret it to the clients	IFC (2007)
5. Exhibiting integrity	Stumpf and Longman (2000) and IMCA (2010)

6. Provide solution to the client	Schaffer (2002)
B. Client	
1. Effectively control the engagement	McLachlin (1999)
2. Active involvement in the project and accepting change	Stumpf and Longman (2000) and IMCA (2010)
3. Clarity in problem formulation	Rynning (1992)
4. Ability to sustain improvement	Schaffer (2002)
5. Adopting the client's solution for considerable improvement	Schaffer (2002)

Source: Author's Construct (2013)

2.9 Factors Responsible for Consultancy Failures

Comparatively only a small number of consulting projects seem to be successful as majority of projects achieve their goals only partly and with considerable delays (Klenter & Möllgard, 2006); Brunesson (2000) also admitted that consulting projects are sometimes abandon in the implementation phase while Obolensky (2001) confirmed that numerous implementation plans do not survive contact with reality. Some consultants acknowledge in general that regardless of all our efforts and good intentions, many of their methods and interventions do not meet the desired goals of their engagement in totality (Warren, 2004). Others suggest a failure rate between 25 and 50 percent (Czander, 2001), or estimate that even 80 percent of all consulting interventions fail (Zackrison & Freedman, 2003). In other cases, the consultants' recommendations have disastrous consequences for the organization (O'Shea & Madigan, 1997; Byrne, 2002; Sorge & van Witteloostuijn, 2004). At other times, failure is attributable to personal characteristics of the consultant and client (lack of skills), technical shortcomings (ineffective project management), unstable or bad consultant -client relationships (lack of communication), and/or socio-political aspects of the client

organization (e.g. hidden agendas; unreadiness for/resistance to change) (Seidl &Mohe, 2007). The two issues responsible for most failed consultations are notably the intrusion of internal politics into the consultation process and the failure to clearly establish and maintain consensual goals (Lister & Pirrotta, 1996). The most critical reasons for failed consulting projects are the absence of tight project controlling and an bloating of projects cost (Klenter & Mollgard, 2006).

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Drawing on from the above, it has been realized that consulting failures emanates from diverse sources hinged on the opinions of several authors in consulting research. It is important to summarise the key factors responsible for consultancy failures in Table 3.2 below.

Table 1.2: Summary of consulting failure factors

CONSULTING FAILURES	LITERATURE SOURCE
1. Considerable delays	(Klenter and Möllgard (2006)
2. Project abandonment at implementation phase	Brunesson (2000)
3. Executing unpractical implementation plans	Obolensky (2001)
4. Methods adopted not meeting the desired goals of Engagement	Warren (2004)
5. Implementing disastrous consulting recommendations	O'Shea & Madigan (1997); Byrne (2002); Sorge & van Witteloostuijn (2004)
6. Lack of desirable personal characteristics for Consulting.	Seidl & Mohe (2007)
7. Internal politics in organizations creeping into the consultancy process	Lister & Pirrotta (1996)
8. Lack of consensual goals	Lister & Pirrotta (1996)
9. Absence of project control and inflating project cost	Klenter & Mollgard (2006)
10. Bloating of project cost	Klenter & Mollgard (2006)

Source: Author's Construct

2.10 The Art of Pricing Consultancy Services

In principle, pricing is an important issue; among the numerous activities that the consultancy industry undertakes notably the transfer of knowledge and expertise relating to how to do various tasks, how to measure and how to communicate the fact and extent of it to the public (ACENZ, 2004 and ADB, 2010). The potential benefit of each of these activities can be achieved only at a cost; and pricing is the medium through which these benefits can be realized by mediating between benefits and costs. At a social best, costs and benefits would be equated at the margin and this would require the prices of consultancy industry products and services to be neither too high nor too low (Young *et al.*, 2003 and Jacquemin, 1990). In an oligopolistic market, there is no achievement of optimum pricing as identified above rather the market is witnessed by price wars; collusive pricing agreements; and implicit collusion (Young *et al*., 2003).

Consultancy pricing is affected by a number of factors including the client's need for special knowledge and experience; how much competition for clients there is; the consultant's reputation; and, if known, the benefit to the client of a successful outcome (ACENZ, 2004). Consultancy pricing manifest in diverse shades by stage pricing till the final submission of reports; flat fee pricing; and payment in advance (ACENZ, 2004). Serving in advisory position on consulting assignments gives the opportunity to consultants to price their services by flat fee nomenclature for each advisory session that services are provided (ADB, 2010). Variations to pricing consultancy services occurs when consultants encounter clients preferring contingency pricing; this form of pricing consultancy services may work

depending on the cardinal principles of integrity from both client and consultant (ACENZ, 2004 and ADB, 2010).

Consultancy services cost include expenses for travel, entertainment, communications, and special services on monthly intervals (Washburn *et al*., 2002); consultant staff remuneration; travel and transport; mobilization and demobilization; staff allowances; communications; office rent, supplies, equipment, shipping, and insurance; surveys and training programs; report translation and printing; taxes and duties; and contingencies (JICA, 2006 and The World Bank, 2002); salary and wages; net profit; staff benefits; and overheads (CEBC, 2011). In terms of travels and transport remuneration structure comprises local travel and transport costs based on local tariffs; number and type of vehicles including operation and maintenance costs while mobilization and demobilization may include reasonable travel time, a medical checkup, hotel costs, local transportation, and miscellaneous items and costs for shipping personal effects should also be estimated (TRF, 2011). Cost estimates in consultancy pricing take cognizance of number of experts required for assignment (Elliott, 2009 and ADB, 2010). It is important to define these inputs as accurately as possible when preparing cost estimates, it is useful to draft bar charts indicating the time needed to carry out each main activity (activity schedule) and the time to be spent by the consultant staff (staffing schedule) (Department of Energy, 2011).

Cost estimates include a breakdown of the total costs of the assignment; hence consultant staff remuneration may be subdivided into professional or high-level specialists and support staff (Butcher & Demmers, 2003). Remuneration rates for staff vary according to sector and

depend on the experience, and qualifications of the consultants (ADB, 2010 and The World Bank, 2002). In general, staff remuneration rates include different proportions of the following components, depending on company and industry specific factors and country laws namely basic salary; social charges; overhead; fees or profit; and allowances (Ministry of Finance, 2009).

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As far as communication cost is concerned, reasonable monthly allocation for international and local telecommunications; and teleconferencing and the Internet are tolerable (PPB, 2003). In the case of cost build up for office utilization to deliver consulting services to clients, consideration is given to office rent; supplies, office equipment and insurance (*c.f.* The World Bank, 2002). Taxes and duties also form part of the costing of consultancy services for pricing agenda, taxes and duties that normally form part of consultancy services cost include value added tax(VAT) and levies (ACENZ, 2004 and The World Bank, 2002). Contingencies in pricing of consultancy services are twofold in the nature of physical contingency ranging from 10 to 15 percent encompassing issues notably price items; providing for unforeseen work; monetary inflation (Washburn *et al*., 2002 and The World Bank, 2002); and price contingencies which are considered to cushion inflationary impacts (The World Bank, 2002).

It is essential that the cost estimate fully cover the requirements of the TOR to ensure that the financial commitments of the consultants fully reflect their technical proposals, which if inaccurate could result in deficient proposal evaluation and contract award, and unsatisfactory contract implementation (Washburn *et al*., 2002 and Islamic Development

Bank, 2005). Finally, consultancy costs are categorized as remuneration (fees) and reimbursable cost items (travel and transport, communications, office rent, local staff salaries, local taxes, etc.). Local taxes (indirect and direct) and customs duties on imported equipment and supplies shall be identified separately (Islamic Development Bank, 2005).

Drawing on from the above review on the art of pricing consultancy services, it has been found that consultancy pricing is mainly cost driven; and in most cases profitability is not considered. Also, the review revealed that key market forces notably risk, competition inter alia are left out in pricing. The review clearly demonstrated the gap existing in pricing research as most of the sources of the review were not from the Ghana. Finally, the review revealed that there is a humongous lacuna in consultancy services pricing research agenda both locally and internationally.

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CHAPTER THREE

THEORETICAL FRAMEWORK AND HYPOTHESES

3.1 Introduction

This chapter delves in to the theoretical framework on pricing leading to the formulation of hypotheses for the research. It is pertinent to look at some of the existing theories for pricing goods and services. In this light hypotheses have been formulated as a result of the synthesis of literature review on these pricing theories for testing to either prove their falsification. The chapter also looks at the concept of production and subsequently the elements of price determination.

3.2 Concept of Price and Value

Price is the amount for which product, service or idea is exchanged, or offered for sale regardless of its worth or value to potential purchasers (Cannon, 1998). Again, price is the value (or its equivalent) placed on a good or service (Farese *et al*., 1991) and according to Perreault and McCarthy (2002), "price is the amount of money charged for "something" of value." The key to pricing understands the value buyers place on a product (Pontiskoski, 2009). Value is a matter of anticipated satisfaction from a product (Zhilin & Robin, 2004, Grahame & Mark, 1997). If consumers believe they will get a great deal of satisfaction from a product, they will place a high value on it (Thompson, 2005). They will also be willing to pay a high price for it. A seller must be able to gauge where a product will rank in the customer's estimation- valued much, valued little, or valued somewhere in between (Brand, 1998, Grehalva, 2004, Tommie *et al*., 2008). This information can be taken in to decision. The seller's objective is to set a price high enough for the firm to make a profit and yet not

so high that it exceeds the value potential customers place on the product (Farese *et al*., 1991).

From the foregoing, therefore, it stands to reason that the ability of price setters to gauge the value customers place on a good or service is vital in determining a workable price for goods and services. Thus it is appropriate to hypothesize that:

Hypothesis 1: A significant key to successful pricing is dependent on: (*H1a*).value of a product or service and (*H1b*). affordability

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3.3 The Just Price

Underlying the discussion about price is the notion of the 'fair' or 'just' price, the price that could be called correct on the basis of social considerations. A great deal of government, pressure group and media action and discussion is geared towards achieving just prices, but it is seldom fully appreciated how sensitive this concept is to the point of view of those discussing it (Allison *et al*., 2011). To the seller a fair price is probably the amount needed for their offering in order to make reasonable profit (Canonn, 1998). The notion of a reasonable profit itself has to be discussed, as there are different approaches to this. To the customer a fair price probably refers to some general idea of affordability allied to some sense of intrinsic value, with previous experience a contributory factor. In entering into the exchange both are seeking some degree of profit from it. Sellers want some excess income over costs, while buyers want an excess of satisfaction from goods or services over the satisfaction from holding on to their money or purchasing something else. In determining pricing policies the company needs to understand both costs involved and alternatives open

and the responses of the different groups and the value they place on the goods or services (Canonn, 1998).

From the foregoing, it is therefore clear that both the seller and the buyer want to arrive at a fair price which they will refer to as correct from the social point of view. At the same time, the seller wants to make some excess money representing his profit for engaging in a business venture and buyers would refer to a price as fair if they can afford the goods or services and derive some satisfaction which is of intrinsic value. Hence it has become necessary to hypothesize that:

Hypothesis 2: The achievement of just price levels is significantly dependent on: (*H2a*). the government. (*H2b*). media action. (*H2c*). pressure group (*H3d*). seller's profit. (*H3e*). customer's intrinsic value. (*H3f*). customer's affordability.

3.4 Importance, Objectives and Goals of Pricing

Price is an important factor in the success or failure of a business because it helps establish and maintain a firm's image, competitive edge and profit. Many customers use price to make judgments about products (Amstrong & Green, 2011, Rajneesh & Kent, 2003). Sometimes price is the main thrust of a firm's advertising strategy (Farese *et al*., 1991). Pricing objectives might be: to increase profitability, to thwart the efforts of competitors to accept us as a price leader, to restore order in a chaotic market, to increase market share and to smooth the seasonality of purchases (Dwyer & Tanner, 2006). According to Farese *et al*. (1991), pricing objectives "include share of the market, achieving a return on investment and meeting competition." Pricing objectives consist of profit oriented (i.e. target return and

maximize profits), sales oriented (i.e. sales growth and growth in market share) and status quo oriented (i.e. meeting competition and non-price competition) (Perreault & McCarthy, 2002).

From the foregoing, it can be realize that objectivity is one of the critical pillars of price setting and it plays a key role in the judgement of a firm's image, success and failure. As a result it can be hypothesized that:

Hypothesis 3: The role of the firm in setting price levels is significantly dependent on: (*H3a*). objectivity. (*H3b*). failure. (*H3c*). success. (*H3d*). image.

3.5 Pricing Strategies

The formulation of a sound pricing strategy requires consideration of demand and cost factors in a competitive environment (Robert, 2001, Andreea, 2011). A price strategy consists of a specific approach to achieve the pricing strategies (Ashok *et al*., 2008, Ioannis, 2002 and Ashok *et al*., 2008). Pricing strategies may include: to gain market share by concentrating on small users served by full-line, to build customer trust by reducing prices on products having highly visible cost reductions, to win customers from competitors by bundling at a low total price, including items not carried by rivals (Dwyer & Tanner, 2006). Steps in setting price include: determine pricing objectives, study costs, estimate demand, study competition, and decide on pricing strategy and set price (Farese *et al*., 1991).

Basic pricing strategies include: "cost-oriented pricing: calculate first the costs of acquiring or making a product and their expenses of doing business. Then they add their projected

profit margin to these figures to arrive at a price (Patsula, 2007, McTaggart & Kontes, 1993, Treacy & Wiersema, 1993). It include markup pricing that is difference between the price of an item and its cost; and cost-plus pricing that is all costs and expenses are calculated and then the desired profit is added to arrive at a price (Holland, 1998 and Ball, 2011). Demand oriented pricing is used to determine what present consumers are willing to pay for given goods or services (Patsula, 2007; KIPPRA, 2010; Cicchetti & Haveman, 1972). The key to using this method is the consumers' perceived value of the item, and competition pricing is studying competitors to determine the prices of products (Gale & Swire, 2006; Lewis & Shoemaker, 1997 and Essel, 1996). Sales, costs and expenses determine a firm's profit (Kaplan, 2006; Roberts *et al*., 2011). As a result businesses constantly monitor, analyse and project prices and sales in the light of costs and expenses (FTC, 2005; CAS, 2003; Burnett, 2008). Businesses improve a product by adding more features or upgrading the materials used in order to justify a higher price (Farese *et al*., 1991).

From the foregoing, therefore it can be seen that there are various strategies of determining price and fundamental to the success of every pricing strategy is the accurate determination of costs and expenses and key in every pricing strategy lays demand and competition. Hence it can be hypothesized that:

Hypothesis 4: The fundamentals of every pricing strategy of a firm depend on:

(*H4a*). Cost. (*H4b*). Profit (*H4c*). Demand (*H4d*). Competition.

3.6 Project Pricing

Another service industry which can be used to illustrate a further problem of setting prices is pricing projects, which are a form of the special (one-off) product pricing issue (IMP, 1982). In the consultancy industry, many systems companies have to establish pricing strategies (Brodie, 2009). From the selling company's perspective the low-risk pricing policy on a 'time and materials basis', whereby the time taken to solve the problem is charged to the client at an agreed daily rate together with any materials used on the project (Jenkins, 2006). However, this low risk on the part of the selling company means that the customer has the high risk and is potentially signing a blank cheque to the supplier (OFT, 2008). Therefore as a way of differentiating themselves from competition some companies started to quote fixed prices for solutions to client problems (Patsula, 2007). For this pricing strategy to be successful, the company needs to have a very good financial control system which should be organized to provide accurate information on a project basis (Rodin-Brown, 2008). The control system should allow managers to learn about past project costs and hence to be able to forecast more accurately in the future (The World Bank, 1998). The system should also produce timely reports on current projects compared to plan so that managers can make decisions and take action on any projects which show signs of overrunning (IFC, 2007). This means that plans and actual costs have to be capable of being compared against achievement milestones, not just expenditure levels (Flyvbjerg *et al*., 2003).

In the construction industry, this problem of pricing and cost control is also a major concern to customers and it is particularly so when a number of different suppliers (for example, the actual building company, architects, quantity surveyors, specialist contractors) are involved

in any major contract (Haider, 2009). Out of this complexity, a new service has been developed, particularly by quantity surveyors who are expert in construction measurement, which provides the client with 'total project management.' This service should ensure that the client gets what was wanted for the fixed cost which was agreed at the start of the project, and thus the project manager resolves any cost overruns and frees the client from any detailed involvement in the project. Clearly, the client pays a fee for the service provided, but it is a good example of the complexity of pricing leading to a marketing opportunity for a new product (Ward, 1994).

From the foregoing it can be seen that the pricing of projects for that matter construction projects is beset with some complexities and risks to both the client and the seller of the consultancy service. In this regard pricing normally takes in to significant consideration the time taken to solve problems, and materials used on projects. For project pricing to be successful it is pertinent to take serious note of the financial control system, record of past costs (cost history of projects), cost forecast and timely delivery of deliverables. As a result, it is therefore of much significant to hypothesize that:

Hypothesis 5: The successful criteria for consultancy services pricing is dependent on: (*H5a*). time taken to solve the problem. (*H5b*). materials used on the project. (*H5c*). good financial control system. (*H5b*). Record of past project costs. (*H5c*). accurate forecast of future cost; and (*H5d*). production of timely reports.

3.7 Bid Pricing

Bid pricing means offering a specific price for each possible job rather than setting a price that applies for all customers (Meissner & Strauss, 2010). Bid pricing is more complicated; a big problem is estimating all the costs that will apply. A complicated bid may involve thousands of cost components (Reguant, 2011 and Koomey *et al*., 2009). Further, management must include an overhead charge and a charge for profit. This system does not allow the seller to set a price based on the precise situation and what marginal costs and marginal revenue are involved (McAfee, 2008, Nwokeji, 2007, Anderson & Ross, 2005). Bids are usually based on purchase specifications provided by the customer. Sometimes, the seller can win the business, even with a higher bid price, by suggesting changes in the specs that save the customer money (Perreault & McCarthy, 2002). Competitive bidding is very common in government and quasi- public institution (schools, hospitals, social services agencies) largely to satisfy external constituencies that otherwise have difficulty auditing performance (Kosar, 2011 & Keidel, 2007). Competitive bids provide some assurance of input efficiency (Hamilton, 2008 and IFC, 2007). A successful bid is one that meets the goals of both buyer and seller (Dwyer & Tanner, 2006; Froeb & McAfee, 1988).

From the foregoing, it has been demonstrated that bidding is just another form of pricing which considers costs and competition from other bidders. Bidding takes serious and elaborate cognizance of finance, technical capacity, reputation, experience, and duration and business development of firms in to consideration. These are therefore fundamental to every bidding process. Bidding is therefore not a pricing strategy for every product or service; it is

mostly suitable for customized projects for governments and quasi-public institutions. In this light, it is necessary to hypothesize that:

Hypothesis 6: The success of a bid price is significantly dependent on: (*H6a*). financial capacity, (*H6b*). technical capacity, (*H6c*). experience, (*H6d*). duration, (*H6e*). reputation, (*H6f*). business development, and (*H6g*) Profit and overhead

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3.8 The Concept of Risk

Risk is measurable uncertainty (likelihood) for something to occur that lets projects fail, decreases their utility or increases their costs and duration. In the construction industry, risk is often referred to as the presence of potential or actual threats or opportunities that influence the objectives of a project during construction, commissioning, or at time of use (RAMP, 1998).

Risky events can be characterized by their magnitude, scope or spread, frequency and duration, and their history all of which affect vulnerability (Heitzmann *et al*., 2002). Risks can be classified as idiosyncratic risks that usually affect individual firms and covariate risks that affect many firms simultaneously(e.g. major drought or floods, fluctuating market prices) (Skees *et al.*, 1999). Risk is the possibility that an event will occur that will potentially have a negative impact on the achievement of a firm's performance objectives (Boisnier & Chatman, 2002). Expected losses from risky event include both tangible and intangible losses, and short and long-term losses (Jaffee *et al*., 2008). It is critical to consider losses in terms of how they affect short term outcomes versus livelihoods and outcomes in the longer term (IFC, 2007 and Morduch & Haley, 2002). Thus, in addition to

examining whether risks are idiosyncratic or covariate, it is important to examine if they impact performance flows (e.g. movement of goods and services, incomes) and/ or also damage assets. The expected losses are a function of probability of a risky event actually occurring and the exposure to that risky event i.e how performance outcomes might be influenced if the risk materializes (Jaffee *et al*., 2008).

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From the foregoing contextualization of risk, it can be seen that risk is the occurrence of any event which can affect almost all the facets of business activities and it is probabilistic in nature and can cause serious changes to activities such as price setting, performance and maintenance of quality standard.

3.9.1 Risk and Price

Price uncertainty and price volatility are problems (Dehn, 2000; Dana, 2005 and Fischer & Orr, 1994). In analyzing price risk issues, it is important first to differentiate between direct risk and indirect risk (Dana, 2005 and Inderst, 2009). Direct risk is the impact of price on specific commercial transactions: purchase of goods, sales of goods, processing of goods, and lending which supports any of these activities (Andam, 2003; European Union, 2010 and Dana, 2005). Direct price risk is only experience by market participants who are engaged in these transactions (Dohring, 2008; Dana, 2005 and Papaioannou, 2006). Direct risk can be classified as financial and physical (Malkiel, 2003 and Santomero, 1997). Financial risk is the financial impact or profit/loss position of a producing entity. Financial risk can be quantified by: net risk position, it can be 'long' or 'short'. A long position describes the commercial position where a fixed priced inventories or purchase commitment

without having equal and offsetting fixed sales contracts (Dana, 2005 and Jaffee *et al*., 2008). The risk of long position is that prices will fall below the level of the purchase price committed (Rappaport, 2005; Elwell, 2011and McCue & Belsky, 2007).

A short position is the opposite scenario. A price level is the price basis at which the inventories are valued or purchased/sales commitment made (Dana, 2005; Treacy & Wiesema, 1992 and Beechy & Conrod, 1998). The price level of the risk is expressed in terms of the local price basis, and if applicable, the corresponding international market or exchange price basis (Kojima, 2009 and Dana, 2005). The difference between the two prices is the cost of getting the product or service to the market (processing, local transportation, insurance, freight), and a premium or discount for cash price (Tseng *et al*., 2005, McAfee, 2008, Micco & Perez, 2002). The terminal market price is referred to as basis risk (Taylor, 2011 and Huang & Wang, 1997). Volume of inventories and/or purchase commitments; duration, the time period for which the entity is 'long' or 'short' and exposed to price movements which may be unfavourable (Stevenson & Bear, 1970 and Dana, 2005). Physical risk is different from financial risk because it focuses on the trade of the physical product and issues of volume, quantity, timing and delivery (UNEP, 2004 and Morrison *et al*., 2009). Price risk falls within the category of financial risks. Indirect risks are the knock-on effects of direct risk felt in the system. Indirect impacts occur when direct price risk problems experienced at one level create uncertainty or economic and financial instability (Dana, 2005).

From the above exposition, it is crystal clear that business activities encounter situations which are classified as direct risk and indirect risk. Among these, the direct risk which has a component financial risk significantly impacts on price levels. In this case it will be appropriate to posit that:

Hypothesis 7: Consultancy services price levels are dependent on financial risks.

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3.9.2 Types of Risk

Market related risks exist for inputs and outputs and for the critical services which support supply chains such as finance and logistics (Jaffee *et al*., 2008). Generally, market risks are related to issues which affect price, quality, availability, and access to necessary products and services, (Stader & Shaw, 1998), of these market risks are typically the most volatile (Buehler *et al*., 2008). Logistical and infrastructural risks are related to logistics and infrastructure that affect the availability and timing of goods and services, energy and information (Tseng *et al*., 2005 and Malhotra, 2005). Thus logistics related risks are closely related to price and market related risks, including the driving decisions on product lines and input use which can affect future production, processing, marketing decisions (Ioannis, 2002 and Wind, 1981). Managerial and operational risks are closely associated with human judgment and response- i.e. errors and actions and inaction, commission and omission (Flouris *et al*., 2010). These risks are mostly associated with productivity reductions, and how quality of products and unreliable delivery of inputs and outputs and support services (Jaffee *et al.*, 2008).

Demand risk relates to potential or actual disturbances to flow of product, information and cash emanating from within the network between the focal firm and its market (Braithwaite, 2003; Wilding, 2007; IMP, 1982). In particular, it relates to the processes, controls, assets and infrastructure dependencies of the organization downstream and adjacent to the focal firm (Mungofa, 2009; Belkin, 2008; Braithwaite, 2003 and Teece *et al*., 1997). Supply risk is the upstream equivalent of demand risk; it relates to potential or actual disturbances to the flow of product or information emanating within network upstream of the focal firm. Environmental risk is associated with external and, from the firm's perspective, uncontrollable events. The risks can impact the firm directly or through its suppliers and customers (Braithwaite, 2003).

Technological risks are all those risks that lead to non-completion, underperformance or false performance of the procured good and service (Edler, 2010 and Pissas, 2007). The risk lies in technical characteristics of the service or product in its production and thus originates in the supply side (European Union, 2010 and UNCTAD, 2008). This risk appears in particular relevance in procurement of products in the fluid phase (European Union, 2010 and Barringer, 2003). Organizational risks are all those risks of procurement failing or under- delivery for reasons situated within the organization that procures (WTO, 2004). Societal risks are those related to a lack of acceptance and uptake by the users of the new or changed service delivered within society (European Union, 2010 and WHO, 2003). Finally, turbulence risks- in fact turbulence uncertainties as they are hard to predict and measure are associated with large scale projects and emerge from a range of unforeseen events that lead

various actors in the whole process to reassess their priorities or change their expectations (European Union, 2010).

From the above, it is clear that there are myriad of risks facing business entities for that matter consultancy firms from various sources such as market, demand and supply, financial, physical, logistics, technological, organizational and societal. It is of no doubt that risks from any of these sources will affect the price level set by consultancy firms since they operate in environment that their business activities are related to these sources of risks. Hence it stands to hypothesize that:

Hypothesis 8: The robustness of consultancy pricing is significantly dependent on the existence of: (*H8a*). Market related risks (*H8b*). Logistical and infrastructural risks (*H8c*). Managerial and operational risks (*H8d*). Technological risks (*H8e*). Organizational and societal risks.

3.9.3 Risks at Various Stages of Project Implementation

According to UNEP (2006) risks occurring during project implementation are: risks during the project implementation phase- between the project concept and its implementation stage there are several steps that require significant time and resource input. There is however, the possibility that the project concept will never reach implementation stage on account of the project being considered infeasible or economically unviable. Hence the project does not receive the necessary regulatory approvals or the project fails to achieve financial closure i.e. raise the required funds to implement the project (IFC, 2007 and UNEP, 2006). However, the probability of delays in receiving the regulatory approvals and achieving

financial closure is relatively high. Risks during the construction phase: completion risk- the nature of risk factors associated with completion being time overrun, cost overrun or completed project not being up to the required technical specifications (Kreydieh, 1996).

The probability of time and cost overruns is pretty high and the extent of impact on account of these is also relatively high (UNEP, 2006 and Guo, 2004). Counterparty risks- when construction is undertaken by a construction contractor, there is a risk that the contractor does not perform as per contract, which results in time and cost overruns (Smith, 2009; UNEP, 2006 and Haider, 2009). Risks during the operation phase include performance risk- the nature of risks associated with performance is similar to that in the case of infrastructure projects with there being the possibility of equipment not performing as per required standard (Harris, 2003, UNEP, 2006 and IFC, 2007). Counterparty risk- when operations are performed and managed by a contractor there is a risk that the contractor does not perform as per contract which may result in sub-standard performance. Generic risks for all phases include: financial risk- fluctuations in interest rate, currency exchange rate and inflation can affect project economics (Kreydieh, 1996; Gray & Irwin, 2003, Nair & Yescombe, 2008). The probability of fluctuation of these factors is high and the extent of impact is linked to the extent of fluctuation (Pirog, 2005 and Baker *et al*., 2008). Legal risk- there is often problems with respect to contract enforcement as well as contract re-negotiations in developing countries on account of a poor legal infrastructure (Samuels, 2006 and Likosky, 2009). The probability of contractual default is high and the extent of impact is also relatively high (UNEP, 2006). The only way of mitigating this risk is by obtaining some form of a sovereign guarantee from the host government (Ramamurti & Doh, 2003,

Bedoucha, 2010, and Gupta *et al.*, 2002). Regulatory risk- even where the price is locked in through a purchase agreement (PA) (Antolin & Stewart, 2009; Finon & Perez, 2008), there is a risk that the regulators may mandate a revised price leading to a renegotiation of the PA (Grabel, 2002). Political risk- restriction on currency convertibility may restrict the repatriation of profits. Political violence may restrict operations and result in damage to equipment as well. The probability of occurrence of these events is relatively low but the extent of impact is very high (Hillson & Hulett, 2004). Force majeure risk- natural catastrophes such as floods, earthquake as well as man-made events such as a war, strike could hamper or stop activities both during the construction as well as operations phase (UNEP, 2006). The probability of occurrence of is low but the extent of impact is very high (Chomitz & Gray, 1996).

From the above, it has been clearly demonstrated that the generic risks which run through all the phases of project implementation affect the provision of consultancy services hence the need for their pricing. Financial, legal, regulatory, political and force majeure risks have very high extent of impact on projects as well as consultancy pricing. In the light of this, it is appropriate to hypothesize that:

Hypothesis 9: The level of consultancy pricing is dependent on: (*H9a*). Financial risk (*H9b*). Legal risk (*H9c*). Regulatory risks (*H9d*). Political risk and (*H9e)*. Force majeure risks.

3.10 Taxation of consultancy services

Local tax liabilities originating from consultancy services contracts are often the cause of unclear proposals and of unsatisfactory contracts. The identification and calculation of local

tax amounts are a difficult and time-consuming task for consultants with little knowledge of the tax system. Such local taxes generally include the following: indirect taxes, that is ad valorem taxes(VAT) on contract items for example VAT on consultant remuneration, duties on imported equipment and supplies later exported by the consultants, for example personal computers, scientific equipment; duties and levies on equipment imported or locally acquired by the consultants that is treated as property of client, for example cars, office equipment and local income taxes on the remuneration of services rendered locally(World Bank, 2002).

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3.10.1 Tax System in Ghana

The tax structure in Ghana is generally composed of direct taxes, indirect taxes and international trade taxes. For the direct taxes, the factors that produce the income are assumed to pay the associated taxes while for the indirect taxes and international trade taxes, households or firms that consume or import/export the taxed items are assumed to pay the associated taxes (Owusu-Afriyie, 2009).

3.10.2 Income and Profit Tax Legislation

Principle legislation regarding direct taxation is the Income Tax Act 592 (2000) which comprises both Personal Income Tax (PIT) and corporate Income Tax (CIT). Recently, the Act was amended by Amendment 622 (2002). The Act sets out tax policy as well as tax procedures. Profit tax legislation is also part of the Income Tax Act. Profits are calculated on an accrual base. According to the Act, tax rates on profits are differentiated accordingly into six sectors or branches, and variation between the regions in which the business

operates. Companies listed at the stock exchange are subject to a rate of 30 per cent. The highest rate for 'other business' reaches out to 32.5 per cent (Romer & Romer, 2007; Witt & Lautenbacher, 2003).

3.10.3 The Implementation of VAT

VAT was originally established in 1995 to replace the old sales and service tax system. As the rate was set at 17 per cent, the VAT was fiercely resisted and eventually suspended: the rate was seen as too high, the threshold (annual turnover of 25 million cedi) was too low; the information, campaigning and taxpayer education was too poor. After three years of reconsideration, VAT was successfully introduced in 1998 under VAT Act 546. This time the added value of all goods (except agriculture and basic goods) and services were taxed with a rate of 10% and a threshold of 200 million cedi annual turnover (suppliers of goods). In 2000, a major review of the VAT system was completed, which resulted in a tax rise to 12.5% and a broadening of the tax base by lowering the threshold for suppliers of goods to an annual turnover 1oo million cedi(Witt & Lautenbacher, 2003). Other than exempt goods and services, Value Added Tax (VAT) and the National Health Insurance Levy ('NHIL') are charged on the following: every supply of goods and services made in Ghana, every importation of goods, supply of any imported service. The tax shall be charged on supply of goods and services where the supply is a taxable supply and made by a taxable person in the course of his business. The tax shall be paid: in the case of taxable supply by taxable person making the supply, in the case of the imported service, by the receiver of the service (Pricewaterhousecopers, 2008).

From the foregoing, it has been realized that by the laws of Ghana, all businesses operating in the country are obliged by the law to pay taxes. Taxes payable by firms include corporate tax, income tax of employees, VAT/ 'NHIL'; profit tax, property tax and local rates. Taxes form the expenditures of firms as the cost of doing business and must be recovered through pricing. In the light of the above, it is appropriate to hypothesize that:

Hypothesis 10: The level of consultancy prices is significantly dependent on taxes such as: (*H10a*). personal income tax (*H10b*). VAT/ 'NHIL' (*H10c*). Corporate tax (*H10d*). Profit tax (*H10e*). local rates (*H10f*). Property tax.

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3.11 Concept of Inflation

What exactly is inflation? A persistent increase in the level of consumer prices or a persistent decline in the purchasing power of money, caused by an increase in available currency and credit beyond the proportion of available goods and services. Inflation occurs when the price level rises from one period to the next (Robinson, 2007). There is an inverse relationship between the prices of goods and services and the value of money in an economy. Other things equal, as prices rise over time, a given amount of money will be able to purchase fewer goods and services. Inflation has an additional effect on prices when businesses, workers and others experiencing a loss in purchasing power attempt to adjust upward what they receive for their goods and services in order to keep pace with their rising costs (FEWS NET, 2009).

From the exposition above we can say that a persistent increase in the price of goods and services, and for that matter input prices for firms or consultancy service providers will

cause inflation in the economy hence prices set by firms will be affected. Hence it is appropriate to hypothesize that:

Hypothesis 11: Price level is significantly dependent on: (*H11a*). input prices (*H11b*). Inflation

3.11.1 Causes of Inflation

The price of any good is influenced by different market forces that can change the balance between supply and demand (Schnepf, 2006 and FEWS NET, 2009). Many of these forces come from domestic as well as regional and international markets. This section discusses the causes of inflation. Production shortfall- for locally produced goods, the differences in product prices reflect differences in local conditions of supply and demand (FTC, 2005; FEWS NET, 2009, Ghemawat, 2006; Meijerink & Roza, 2007). In general, prices are lower in regions of surplus production and higher in densely populated regions of deficit production. Effects of input markets- if the cost of inputs used in production of a good increases; this can cause a rise in the cost of production. Government policies can take many forms and could potentially cause inflationary pressure; and international trade and trade barriers (FEWS NET, 2009).

In summary, it can be seen that price levels for that matter inflation can rise as a result of production shortfall, effects of input markets, government policies and international trade and trade barriers. These can cause changes in prices hence it is pertinent to hypothesize that:

Hypothesis12: Significant changes in price levels are dependent on inflationary causes: (*H12a*). production shortfall (*H12b*). Effects of input market (*H12c*). Government policies; and (*H12d*). International trade and trade barriers.

3.11.2 Economic Indicators of Inflation

Leading indicators are those which are believed to change in advance of changes in the economy, giving a purview of what is going to happen before the change actually. Generally, economic indicators of inflation are statistical data showing general trends in the economy. Those with predictive value are leading indicators; those occurring at the same time as the related economic activity are coincident indicators; and those that only become apparent after the activity are lagging indicators. The most important indicator is the Gross Domestic Product (GDP) report (Robinson, 2007).

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CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 Introduction

This chapter discusses the research methodology adopted for this research study. It delves into the principles upon which the research process is based leading to the adoption of survey instrument for data collection and analysis. The research methodology first of all reviews the existing environment regarding the philosophies, methods and statistical tools to be adopted for the research. This is then followed by the justification for the choice of a particular process. Once the key characteristics of the research philosophies, methods and analytical tools have been examined and justified, the researcher proceeded with a detailed description of how they were applied in the conduct of this research study. In this chapter the "what is done", "why" and "how it was done" aspects of the research will be the cardinal point of this chapter. In this thinking, the research methodological terms and concept will be thoroughly discussed followed by the exposition of their application in the research process.

4.2 Philosophical Traditions and Considerations

Guba and Lincoln (1994, 1998) categorize research paradigms into four namely positivism, post positivism, critical theory and constructivism. According to Guba (1990), a paradigm is a basic set of beliefs that guide an action. Denzin and Lincoln (1998) were of the view that a paradigm consists of three main elements namely: epistemology, ontology and methodology. According to Jacob (1987), epistemology is how we know the world; ontology is about the reality of nature; and methodology is about how we gain knowledge of the world. Epistemology is a research philosophy branch which controls the structure and

processes of social research (Sarantakos, 2005). Epistemology informs the methodologies about the nature of knowing or about what counts as a fact and where knowledge is to be sought (Campana, 2010). Simply put, epistemology is the science of knowing (Babbie, 1995). Gall *et al*. (2003) added that epistemology is about studying the nature of knowledge and the process of acquiring knowledge and its validation.

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Babbie (1995) asserted that the concept of knowing is positivism. Positivist researchers develop knowledge by collecting numerical data on observable behaviours of samples and then subjecting these data to numerical analysis (Campana, 2010). Researchers over the years have clearly indicated that the aim of positivism is to explain, predict and control a phenomenon (Guba & Lincoln, 2004). *Positivism concerns epistemological doctrine that physical and social reality are independent of those who observe it*; *the observation of this reality is unbiased and constitute scientific knowledge* (Gall *et al*., 2003). According to Weber (2004) *positivist philosophy assumes that theoretical based predictions can be tested with data collected from the objective world*. *Quantitative research is taken as identical to positivist research since it contains epistemological characteristics that show how the methodology should control the research* (Sarantakos, 2005). Sarantakos (2005) pointed out that positivist research paradigm consist of realist or objectivist ontology that guides the strategy of quantitative methods.

In consonance with the tenets of epistemology which is about where knowledge is to be sought; and leaning greatly towards positivism, the researcher distributed the questionnaires to only practitioners of quantity surveying consultancy as they have in-depth knowledge of

what was being investigated. In doing this only what counts as facts were collected as data for analysis in order to churn out reliable and workable results. The survey instruments administered were designed using key variables from the theoretical framework and the statistical tools which are mathematical and scientific in nature of analysis were adopted for data analysis. This clearly positions the study within the positivist tradition.

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Similarly, idealism branch of philosophy is cardinal to this research as the research seeks to establish existing truth about pricing phenomenon using statistical analysis which is the cardinal point of idealism. In this direction, the research endeavor to establish preexisting unchangeable facts about consultancy pricing. Idealist believed that contemporary problems are deeply rooted in the past hence the need to give the past prominence in the diagnosis of current pricing phenomena. Idealism lays much emphasis or pertinence on past literature to chart a new path. In this direction, this research study conducted a very elaborate literature review of pertinent issues of pricing ranging from theoretical issues of pricing to the practice of general consultancy and quantity surveying.

4.2.1 Method of Scientific Inquiry and Reason

Having adopted the positivism, it is appropriate to reason along the line of deductive logic in the conduct of this research in attempt to unravel the phenomenon of pricing which is a social and quantitative dynamic in nature. This is because, social issues and intrinsic (psychological) issues affect pricing which is numerically communicated. Deductive reasoning operates from a general to specific perspectives drawing conclusions based on facts (Burney, 2008); pricing is the anticipation of reward for services rendered, this

position is supported by adoption of deductive reasoning, a stance advocated by Collis and Hussey (2003) that deduction allows the expectation of a phenomenon; likewise, Robson (2002) sequentially outlined deductive logic in research as deduction of hypothesis from theory; operationalization of the hypothesis (how the variables are to be tested) to determine the relationship between specific concepts and variables; testing the hypothesis; confirmation or modification of the outcomes; and verification of the theory using the findings.

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Based on the above, the theoretical framework (*refer to chapter two*) was adopted in which various concepts and theories of pricing were reviewed and synthesized leading to the postulation of twelve (12) key hypothesis with fifty-three(53) independent variables and the dependent variable mainly was pricing. The Chi Square test was adopted using the SPSS in testing the hypothesis. The Chi Square test of independence was the specific type of chi Square test used because to the nature of the hypothesis, they were composed of Dependent variables (DV) and independent variables (IV). The conventional *p*-value of 0.05 was adopted in determining the existence of relationship between the dependent and independent variables of testing the hypotheses. The chi square value denoted by X^2 and the *p*-value were used to accept or reject the null hypothesis and to determine relationship between DV and IV. Where the X^2cal (*calculated*) > $X^2\alpha$ (*value from chi square table*) the null hypothesis is rejected and when the *p*-value $\leq$ 0.05, this indicate that a significant relationship exist between the DV and the IV.

4.3 Research Strategy and Design

4.3.1 Quantitative Research Paradigm

According to Wadsworth (1997), quantitative research is the systematic scientific investigation of quantitative properties and their relationships. Quantitative studies are concerned with behaviours consisting of measures or observation scales (or both) and they focus on the cause-and-effect relationship between *two variables* (Krathwohl, 2004). Wadsworth (1997) stated that quantitative research is about "how many; to what extent, or how much aspect which involves counting and other data analysis. The objective of quantitative research is to develop and employ mathematical models, theories, *hypotheses* concerning the natural phenomena (Sarantakos, 2005). Measurement process is key to quantitative research because it provides the basis for connection between empirical observation and mathematical expression of quantitative *relationships* (Gall *et al*., 2003). The quantitative research generally uses critical approaches such as the generation of models, *theories and hypotheses*; the development of instruments and measurement; experimental control and manipulation of variables; *collection of empirical data*; modeling and analysis of data; and evaluation of results (Gall *et al*., 2003). A positivist, objectivist and realist approach (quantitative research) investigate and *explain how one variable affects another* (Creswell, 2005). According to Creswell (2005), *variables* are the attributes that the researcher studies. Sarantakos (2005) argued that as a strategy the quantitative research (hinged on positivist, objectivist and realist approach) consist of vital criteria such as the use of empirical methods; objectives; clarity in *design and reliance on methods and procedures; distance* between the *researcher* and the *participants*; measurement and quantification; validity, reliability, accuracy and precision; and ethical considerations. Quantitative research

is an appropriate educational research approach in which the researcher is free to choose what to study, especially what is of interest to the research, asks specific and narrow questions, collects numeric data from participants, analyses the data using *statistics in an objective and unbiased manner* (Creswell, 2005).

4.3.1.1 Objectivism and Realism

Campana (2010) opined that realism is a feature of quantitative method because it perceives reality to be objective, simple and fixed. Sarantakos (2005) adds that reality comprises of sense of impressions, which is what is perceived through the senses. Researchers perceive the features of the social environment as having both social and physical reality. Objective reality means that these features must exist independently of the individual who created or is observing them (Gall *et al*., 2003). According to Guba and Lincoln (2004), a researcher who adopts the positivist position believe that *scientific inquiry* must form the basis for the study of *multiple social reality*, which means different individuals interacting with the social environment. Sarantakos (2005) asserted that objectivism is significantly linked to reality as reality and truth exist objectively, and can be discovered and adequately measured. Also, Creswell (2005) opined that the observance of objective detachment, value neutrality, and unbiased approach must be taken by researchers to quantitative research.

Drawing on from the above works cited, quantitative research studies explore behaviours with much emphasis on the *cause-and-effect relationship* between variables; positivist researchers are concerned about collecting data on numerical behavior of individuals for analysis. The art of pricing borders heavily on consumer behavior and meaningful assessment of the variables underlying pricing behavior and this can be identified

quantitatively. Again, quantitative research permits an objective and fair data analysis using statistics. The issue of *fairness* in pricing is highly fundamental to this research and it is the basis upon which the research study is hinged. This issue of fairness in pricing has made the adoption of the quantitative research approach a non-negotiable issue and the most apposite method to be adopted as far as the research is concerned. The quantitative research method adopted for the research is positioned in philosophical paradigms such as epistemology (what is the fact and where the fact is to be sought); positivism (explaining, predicting, and controlling phenomenon); and objectivism and realism (perception through the senses and social phenomenon).

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The researcher adopted the quantitative approach to test the hypotheses postulated. The presentation of results collected using tables and other visual techniques for ease of comprehension and assimilation of the results are all features of the quantitative method of analysis. In adopting the quantitative approach to this research, the objective perspectives of the research was both descriptive and correlation in nature determined by the testing of hypotheses using chi-square test. The correlational (i.e. ***relational*** in this case) aspect of the research borders on the postulation and testing of hypotheses to determine the relationship between pricing as a dependent variable (DV) and the independent or explanatory variables (IV) that can influence or alter pricing levels. This is because the study seeks to investigate the attitude of consultants concerning decisive factors that influence the pricing of their services.

The adoption of this strategy of testing hypothesis is crucial in order to generalize the findings of the research since pricing is a universal phenomenon. The decision of pricing services by quantity surveying consultants is individualistic hence it is pertinent for the researcher to be detached from the study of this phenomenon to be able to identify the dynamics that are independent in nature without the feelings and sentiments of the researcher. This assertion gives much impetus to the adoption of the quantitative approach in this study. Pricing is a multifaceted phenomenon which is expressed quantitatively hence the adoption of the quantitative method with its attendant philosophical underpinnings is espoused in the research process as follows:

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4.3.1.2 The Survey Process

Cohen *et al*. (2005) observed that researchers who adopt positivist perception use a range of traditional options such as surveys and questionnaires. According to Isaac and Michael (1997), survey research is an avenue for answering questions that have been raised, to solve problems that have been posed or observed, assess needs and goals set, to determine whether or not specific objectives have been met, to establish baselines against which future comparisons can be made, to analyze trends across time, and generally to describe what exist, in what amount and in what context. Kraemer (1991) opined that survey research is used to quantitatively describe specific aspects of a given population which consist of relationship between variables. Kraemer (1991) further pointed other characteristics of survey research by asserting that the data required for the survey research are collected from people by using certain portion of the population from which findings can later be generalized back to the population. According to Glasow (2005) independent and dependent variables are used to define the scope of survey research; and that before the commencement

of the research, the researcher must predicate a model of relationship existing among the variables.

Survey design consist of two steps namely development of sampling plan and obtaining population estimate from the sample data. The sampling plan involves the selection of sample; determination of an adequate sample size; and the choice of media through which the survey will be administered which comprises of telephone interview, face-to-face interviews and mailed surveys using postal or electronic mail (Levy & Lemeshow, 1999 and Salant & Dillman, 1994).

In keeping with the above works demonstrated in extant literature, the rationale for adopting the survey process for this study is embedded in the philosophy of the researcher that the survey process enables data to be gathered from large number of respondents in order to generalize the results of the study. Again, the survey process was adopted because of its ability to allow for the aggregation of the opinions and attitude of respondents on the various facets of quantity surveying pricing under investigation. The sample for this study involves professionals categorized as quantity surveyors by training and education and are working in firms. Survey is appropriate for because of the intention to ascertain the relationship between key variables of the researcher. Also the use of the survey process provided the basis for the testing hypothesis by chi square test of independence; ranking of variables by relative importance index and the classification and reduction of variables based on the common factors by the use of factor analysis.

4.3.1.2 .1 Research Scope and Boundaries

The research was conducted in Accra the administrative and political capital of the Republic of Ghana. The population of Accra constitute 16.3 per cent of the population of Ghana (Ghana Statistical Service, 2012). Accra is also the capital of the Grater Accra region of Ghana bounded by the Central Region, Volta Region, Eastern Region and the Gulf of Guinea. Accra is the key industrial hub of Ghana, being home to every aspect of the Ghanaian economy ranging from agriculture to tertiary services like the consultancy industry. Construction is one of the key industrial sectors in Accra. This phenomenon is underpinned by its industrial nature and the concentration of job seekers in the construction sector by people migrating from the rural areas. As construction activities boom in Accra, it implies that more professionals including quantity surveyors in the construction industry will gravitate towards the Greater Accra.

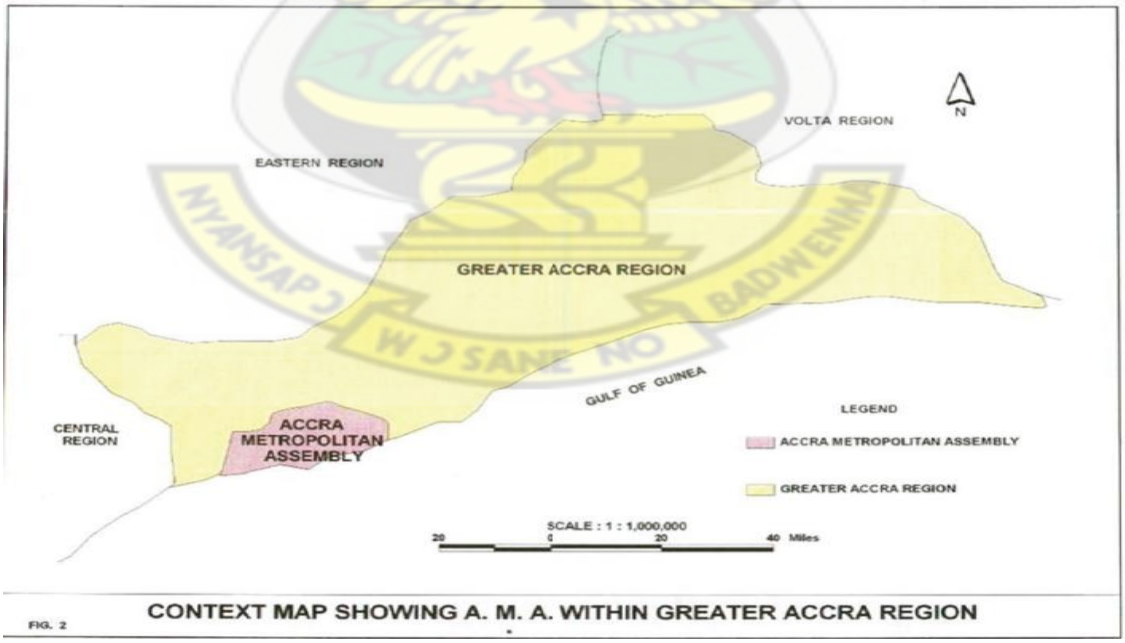

Figure ***5.1: Map of Greater Accra Region (Source: UN-HABITAT, 2009)***

4.3.1.2 .2 Sampling Techniques and Sample Frame

Salant and Dillman (1994) pointed out that sample selection is hinged on population size; the sample media and its cost of use; and the degree of precision required. Participants in the sample must be selected at random with equal chance (*ibid*). A prerequisite to sample selection is to define the target population as narrowly as possible (Salant & Dillman, 1994). On the contrary, it is sometimes not possible to know the true population hence Attewell and Rule (1991) proposed that a theoretical sample may be used; theoretical sample purposively selects organizations that demonstrate the desired characteristics that are the focus of the researcher's study.

The composition of the sampling frame comprise of: 37 fellows; 282 professionals; and 53 technicians; this sum up to a population of 372. Having determined the sampling frame for this study, the researcher adopted the Kish (1965) formula which is popularly used in most empirical works as evidenced in the works of Bolstein and Crow (2008) as follows:

$$n = \frac{n^1}{1 + n^1 / N}$$

Where;

n = sample size

N = total population size

$$n^1 = \frac{s^2}{v^2}$$

s = maximum standard deviation in the population element at a confidence interval of 95%

s^2 = p (1-p)

p = the proportion of population elements

v = standard error of the distribution at 0.05

s^2 = 0.5(1- 0.5)

s^2 = 0.25

$n^1 = \frac{0.25}{0.05^2}$

n^1 = 100

Now N = 372

Therefore, sample size, $n = \frac{100}{1+100/372}$

n = 78.8

Hence, Sample Size, n = 79

Therefore the appropriate sample size for the study was 79 respondents (quantity surveyors). This means that questionnaires should be distributed to 79 respondents to achieve 95% confidence interval.

4.3.1.2 .2 .1 Sampling Technique Adopted

Consistent with the assertion of Salant and Dillman (1994), the respondents for the research were selected by using simple random sampling technique to give each respondent an equal chance of being selected as active participant of the survey process. This is necessary because the roll of QS practitioners is available. Similarly, the adoption of simple random sampling will enable the generalization of the research findings to be easier than the utilization of other sampling methods. In order to pursue randomization in the selection process, a random number table (***see Appendix 2***) was utilized in that regard. Using the rules

of simple random sampling, and the information available to the researcher: 372 of professional quantity surveyors, 79 QS were selected (i.e**.** ***sample size***) to participate in the survey. Hinged on the rule that each member of the survey population (sampling frame) must have an equal chance of being selected to participate, the random table in ***appendix two*** was the main tool for the execution of the task of selecting 79 respondents from a survey population randomly. Based upon the above data and the random table available, 3-digit numbers are required. It is also necessary to enter the random number table randomly. This was accomplished by pulling out one of the Ghana Cedi notes from pocket which turned out to be twenty Ghana Cedis (GH₵ 20.00) with a serial number of **VL7745452.**

The last two digits being 52 were selected as entry point. Now the row and the column would have to be determine randomly, therefore a twenty pesewa (20p) coin was tossed, a head showing implies the first digit is 5 which was designated as the entry column and 2 was designated as the entry row and vice versa. With this procedure, the researcher tossed the twenty pesewa coin and a tail showed which means the second digit designated the column which is 2 and 5 designated the row. Hence the random table was entered as indicated with arrows in ***appendix two***. The names of all members of the target population were arranged alphabetically and serialized. With this, the random selection began by using the first random number of **3114,** this number was separated to **31** and 14, and reading from the right to the left on the random table, the QS with number **31** was selected to be the first respondent. Moving down the column, the next number was **2463** and separating this random number because the sample size was a two-digit number and reading from the right to the left of the table, the QS with serial number **24** was selected. Numbers selected which

were not within the sample size range of 1 to 79 were ignored and the next number within the column was considered. The process continued until the sample size was exhausted. Numbers already selected were crossed out from the survey population list.

4.3.1.2.3 Data Collection Methods

A data collection strategy that quantitative researchers mostly prefer is survey or questionnaires (Sarantakos, 2005). Surveys questionnaires are the most frequently used method of data collection in the social sciences and are mostly mistaken as a method of social research (Sarantakos, 2005). Cohen *et al*. (2005); Creswell (2005); and Krathwohl (2004) asserted that survey questionnaires are used in diverse ways as an instrument for data collection. Survey questionnaires are excellent techniques (method) of data collection with closed and open ended questions (Sarantakos, 2005). Creswell (2005) opined that quantitative research uses an instrument to measure variables in a study; this instrument consists of specific questions and response alternatives or possibilities that the researcher has established as a priori to the study. According to Campana (2010), survey questionnaires are adopted to generalize the results collected from a smaller number to a larger number. Survey questionnaires are recognized as the suitable method of data collection from a large number of participants when the researcher is able to clearly convey the appropriate information of interest across with suitable measures of variables (Creswell, 2005; Gall *et al*., 2003; Krathwohl, 2004; and Sarantakos, 2005).

Survey questionnaires also aim at one or more groups of people in obtaining their opinions and attitudes concerning a phenomenon under study (Funnell, 1996). Survey questionnaires have numerous advantages consisting of the ability to access a large number and

geographically dispersed population; gathering of data by means of voluntary participation devoid of compulsion or force; reduction of researcher bias; and minimization of time requirement for the respondent and the researcher (Creswell, 2005). A good questionnaire consists of questions that elicit different types of information from respondents (Gall *et al*., 2003). Questionnaires must be kept short, questions organized in easy manner and avoiding double-barreled questions (Gall *et al*., 2003). According to Creswell (2005), quantitative investigators use both ordinal and interval scales; of these, interval scales provide the most variation of responses and lend themselves to stronger statistical analysis. Sarantakos (2005) and Creswell (2005) suggest that the Likert scale is particularly suitable for studying attitudes; Cohen *et al*. (2004) adds that the use of Likert scale gives the researcher the opportunity to build differences, measure attitudes, and generate hard data on the respondents; and it also offers information such as frequency, flexible responses and linkage between opinion and quantity. The Likert scale is a five point response scale used to measure responses to a set of statements; and permits the measurement of degrees of difference but not the specific amount of difference (Kapadia-Kundu & Dyalchand, 2007). Attitudes and perceptions have traditionally been measured on a five point Likert scale and its variants (O'Keefe, 1991).

The design of an effective survey questionnaire is hinged on four critical pillars namely question wording, categorization, coding of variables and general acceptance (Sarantakos, 2005). Survey instrument design must be preceded by firstly defining clearly the focus of the study; and secondly, translating the study objectives into measureable factors that contribute to the focus of the research (Salant & Dillman, 1994). According to Fowler and

Floyd (1995) a good question is one that produces answers that are reliable and valid measures of something that we want to describe. McIntyre (1999) observed that survey questions must use words that commensurate the educational levels of respondents. Fowler and Floyd (1995) added that both the question and the response options must be clear to both the respondent and the researcher. The wording should prevent alternative interpretations or incomplete sentences that would allow misinterpretation (Browne & Keeley, 1998; Fowler & Floyd, 1995; and Salant & Dillman, 1994). Survey questions should not be combined where the respondent might wish to answer affirmatively for one part, and negatively for the other part (Glasow, 2005).

Survey questions must be feasible to answer and respondents must be willing to answer them (Fowler, 1995). Questions must be civil and ethical (McIntyre, 1999); questions that ask respondents for data they do not have must be avoided and those questions that assume the respondent knows something about the subject must not be asked; personal questions, objectionable statements that reflects the researcher's bias and questions that require difficult calculations must be avoided; and Undefined abbreviations, acronyms, and jargons should not be used (Salant & Dillman, 1994). Onerous questions, double negatives questions and long questions that lose the respondents in the reading must be avoided (McIntyre, 1999).

In questionnaire type of data collection, standards such as validity and reliability are very crucial in which researchers look for two types of responses at group level and individual level (Gall *et al*., 2003). According to Cohen *et al.* (2005) validity can be achieved by choosing an appropriate time frame; selecting an appropriate methodology; selecting and

designing an appropriate instrument to collect data; and ensuring that the study comply with its original hypothesis. Sarantakos (2005) supported the assertion of Cohen *et al*. (2005) on validity by suggesting that validity in quantitative research is hinged on the instrument that measures relevance; precision; accuracy and compliance with the research hypothesis. Burns (2000); Cohen *et al*.(2003); Gall *et al*.(2003) and Sarantakos (2005) all agree that internal validity is necessary for ensuring validity in a research; thus internal validity refers to internal study mechanisms that ensure research design, method and approach do not have impact on the results of the study. Campana (2010) clearly pointed out that validity and reliability are critical to conduct and data collection of a research study. In this thinking Campana (2010) identified validity broadly as content and construct. Content validity is ensured by piloting the questionnaire with qualified practicing personnel to ascertain details concerning wording of questions and industry relevance while construct validity is address by ensuring statistical procedures; tabulation of results; and application of non-statistical results in examining, discussing and interpreting the scores align to the questions (Campana, 2010). The key issues of validity and reliability were achieved by the adoption of factor analysis in which the KMO values and Barlett test of sampling adequacy were used to ascertain validity and reliability (***refer to factor analysis in chapter 5 and section 4.3 of this chapter***). Sarantakos (2005) clearly pointed out nine keys for ethical consideration consisting of: explanation of research purpose; risk assessment; confidentiality and privacy; informed consent; data access and ownership; data collection; advice; mental harm; and research approvals through ethics committees.

Drawing on from the above existing works extensively, the source of data for this study was primary as a result of the adoption of idealist perspective which requires that issues be holistically examined. In this research, idealism was fulfilled as a result of elaborate literature review conducted within the general consultancy practice milieu, quantity surveying practice environment and a theoretical framework on the general pricing theories that are widely acceptable. This review culminated into the identification of key variables for the research study. The data was ordinal in nature as a result of the five point Likert scale adopted to measure the perception of respondents.

The tool for data collection was a survey questionnaire fitted onto four pages of A4 sheets measuring various aspects of the research of interest to the researcher. There were eleven questionnaires addressing key aspects of the research notably the aim and objectives of the research which sought to tackle the general pricing milieu in quantity surveying practice and these questions touched on price and value; just price; objectives of pricing; pricing strategies and parameters; criteria for consultancy bid price success; dynamics of pricing risks; taxation and inflation; components of quantity surveying consultancy services pricing; challenges confronting QS consultancy practice and the QS consultancy services. Questions on the profile of respondents bordered on the status of their firms; working experience; rate of work acquisition and sectors of operation. These questions were necessary to ensure internal validity of the data collected. Questionnaires are suitable for survey processes to gather data on social phenomenon on individuals, groups and institutions located within large geographical areas. In using questionnaire as a tool for gathering data in this study, care was taken in the construction of questions. In the first place, the questions were closed-

ended requiring respondents to provide responses on key variables. Standardization was carefully observed in order to ensure all respondents answer the same questions with the same responses; this is one of the reasons for using questionnaire as a tool because control is of essence in survey process unlike laboratory research where samples are under control in confinement and conditioning. In ensuring uniformity, same wording of questions were maintained throughout the questionnaire and the use of jargons or technical words were minimal.

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In terms of ethics and communication, an introduction was provided bordering on the title of the research, the aim and objectives of the research and respondents were highly assured of their confidentiality. The sequence of the questions were such that they draw the respondents gradually into the interaction with the questionnaire beginning with issues that respondents are very familiar with by graduating the questions from simpler to thought provoking professional issues in practice. The questions were devoid of sensitive issues and the privacy of respondents was highly respected. Practicality and relevance of questions were achieved by crafting questions that are of much interest to respondents in the practice of quantity surveying consultancy services pricing. To aid respondents' responses to avoid measurement errors, tables were used to profile the variables to majority of the questions to help in ticking appropriate boxes based on the instructions provided in the introductory section of the questionnaire; this will also make the recording, aggregation, analysis and organization of data into standardized format easier for the researcher.

The questionnaire was self-administered to respondents by the researcher. Respondents were given time to respond to the questions within four (4) weeks. The questionnaires were later retrieved after four weeks by which time majority of the respondents had considered and responded to the questionnaire. In all a total of 110 questionnaires were distributed in order to achieve the appropriate sample size of 79. At the end of the four week field work of questionnaire administration to respondents, 79 questionnaires were retrieved producing a response rate of 71.8 per cent.

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4.4 Data Analysis Methods

4.4.1 Inferential Analysis: Hypothesis Testing

Inferential analysis intends to make generalizations from a sample to the wider population (Gabrenya, 2003). Inferential analysis largely dwells on the deployment of statistical techniques in testing hypothesis to derive implications from a research (Baddie & Halley, 1995; Kolawole, 2001). They are equally suitable for data obtained through the utility of nominal scale of measurement; ordinal measurement and processed in ranked order of 1^{st}, 2^{nd}, 3^{rd}, 4^{th} and indefinitely. Non-parametric analysis is also suitable when the research does not have idea about the nature of the distribution (Siegel, 1988). Hypothesis testing is a technique adopted by researchers to draw conclusion on the results of a data collected in a research investigation in order to make useful conclusions on a population of interest (Deveries, 2007). Hun (2010) asserted that a hypothesis is an assumption about the characteristic of a particular population of interest.

Testing hypothesis for a research study is also aimed at the utilization of the sample data to infer from the results to determine the level of real relationship between variables. According to Kochanski (2005), hypothesis testing is apposite for critical application or for drawing conclusion. Hypothesis testing results into either 'null hypothesis (H_o)' or the 'alternative hypothesis (H_1); for which the *p*-value is the probability of obtaining a result as large as that observed in the sample if the null hypothesis were true; and *Alpha,* the probability of falsely rejecting the null hypothesis Typically, the alpha is set at .05 or .01(Anglim, 2007). The *p*-value is about the statement of values that never occurred; it is computed based on the distribution of the test statistic assuming the null hypothesis is true (Anderson *et al*., 2000). According to Anderson *et al*. (2000), the appropriate interpretation of the *p-value* is based on the probability of the data given the null hypothesis is not the converse. The ***p-value*** indicates the degree of consistency of the data with the null hypothesis (Ho) (Anderson *et al*., 2000). Similarly, the *p*-value is perceived as the degree of risk that researchers take in rejecting the null hypothesis

According to Anglim (2007), if the *p*-value is less than alpha (*for instance* .05), the probability of the null hypothesis being true is low, hence reject the null hypothesis and accept the alternative hypothesis. According to Anderson *et al*.(2000) a test statistic is first calculated from the sampled data and judged against its hypothesized null distribution to assess the consistency of the data with the null hypothesis; if the values of the test statistic are more extreme, then it implies that the sample data are not consistent with the null hypothesis. In addition, an arbitrary level (α) is set as a cutoff to serve as the basis for

deciding statistically significant and statistically non-significant results (Anderson *et al*., 2000).

4.4.2 Adoption of Chi Square Test for Hypotheses Testing

Two key underlying assumptions of the Chi-square test state that the sample size must not be less that 5 (Champion, 1970); and samples must be achieved through independent observation (Adeyemi, 2009). Chi-square test is appropriate for an entire population irrespective of whether the data fits normal distribution (Adeyemi, 2009). The Chi-Square test is a non-parametric test of significance targeted at testing the relationship between two variables (Adeyemi, 2009). Scheaffer (1999) observed that the chi square test indicates the relationship in data. According to Zibran (2007), the chi-square test is appropriate for ascertaining association or independence of facts given by the formula:

$$X^2 = \frac{O_I - E_I}{E_I}^2 ;$$

where Oi= observed frequencies; E_i= expected frequencies; i= 1, 2, 3…….n, and n= number of cells in the contingency table. The use of the chi-square test is restricted to large samples (*ibid*, 2007). Zibran (2007) concludes that the chi-square test helps in ascertaining whether the classifications on a given population are dependent on each other or not.

Drawing on from the above extant literature extensively, the Chi-Square test is adopted for this research as a result of the scale of measurement adopted in data collection which is mainly ordinal. Another reason for using the chi square to test hypothesis is the objective of ascertaining the relationship between pricing as the main dependent variable and

independent variables which have the potential of affecting pricing to cause changes in price levels. Chi-square Test was conducted using the SPSS to determine if significant relationships exist between dependent and independent pricing variables. Pricing is the main dependent variable and factors relating to pricing are independent variables; in this case independents variables are all variables within the concept of price and value; pricing strategies; project pricing(consultancy pricing); concept of price and risk; taxation and inflation in pricing; and components of consultancy services pricing.

In the conduct of this research, the Chi-Square test result was reported by first stating the X^2 (Chi-Square value), followed by the chi square value from the chi square distribution table($X\alpha$); the degrees of freedom (df); and the significance level represented by *p*-value in a bracket. Therefore, the Chi-Square test results for hypotheses tested in this research were reported in the format (X^2, $X\alpha$, df, and *p*-value). The exact significance levels were reported but in circumstances where they are less than .01, they were denoted as $p < .01$. In this research, a pricing variable was considered to be significant if its significance level represented by *p*-value on the hypothesis result table is less than the conventional or the alpha value (α) = 0.05 which was adopted for the test using the SPSS. The assumptions underlying the Chi-Square Test for Independence adopted for this research are that: the respondents were randomly selected; expected frequencies are grater or equal to 1 ($E \geq 1$); and not more than 20% of expected frequencies are less than 5. The null hypotheses were denoted by $H_o i$ while the alternative hypotheses were denoted by $H_1 i$; where i represent the serial number of the hypothesis being tested.

4.4.3 Framework Development: Utilizing Factor Analysis

For factor analysis to be suitable, the number of variables in a study must in the range of 20 to 50 (Po-Yi & Chen, 2004). Factor analysis is conducted for varied purposes including the quest for improving measures; evaluation of construct validity; hypothesis testing; development and enhancement of instrument's scales (McCauley *et al*., 1994); and reduction of data and the comprehension of its intrinsic characteristics and constructs (Conway & Huffcutt, 2003; Williams *et al*., 2012). The reasons for factor analysis are to reduce the number of variables; to determine the relationship between variables; to discover and evaluate the unidimensionality of a theoretical concept; to examine the validity of a scale; to ensure the simplification and effectiveness of analysis and interpretation; to address phenomenon of high correlation between two or more variables; ***to develop theoretical frameworks*** (*which is the focus of this particular research*); and to confirm or reject theories (Williams *et al*., 2012).

4.4.3.1 Interpretation of Results Produced by Factor Analysis

The interpretation of the results churned out by factor analysis output is guided by the following criteria, ***common degree*** which is determine by the conduct of the Barlett test in which the KMO value is used to ascertain the suitability of the variables for factor analysis. A KMO value above 0.5 implies that the Bartlett's test is appropriate reinforcing the suitability of the original variables (Po-Yi & Chen, 2004); ***factor characteristics and variable explanation*** values larger than '1' for respective variables under consideration are considered. Interestingly, factor rotation does not change the characteristic value and variable explanation hence a careful study of the factor characteristic value and variable explanation would translate into the identification of the common characteristic among

factors (variables). Factor name, for common factors, a group name would have to be obtained by the observation of the common characteristic among the group of factors.

Dwelling extensively on information provided by extant literature above, the factor analysis was adopted for data analysis to reduce the large amount of data involved in the study and to classify the variables of the same underlying characteristics. The factor analysis aided in the development of the grand pricing framework emanating from the systematic development of subclass framework. The deployment of factor analysis helped in utilizing the KMO to compare the correlation between variables to identify potential factors. In all the cases of applying the factor analysis the KMO values were above 0.5 which demonstrated the sampling adequacy of the research. Similarly, the KMO was used to measure the strength of relationship between dependent variables (DV) and independent variables (ID) in this study. The KMO values in this regard proved that the magnitude of partial correlation is significant as a result of KMO values above 0.5 in all cases. This explained that the factors identified in this study are potential pricing variables in the quantity surveying consultancy services pricing milieu. The KMO values provided the needed validity for this study which gave the research results the needed impetus for generalization.

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4.5 Summary of the Research Process

The methodology adopted for the research process is summarized in figure 5.2 below.

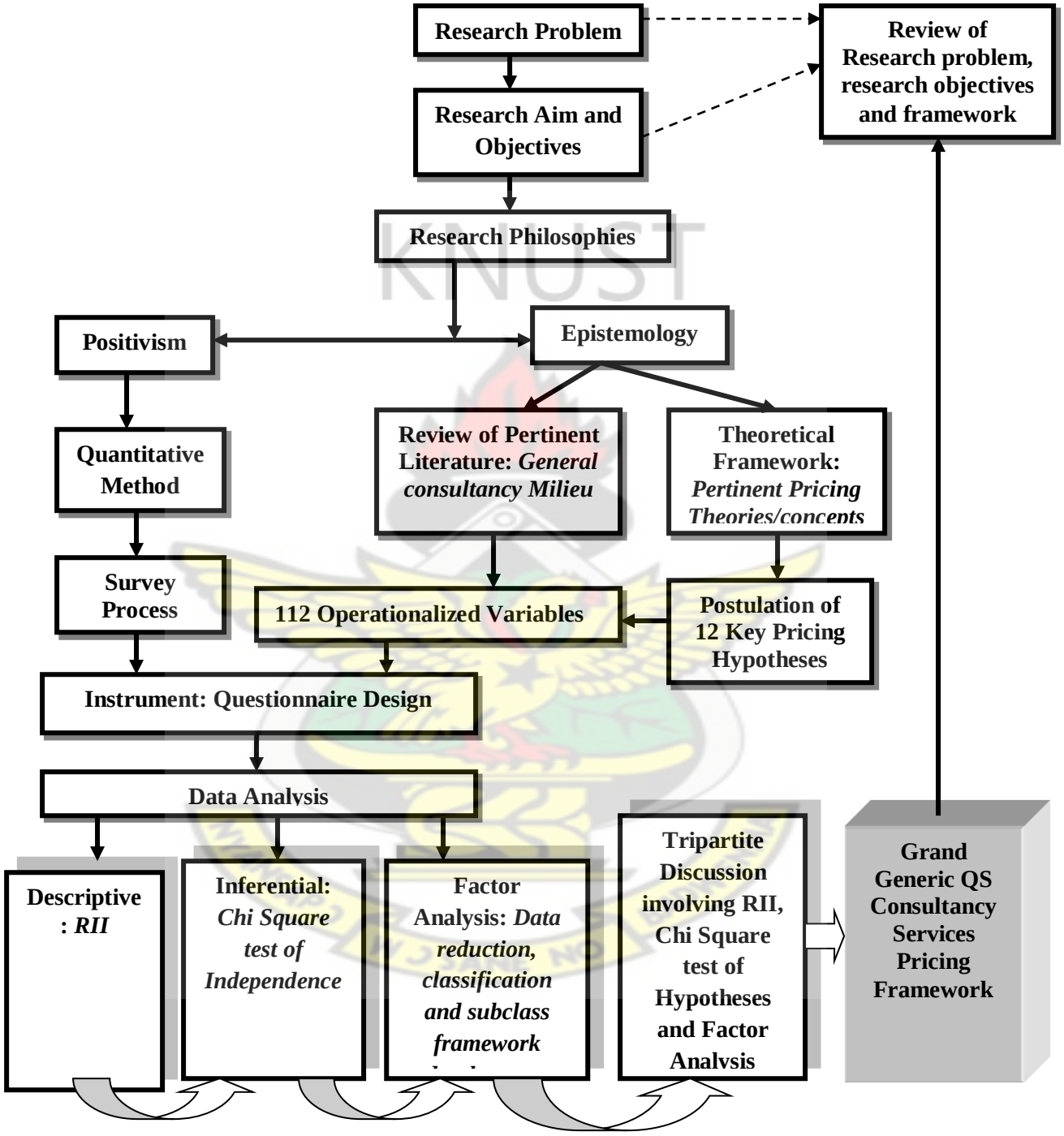

Figure 5.3: ***Research Approach Adopted***

CHAPTER FIVE

ANALYSIS AND DISCUSSION OF RESULTS

5.1 Introduction

This chapter of the research details the analysis and the discussion of the results realized after the administration of the key research instrument, the questionnaire which churn data to provide the basis for this chapter. The data collected using the questionnaire provide the information on the critical pricing variables under investigation within the context of this research work; the data also provided other key information which are very crucial for the analysis and will improve the validity and acceptability of the research. The data in this chapter will provide the manifestations (Leedy & Ormrod, 2005) of the key pricing variables hitherto unexplored within the arena of the marketing mix

The nature of data analysed in this chapter is purely primary data; primary data is significant in this domain of pricing investigation because of their ability to be closer to the layer of truth (Leedy & Ormrod, 2005). The logical reasoning in this analysis is purely deductive relying on the data collected using the questionnaire crafted as a result of the general review of extant literature and critical pricing theories or concepts to postulate critical pricing hypotheses to be tested to enable inferences to be made for generalization.

5.2 Respondents Profile

This aspect of the analysis seeks to delve into the background of respondents in order to ascertain the degree of credible information they have acquired as a result of quantity surveying practice. It consists of the status of firms; years of experience; rate of work

acquisition; and the sectors of operation. Earlier researchers analysed these critical phenomenon on respondents; for instance Dogbegah (2009), Otu-Nyarko (2010); Osei-Hwedie (2010); and Saleh (2008) all explored these aspects of respondents in their study to give much credence to the data behind the results being analysed and discussed.

5.2.1 Legal Status of Respondents' Organizations

Statutory regulations require all firms to regularize their operations by registration with statutory authorities in most jurisdictions for socio-economic reasons. The legal status of firms is crucial as clearly indicated by Owusu-Manu (2008) that the legal character of the firm depicts the caliber of activity they undertake. Table 5.1.1 demonstrates the legal entities that respondents in this study belong. It is clear that majority of respondents representing 56 percent practice in private limited firms; while sole enterprise/sole proprietorship; partnership/joint venture; and other category of firms were represented by respondents below 20 percent. This explains that nature of firms in the construction industry is largely private owned hence majority of QS practitioners found themselves in these caliber of firms. This result is in consonance with Otu-Nyarko (2010) and other previous works conducted in similar cases in Ghana. The reason for the private limited company being in the majority in this regard as far as Ghana is concerned relates to the fact that QS practitioner firms belong to the construction industry in which the government is the largest employer operating with procurement regulations which do not recognize sole proprietorship. Similarly, most enterprising individuals prefer owning their businesses as a result of prestige and enjoyment of profits.

Table 5.1.1 :Firm Status

	Firms Status	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Enterprise/Sole proprietorship	10	12.7	12.7	12.7
	Private Limited Company	44	55.7	55.7	68.4
	Partnership/Joint Venture	13	16.5	16.5	84.8
	Others	12	15.2	15.2	100.0
	Total	**79**	**100.0**	**100.0**	

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5.2.2 Years of Existence of Respondents' Organization (Age)

The years of existence for that matter the age of firms has been recognize as a critical factor in the life of every business establishment including quantity surveying firms as well. In this regard, Stinchcombe (1965) suggested that older firms are more experience; have learned more over time and are not susceptible to the liabilities of newness and have the benefits of better performance. Drawing on from Table 5.1.2, 37 percent of respondents practice in firms that are under 10 years and between 10 to 20 years of establishment respectively. The age of the firm will determine the experiences of its employees in the acquisition of knowledge and know how in the pricing of their consulting services.

Table 5.1.2: Years of existence

Years of Experience		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Under 10 years	29	36.7	37.2	37.2
	10-20 years	29	36.7	37.2	74.4
	21-30 years	7	8.9	9.0	83.3
	Over 30 years	13	16.5	16.7	100.0
	Total	78	98.7	100.0	
Missing	Missing	1	1.3		
Total		**79**	**100.0**		

5.2.3 Rate of Work Acquisition

The rate of work acquisition is necessary for the learning throughout the life cycle of a firm. The more frequent a firm acquires work or consulting engagements, the better their experiences and sharpness in pricing skills hence their information becomes reliable and more valid than firms that do not acquire work frequently. From Table 5.1.3, majority of respondents' firms have work acquisition rate of 42 percent, while the next significant work acquisition rate is moderately frequent with 33 percent.

Table 5.1.3: Rate of Work Acquisition

Work Acquisition		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not frequent	7	8.9	9.1	9.1
	Moderately frequent	26	32.9	33.8	42.9
	Frequent	33	41.8	42.9	85.7
	Very frequent	11	13.9	14.3	100.0
	Total	77	97.5	100.0	
Missing	Missing	2	2.5		
Total		**79**	**100.0**		

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5.2.4 Sectors of Operation

It is also important to examine the sectors that consulting QS practitioners operate in order to identify the areas that they are well-informed. It will also serve as the direction and identification of opportunities yet untapped in the economy. From the results below, the frequency of operation in the construction sector is 35 percent; civil and structural engineering is 15 percent frequent; mechanical building and engineering services is 5 percent frequent; petro-chemical is 4 percent frequent; mineral extraction is 1 percent frequent and 5 percent very frequent; and urban planning had 6 percent frequent and 3 percent very frequent as demonstrated in Tables 5.1.4a, b, c, d, e and f below.

From above result, it is clear that QS professionals operate in the building construction sector more than the other sectors examined in this research; this result is in consonance with the earlier assertion of Olajunji *et al*. (2009). On the contrary, the low level of

operation by QS practitioners in other sectors examined including petro-chemical is an opportunity for enterprising QS practitioners to venture into since those sectors are unsaturated with QS practitioners hence their services will be in dire need in those sectors.

Table 5.1.4a: Building construction

	Responses	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not frequent	3	3.8	3.8	3.8
	Less frequent	4	5.1	5.1	9.0
	Moderately Frequent	23	29.1	29.5	38.5
	Frequent	27	34.2	34.6	73.1
	Very frequent	21	26.6	26.9	100.0
	Total	**78**	**98.7**	**100.0**	
Missing	Missing	1	1.3		
Total		**79**	**100.0**		

Table 5.1.4b: Civil and structural engineering

	Responses	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not frequent	9	11.4	11.4	11.4
	Less frequent	23	29.1	29.1	40.5
	Moderately Frequent	30	38.0	38.0	78.5
	Frequent	12	15.2	15.2	93.7
	Very frequent	5	6.3	6.3	100.0
	Total	**79**	**100.0**	**100.0**	

Table 5.1.4c : Mechanical building and engineering services

	Responses	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not frequent	46	58.2	58.2	58.2
	Less frequent	24	30.4	30.4	88.6
	Moderately Frequent	5	6.3	6.3	94.9
	Frequent	4	5.1	5.1	100.0
	Total	**79**	**100.0**	**100.0**	

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Table 5.1.4d: Petro-chemical

	Responses	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not frequent	68	86.1	86.1	86.1
	Less frequent	7	8.9	8.9	94.9
	Moderately Frequent	1	1.3	1.3	96.2
	Frequent	3	3.8	3.8	100.0
	Total	**79**	**100.0**	**100.0**	

Table 5.1.4e: Mineral extraction

	Responses	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not frequent	65	82.3	82.3	82.3
	Less frequent	8	10.1	10.1	92.4
	Moderately Frequent	1	1.3	1.3	93.7
	Frequent	1	1.3	1.3	94.9
	Very frequent	4	5.1	5.1	100.0
	Total	**79**	**100.0**	**100.0**	

Table 5.1.4f: Urban planning

	Responses	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not frequent	30	38.0	38.0	38.0
	Less frequent	27	34.2	34.2	72.2
	Moderately Frequent	15	19.0	19.0	91.1
	Frequent	5	6.3	6.3	97.5
	Very frequent	2	2.5	2.5	100.0
	Total	**79**	**100.0**	**100.0**	

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5.3 Inferential Analysis: Hypotheses Testing

Inferential analysis deals with parameter estimation and hypothesis testing. Several statistical techniques are employed in these cases to manipulate data for analysis and interpretation. In this research work, inferential analysis is solely limited to hypothesis testing (*see chapter three for more details*) by adopting Chi-Square test. Utilizing the relative importance index (RII) which is a descriptive technique is not enough to generalize the result to the population, as some results may be due to chance. In order to ascertain the significance of the results, hypothesis testing has been adopted to achieve this goal. The Chi-Square test was adopted because of its admissibility of all types of scale (nominal, ordinal, interval and ratio) used in collecting data. Also, the ranked nature of the preliminary results analysed above has made the Chi-Square test apt for this test of significance. The hypothesis tested were crafted from a carefully constructed theoretical framework covering key pricing concepts notably price and value; just price; role of the firm (importance, objectives and goals of pricing); pricing strategies; pricing parameters; bid price success; price and risk concepts; risks associated with various stages of projects affecting pricing; taxation and inflation; and quantity surveying consultancy services pricing components.

5.3.1 Testing of Research Hypotheses

H_o1: A significant key to successful pricing is not dependent on: (H1a) value of a product or service and (H1b) affordability.

H_1 1: A significant key to successful pricing is dependent on: (H1a).value of a product or service and (H1b). affordability

A chi-square test conducted to determine the relationship between successful pricing (*a dependent variable*) and pricing variables (*independent variables*) as demonstrated in Table H1 below revealed that there was significant relationship between the value of a product (X^2 = 61.190, $X^2\alpha$ = 9.488, df = 4, $p < 0.01$); and affordability (X^2 = 52.329, $X^2\alpha$ = 9.488, df = 4, $p < 0.01$). Since $X^2_{cal} > X^2\alpha$ at $p < 0.05$, reject the null hypothesis. The results clearly suggest that there is relationship between the independent variables and the dependent variable hence the alternate hypothesis holds implying that the successful pricing of quantity surveying consultancy services is dependent on the value of the service provided to clients and the ability of clients to afford for the services (ability to pay the services). The hypothesis testing of these variables further gives much statistical credence to the relative ranking of these variables. This result clearly suggests that the value of the services that QS consultants provide to clients has significant bearing on the prices they charge. Poor services in value will require low prices being attained while quality services provided to clients will definitely require sustainable pricing that will result in break-even. In another vein, providing value services alone will not inure to realistic pricing or successful pricing being chalked but the ability of the client to afford or pay for a price determined based on the value of the services provided. *It is therefore necessary to determine the parameters for ascertaining the value of services provided by QS consultants to their clients. However, this*

phenomenon has not been addressed by this study hence a research agenda to explore the criteria for value of QS services will be novel and apt. Similarly, a study to determine the willingness to afford or pay (WTP) for consultancy services will be a step in the right direction.

Table H 1: Test Statistics

Independent Variables	Chi-Square (X^2)	df	Asymp. Sig.
1. Value of a product or service	61.190[a]	4	0.000
2. Affordability	52.329a	4	0.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 15.8.-

H_o2: The achievement of just price levels is not significantly dependent on: (H2a). the government. (H2b) media action. (H2c) pressure group (H3d). Seller's profit. (H3e). customer's intrinsic value. (H3f) customer's affordability.

$H_1$2: The achievement of just price levels is significantly dependent on: (H2a). the government. (H2b). media action. (H2c). pressure group (H3d). seller's profit. (H3e). customer's intrinsic value. (H3f). customer's affordability.

The chi-square test conducted with respect to *hypothesis 2* is demonstrated in Table H2 below. The test result revealed that there is significant relationship between media action ($X^2 = 34.861$, $X^2\alpha = 9.488$, df = 4, $p < 0.01$); pressure group ($X^2 = 36.886$, $X^2\alpha = 9.488$, df = 4, $p < 0.01$); Seller's profit ($X^2 = 28.278$, $X^2\alpha = 9.488$, df = 4, $p < 0.01$); customer's intrinsic value ($X^2 = 27.899$, $X^2\alpha = 9.488$, df = 4, $p < 0.01$); and customer's affordability ($X^2 = 76.359$, $X^2\alpha = 9.488$, df = 4, $p < 0.01$). Since $X^2_{cal} > X^2\alpha$ at $p < 0.05$, reject the null hypothesis in terms of these group variables, hence there is significant evidence that these

group variables are related to the achievement of just price levels. However there is significant evidence that the variable 'the government'($X^2 = 1.316$, $X^2\alpha = 9.488$, df = 4, p = .859). Since $X^2_{cal} < X^2\alpha$ at $p > 0.05$, accept the null hypothesis in terms of this group variable (the government). The media has been powerful since the emergence of democratization in Ghana. The media can influence price level to the extent that the consultant's objective of making profit can be achieved or dashed. Customer's/clients intrinsic value can also be influenced by the media and this will subsequently affect the decision of the client on the services being acquired leading to the determination of a price level that will be beneficial to the consultant or vice versa. It is therefore important for practitioners of QS consultancy to be mindful of media action when setting price for their services. QS consultancy price setters hence forth ought to consider the media landscape and other pricing variables when fixing prices for clients.

Table H 2: Test Statistics

Independent Variables	Chi-Square (X^2)	df	Asymp. Sig.
1. The Government	1.316[a]	4	.859
2. Media action	34.861[a]	4	.000
3. Pressure Group	36.886[a]	4	.000
4. Seller's profit	28.278[a]	4	.000
5. Customer's intrinsic value	27.899[a]	4	.000
6. Customer's affordability	76.359[b]	4	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 15.8.

b. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 15.6.

H_o3: The role of the firm in setting price levels is not significantly dependent on: (H3a) objectivity. (H3b) failure. (H3c) success. (H3d) image.

H_1 3: The role of the firm in setting price levels is significantly dependent on: (H3a). objectivity. (H3b). failure. (H3c). success. (H3d). image.

The Chi-Square test conducted with regards to *Hypothesis 3* above is demonstrated in Table H3 below; the result revealed that there is significant relationship between the role of the firm in setting prices and firm's objectivity ($X^2 = 49.544$, $X^2\alpha = 9.488$, df = 4, $p < 0.01$); firm's failure ($X^2 = 14.861$, $X^2\alpha = 9.488$, df = 4, $p = 0.05$); firm's success ($X^2 = 68.658$, $X^2\alpha = 9.488$, df = 4, $p < 0.01$); and firm's image ($X^2 = 42.456$, $X^2\alpha = 9.488$, df = 4, $p < 0.01$) and the role of the firm in setting prices. Since, $X^2_{cal} > X^2\alpha$ at $p < 0.05$ in all the cases of the group variables, we reject the null hypothesis H_0 at a significance level of 0.05. Therefore there is significance relationship between the role of the firm in setting price levels and the objectives of the firm's objectivity; firm's failure; firm's success; and the firm's image). It has been statistically evident that the role of the firm in fixing consultancy prices would result in the failure of the firm; prices set by the firm would have impact on their image before their clients; and this leads to the success of the firm. It is imperative to note that the determinant of the three key variables above is pricing objectives. QS consultancy firms must determine their objectives prudently in within the parameters of the above pricing outcomes (*image, success and failure*).

Table H 3: Test Statistics

Independent Variables	Chi-Square (X^2)	df	Asymp. Sig.
1. Firm's objectivity	49.544[a]	4	.000
2. Firm's failure	14.861[a]	4	.005
3. Firm's success	68.658[a]	4	.000
4. Firm's image	42.456[a]	4	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 15.8.

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Ho 4: The fundamentals of pricing strategy of a firm are not dependent on: (H4a). Cost. (H4b). Profit (H4c). Demand (H4d). Competition

H_1 4: The fundamentals of every pricing strategy of a firm are dependent on: (H4a). Cost. (H4b). Profit (H4c). Demand (H4d). Competition

The Chi-Square result for *hypothesis 4* in Table H4 below demonstrates that a significant relationship exist between the pricing strategy and group variables(independent variables) namely cost (X^2 = 42.873, $X^2\alpha$ = 7.815, df = 3, $p < 0.01$); profit (X^2 = 59.038, df = 4, $p < 0.01$, $X^2\alpha$ = 9.488); demand (X^2 = 33.354, df = 3, $p < 0.01$, $X^2\alpha$ = 7.815); and competition (X^2 = 40.557, df = 4, $p < 0.01$, $X^2\alpha$ = 9.488). Since the $X^2_{cal} > X^2\alpha$ at $p < 0.05$ in all the cases of the group variables, reject the null hypothesis H_0 at a significance level of 0.05. Therefore, there is significant evidence to suggest that pricing strategy is dependent on cost, profit, demand and competition. This will mean that consultancy services pricing must take cognizance of these variables of cost, demand, competition and profit. Having established the evidence of these variables (*demand, cost, competition and profit*) as the fundamentals of pricing, it is novel that a *further research* at advanced level to conduct an in-depth study to investigate on the dynamics of each of these variables in influencing consultancy services pricing.

Table H 4: Test Statistics

Independent Variables	Chi-Square (X^2)	df	Asymp. Sig.
1. Cost	42.873[a]	3	.000
2. Profit	59.038[b]	4	.000
3. Demand	33.354[a]	3	.000
4. Competition	40.557[b]	4	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 19.8.

b. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 15.8.

Ho5: The successful criteria for consultancy services pricing is not dependent on: (H5a). time taken to solve the problem. (H5b). materials used on the project. (H5c). good financial control system. (H5b). Record of past project costs. (H5c). accurate forecast of future cost; and (H5d). production of timely reports.

H_1 5: The successful criteria for consultancy services pricing is dependent on: (H5a). time taken to solve the problem. (H5b). materials used on the project. (H5c). good financial control system. (H5b). Record of past project costs. (H5c). accurate forecast of future cost; and (H5d). production of timely reports.

The Chi-Square test conducted for *hypothesis 5* above has its result depicted in Table H5 below. The results revealed that there was a significant relationship between successful criteria for pricing consultancy services and the independent variables namely time taken to solve the problem (X^2 = 62.722, df = 3, $p < 0.01$, $X^2\alpha$ = 7.815); materials used on the project (X^2 = 34.468, df = 3, $p < 0.01$, $X^2\alpha$ = 7.815); good financial control system (X^2= 17.456, df = 3, $p = 0.01$, $X^2\alpha$ = 7.815); record of past project costs (X^2 = 50.177, df = 4, $p < 0.01$, $X^2\alpha$ = 9.488); accurate forecast of future cost (X^2 = 55.873, df = 4, $p < 0.01$, $X^2\alpha$ = 9.488); and production of timely reports (X^2 = 43.722, df = 4, $p < 0.01$, $X^2\alpha$ = 9.488). Since

the $X^2_{cal} > X^2\alpha$ at $p < 0.05$ in the case of the group variables, reject the null hypothesis H_0 at a significance level of 0.05. Therefore, there is a statistical evidence to advocate that the success criteria for consultancy services pricing is significantly dependent on the time taken to solve the problem; materials used on the project; good financial control system; record of past project costs; accurate forecast of future cost; and production of timely reports. Drawing from the result of *hypothesis 5*, practitioners of QS consultancy services must operate within the framework of these success criteria in order to be successful in pricing their services. Theoretically, pricing of services within the consultancy services provision has been improve as this provides enough scientific bases for consideration these variables in future pricing development.

Table H 5: Test Statistics

Independent Variables	**Chi-Square (X^2)**	**Df**	**Asymp. Sig.**
1. Time taken to solve the problem	62.722[a]	3	.000
2. Materials used on the project	34.468[a]	3	.000
3. Good financial control system	17.456[a]	3	.001
4. Record of past project costs	50.177[b]	4	.000
5. Accurate forecast of future cost	55.873[b]	4	.000
6. Production of timely reports	43.722[b]	4	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 19.8.
b. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 15.8.

Ho 6: The success of a bid price is not dependent on: (H6a). financial capacity, (H6b). technical capacity, (H6c). experience, (H6d). duration, (H6e). reputation, (H6f). business development and (H6g) profit and overhead.

H_1 6: The success of a bid price is dependent on: (H6a). financial capacity, (H6b). technical capacity, (H6c). experience, (H6d). duration, (H6e). reputation, (H6f). business development, and (H6g) profit and overhead.

The Chi-Square test result for *Hypothesis 6* above is demonstrated in Table H6 below, the results supports the existence of significant relationship between the dependent variable bid price for consultancy services pricing and the independent variables namely financial capacity ($X^2 = 44.734$, df = 4, $p < 0.01$, $X^2\alpha = 9.488$); technical capacity ($X^2 = 69.165$, df = 4, $p < 0.01$, $X^2\alpha = 9.488$); firm's experience($X^2 = 69.671$, df = 4, $p < 0.01$, $X^2\alpha = 9.488$); duration to render the service ($X^2 = 52.456$, df = 4, $p < 0.01$, $X^2\alpha = 9.488$); firm's reputation ($X^2 = 59.692$, df = 4, $p < 0.01$, $X^2\alpha = 9.488$); business development ($X^2 = 12.595$, df = 3, $p = .06$, $X^2\alpha = 7.815$); and profit and overhead ($X^2 = 41.443$, df = 4, $p < 0.01$, $X^2\alpha = 9.488$). Since $X^2_{cal} < X^2\alpha$, and the $p > 0.05$, accept the null hypothesis H_o for the group variable business development, hence bid price success for consultancy services is not dependent on the business development agenda of the firm. However, the result demonstrates that in the case of other independent variables $X^2_{cal} > X^2\alpha$ at $p < 0.05$, at this instance, reject the null *hypothesis* H_o at a significance level of 0.05. Hence there is statistical evidence to suggest that bid price success for consultancy services is significantly dependent on financial capacity; technical capacity; firm's experience; duration to render the service; firm's reputation; and profit and overhead. The rejection of the null hypothesis is a testament that bid price success which is the focus of most consultancies is important and reinforces the application of the independent variables in the examination of bid price quotations from consultants. The acceptance of the null hypothesis in terms of business

development underpins the fact that in spite of business development strategies adopted by consultancies if they do not adhere to successful bid pricing criteria, they are bound to fail in the pricing of their services.

Table H 6: Test Statistics

Independent Variables	Chi-Square (X^2)	df	Asymp. Sig.
1. Financial capacity	44.734[a]	4	.000
2. Technical capacity	69.165[a]	4	.000
3. Firm's experience	69.671[a]	4	.000
4. Duration to render the service	52.456[a]	4	.000
5. Firm's reputation	59.692[b]	4	.000
6. Business development	12.595[c]	3	.006
7. Overhead and profit	41.443[a]	4	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 15.8.

b. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 15.6.

c. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 19.8.

H_o 7: Consultancy services price levels are not dependent on financial risks.

H_1 7: Consultancy services price levels are dependent on financial risks.

A Chi-Square test was conducted to find out whether consultancy services price levels are dependent on associated financial risk. The results demonstrated that there is significant relationship between consultancy price levels and financial risks (X^2= 78.532, df = 4, p < 0.01, $X^2\alpha$ = 9.488). Since $X^2_{cal} > X^2\alpha$ at $p < 0.05$, reject the null hypothesis. Hence there is significant evidence statistically to advocate that consultancy services price levels are dependent of financial risks. Hitherto financial risks do not feature in the price composition of consultancy services provisions. The test of this hypothesis would practically improve the

pricing of consultancy services by ensuring that financial obligations are shared among project stakeholders. However, it is important to explore the nature of consultancy financial risks to establish its true level of influence and other associated encumbrances in pricing in a future study.

Table H 7: Test Statistics

Independent Variable	Chi-Square (X^2)	df	Asymp. Sig.
Financial risk	78.532[a]	4	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 15.8.

H_o 8: The robustness of consultancy pricing is not dependent on the: (H8a).Market related risks (H8b). Logistical and infrastructural risks (H8c). Managerial and operational risks (H8d). Technological risks (H8e). Organizational and societal risks.

H_1 8: The robustness of consultancy pricing is dependent on: (H8a).Market related risks (H8b). Logistical and infrastructural risks (H8c). Managerial and operational risks (H8d). Technological risks (H8e). Organizational and societal risks.

The Chi-Square result conducted revealed that the robustness of consultancy services pricing is significantly dependent on market related risks ($X^2 = 35.076$, df = 3, $p < 0.01$, $X^2\alpha = 7.815$); logistical and infrastructural risk ($X^2 = 57.769$, df = 4, $p < 0.01$, $X^2\alpha = 9.488$); managerial and operational risk ($X^2 = 29.405$, df = 3, $p < 0.01$, $X^2\alpha = 7.815$); technological risk($X^2 = 14.924$, df = 3, $p = 0.02$, $X^2\alpha = 7.815$); and organizational and societal risk ($X^2 = 37.646$, df = 4, $p < 0.01$, $X^2\alpha = 9.488$). Since the $X^2_{cal} > X^2\alpha$ at $p < 0.05$, reject the null hypothesis H_0 and conclude that the robustness of consultancy services pricing is dependent on market related risks; logistical and infrastructural risks; managerial and operational risks;

technological risks; and organizational and societal risks. The ingredients for consultancy price robustness have eluded practitioners over the decades. The test result of this hypothesis has the potential of creating the awareness of price robustness among consultancies and contributing to theory development by setting the tone for in-depth studies in this area in consultancy pricing and other disciplines as well.

Table H 8: Test Statistics

Independent Variables	Chi-Square (X^2)	df	Asymp. Sig.
1. Market related risk	35.076[a]	3	.000
2. Logistical and infrastructural risk	57.769[b]	4	.000
3. Managerial and operational risk	29.405[a]	3	.000
4. Technological risk	14.924[a]	3	.020
5. Organizational and societal risk	37.646[c]	4	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 19.8.
b. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 15.6.
c. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 15.8

H_o 9: The level of consultancy pricing is independent of: (H9a). Financial risk (H9b). Legal risk (H9c). Regulatory risks (H9d). Political risk and (H9e). Force majeure risks.

$H_1$9: The level of consultancy services pricing is dependent on: (H9a). Financial risk (H9b). Legal risk (H9c). Regulatory risks (H9d). Political risk and (H9e). Force majeure risks.

The Chi-Square result for *Hypothesis 9* above as demonstrated in Table H 9 below disclosed that there is significant relationship between the level of consultancy pricing and financial risk ($X^2 = 58.795$, df = 4, $p < 0.01$, $X^2\alpha = 9.488$); legal risk ($X^2 = 37.266$, df = 4, $p < 0.01$, $X^2\alpha = 9.488$); regulatory risk ($X^2 = 38.911$, df = 4, $p < 0.01$, $X^2\alpha = 9.488$); political risk ($X^2 = 22.962$, df = 4, $p < 0.01$, $X^2\alpha = 9.488$); and force majeure risks ($X^2 = 19.165$, df = 4, p

= 0.01, $X^2\alpha = 9.488$). Since the $X^2_{cal} > X^2\alpha$ at $p < 0.05$, reject the null hypothesis H_o and conclude that the level of consultancy services pricing is significantly dependent on financial risk; legal risk; regulatory risk; political risk; and force majeure risk. This implies that consultants must price their services within the framework of these risks in order to realize appreciable price levels for their services. Theoretically, the relationship between risk and pricing levels are least investigated in consulting and other fields as well, this revelation has the potential of igniting novel studies in the research community towards unfolding deeper dynamics regarding price levels and risk.

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Table H 9: Test Results

Independent Variables	Chi-Square (X^2)	df	Asymp. Sig.
1. Financial risk	58.795	4	.000
2. Legal risk	37.266	4	.000
3. Regulatory risk	38.911	4	.000
4. Political risk	22.962	4	.000
5. Force majeure risks	19.165	4	.010

a. 0 cells (0%) have expected frequencies less than 5. The minimum expected frequency is 15.6.
b. 0 cells (0%) have expected frequencies less than 5. The minimum expected frequency is 15.8.

H_o 10: The level of consultancy prices is not dependent on these taxes: (H10a). personal income tax (H10b). VAT/ 'NHIL' (H10c). Corporate tax (H10d). Profit tax (H10e). local rates (H10f). Property tax.

H_1 10: The level of consultancy prices is dependent on these taxes: (H10a). personal income tax (H10b). VAT/ 'NHIL' (H10c). Corporate tax (H10d). Profit tax (H10e). local rates (H10f). Property tax.

The Chi-Square result of *Hypothesis 10* above depicted in Table H10 revealed that there is significant relationship between the level of consultancy services prices and personal income tax ($X^2 = 20.051$, df = 4, $p < 0.01$, $X^2\alpha = 9.488$); VAT/ NHIL ($X^2 = 27.519$, df = 4, $p < 0.01$, $X^2\alpha = 9.488$); corporate tax ($X^2 = 36.506$, df = 4, $p < 0.01$, $X^2\alpha = 9.488$); profit tax ($X^2 = 31.063$, df = 4, $p < 0.01$, $X^2\alpha = 9.488$); local rates ($X^2 = 22.203$, df = 4, $p < 0.01$, $X^2\alpha = 9.488$); and property tax ($X^2 = 22.835$, df = 4, $p < 0.01$, $X^2\alpha = 9.488$). Since the $X^2_{cal} > X^2\alpha$ at $p < 0.05$ in all cases of the variables, reject the null hypothesis H_o and conclude that the level of consultancy services price is dependent on personal income tax; VAT/ NHIL; corporate tax; profit tax; local rates; and property tax. The phenomenon of taxes in pricing is least investigated theoretically especially in QS consultancy services pricing, the result of this hypothesis implies that awareness would be created to engender the consideration of taxes in the development of consultancy services pricing theories especially in the determination of price levels. Practically, price setters would henceforth consider the various tax burdens that they encounter in the delivery of services to clients.

Table H 10: Test Results

Independent Variables	Chi-Square (X^2)	df	Asymp. Sig.
1. Personal income tax	20.051	4	.000
2. VAT/ NHIL	27.519	4	.000
3. Corporate tax	36.506	4	.000
4. Profit tax	31.063	4	.000
5. Local rates	22.203	4	.000
6. Property tax	22.835	4	.000

a. 0 cells (0%) have expected frequencies less than 5. The minimum expected cell frequency is 15.8

H_o 11: Consultancy services price level is not dependent on: (H11a). input prices (H11b). Inflation

H_1 11: Consultancy services Price level is dependent on: (H11a). input prices (H11b). Inflation

The Chi-Square results of *Hypothesis 11* above as demonstrated in Table H11 unveiled that there is significant relationship between input prices ($X^2 = 43.722$, df = 4, $p < 0.01$, $X^2\alpha = 9.488$) and inflation ($X^2 = 43.154$, df = 4, $p < 0.01$, $X^2\alpha = 9.488$). Since the $X^2_{cal} > X^2\alpha$ at $p < 0.05$, reject the null hypothesis H_o and conclude that consultancy services price level is dependent on input prices and inflation. The result of this hypothesis underpins the consideration given to components of consultancy services pricing which serve as inputs to the delivery of the services to clients. These inputs include materials and supplies, communication expenses among others. Practically, this hypothesis gives a scientific impetus to their inclusion in the development of the pricing framework. Inflation is not considered in the existing pricing of consultancy services since majority of consultancies adopt percentage pricing where a percentage of the project cost is normally taken to be the consultancy services price. This hypothesis also provides a further reason for the consideration of inflationary rate in the pricing of service especially over long project duration.

Table H 11: Test Results

Independent Variables	Chi-Square (X^2)	df	Asymp. Sig.
1. Input prices	43.722	4	.000
2. Inflation	43.154	4	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 15.8.
b. 0 cell (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 15.6.

H_o12: Changes in consultancy services price levels are independent of inflationary causes: (H12a). production shortfall (H12b). effects of input market (H12c). Government policies; and (H12d). International trade and trade barriers.

$H_1$12: Changes in consultancy services price levels are dependent on inflationary causes: (H12a). production shortfall (H12b). Effects of input market (H12c). Government policies; and (H12d). International trade and trade barriers.

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The Chi-Square test result of *Hypothesis 12* as in Table H12 below revealed that there is significant relationship between changes in consultancy services price levels and production shortfall ($X^2 = 27.266$, df = 4, $p < 0.01$, $X^2\alpha = 9.488$); effects of input market ($X^2 = 40.304$, df = 4, $p < 0.01$, $X^2\alpha = 9.488$); Government policies ($X^2 = 26.127$, df = 4, $p < 0.01$, $X^2\alpha = 9.488$); and international trade and trade barriers ($X^2 = 23.595$, df = 4, $p < 0.01$, $X^2\alpha = 9.488$). Since the $X^2_{cal} > X^2\alpha$ at $p < 0.05$, reject the null hypothesis H_o and conclude that changes in consultancy services price levels are dependent on production shortfall; effects of input market; government policies; and international trade and trade barriers. Globalization has made the world to be closer in trade and its related issues. International trade has the potential of altering the level of consultancy price levels. An increase in input prices in the world market in a different jurisdiction can affect the pricing of services provided input materials are purchased from the international market. In the light of this, pricing QS consultancy services must take due cognizance of international trade dynamics especially in the delivery of services that are international in nature.

5.4 Factor Analysis

There are sixty-six (66) independent variables. In view of the numerous independent variables involved in this research, it is possible there will be significant amount of variables

measuring the same pricing phenomenon. Hence factor analysis was adopted to reduce the repeatability of variables and to empirically aid in the development of the pricing framework by classifying key pricing variables of the same characteristics.

5.4.1 Concept of Price and Value (Variables)

5.4.1.1 Initial Consideration

The reliability of factor analysis is determined by the sample size as correlation coefficients changes from one set of sample to another. From Table F 1 below using the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy which is approximately 0.7 signifies the adequacy of the sample size of the data for the factor analysis to be conducted. This implies that factor analysis has been given a clean sheet to proceed. Similarly, communalities in Table F 2 after extraction were above 0.5 (Po-Yi & Chen, 2004), and this further strengthen the adequacy of the sample size; hence the communalities in the Table F2 are significant. The Bartlett's Test of Sphericity is also significant since the KMO is above 0.5. These phenomena of the data as demonstrated by the KMO and the Bartlett's Test of Sphericity clearly indicate that there is a strong relation among the pricing variables, this aspect of the result clearly dovetail into the objective of the research of ascertaining the nature of relationship among the quantity surveying consultancy pricing variables. After ascertaining the suitability of the data on price and value concepts, the data was analysed using the Principal Component Analysis (PCA) and Varimax with Kaiser Normalization. The communalities involved were ascertained as indicated in Table F 2 below to account for the number of variables to be extracted finally. A critical examination of the extraction column of Table F 2 indicated that the average of communalities extracted were above 0.60

indicating how well the extracted components represent the factors/ pricing variables hence the extracted components are very good representation of the factors price and value factors.

Table F 1: KMO and Bartlett's Test (*Price and value*)

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.673
Bartlett's Test of Sphericity	Approx. Chi-Square	524.433
	df	120
	Sig.	.000

Table F 2: Communalities (*Price and Value*)

Variables	**Initial**	**Extraction**
1. Value of a product or service	1.000	.704
2. Affordability	1.000	.643
3. The Government	1.000	.802
4. Media action	1.000	.837
5. Pressure Group	1.000	.723
6. Seller's profit	1.000	.866
7. Customer's intrinsic value	1.000	.722
8. Customer's affordability	1.000	.670
9. Firm's objectivity	1.000	.736
10. Firm's failure	1.000	.561
11. Firm's success	1.000	.691
12. Firm's image	1.000	.605
13. Cost	1.000	.662
14. Profit	1.000	.618
15. Demand	1.000	.741
16. Competition	1.000	.666

Extraction Method: Principal Component Analysis.

From Table F 3, five components have been extracted to represent the price and value factors or variables. The total variance explained by each component extracted include, the

first principal component (*component 1*) version is 27.965% of the total variance; second principal component (*component 2*) version is 15.216% of the remaining variance not accounted for by the first component while the third principal component (*component 3*) version is 11.757% of the remaining variance unaccounted for by the first and second component; the fourth principal component (*component 4*) accounted for 8.197% of the remaining variance not explained by the previous components; and finally, the fifth component (*component 5*) accounted for 7.15% of the remaining variance not explained by the previous four principal components. In all, the five (5) components extracted cumulatively accounted for 70.285% of the variation inherent in the data. This therefore implies that five (5) principal components have been extracted to represent key pricing variables or factors whose eigenvalues are greater than 1. These factors with high eigenvalues explained about 70% of the variables, therefore the factor (variables) can be reduced to these set of variables with a loss of 30% information.

Table F 3: Total Variance Explained (*Price and value*)

	Initial Eigenvalues			**Extraction Sums of Squared Loadings**			**Rotation Sums of Squared Loadings**		
Component	Total	% of Variance	Cum. %	Total	% of Variance	Cum. %	Total	% of Variance	Cum. %
1	**4.474**	**27.965**	**27.965**	4.474	27.965	27.965	**2.702**	**16.885**	**16.885**
2	**2.435**	**15.216**	**43.181**	2.435	15.216	43.181	**2.654**	**16.588**	**33.473**
3	**1.881**	**11.757**	**54.938**	1.881	11.757	54.938	**2.613**	**16.329**	**49.802**
4	**1.312**	**8.197**	**63.135**	1.312	8.197	63.135	**1.863**	**11.642**	**61.444**
5	**1.144**	**7.15**	**70.285**	1.144	7.150	70.285	**1.415**	**8.841**	**70.285**
6	0.851	5.320	75.605						
7	0.724	4.523	80.128						
8	0.600	3.749	83.877						
9	0.512	3.203	87.08						
10	0.496	3.102	90.182						
11	0.393	2.457	92.638						

12	0.332	2.073	94.711
13	0.300	1.875	96.586
14	0.237	1.482	98.068
15	0.189	1.178	99.247
16	0.121	0.753	100

Extraction Method: Principal Component Analysis.

Table F 4: Rotated Component Matrix[a] (*Price and value*)

	Component				
Variables	**1**	**2**	**3**	**4**	**5**
1. Value of a product or service	.079	.038	.219	-.060	**.803**
2. Affordability	.509	.175	.017	.194	.561
3. The Government	.096	**-.675**	.234	.521	-.102
4. Media action	-.114	-.085	-.032	**.887**	-.171
5. Pressure Group	-.073	.220	-.071	**.783**	.225
6. Seller's profit	.035	**.919**	-.048	.035	-.126
7. Customer's intrinsic value	.281	**.775**	.036	.094	.179
8. Customer's affordability	.094	**.664**	.407	.094	.213
9. Firm's objectivity	.301	-.051	**.779**	.090	.165
10. Firm's failure	.269	.382	.519	.145	-.229
11. Firm's success	.001	-.034	**.810**	-.053	.176
12. Firm's image	.232	.089	**.717**	-.159	.060
13. Cost	**.692**	.119	.151	-.246	.292
14. Profit	**.764**	.157	.094	-.004	-.008
15. Demand	**.796**	.094	.235	-.109	.179
16. Competition	**.637**	-.134	.447	.032	-.204

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 6 iterations.

5.4.1.2 Components Extracted

The results of the factor analysis above are promising. The data was summarized to 70% of the variance in the 16 factors with ***5 components***. Each component has at least 1 factor and at most 4 factors which can be represented as factors which are significant in pricing

decision with regards to price and value concepts. Table F5 below summarizes the components and their respective factors of price and value. Factors are interestingly grouped according to their heading (themes).

Table F 5: Component Profile of the concept of Price and value

Description of Components and Variables	Factor Loading	Variance Explained
Component1: Pricing Strategies		
1. Cost	.692	**27.965%**
2. Profit	.764	
3. Demand	.796	
4. Competition	.637	
Component 2: Just Price		
1. The government	-.675	**15.216%**
2. Seller's profit	.919	
3. Customer's intrinsic value	.775	
4. Customer's affordability	.664	
Component 3:Pricing Roles		
1. Firm's objectivity	.779	**11.757%**
2. Firm's success	.810	
3. Firm's image	.717	
Component 4: Social Influence		
1. Media action	.887	**8.197%**
2. Pressure group	.783	
Component 5: Value		
1. Value of a product or service	.803	**7.15%**

5.4.2 Project Pricing (Consultancy Pricing)

5.4.2.1 Initial Considerations

The first step in the conduct of every factor analysis is to verify the adequacy of the survey data. The KMO test and Bartlett's Test of Sphericity (see Table F 6) below are used to verify the adequacy of the data for the factor analysis of consultancy pricing variables. From Table

F 8, the adequacy of the data is excellent since the KMO value is .855. The KMO statistic ranges from 0 to 1 and a KMO value closer to 1 is considered better than KMO values far from 1.

Table F 6: KMO and Bartlett's Test (*Price and value*)

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.855
Bartlett's Test of Sphericity	Approx. Chi-Square	462.501
	df	78
	Sig.	.000

The communalities involved as indicated in Table F 7 below accounted for the number of variables to be extracted. The extraction column of Table F 7 indicated that the average of communalities extracted were slightly above 0.60.

Table F 7: Communalities (*Project Pricing/consultancy pricing*)

Variables	**Initial**	**Extraction**
1. Time taken to solve the problem	1.000	.642
2. Materials used on the project	1.000	.650
3. Good financial control system	1.000	.738
4. Record of past project costs	1.000	.564
5. Accurate forecast of future cost	1.000	.577
6. Production of timely reports	1.000	.614
7. Financial capacity	1.000	.548
8. Technical capacity	1.000	.613
9. Firm's experience	1.000	.664
10. Duration to render the service	1.000	.671
11. Firm's reputation	1.000	.599
12. Business development	1.000	.814
13. Overhead and profit	1.000	.582

Extraction Method: Principal Component Analysis.

Drawing on from Table F 8 below, three (3) components of the total variance explained have been extracted comprising of the first principal component christened ***component 1*** accounted for 45.587% of the total variance; ***component 2*** explained 9.41% of the other components not accounted for by component 1; and ***component 3*** accounted for 8.673% of the variance not explained by the first and second components of the remaining variation. In all, the three extracted components cumulatively accounted for 63.67% which is well above the accepted variance criterion that the cumulative extracted components must be at least 50% of the variance.

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Table F 8: Total Variance Explained (*Project Pricing/consultancy pricing*)

	Initial Eigenvalues			**Extraction Sums of Squared Loadings**			**Rotation Sums of Squared Loadings**		
Component	Total	% of Variance	Cum. %	Total	% of Variance	Cum. %	Total	% of Variance	Cum. %
1	**5.926**	**45.587**	**45.587**	5.926	45.587	45.587	2.767	**21.287**	**21.287**
2	**1.223**	**9.410**	**54.997**	1.223	9.41	54.997	2.765	**21.269**	**42.556**
3	**1.127**	**8.673**	**63.670**	1.127	8.673	63.67	2.745	**21.114**	**63.670**
4	0.938	7.212	70.882						
5	0.697	5.362	76.244						
6	0.589	4.528	80.771						
7	0.485	3.729	84.501						
8	0.472	3.634	88.135						
9	0.409	3.146	91.281						
10	0.368	2.834	94.116						
11	0.309	2.375	96.491						
12	0.294	2.26	98.751						
13	0.162	1.249	100						

Extraction Method: Principal Component Analysis.

Table F 9: Rotated Component Matrix[a] (*Project pricing/consultancy pricing*)

	Component		
Pricing Variables	**1**	**2**	**3**
1. Time taken to solve the problem	0.078	**0.794**	0.075
2. Materials used on the project	0.151	**0.653**	0.448
3. Good financial control system	0.272	**0.805**	0.123
4. Record of past project costs	0.303	**0.618**	0.300
5. Accurate forecast of future cost	0.512	0.517	0.217
6. Production of timely reports	0.127	0.172	**0.754**
7. Financial capacity	0.214	0.291	**0.646**
8. Technical capacity	0.454	0.331	**0.546**
9. Firm's experience	**0.648**	0.266	0.417
10. Duration to render the service	**0.709**	0.162	0.376
11. Firm's reputation	0.580	0.243	0.451
12. Business development	**0.881**	0.157	-0.116
13. Overhead and profit	0.086	0.066	**0.755**

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 4 iterations.

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5.4.2.2 Components Extracted

The results of the factor analysis are auspicious. The data was summarized to 64% of the variance in the 13 factors with 3 components. Each component has three factors which represent significantly project pricing/consultancy pricing variables. Using Table F9 above, Table F 10 below clearly demonstrates the extracted components with their key variables. Factors are grouped according to appropriate headings (themes).

Table 2F 10: Component Profile of Project pricing/consultancy pricing

Description of Components and Variables	Factor Loading	Variance Explained
Component 1: Business management		
1. Firm's experience	0.648	**45.587%**
2. Duration to render service	0.709	
3. Business development	0.881	
Component 2: Project/service cost management		
1. Time taken to solve the problem	0.794	**9.41%**
2. Materials used on the project	0.653	
3. Good financial control system	0.805	
4. Record of past project cost	0.618	
Component 3: Technical and financial capabilities		
1. Production of timely reports	0.754	**8.673**
2. Financial capacity	0.646	
3. overhead and profit	0.755	
4. technical capacity	0.546	

5.4.3 Concept of risk

5.4.3.1 Initial Considerations

The Barlett test conducted to ascertain the existence of common factors with regards to the concept of pricing risks in this study. Referring to the KMO measure of sampling adequacy, it is clear that the sampling adequacy is deemed to be above average; hence the factor analysis proceeds (see Table F11).

Table F 11: KMO and Bartlett's Test (*Concept of risk*)

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.691
Bartlett's Test of Sphericity	Approx. Chi-Square	324.155
	df	66
	Sig.	.000

Having examined the suitability of the data using Table F11 above, the Principal Component analysis PCA was used to establish the communalities for the factor analysis. **Table F 12** below presented the variables to be extracted. The average communalities to extract are marginally above average (i.e. 0.607).

Table F 12: Communalities (*Concept of risk*)

Variables	**Initial**	**Extraction**
1. Associated business risk	1.000	.643
2. Financial risk	1.000	.526
3. Market related risk	1.000	.472
4. Logistical and infrastructural risk	1.000	.596
5. Managerial and operational risk	1.000	.605
6. Technological risk	1.000	.584
7. Organizational and societal risk	1.000	.629
8. Financial risk	1.000	.431
9. Legal risk	1.000	.582
10. Regulatory risk	1.000	.691
11. Political risk	1.000	.794
12. Force majeure risks	1.000	.731

Extraction Method: Principal Component Analysis.

From **Table F 13** below, three (3) components of the total variance explained have been established for extraction. ***Component 1*** accounted for 34.469% of total variation; ***component 2*** version is 14.268% of the variation not explained by the component 1; and ***component 3*** accounted for 11.972% of the total variance not explained by components 1 and 2. The three components altogether accounted for 60.709% which is above the accepted criterion of cumulative extracted components to be at least 50%.

Table F 13: Total Variance Explained (*Concept of risk*)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cum. %	Total	% of Variance	Cum.%	Total	% of Variance	Cum%
1	**4.136**	**34.469**	**34.469**	4.136	34.469	34.469	**3.108**	**25.903**	**25.903**
2	**1.712**	**14.268**	**48.737**	1.712	14.268	48.737	**2.446**	**20.385**	**46.288**
3	**1.437**	**11.972**	**60.709**	1.437	11.972	60.709	**1.731**	**14.422**	**60.709**
4	0.838	6.985	67.694						
5	0.801	6.673	74.367						
6	0.759	6.321	80.688						
7	0.678	5.648	86.336						
8	0.438	3.652	89.988						
9	0.43	3.587	93.575						
10	0.319	2.657	96.232						
11	0.262	2.185	98.417						
12	0.19	1.583	100						

Extraction Method: Principal Component Analysis.

Table F 14: Rotated Component Matrix[a] (*Concept of risk*)

Rotated Component Matrix[a]

Concept of risk(*variables*)	Component		
	1	**2**	**3**
1. Associated business risk	**0.727**	-0.188	0.281
2. Financial risk	**0.709**	0.152	-0.004
3. Market related risk	0.629	0.254	-0.11
4. Logistical and infrastructural risk	**0.710**	0.133	0.273
5. Managerial and operational risk	**0.727**	0.272	-0.049
6. Technological risk	0.485	0.564	-0.175
7. Organizational and societal risk	0.155	**0.766**	0.136
8. Financial risk	0.553	0.332	0.121
9. Legal risk	0.259	**0.710**	0.106
10. Regulatory risk	0.045	**0.83**	0.004
11. Political risk	0.115	-0.012	**0.883**
12. Force majeure risks	0.028	0.155	**0.841**

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 6 iterations.

5.4.3.2 Components Extracted

The extracted components with their respective variables comprising component 1 with four (4) variables; component 2 with three (3) variables; and component 3 consist of two (2) extracted variables. In all nine (9) variables have been extracted cumulatively at 60.709%. Three variables were eliminated because of the insignificance of their eigenvalues which are far below 1. The respective components with their themes are demonstrated in **Table F 15** below.

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Table F 15: Component Profile of concept of risk

Description of Components and Variables	Factor Loading	Variance Explained
Component 1: Corporate internal risk		
1. Associated business risk	0.727	**34.469**
2. Financial risk	0.709	
3. Logistical and infrastructural risk	0.710	
4. Managerial and operational risk	0.727	
Component 2: Corporate external risk		
1. Organizational and societal risk	0.766	**14.268**
2. Legal risk	0.710	
3. Regulatory risk	0.830	
Component 3: location risk		
1. Political risk	0.883	
2. Force majeure risks	0.841	**11.972**

5.4.4 Concept of taxation and inflation

Taxes and inflation affect prices of services rendered to clients by consultants. In most cases, these two indicators of prices have become the concerns of the business world. In this study, varied form of taxation and inflationary forces were examined to ascertain the

opinion of respondents on these issues with regard to the pricing of QS consultancy services.

5.4.4.1 Initial Consideration

The KMO statistic in Table F 16 regarding the dataset of concept of taxation and inflation revealed that the adequacy of sampling for factor analysis is above average since the KMO statistic is 0.726; hence the factor analysis proceeds.

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Table F 16: KMO and Bartlett's Test (*Taxation and inflation*)

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.726
Bartlett's Test of Sphericity	Approx. Chi-Square	420.665
	df	66
	Sig.	.000

Table F 17 demonstrates communalities before and after extraction; before extraction the communalities are all to be 1. The communalities in the extraction column of Table F 17 demonstrate the common variance existing in the data. Referring to the Table F17, 0.708 (70.8%) of the variance in relation to personal income tax is common (refer to **Table F 17** for this information regarding other variables). The average of the communalities is 0.65.

Table F 17: Communalities (*Taxation and inflation*)

Variables	Initial	Extraction
1. Personal income tax	1.000	.708
2. VAT/ NHIL	1.000	.558
3. Corporate tax	1.000	.571
4. Profit tax	1.000	.560
5. Local rates	1.000	.554
6. Property tax	1.000	.720
7. Input prices	1.000	.727
8. Inflation	1.000	.788

9. Production shortfall	1.000	.651
10. Effects of input market	1.000	.758
11. Government policies	1.000	.686
12. International trade and trade barriers	1.000	.520

Extraction Method: Principal Component Analysis.

From **Table F 18** below, three (3) components of the total variance explained have been established. ***Component 1*** accounted for 34.444% of total variance explained; ***component 2*** version produced 20.858% of the total variance not explained by component 1; and ***component 3*** accounted for 9.708% of the total variance not accounted by component 1 and 2. The three components together accounted for 65.010% which meets the criteria that cumulative extracted components must be at least 50%.

Table F 18: Total Variance Explained (*Taxation and inflation*)

	Initial Eigenvalues			**Extraction Sums of Squared Loadings**			**Rotation Sums of Squared Loadings**		
Component	Total	% of Variance	Cum. %	Total	% of Variance	Cum. %	Total	% of Variance	Cum. %
1	**4.133**	**34.444**	**34.444**	4.133	34.444	34.444	**3.689**	**30.741**	**30.741**
2	**2.503**	**20.858**	**55.302**	2.503	20.858	55.302	**2.813**	**23.439**	**54.180**
3	**1.165**	**9.708**	**65.010**	1.165	9.708	65.010	**1.300**	**10.830**	**65.010**
4	.980	8.167	73.177						
5	.838	6.986	80.163						
6	.600	5.003	85.166						
7	.430	3.587	88.752						
8	.405	3.378	92.130						
9	.316	2.630	94.760						
10	.235	1.959	96.720						
11	.220	1.831	98.551						
12	.174	1.449	100.000						

Extraction Method: Principal Component Analysis.

Table F 19: Rotated Component Matrix[a] (*Taxation and inflation*)

	Component		
Variables	**1**	**2**	**3**
1. Personal income tax	**.824**	.169	.016
2. VAT/ NHIL	**.730**	-.007	.158
3. Corporate tax	**.724**	-.035	.212
4. Profit tax	**.738**	.106	-.063
5. Local rates	**.735**	.015	.120
6. Property tax	**.812**	.110	-.221
7. Input prices	.272	.293	**.753**
8. Inflation	.153	**.659**	.574
9. Production shortfall	.019	**.799**	.108
10. Effects of input market	-.064	**.868**	.025
11. Government policies	.145	**.816**	.006
12. International trade and trade barriers	.294	.425	-.503

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 6 iterations.

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5.4.4.2 Components Extracted

Referring to Table F 19 above, six (6) variables were extracted from ***component 1***. ***Component 2*** had four (4) variables extracted; and ***component 3*** consist of only one (1) extracted variable. In all, eleven (11) variables were extracted while one (1) variable was ignored because its eigenvalue is low in all the three components. The three components with their interpretation are demonstrated in Table F 20 below.

Table F 20: Component Profile (*Taxation and inflation*)

Description of Components and Variables	Factor Loading	Variance Explained
Component 1: Taxes		
1. Personal income tax	.824	**34.444**
2. VAT/ NHIL	.730	
3. Corporate tax	.724	
4. Profit tax	.738	
5. Local rates	.735	
6. Property tax	.812	
Component 2:Price catalysts		
1. Inflation	.659	**20.858**
2. Production shortfall	.799	
3. Effects of input market	.868	
4. Government policies	.816	
Component 3: Input prices		
1. Input prices	.753	**9.708**

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5.4.5 Quantity surveying consultancy services pricing components

5.4.5.1 Initial Consideration

In reference to **Table F 21,** the KMO value is .786 which is above average hence the reliability of factor analysis is guaranteed. Similarly, the Barlett test conducted indicated the existence of common factors in the data.

Table F 21: KMO and Bartlett's Test (*QS consultancy services pricing components*)

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.786
Bartlett's Test of Sphericity	Approx. Chi-Square	413.503
	df	78
	Sig.	.000

Table F 22 below contains the communalities before and after extraction, the communalities before extraction are assumed to be 1 while communalities after extraction are above 1. The loadings in the extraction column depict the amount of common variance present in the data as far as each variable is concerned. The average communality (8.937/13) is 0.687.

Table F 22: Communalities (*QS consultancy services pricing components*)

Variables	Initial	Extraction
1. Consultant staff remuneration	1.000	.684
2. Travel and transport	1.000	.798
3. Mobilization and demobilization	1.000	.521
4. Staff allowances	1.000	.719
5. Communications	1.000	.672
6. Office rent	1.000	.682
7. Supplies and equipment	1.000	.714
8. Training programmes	1.000	.721
9. Report preparation	1.000	.617
10. Insurance	1.000	.743
11. Contingencies	1.000	.749
12. Taxes and duties	1.000	.620
13. Profits	1.000	.697

Extraction Method: Principal Component Analysis.

In **Table F 23 below**, four (4) components were established of the total variance explained. ***Component 1*** accounted for 37.889% of total variance explained; ***component 2*** revealed 12.948% of the total variance not accounted for by component 1; ***component 3*** depict 9.357% of total variance unaccounted by the component 1 and component 2; and ***component 4*** portray 8.571% of the total variance not demonstrated by the previous three components. The four components together accounted for 68.765% of total variance

explained which satisfy the criteria that the cumulative extracted components must be at least 50% of the total variance explained.

Table F 23:Total Variance Explained (*QS consultancy services pricing components*)

	Initial Eigenvalues			**Extraction Sums of Squared Loadings**			**Rotation Sums of Squared Loadings**		
Component	Total	% of Variance	Cum. %	Total	% of Variance	Cum. %	Total	% of Variance	Cum. %
1	**4.926**	**37.889**	**37.889**	4.926	37.889	37.889	**2.533**	**19.487**	**19.487**
2	**1.683**	**12.948**	**50.837**	1.683	12.948	50.837	**2.331**	**17.927**	**37.414**
3	**1.216**	**9.357**	**60.194**	1.216	9.357	60.194	**2.243**	**17.254**	**54.667**
4	**1.114**	**8.571**	**68.765**	1.114	8.571	68.765	**1.833**	**14.097**	**68.765**
5	.842	6.476	75.241						
6	.692	5.322	80.562						
7	.564	4.336	84.898						
8	.524	4.034	88.932						
9	.375	2.884	91.816						
10	.326	2.510	94.326						
11	.294	2.258	96.584						
12	.228	1.752	98.336						
13	.216	1.664	100.000						

Extraction Method: Principal Component Analysis.

Table F 24: Rotated Component Matrix[a] (*QS consultancy services pricing components*)

Variables	Component			
	1	**2**	**3**	**4**
1. Consultant staff remuneration	.462	-.235	.315	**.562**
2. Travel and transport	.223	-.120	**.817**	.258
3. Mobilization and demobilization	.238	.371	.254	**.512**
4. Staff allowances	**.776**	.004	.110	.323
5. Communications	.500	.299	**.555**	-.158
6. Office rent	**.755**	.295	.117	.104
7. Supplies and equipment	**.783**	.244	.136	.152
8. Training programmes	.074	.343	**.771**	-.055
9. Report preparation	.058	.422	**.616**	.238
10. Insurance	.350	**.779**	.102	-.058
11. Contingencies	.138	**.828**	.195	.086
12. Taxes and duties	.028	**.546**	.185	.536
13. Profits	.164	.024	-.052	**.817**

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 11 iterations.

5.4.5.2 Components Extracted

From Table F 24 above, three (3) variables have been extracted with regard to ***component 1***, ***component 2*** and ***component 4*** respectively except ***component 3*** which had four (4) variables extracted. It is worthy to note that consultant staff remuneration; mobilization and demobilization; communications; and taxes and duties had their eigenvalues marginally above 0.50 hence the extraction of these variables can be deemed to be mediocre. **Table F 25** below demonstrates the components, their descriptions with respective variables extracted.

Table 3F 25: Component Profile (*QS consultancy services pricing components*)

Description of Components and Variables	Factor Loading	Variance Explained
Component 1: Office management		
1. Staff allowances	.776	**37.889**
2. Office rent	.755	
3. Supplies and equipment	.783	
Component 2: Overheads		
1. Insurance	.779	**12.948**
2. Contingencies	.828	
3. Taxes and duties	.546	
Component 3: Administration and training		
1. Travel and transport	.817	**9.357**
2. Communications	.555	
3. Training programmes	.771	
4. Report preparation	.616	
Component 4: Reimbursement and payments		
1. Consultant staff remuneration	.562	**8.571**
2. Mobilization and demobilization	.512	
3. Profits	.817	

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5.4.6 Challenges Confronting QS Consultancy Practice

5.4.6.1 Initial Consideration

Table F 26 clearly reveals the KMO statistic of .664 paving the way for factor analysis of the data on the challenges of QS practice.

Table F 26: KMO and Bartlett's Test (*QS consultancy challenges*)

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.664
Bartlett's Test of Sphericity	Approx. Chi-Square	227.777
	df	55
	Sig.	.000

Table F 27 below contains the communalities before and after extraction, the communalities before extraction are assumed to be 1 while communalities after extraction are above 1. The loadings in the extraction column represent the amount of common variance existing in the data as far as each variable is concerned. The average of communalities (7.482/11) is 0.680.

Table F 27: Communalities (*QS consultancy challenges*)

Variables	Initial	Extraction
1. Slow response to changing contractual arrangements	1.000	.630
2. Challenge of appropriate response to emerging services	1.000	.661
3. Slow response to information and communication technology revolution	1.000	.686
4. Inability to integrate applied research outputs into practice	1.000	.536
5. Changing nature of clients' demand	1.000	.577
6. Impact of competition	1.000	.794
7.Complexity of modern construction projects	1.000	.609
8. Reducing fees to loss-making territory	1.000	.755
9. Exposure to risks	1.000	.714
10.Decrease in project value	1.000	.686
11. Fluctuation in professional tariff of fees	1.000	.834

Extraction Method: Principal Component Analysis.

From Table F 28 below, four (4) components of total variance explained were established for extraction. ***Component 1*** accounted for 27.385% of total variance explained; ***component 2*** portrays 18.966% of total variance not accounted for by component 1; ***component 3*** demonstrates 12.172% of total variance not portrayed by components 1 and component 2; and ***component 4*** accounted for 9.497% of total variance explained not accounted for by components 1, 2 and 3. The four components accounted for 68.021% of the total variance

explained which is well above with the acceptable criteria of cumulative extracted components to be at least 50%.

Table F 28: Total Variance Explained (*QS consultancy challenges*)

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cum. %	Total	% of Variance	Cum. %	Total	% of Variance	Cum. %
1	**3.012**	**27.385**	**27.385**	3.012	27.385	27.385	**2.512**	**22.837**	**22.837**
2	**2.086**	**18.966**	**46.351**	2.086	18.966	46.351	**2.054**	**18.677**	**41.514**
3	**1.339**	**12.172**	**58.523**	1.339	12.172	58.523	**1.630**	**14.821**	**56.334**
4	**1.045**	**9.497**	**68.021**	1.045	9.497	68.021	**1.285**	**11.686**	**68.021**
5	.821	7.463	75.484						
6	.649	5.897	81.381						
7	.540	4.905	86.287						
8	.504	4.578	90.865						
9	.411	3.736	94.600						
10	.341	3.100	97.700						
11	.253	2.300	100.000						

Extraction Method: Principal Component Analysis.

Table F 29: Rotated Component Matrix[a] (*QS consultancy challenges*)

Variables	Component			
	1	**2**	**3**	**4**
1. Slow response to changing contractual arrangements	**.735**	-.224	.191	-.054
2. Challenge of appropriate response to emerging services	**.803**	-.044	.099	-.070
3. Slow response to information and communication technology revolution	**.755**	.282	.169	.084
4. Inability to integrate applied research outputs into practice	**.719**	.101	-.088	.042
5. Changing nature of clients' demand	.412	.127	**.618**	-.091
6. Impact of competition	-.064	.076	**.886**	.011
7. Complexity of modern construction projects	.218	.070	.565	.487
8. Reducing fees to loss-making territory	.113	**.840**	.071	-.176
9. Exposure to risks	-.010	**.842**	.008	.074
10. Decrease in project value	-.026	**.686**	.236	.398
11. Fluctuation in professional tariff of fees	-.068	.028	-.036	**.910**

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

5.4.6.2 Components Extracted

From Table F 30 above, four (4) variables have been extracted for ***component 1***; ***component 2*** had three (3) extracted variables while ***component 3*** is represented by two (2) variables; and ***component 4*** had only one (1) extracted variable. **Table F 30** below demonstrates the components and their descriptions with respective variables extracted.

Table F 30: Component Profile (*QS consultancy challenges*)

Description of Components and Variables	Factor Loading	Variance Explained
Component 1: Contractual and technology challenges		
1. Slow response to changing contractual arrangements	.735	**27.385**
2. Challenge of appropriate response to emerging services	.803	
3. Slow response to information and communication technology revolution	.755	
4. Inability to integrate applied research outputs into practice	.719	
Component 2: Pricing challenges		
1. Reducing fees to loss-making territory	.840	**18.966**
2. Exposure to risks	.842	
3. Decrease in project value	.686	
Component 3: Market forces challenges		
1. Changing nature of clients' demand	.618	**12.172**
2. Impact of competition	.886	
Component 4: Professional fees challenges		
1. Fluctuation in professional tariff of fees	.910	**9.497**

5.5 Discussion and Interpretation of Results

This section focuses on the discussion and interpretation of the results. It combined the inferential analysis using chi square test for hypotheses; and factor analysis meant to classify and reduce variables for development of the generic framework. This section would

adopt the procedure of Leedy and Ormrod (2005) for the discussion and interpretation of results by relating the findings of the research to the hypotheses advanced; relating 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.

It is important to recap the problem statement of the research for the purpose of this discussion and interpretation. The problem statement confronting this research include the need to offer competitive consultancy pricing; and lack of pricing consultancy services within perceived risk factors. Others comprise of the phenomenon of overpricing and under-pricing which can cause substantial loss to consultants hence their extinction; existence of serious pricing challenges confronting built environment consultants in the form of non-payment of prices charged by consultants by clients for services rendered to them; and finally absolute lack of apposite and reliable framework for consultancy services pricing.

5.5.1 Concept of price and value

5.5.1.1 Component 1: Pricing strategies

Pricing strategies based on cost, profit, demand and competition have factor loadings of .692, .764, .796 and .637 respectively. The statistical significance of these pricing strategies in this study by was ascertained by the chi square test of independence. It is clear from the chi square test that there is a significant relationship between cost, demand, competition and profit hence the acceptance of the hypothesis that cost, demand, competition and profit are fundamentals of pricing strategies. Extant literature is in consonance with the acceptance of the above hypothesis in terms of the pricing strategies hence Robert (2001) advocated that a

sound pricing strategy must give much consideration to the pricing variables of cost, demand, competition and profit.

In developing a realistic framework for quantity surveying consultancy pricing, it is crucial to consider the recovery of cost incurred in providing services to clients; the profit that will accrue as a reward; the competition from other quantity surveyors in terms of pricing (Rahim *et al*., 2013); and the nature of demand from the perspective of clients. Drawing on from the above, a sub class pricing framework will be appropriate and novel as demonstrated in ***figure 5.5.1.1*** below.

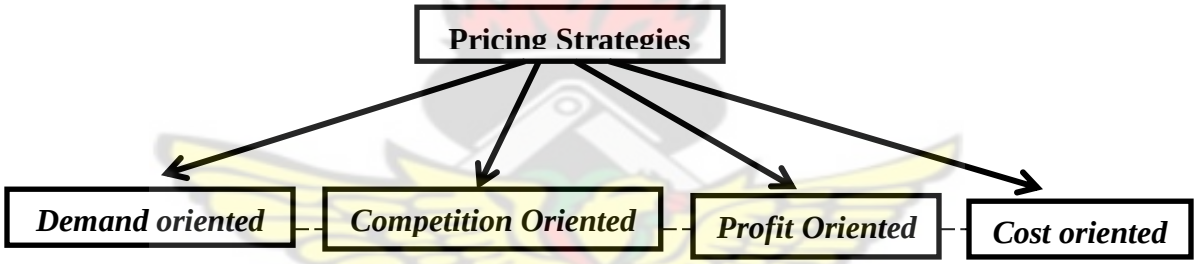

Figure ***5.5.1.1: Pricing Strategies sub framework***

Practically, cost oriented strategy and profit oriented strategy are mostly adopted in pricing than others because most price setters think first of cost recovery to stay in business, and profit to reward their effort. However, it is appropriate to consider infusing all these strategies in to the pricing agenda whenever pricing. *Each of the above pricing strategies identified have their nature and dynamics which will require a future research study to thoroughly examine their characteristics.*

5.5.1.2 Component 2: Just Pricing

The pricing variables classified under this component comprise of seller's profit; customers intrinsic value; customer's affordability; and the government. The eigenvalues of the government and customer's affordability are slightly above average (-.675 and .665 respectively). The chi square test revealed that there is no significant relationship between the government and the achievement of just price. However, the chi square test result proved that just price is significantly dependent on seller's profit; customer's intrinsic value; and customer's affordability. Practically, the role of governments regarding pricing in capitalist and democratic economies is very minimal; however, their actions or decisions can indirectly affect the manner in which demand (client) and supply (consultant) interact in setting a just price or an equilibrium price.

From the above discussion, the sub pricing framework for just price achievement for the establishment of equilibrium in consultancy pricing between the client and the quantity surveyor is demonstrated below in ***figure 5.5.1.2.***

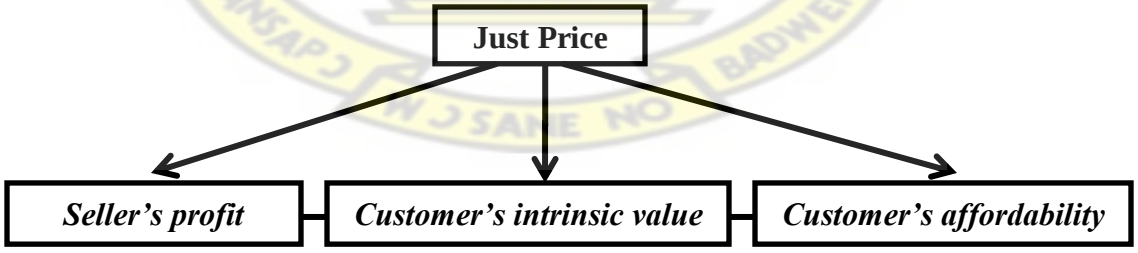

Figure 5.5.1.2: Just/equilibrium pricing sub framework

A perusal of figure 5.5.1.1 and figure 5.5.1.2 revealed a special relationship between just price and pricing strategies. In this relationship, profitability exists in both just pricing and pricing strategies. This phenomenon produces another pricing framework depicted in **figure 5.4.1.2a** below.

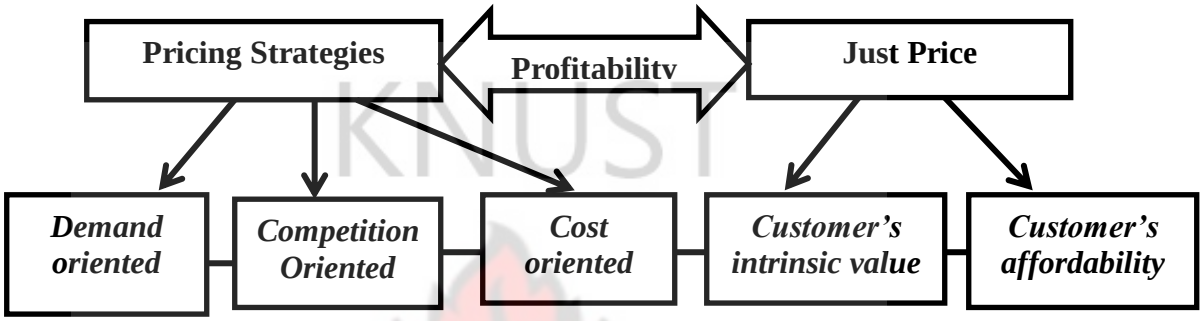

Figure *5.4.1.2a: Pricing strategy and just price relationship*

5.5.1.3 Component 3: Pricing Roles

The variables extracted under *component 3* include firm's objectivity; firm's success; firm's image, and firm's failure with eigenvalues of .779, .810, .717 and .519 respectively. Similarly, the chi square test indicated that the role of the firm is significantly dependent on the objectivity, success image and failure of the firm. The sub pricing framework is demonstrated in ***figure 5.5.1.3*** below.

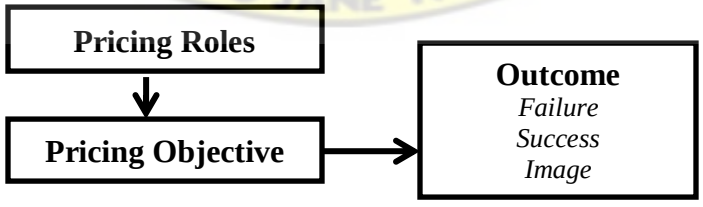

Figure *5.5.1.3: Pricing roles sub framework*

Practically, the objective of the firm determines the pricing strategy to be adopted in setting prices hence QS consultancy practitioners must be mindful of their roles and bear in mind that setting price for clients will either affect their image and ultimately their success in consultancy business. Comparing ***figure 5.5.1.3*** and ***figure 5.5.1.2a*** above, pricing objectivity has created a relationship between pricing roles and pricing strategies; hence the sub class framework is depicted in ***figure 5.5.1.3a.***

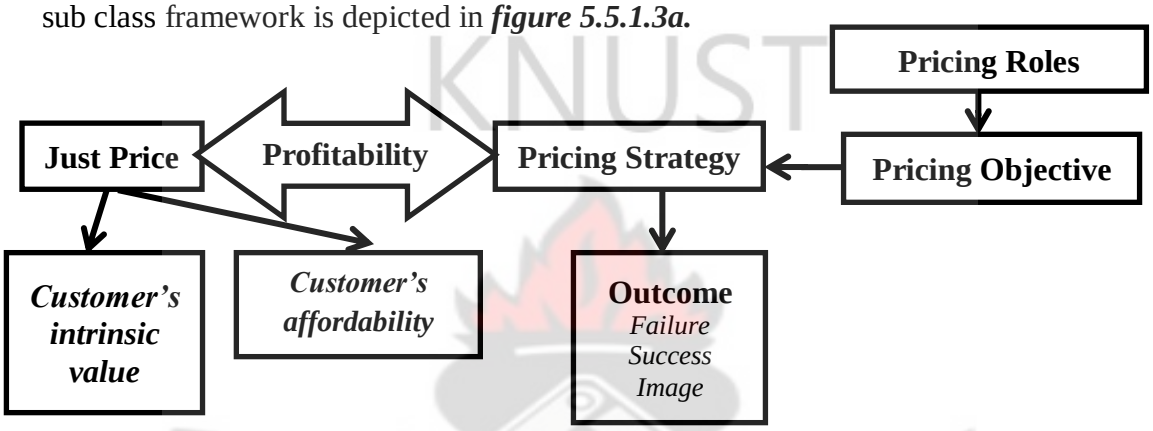

Figure *5.5.1.3a: Grand sub pricing framework*

5.5.1.4 Component 4: Social influence

Social influence affect pricing; and prominent among them are media action and pressure group. Media action and pressure group after extraction have factor loading of .783 and .887 respectively. The chi square test result also produced a *p*-value below .005 hence there is significant statistical evidence that social influence is related to quantity surveying consultancy pricing. Therefore, the sub pricing framework is demonstrated in ***figure 5.5.1.4*** below.

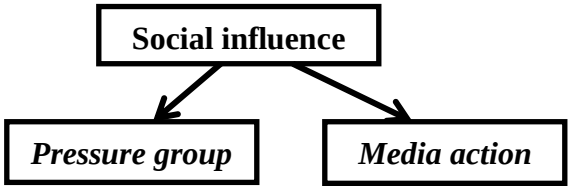

Figure *5.5.1.4: Social influence, sub pricing framework*

5.5.1.5 Component 5: Value

Value is important to pricing; ***component 5*** has an extracted variable 'value of a product or service' with factor loading of .803. Considering the chi square test results of hypotheses in this regard, value of a product or service has a *p*-value less than .05 which makes it statistically significant. Equally linked to value is intrinsic value which is innate to the customer and has the potential of influencing whether the customer will afford the service. It implies that a relationship is created between value and just price by intrinsic value and customer affordability. Similarly, social influence can affect the value system of the client through media advertising, marketing and the actions of consumer protection groups to exert pressure on QS consultancy price setters. In this direction, the grand sub pricing framework is represented in ***figure 5.5.1.5*** below.

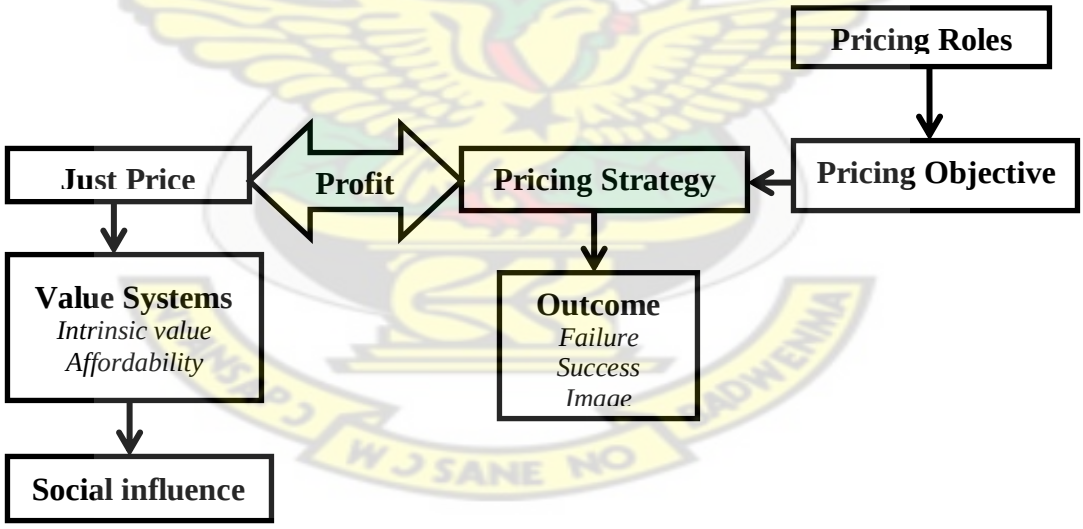

Figure *5.5.1.5: Grand sub pricing framework*

This study has not critically examine the key aspects of value pricing in detail, it is novel to conduct a future study to explore the dynamics of value pricing as far as QS consultancy services pricing is at stake.

5.5.2 Project Pricing (Consultancy Pricing)

5.5.2.1 Component 1: Business management

Business management has the tendency to affect pricing. ***Component 1*** comprises of firm's experience in pricing; duration of service provision; and business development with factor loadings of .648, .708 and .881 respectively. The chi square test of independence adopted for testing hypothesis accepted the null hypothesis relating to business development hence business development is not dependent on the success of bid price of QS consultants. Therefore, there is no statistical evidence to suggest that business development is dependent on pricing success. However, per the chi square test of hypothesis, there is statistical evidence to advocate the dependency of bid price success on duration to render service and firm's experience. Practically, clients are interested in the duration of service delivery and the experience of the consultant to ensure value for money. ***Figure 5.5.2.1*** demonstrates the sub pricing framework in terms of achieving realistic QS consultancy services pricing.

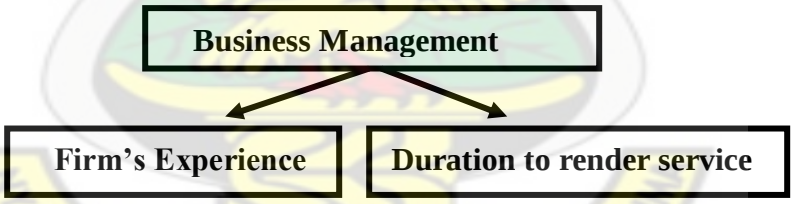

Figure ***5.5.2.1: Business management, sub pricing framework***

5.5.2.2 Component 2: Service cost management

The manner in which the consultant manages cost, value and client attraction (demand) will reflect the pricing strategy leading to the determination of price levels for clients. The variables in *component 2* comprises of time taken to solve a problem; materials used on the project; good financial control system; and record of past project cost with factor loadings of

.794, .653, .805 and .618 respectively. The chi square test of hypothesis relating to these variables revealed a statistical evidence to suggest that a successful criteria for QS consultancy pricing is significantly dependent on the time taken to solve the problem; materials used on the project; and good financial control. In view of the above dynamics, the sub pricing framework is depicted in **figure 5.5.2.2 below**.

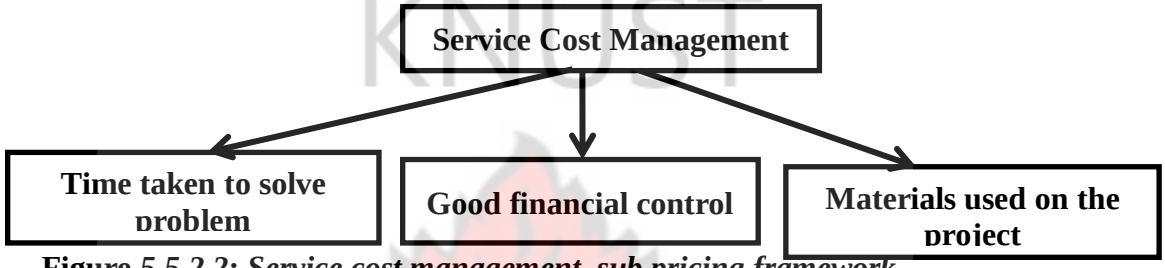

Figure ***5.5.2.2: Service cost management, sub pricing framework***

Observing figure 5.5.2.1 and figure 5.5.2.2, time taken to solve a problem; and duration to render service have created a relationship between business management and service cost management. Hence, the combined framework is depicted in figure 5.5.2.2a as:

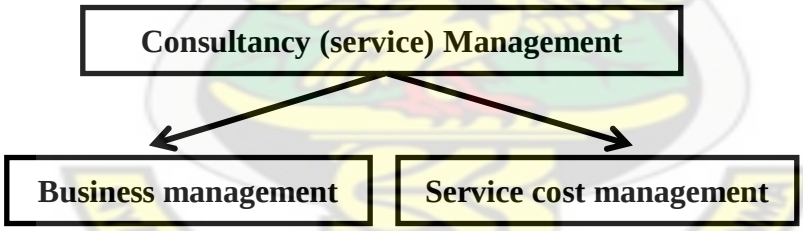

Figure ***5.5.2.2a: Consultancy (service) management, sub pricing framework***

5.5.2.3 Component 3: Technical and financial capabilities

The art of pricing is dependent on key elements. *Component 3* clearly captures them as production of timely reports; financial capacity; overhead and profits; and technical capacity with eigenvalues of .754, .646, .755 and .546 respectively. The chi square test of hypothesis on these variables indicated that there is significant evidence to suggest that bid price

success is dependent on production of timely reports; financial capacity; overhead and profit; and technical capability. Hence ***figure 5.5.2.3*** demonstrates the sub class framework for technical and financial capabilities below.

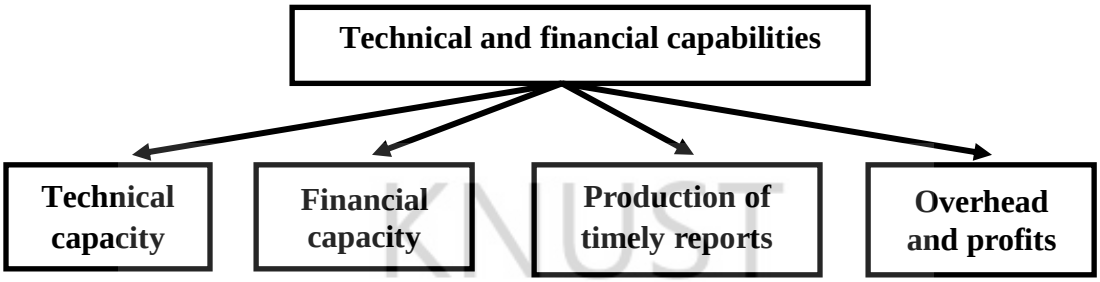

Figure ***5.5.2.3: Technical and financial capabilities***

5.5.3 Concept of Risk

5.5.3.1 Component 1: Corporate internal risk

Corporate internal risks are directly related to the consultancy firm and affects pricing of services provided to clients. ***Component 1*** comprises of associated business risk; financial risk; logistical and infrastructural risk; and managerial risk and operational risk with factor loadings of .727, .709, .710 and .727 respectively. The chi square test hypothesis result of these variables demonstrates that there is significant statistical evidence to claim that the robustness and levels of consultancy services pricing is dependent on financial risk; logistical and infrastructural risk; and managerial and operational risk. The sub pricing framework is demonstrated in ***figure 5.5.3.1*** below.

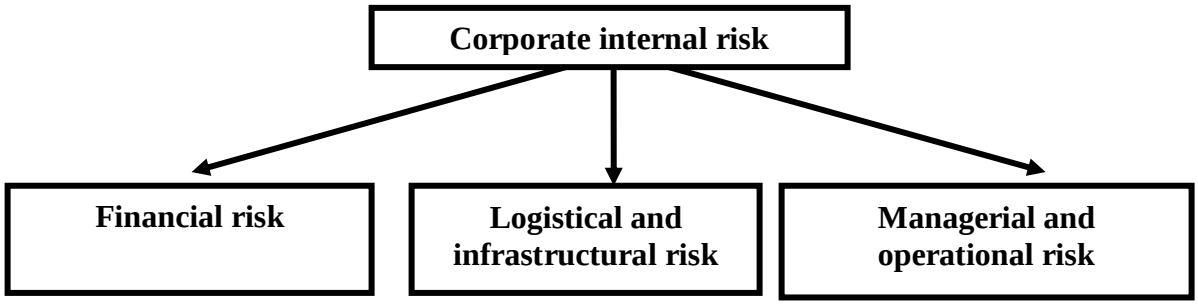

Figure 5.5.3.1: ***Corporate internal risk sub pricing framework***

5.5.3.2 Component 2: Corporate external risk

Corporate external risks are not directly related to the core activities of the QS consultancy firms but they have the potential of affecting the manner in which services are priced. ***Component 2*** comprises of organizational and societal risk; legal risk; and regulatory risk with their eigenvalues of .766, .710 and .830 respectively. The chi square test of hypothesis revealed enough statistical evidence to suggest that QS consultancy robustness is dependent on organizational and societal risk; legal risk; and regulatory risk. In the light of the above, the pricing sub framework is demonstrated in in ***figure 5.5.3.2*** below.

Figure ***5.5.3.2: Corporate external risk***

5.5.3.3 Component 3: Location Risk

Location risk occurs as a result of the geographical positioning of the pricing entity. This risk manifests in various forms like political upheavals and acts of God which may lead to the disruption of the consultancy process. ***Component 3*** comprises of political risk; and

force majeure risk with associated factor loadings of .883 and .841 respectively. The chi square test of hypothesis revealed that there is statistical significance to claim that the level of consultancy pricing is dependent on political risk and force majeure risk. Therefore, the sub pricing framework is demonstrated in ***figure 5.5.3.3*** below.

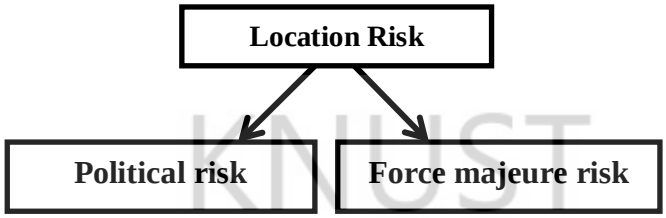

Figure *5.5.3.3: Location risk sub pricing framework*

Considering the sub pricing frameworks in figures 5.5.3.1, 5.5.3.2 and figure 5.5.3.3 for corporate internal risk, corporate external risk and location risk respectively, it is clearly demonstrated that QS consultancy pricing robustness and level is affected by corporate internal risk; corporate external risk; and force majeure risk. Hence the sub grand framework for risk when considering QS consultancy pricing is depicted in ***figure 5.5.3.3a*** below.

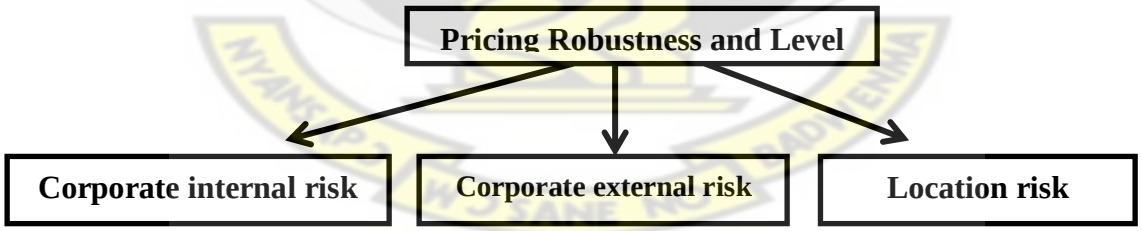

Figure *5.5.3.3a: Sub grand Pricing risk framework*

5.5.4 Concept of Taxation and Inflation

5.5.4.1 Component 1: Taxes

Component 1 consists of taxes which the consultant has to honour as part of statutory duty. These taxes are considered in this study as pricing variables because they have the capacity to alter the level of prices set by consultants whom the client has to pay. These taxes include personal income tax; corporate tax; profit tax; local tax and property tax with factor loading of .824, .730, .724, .738, .735 and .812 respectively. The chi square result of hypothesis testing revealed that there is significant statistical evidence to suggest that a relationship exist between QS consultancy services levels and the tax variables since their *p*-values < .005. Therefore, the sub pricing framework is demonstrated in ***figure 5.5.4.1*** below.

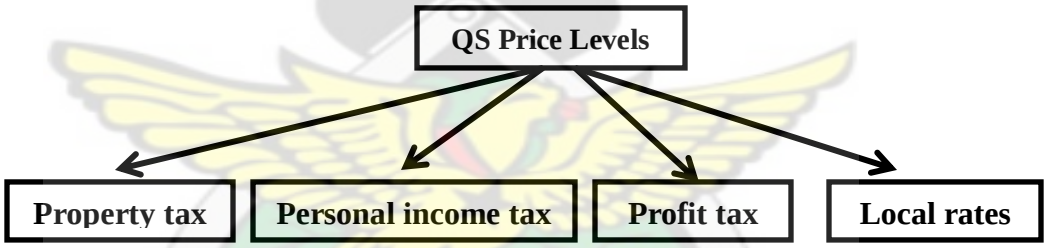

Figure ***5.5.4.1: Taxes sub pricing framework***

5.5.4.2 Components 2 and 3: Price catalysts

Some circumstances precipitate QS consultancy price levels and robustness remotely. This research study christened those price hastening circumstances as *price catalysts*. The price catalysts are categorized in ***components 2 and 3*** comprising of inflation, production shortfall, government policies and input prices with factor loadings of .659, .799, .868 and .816 respectively. The chi square test of hypothesis demonstrated clearly that QS consultancy services price levels are significantly dependent on inflation; production shortfall; effects of input market; and government policies. In the light of the above, the pricing sub framework is depicted in ***figure 5.5.4.2*** below.

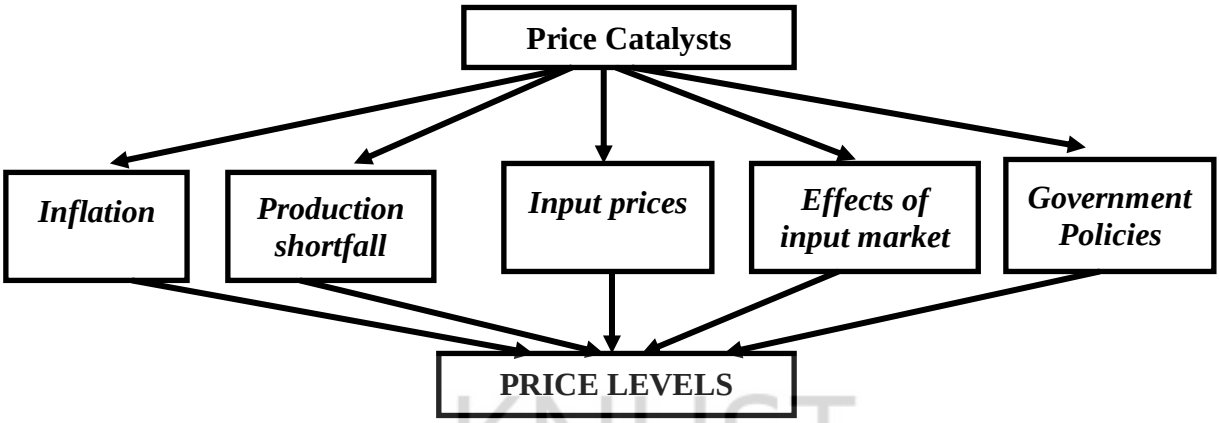

Figure ***5.5.4.2: QS consultancy price catalyst sub framework***

So far it has been realized that the QS consultancy price levels and robustness are affected by risk and tax liabilities of the consultancy entities. These key variables of risk and tax liability will depend on the location of the consultancy firm and the environment of the consultancy engagement hence location has the potential of altering the gauge of QS consultancy services pricing. Combining ***figures 5.5.3.3a, 5.5.4.2 and 5.5.4.1*** above produces a combined pricing framework for risk, taxes and price catalysts would produce a sub grand framework demonstrated in ***figure 5.5.4.2a*** below.

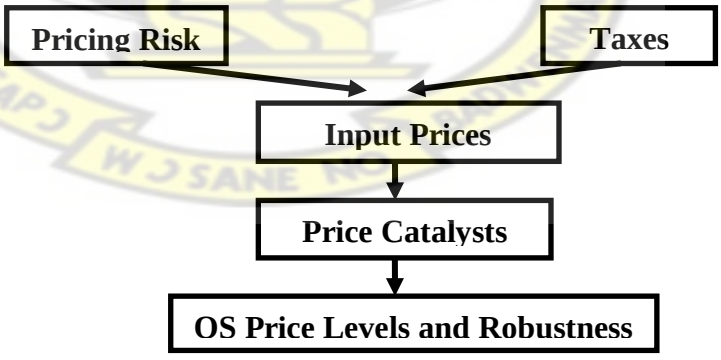

Figure ***5.5.4.2a: QS pricing level and robustness, sub grand framework***

5.5.5 Quantity Surveying Consultancy Services Pricing Components

5.5.5.1 Component 1: Office Management

Office management is important in every corporate organization. Costs are incurred in the management of offices which must be recovered through pricing, ***Component 1*** comprises of staff allowances; office rent; and supplies and equipment with factor loadings of .776, .755 and .783 respectively. The sub framework in this regard is depicted in ***figure 5.5.5.1*** below.

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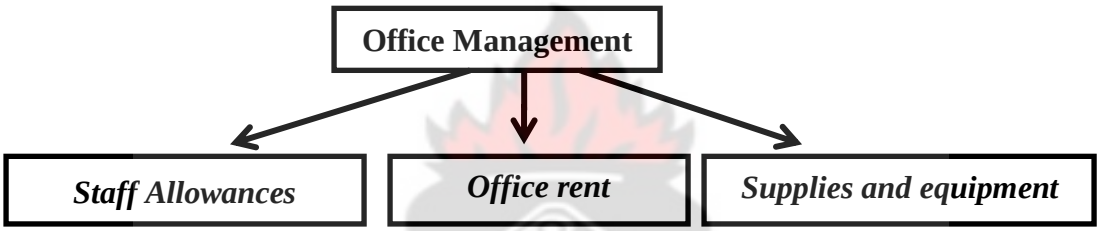

Figure ***5.5.5.1: QS pricing sub framework for office management***

5.5.5.2 Component 2: Overheads

Overheads are expenses incurred as a result of providing services to clients. They are expenditure indirectly related to the core services of the consultancy engagement but are needed to keep the consultancy machinery moving. ***Component 2*** examines the composition of overheads for QS consultancy pricing. It consists of insurance, contingencies; taxes and duties with factor loadings of .779, .828 and .546 respectively. Earlier, respondents gave consideration to taxes. Hence it is appropriate to ignore the component related to taxes and duties to avoid double counting or taxation. Therefore the pricing sub framework is depicted below in ***figure 5.5.5.2*** below.

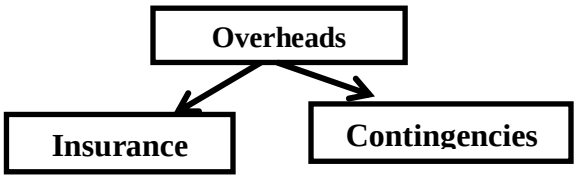

Figure *5.5.5.2: Overheads pricing sub framework*

5.4.5.3 Component 3: Administration and Training

Consultants are often engaged for the training of individuals of corporate organizations or professional bodies. The expenses incurred in providing the training services must be recovered for the consultant to stay in business. ***Component 3*** is designated administration and training. It comprises of variables: travel and transport; communications; training programmes and report preparation with factor loadings of .817, .555, .771 and .616 respectively. Observing the factor loading of these variables, it is appropriate to ignore communication because it has a mediocre eigenvalue value but practically, it is impossible to successfully render consultancy services without employing various forms of communication with the client. Therefore, it is appropriate to include communication in the framework. Hence the sub pricing framework for this component is demonstrated in ***figure 5.5.5.3*** below.

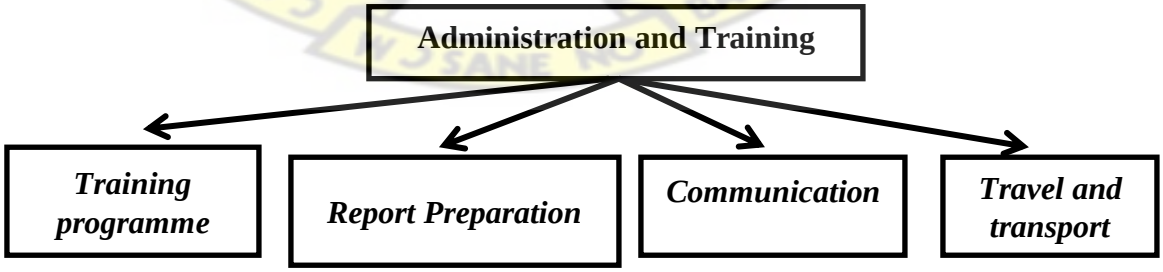

Figure *5.5.5.3: Administration and training sub pricing framework*

5.5.5.4 Component 4: Reimbursement and Payments

It is important to reimburse or reward the consultant for services provided to clients. ***Component 4*** comprises of consultant staff remuneration; mobilization and demobilization; and profits with eigenvalues of .562, .512 and .817 respectively. Examining the eigenvalues, it is apposite to ignore consultant staff remuneration; and mobilization and demobilization; and consultant staff remuneration was earlier considered under the component *office management*. The sub pricing framework in terms of reimbursement and payments is demonstrated in ***figure 5.5.5.4*** below.

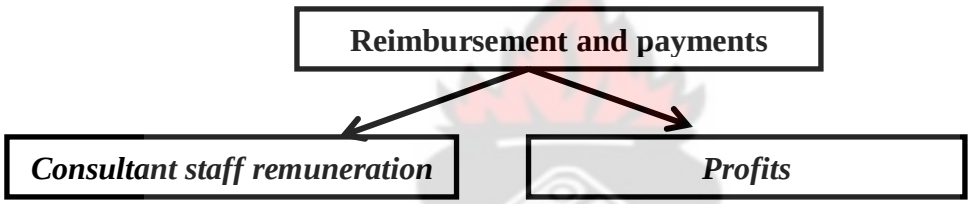

Figure ***5.5.5.4: Reimbursement and payments sub pricing framework***

5.5.6 Challenges confronting Quantity Surveying Consultancy Practice

Every professional practice has its own challenges. In like manner, quantity surveying practice has its own challenges bedeviling the profession in diverse ways. It is therefore appropriate to examine the critical challenges inimical to the vivacity of QS professional practice.

5.5.6.1 Component 1: Contractual and technology challenges

This component comprises of variables: slow responses to changing contractual arrangements; lack of appropriate response to emerging services; slow response to information and communication technology revolution; and inability to integrate applied research outputs into practice with eigenvalues of .735, .803, .755 and .719 respectively. Practically, the QS profession is noted for being conservative to the application of

information technology and research integration. However, the current wave of research revolution on building information modeling (BIM) gives much hope to overcoming these challenges.

5.5.6.2 Component 2: Pricing Challenges

QS consultants are confronted with pricing challenges. These are categorized in ***component 2*** as reducing fees to loss making territory; exposure to risk; and decrease in project value with eigenvalues of .840, .842, and .686 respectively. The respondents consider these challenges as having moderate impact on the pricing of services. In a situation where fees are tied to the total cost of the entire project, the fluctuation or the unstable nature of the project as a result of variations introduced will affect the level of consultancy pricing.

5.5.6.3 Component 3: Market forces

Market forces influence pricing and should not be ignored. From ***Table F31***, these market forces have been categorized under ***Component 3*** as the changing nature of demand; and impact of competition with eigenvalues of .618 and .886 respectively. It is therefore vital for practitioners to be very cautious of market forces. QS professionals are also facing challenges from other professionals who are venturing into QS practice. This scenario looks ugly for the traditional practitioners of the QS profession as it is bound to create stiffer competition within the QS consultancy market. For instance, Rahim *et al*. (2013) clearly pointed out that the scarcity of projects in the construction industry is a catalyst for competition among quantity surveying practitioners. Another phenomenon of competition in the quantity surveying profession is fee competition (Rahim *et al*., 2013).

5.5.6.4 Component 4: Professional fees

In most cases, professional fees in the construction industry especially quantity surveying fee in many jurisdiction are determined by professional bodies and political authorities(Rahim *et al.*, 2013), which are not left to demand and supply as it pertains in other consulting nomenclature like management consultancy. ***Component 4*** contains only fluctuations in professional tariff of fees with eigenvalue of .910.

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5.5.7 A Generic Framework for Pricing QS Consultancy Services

Having examined the pricing issues empirically through the development of sub frameworks above, it is now time to develop the ***generic*** (*all-embracing*) framework that will reflect the realities of pricing quantity surveying services. This ***generic*** (*all-embracing*) framework metamorphosed from ***figure 5.5.1.3a; figure 5.5.2.3; and figure 5.5.4.2a*** respectively is demonstrated in ***figure 5.6*** below.

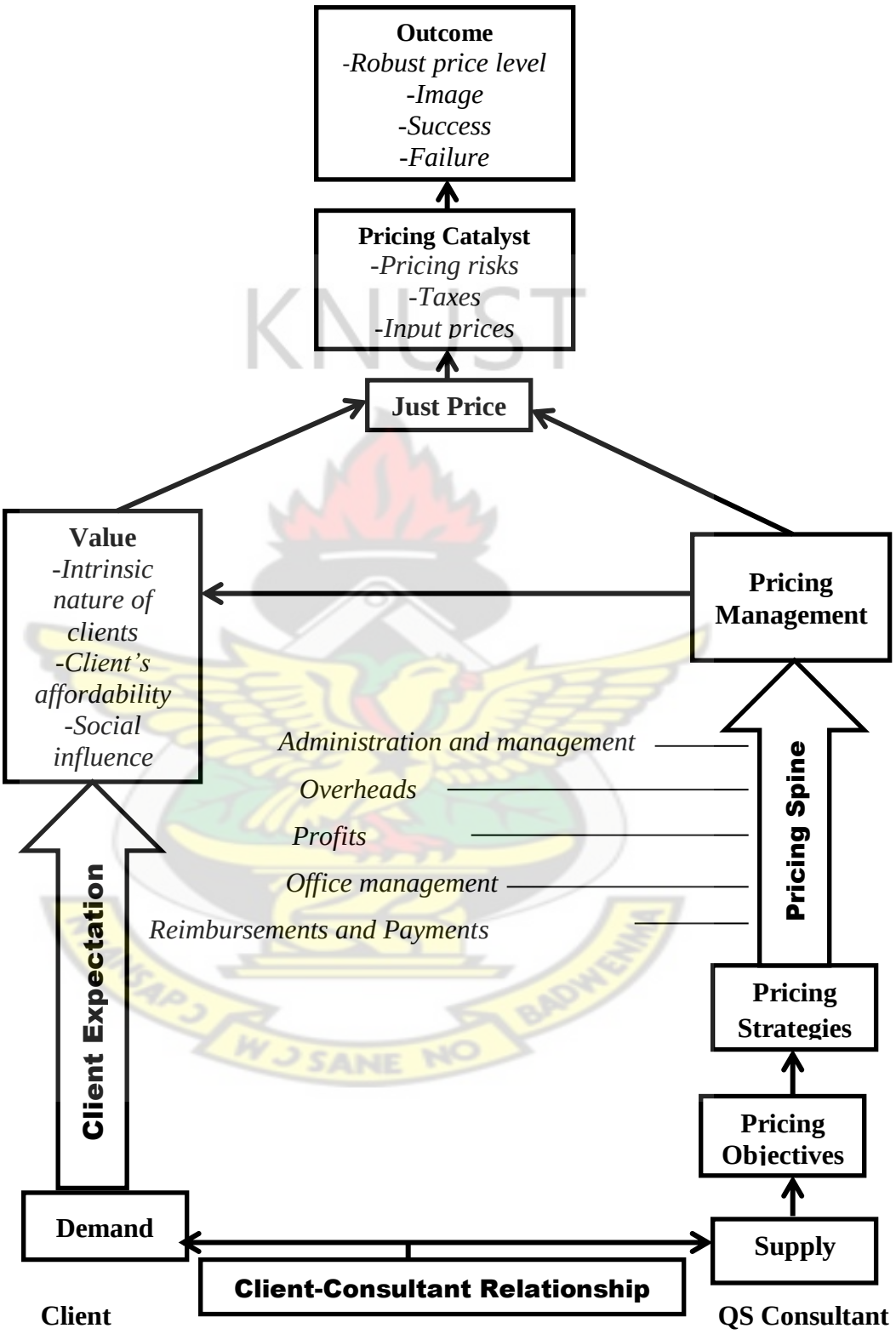

Figure *5.6: A framework for pricing quantity surveying consultancy services*

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This research study commenced with the target of extensively delving into the dynamics of quantity surveying consultancy services pricing. The five chapters undertaken hitherto the commencement of this chapter have concentrated on theoretical framework for the research; literature and conceptual milieu of the research agenda; the methodological dimensions including philosophical underpinnings of the research; and analysis and discussion of results leading to the development of framework for pricing.

This chapter ties the knot on the research endeavor by addressing 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.

6.2 Review of Research Objectives

The main aim of this research was to explore Quantity Surveying (QS) practice in Ghana, and to develop a generic framework for pricing QS professional consulting services in Ghana. To achieve this novel aim of the research, four key specific research objectives were set to effectively drive the agenda as follows:

Objective 1: To conduct a critical literature review of pricing and consulting practice

Critical issues concerning the consultancy services pricing environment of the quantity surveying profession were reviewed to identify the trends in practice. The review was also

necessitated by the need to be abreast with the current quantity surveying and research environment to take sound decisions concerning what should be investigated. The review aided in the identification of the knowledge gap and research gap as far as this research is at stake. The review of extant literature concentrated on key issues notably general consultancy practice; and a theoretical framework on pricing and its allied concepts which are needed in the development of a robust pricing framework. The theoretical framework culminated in to the postulation of key hypothesis in which the dependent variables (DV) were pricing, price robustness and price levels and several independent variables (IV) (*refer to chapter three for more details*). The literature review revealed a gap in research as far as the pricing of quantity surveying consultancy services are concerned. This lacuna in knowledge and research is not related to quantity surveying services pricing alone but in other consulting practices as well.

Objective 2: To explore the potential challenges confronting Quantity Surveying (QS) consultancy in Ghana

Challenges confronting corporate organizations would affect their business transactions culminating into weak pricing strategies which can cause the collapse of business entities if they are not able to recover the cost of operation among others in the provision of goods and services. Quantity surveying practice is no exception as far as challenges confronting business entities are concerned. This study explored the challenges confronting quantity surveying consultancy practice and found changing nature of clients' demand; impact of competition; complexity of modern construction projects and slow response to information and communication technology revolution as the general challenges confronting quantity

surveying consultancy practice. On pricing challenges, the study revealed exposure to risks; and decrease in project value by inflation. However, price-related challenges are perceived to be moderately significant in the pricing of quantity surveying consultancy services except in the cases of market forces. This therefore implies that the general challenges are the most severe challenges confronting quantity surveying practice. Risk of various dimensions posing as challenges to quantity surveying consultancy services pricing identified by the study have been categorized as directly related to the activities of the consulting firm include financial risk; market related risk; and technological risk. Indirect risk which are risks occurring at the various stages of the project implementation were identified by the study as financial risk; legal risk; political risk; and regulatory risk. Using the factor analysis, these risks were further classified as corporate internal risk; corporate external risk; and location risk (***political risk and force majeure***).

Objective 3: To establish the key determinants (indicators) in pricing QS consultancy service practice

The study also sought to identify the key determinants of quantity surveying consultancy services pricing. The study unfolded the key determinants as demand for quantity surveying services; taxes and inflation; amount of cost incurred in service provision; various forms of risks as identified in ***objective 2*** above; inflation; effects of input market; service cost management; value; social influence (*media and pressure groups*); pricing strategies adopted; profit; and duration of service provision.

Objective 4: To develop a generic framework for pricing QS consultancy services based on the identified indicators

In achieving the above objective which is the grand agenda of this study, the researcher combined the results and discussion conducted using statistical tools: relative importance index, chi-square test of hypothesis to ascertain the relationship between the dependent variables and independent variables; and the factor analysis to identify the underlying common factors among these pricing variables. The discussions led to the development of the generic framework depicted in ***figure 6.1*** below.

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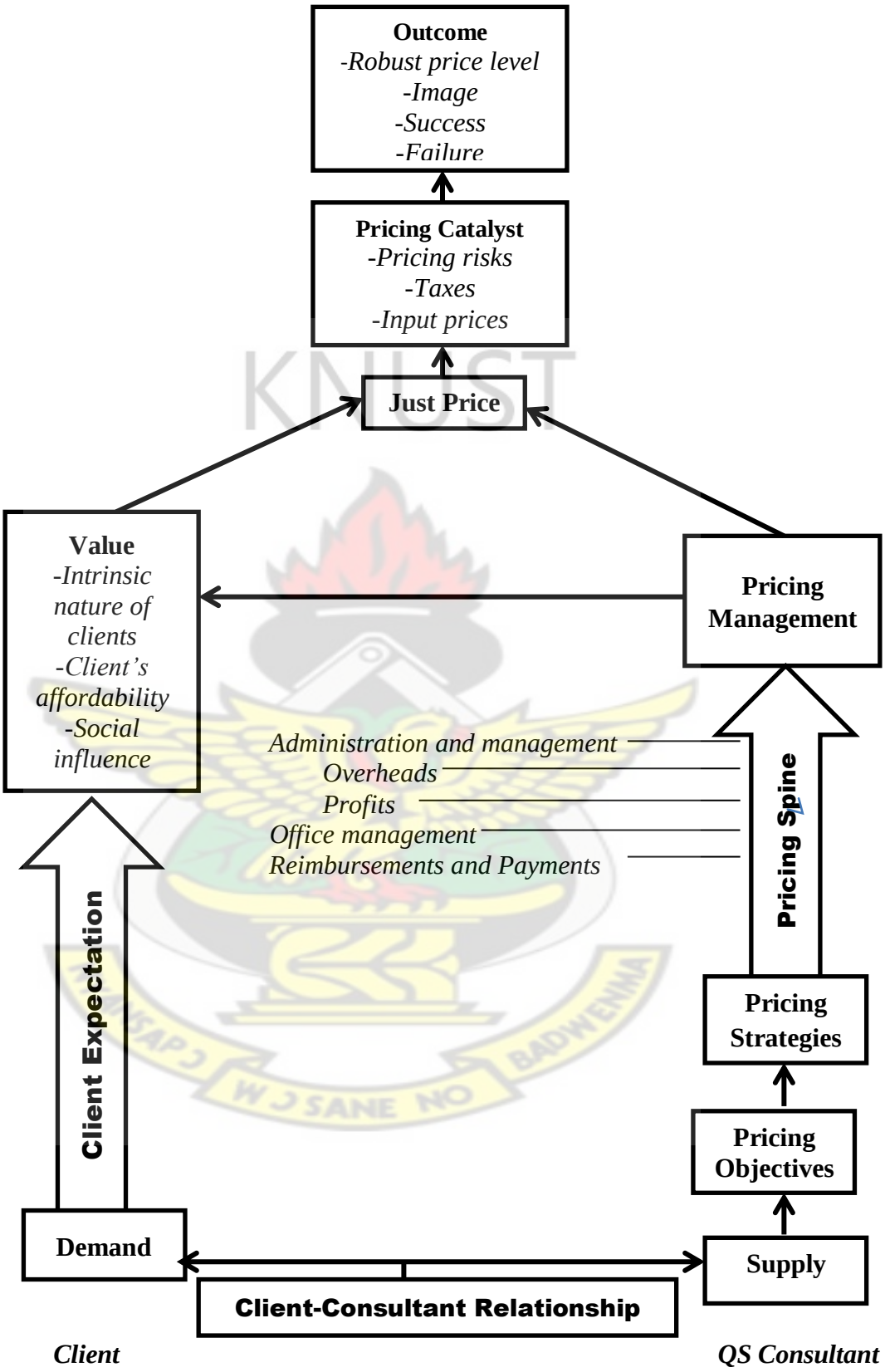

Figure 6.1: A generic framework for pricing quantity surveying consultancy services

6.3 Findings of the Research

In addition to the findings under the ***review of research objectives*** above, other findings identified by the research study which are crucial to the pricing of quantity surveying consultancy services include:

- indirect risks associated with projects are significant pricing variables that can change the levels of consultancy services pricing;
- financial risk is both direct and indirect consultancy services pricing risk of major proportion;
- when cost of consultancy services is high all components of consultancy services pricing will be proportionally high except profit and contingencies;
- the dominance of capitalism has weakened the power of professional bodies in price determination and control leading to haggling between demand (client) and supply (consultant) to set consultancy services price levels hence price-related challenges are deemed to be moderately significant in the pricing of quantity surveying consultancy services except in the case of market forces;
- QS consultancy price levels and robustness are affected by risk and tax liabilities of the consultancy entities;
- corporate external risks are not directly related to the core activities of the QS consultancy firms but they have the potential to affect QS consultancy services pricing;
- social influence affect the value system of the client through media advertising, marketing and the actions of consumer protection groups will exert pressure on price setters;

- intrinsic values of clients have the potential of influencing the affordability of QS consultancy services; and

6.3.1 Special Relationships Identified

The discussion of the results involving the two main statistical tools employed for this research study in ***section 5.4 of chapter six*** culminated into the above generic framework for quantity surveying consultancy services pricing in figure 6.1 above. This has led to the creation of key relationships among some of the variables involved in the study by other variables equally involved in the study. These relationships were discovered during the development of the various subclass frameworks and include the following:

- A relationship has been created between profitability and pricing strategies. This means that the type of pricing strategy adopted by the quantity surveying consultant would determine the level of profit to be enjoyed from services rendered to clients;
- There is a relationship between pricing objectivity and pricing strategy. This implies that the objective of pricing would determine the pricing strategy to be adopted;
- Time taken to render service to clients has a bearing on business management and service cost management. This means that the cost of service provision is proportional to the duration of the service provision; however, adoption of appropriate business management practices would determine whether higher or minimal service cost would be incurred; and
- Production of timely reports is related to business management, service cost management, technical and financial capabilities.

6.4 Contribution to Knowledge

The relevance of a research is measured in terms of its contribution. All over the world higher education institutions set their parameters for contribution to knowledge. Thus what counts as a contribution to knowledge may slightly differ from institution to institution but there are commonalities among these parameters for determining contribution to knowledge by a research work. For instance, Gray (2011) identified five criteria for determination of contribution to knowledge as:

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- literature review to demonstrate what counts as knowledge in the area of discourse and establishing what is currently known in the area of research study;
- development of frameworks (models);
- publications;
- contributions to methodology; and
- formulas.

The generic framework for pricing consultancy services contributes to knowledge in diverse ways by the combination of the various facets of pricing dynamics into a simpler, manageable, and comprehensive entity for price setters of consultancy services and others alike. The key findings of the research regarding ***value*** emphasized the need for ensuring value in pricing QS services which hitherto pricing knowledge transmission has not been robust. This is very significant in the case of knowledge transmission to provide value pricing in consultancy services provision to clients especially in the arena of quantity surveying. The pricing catalysts comprising pricing risks, taxes and input prices have added to the dimension of pricing consultancy services especially in terms of potential risks that

can alter the robustness and level of consultancy services pricing. A pricing knowledge in area of the identified pricing catalysts by this research provides solid foundation for understanding pricing situations faster. This leads to quick analysis of consulting engagements to price effectively. In addition, this study identified special pricing relationships among key pricing variables of profitability and pricing strategy; pricing objectivity and pricing strategy; and the concept of consultancy duration and its bearing on business and service cost management. The knowledge of these special pricing relationships improves the knowledge base of consultancy services price setters. The systematic manner of developing the generic framework through the development of subclass pricing frameworks has added to the understanding of consultancy services pricing phenomenon that pricing within the QS consultancy practice should be systematic and methodical.

6.5 Recommendations for Practitioners

In view of the findings of this research, it is appropriate to recommend vital issues for consideration by consultancy practitioners and other stakeholders as far as consulting practice is concerned. These recommendations include the following:

- it is important for price setters in the consulting industry to envisage the risks in relation to consulting engagements for which they are employed to provide services;
- the low ranking of various taxes except VAT/NHIL means non-payment of taxes or tax evasion by consultants dealing with private sector clients as a result of the inability of the tax authorities to locate consultants to fulfill this statutory obligation due to improper planning and layout of offices. This finding is a pearl for the tax

authorities to dwell on in expanding their tax net to mobilize more revenue for government coffers for development;

- it is equally important for consulting entities to take due cognizance of inflation and its causes that will affect consultancy services pricing;
- practically, clients are interested in the duration of service delivery, the consultant can only meet this expectation by using experience in sound business management to ensure value for money thereby meeting timelines, cost and quality expectations of clients;
- the objective of the firm determines the pricing strategy to be adopted in setting prices hence QS consultancy practitioners must be mindful of their roles and bear in mind that setting price for clients will either affect their image and ultimately their success in consultancy business; and
- the impact of market forces on QS consultancy services pricing is much higher than other challenges. It is therefore vital for practitioners to be very wary of the market.

6.6 Future Research Agenda

This study has its own shortcomings as it cannot cover all aspects of the consultancy services pricing agenda. It is therefore appropriate to turn these shortcomings into future research to be undertaken. The future researches as far as this study is concerned evolved from the analysis and discussion of the research results (***see for instance chapter five***) include:

- a further research agenda to explore the in-depth dynamics of pricing objectives with much emphasis on their influence on price levels will be a novel research undertaking;
- it is therefore necessary to determine the parameters for the ascertainment of value of services provided by QS consultants to their clients, this phenomenon has not been addressed by this study hence a research agenda to determine the parameters for value of services will be novel and apt;
- Similarly, a study to determine the willingness to afford or pay (WTP) by clients for consultancy services will be a step in the right direction;
- having established the evidence of these variables (demand, cost, competition and profit) as the fundamentals of pricing, it is novel that a further research at advanced level be conducted in an in-depth manner on the dynamics of each of these variables in influencing consultancy services pricing;
- it is important to explore the nature of consultancy financial risks, to establish its true level of influence and other associated encumbrances in pricing;
- this study has not critically examine the key aspects of value pricing, it will be necessary to conduct a future study to explore the dynamics of value pricing as far as QS consultancy services pricing is at stake; and
- a further empirical study on the relationship between economic development and demand for consultancy services would be a novelty to undertake at a higher level of research.

6.7 Conclusions of the Research

It is important to examine the various aspects of the generic framework developed from this research work viz-a-viz the circumstances surrounding a particular consulting engagement during service delivery to clients. It should be noted that the utilization of this framework is subject to the manipulation of the quantity surveying services price setter since practitioners would operate under different ambiance all the time. In short, the framework should be used in relation to the circumstances of the consultancy service price setter.

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The adoption of this framework for practice has the potential of providing consultancy practitioners the opportunity to estimate realistic prices based on the nature of their service delivery. The generic framework also provides an opportunity for reflections on consultancy engagements in order to engage in the right caliber of practices that would inure to the profitability and sustenance of consultancy firms.

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APPENDICES

APPENDIX 1: QUESTIONNAIRE

This research is a Postgraduate level research entitled "A Generic Framework for Consultancy Service Pricing: The Case of Quantity Surveying Practice (QSP)" and intends to identify the challenges confronting QSP; to establish the key determinants of pricing QS consultancy services; and to establish a framework for pricing QS consultancy services. **Please , kindly respond to the questions by ticking(√) the appropriate box for each item. Please note that all information provided will be strictly treated as confidential as this work is for academic purposes.**

KNUST

Firm Status

1. What is the status of your firm?

A. Enterprise / sole proprietorship [ ]
B. Private Limited company [ ]
C. Partnership / Joint venture [ ]
D. Other (Please specify) …… [ ]

Years of Experience

2. How long has the firm been in existence?

[ ] under 10 years [ ] 11 – 20 years [ ] 21 – 30 years [ ] over 30 years

Rate of work acquisition

3. How frequent do you render consultancy services to clients?

[ ] Not frequent [ ] moderately frequent [ ] frequent [ ] very frequent

Sectors of operation

4. Which of the following sectors do you render services frequently? Use the key: 1= Not frequent 2= Less frequent 3= Moderately frequent 4= Frequent 5= Very frequent.

Sectors	1	2	3	4	5
Building construction					
Civil and structural engineering					
Mechanical building and engineering services					
Petro-chemical					
Mineral extraction					
Urban planning					

Concept of Price and Value

5. How significant does your pricing decisions depend on the following factors? Use the key 1= Not significant 2= Less significant 3= Moderately significant 4= Significant 5= Very significant

A. PRICE AND VALUE	1	2	3	4	5
Value of a product or service					
Affordability					

B. JUST PRICE					
The Government					
Media action					
Pressure Group					
Seller's profit					
Customer's intrinsic value					
Customer's affordability					
C. IMPORTANCE, OBJECTIVES AND GOALS OF PRICING (ROLE OF THE FIRM)					
Firm's objectivity					
Firm's failure					
Firm's success					
Firm's image					
D. PRICING STRATEGIES					
Cost					
Profit					
Demand					
Competition					

Project Pricing (Consultancy Pricing)

6. How will the following influence your consultancy services pricing decisions? Use the key 1= Not significantly 2= Less significantly 3= Moderately significantly 4= Significantly 5= Very significantly.

A. PRICING PARAMETERS/ CRITERIA	**1**	**2**	**3**	**4**	**5**
Time taken to solve the problem					
Materials used on the project					
Good financial control system					
Record of past project costs					
Accurate forecast of future cost					
Production of timely reports					
B. BID PRICE SUCCESS IS DEPENDENT ON					
Financial capacity					
Technical capacity					
Firm's experience					
Duration to render the service					
Firm's reputation					
Business development					
Overhead and profit					

KNUST

Concept of Risk

7. To what extent does the following affect your pricing decision? Use the scale: 1= Not significant 2= Less significant 3= Moderately significant 4= Significant 5= Very significant

A. PRICE AND RISK	1	2	3	4	5
Associated business risk					
Financial risk					
Market related risk					
Logistical and infrastructural risk					
Managerial and operational risk					
Technological risk					
Organizational and societal risk					
B. RISKS AT VARIOUS STAGES OF PROJECTS AFFECTING CONSULTANCY PRICE LEVELS					
Financial risk					
Legal risk					
Regulatory risk					
Political risk					
Force majeure risks					

Concept of Taxation and inflation

8. How significant would the following influence your pricing decisions? Use the key: 1=Not significant 2=Less significant 3= Moderately significant 4= Significant 5= Very significant

A. TAXATION	1	2	3	4	5
Personal income tax					
VAT/ NHIL					
Corporate tax					
Profit tax					
Local rates					
Property tax					
B. INFLATION					
Input prices					
Inflation					
C. INFLATIONARY CAUSES AFFECTING CHANGE IN CONSULTANCY PRICE LEVELS					
Production shortfall					
Effects of input market					
Government policies					
International trade and trade barriers					

Quantity Surveying Consultancy Services Pricing Components

9. How significant are the following quantity surveying consultancy pricing components in your price build-up? Use the key: 1= Not significant 2=Less significant 3=moderately significant 4= Significant 5=Very significant.

A. Pricing Components	1	2	3	4	5
Consultant staff remuneration					
Travel and transport					
Mobilization and demobilization					
Staff allowances					
Communications					
Office rent					
Supplies and equipment					
Training programmes					
Report preparation					
Insurance					
Contingencies					
Taxes and duties					
Profits					

Challenges confronting quantity surveying consultancy practice (Odeyinka, 2006; Eke, 2006; cartlidge, 2002; Cruywagen and Snyman, 2005)

10. How would you rate the following challenges confronting quantity surveying consultancy practice? Use the scale: 1= Not Severe 2=Less severe 3=Moderately severe 4=Severe 5= Very severe.

A. GENERAL CHALLENGES	1	2	3	4	5
Slow response to changing contractual arrangements					
Challenge of appropriate response to emerging services					
Slow response to information and communication technology revolution					
Inability to integrate applied research outputs into practice					
Changing nature of clients' demand					
Impact of competition					
Complexity of modern construction projects					
B. PRICING/FEES CHALLENGES					
Reducing fees to loss-making territory					
Exposure to risks					
Decrease in project value					
Fluctuation in professional tariff of fees					

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APPENDIX 2: Random Number Table used for sample selection

	1	**2**	3	4	5	6	7	8	9	10
1	**8450**	6992	6563	0340	2649	6933	9446	6182	2601	7800
2	5952	1443	7100	8444	3904	0159	1849	2601	9763	9058
3	5711	6779	9388	9668	4167	1423	2744	4622	2179	8503
4	2681	8047	0494	7853	8411	5406	8127	9577	8530	2350
→ **5**	0739	3114	3997	3482	3226	2216	6874	0620	8521	2938
6	8985	2463	5054	3448	6357	0187	6342	4740	4064	5068
7	7644	9339	8375	4583	7715	6355	6827	2055	9328	3287
8	6277	6631	8797	3693	6370	1436	1599	6267	2758	0323
9	6355	7590	7628	9054	0022	4241	7499	3430	3644	6576
10	7828	0589	3075	1954	5972	2266	0055	1097	9706	9009
11	6026	4546	4119	1554	4895	3123	9849	2094	5062	6711
12	8416	1972	9345	1593	2943	2379	5062	4829	5952	8292
13	1433	8823	7706	5273	6160	2161	5510	8617	7894	0175
14	0622	4884	8113	4447	5735	6347	7280	2301	2330	0693
15	4104	7164	1184	3964	2119	6968	0469	3827	0845	8400
16	4272	4979	1471	0942	9573	4283	1557	0161	3957	2516
17	1225	4171	3433	8700	0042	5884	2508	3250	1520	6366
18	7442	6575	1927	7267	7182	3960	4341	0350	1126	5945
19	4911	9007	3048	0319	0916	3002	1466	4421	7246	7662
20	3143	7402	4486	0909	1858	7961	1211	6296	5545	4588
21	8055	9294	2578	0426	4322	6925	2487	5677	9491	4301
22	9240	5260	7134	8001	0140	3394	8437	4066	2855	0933
23	7923	8630	3654	2638	2868	1059	0903	3114	6351	8261
24	0020	5104	4344	3324	9214	6615	5926	7012	9052	9205
25	3312	5923	5469	9171	4877	5392	3394	5077	3750	5637
26	3466	4193	5330	4680	0456	5891	3175	5733	5678	0956
27	1677	1694	1697	8921	2520	2811	3597	1355	9605	3637
28	3846	6283	0969	0051	5857	1043	1671	2013	8955	7706
29	8084	2327	0550	7231	1087	4830	9742	5654	5458	8290
30	2715	2247	4504	1374	9236	7340	1773	0693	2749	1335
31	6537	5815	9312	1460	6593	7678	4312	7537	9360	7195
32	4263	8931	1642	6694	1925	2661	1274	7346	8234	3159
33	7468	4077	6691	3961	7640	2355	9938	8485	9398	8364
34	4884	3324	3690	7433	1245	0523	4483	5933	5634	0512
35	7222	7299	1346	8937	0933	1569	5562	3735	2982	5966
36	5040	0820	8606	4006	4743	6343	4873	1002	4757	1075
37	2980	4860	5694	1501	5791	9414	7246	1283	9766	7427
38	8660	5480	7436	9745	8869	3307	4916	6543	9830	6099
39	7627	4959	6417	3542	1877	0370	5464	9590	5184	7379
40	1890	7664	7144	3523	8465	0385	8174	4740	3654	5543
41	3175	2580	3919	7436	0796	1018	5565	1142	4577	0457
42	7616	9338	6304	0283	6502	9085	5443	1531	9724	4140
43	5223	4525	0895	9930	0050	2201	5270	6447	1850	2070
44	9384	9794	8418	0374	4119	2075	0067	4535	7769	4719
45	5862	9165	5302	9789	5771	9670	7523	9280	2604	0212
46	9450	9307	6597	7183	5243	8854	6735	2415	0364	3096

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