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EXAMINING THE EMERGING CAREER TRAJECTORIES IN QUANTITY SURVEYING IN GHANA

By

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MSc CONSTRUCTION MANAGEMENT

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DECLARATION

I hereby declare that this submission is my own work towards the MSc Construction Management and that to the best of my knowledge it contains no material previously published by another person nor material which has been accepted for the award of other degree of the university, except where due acknowledgement has been made in the text.

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ABSTRACT

The Quantity surveying career has been revitalized during the last few years since developing demands for building and variations in the business and the building procedure bid both trials and chances. In Ghana, the profession has reacted to the increasing demands of clients and the public with the emergence of new career trajectories to enable the profession be more valuable in offering extended services. This study therefore purports to examine the emerging career trajectories in the Ghanaian Quantity Surveying Profession with the view to establishing the different aspects of these career trajectories within the Ghanaian profession, also to determine the level of adaptation within the construction industry and its effects on the professional and lastly the challenges associated with its emergence. Qualitative and quantitative research approaches were used in tandem. Using a triangulation of survey, interviews and observations and a simple random sampling technique, data was collected from 75 professionals who have had considerable experience in the field of quantity surveying. The study revealed among others that there are emerging career trajectories such as investment appraisal, procurement services, whole life costing, risk management, value management, facility management, project management, environmental services and costing, technical auditing, sustainability advisors and sub contract administration. Although these emerging career trajectories have been adapted within the construction industry there are however shortages of competencies in some areas such as investment appraisal, environmental services and costing and sustainability advisors. The effect of these services has had positive impressions on the profession as professionals have become more valuable and competent in the rendering of services. However, there are challenges associated with such career paths such as the role of leadership and the competency level of the professional within these emerging trajectories. Informed recommendations such as strategy partnership with countries that has developed these emerging trends, training and

development in areas of low competencies level i.e sustainability advisors, environmental services and cost and investment appraisal are encouraged. The profession should also be customer focus since the client satisfaction is the ultimate aim in our service.

Keywords: Quantity surveying, career trajectories, competency, construction, Ghana.

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DEDICATION

This work is dedicated to my wife Mrs Eunice Nortey and my boys David, Jude and Joel.

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GENERAL INTRODUCTION

1.0 INTRODUCTION

This section provides overture of the thesis brings to light the background and statement of problem to the investigation study. The aim and objectives are defined to provide parameter as to how the researcher intends to address the issues raised in this study. This is followed by defined scope of the thesis which addresses the conceptual and geographical locations. The research methodology is also discussed and the significance of the research is outlined. The general structure of the study presentation is also explained.

1.1 BACKGROUND

Lee (2015) states that Infrastructure development is the cornerstone to spur the economy of every African nation. It has been stated that in order to meet the Millenium Development Goals (MDG) by 2015 infrastructure investment in Africa would need to reach about 15% of GDP (around $93 billion a year). The achievement of such infrastructure development requires the services of built environment professionals and engineering professionals mainly Quantity Surveyors, Architect, Valuer, Planner, Project manager, Construction manager, facility manager and builders (Musa et al., 2010). These professionals bring their expertise's to bear in advisor position and also in the implementation of the infrastructure development. One of such within the built environment is the quantity surveying profession.

The Quantity Surveying (QS) profession globally has undergone momentous revolution and has embraced career pathways and services provided both within and outside of the construction industry (Ashworth, 2013). These vagaries have become imperative due to the dynamic nature of

clients, public technology and increased levels of competition for services. This obviously has seen the profession offering wider services to clients in addition to the traditional services in order to be more valuable both within and outside the construction industry.

Quantity surveying is not a new profession but a profession that has been with the human race since time immemorial. Although it was not formally developed in the pre-historic days, human find a way of making necessary estimates of cost of materials and the whole endeavour in constructing their building. This was a very typical system practiced everywhere especially with Egyptians who built most of their sphinx and pyramids by such. However, a more formalized way of the profession was developed by the British in 17th century which provided a scientific and grandeur to the profession (Ofori, 2012).

Principally the quantity surveyor (QS) is the project cost professional and the advisor to the client and additional participants of the task players on difficulties connecting to procurement and agreement (Fellows et al., 2003). However, in recent times, other duties of the QS are emerging in the built environment where the frontiers of QS are being expanded to control more than the traditional duties in which Ghana is no exception. Cartlidge (2006) confirm that a career wellthought-out to be incrustation extinction a decade ago has been revitalised and been a great demand for its services in the building market in many countries.

The profession of quantity surveying has been revitalized through the most recent few year rising demands for construction and changes in the industry and the construction process offers both challenges and opportunities.

In view of the usual and future trials, quantity surveying is perceived as a profession at an imperative mountain after which it can go outside its out-of-date cost production and economic

managing title role and use it core competence to adopt a direction part within the built environment (Ofori, 2012). In demand to realize this and additional theoretically useful ingenuities, the quantity surveying profession requires control to effort the effort concerning developing the prospects (Ofori, 2012).

If Ghana wants to achieve the best out of these emerging trends and provide leadership in the construction industry, then there is need to examine the phenomenon to offer positive directions.

1.2 STATEMENT OF PROBLEM

Chalkley (1990) stated that professions are principally creatures of community demands. Professions remains in existence because of continuing recourse to them by the community. Quantity surveying training in Ghana has always been British. The profession which began as a building accountant incorporated, with time, costing and allowed the quantity surveyor the performance of the role of a cost advisor in construction. The quantity surveyor in current era built environment examine component of cost of building project in a systematic means and relate the outcomes of investigation to a diversity of economic difficulties challenging the designer and the designer (Badu, 2004).

In this regard, the profession performs consultancy services to governments and companies assisting improve performance through analysis of problems and development of solutions. This takes the form of exchange of preeminent performs, systematic methods, modification managing and training abilities, know-how application, approach expansion, or simple an outsider' viewpoint (Owusu-Manu et al., 2012). This consultancy can be done on an individual basis or as consortium.

The Royal Institute of Chartered Surveyor (RICS) well-defined the Quantity Surveying works as guaranteeing that means of the building industry are developed to the greatest benefit of the world by given that inter alia, the economic controlling for a project and budget advisory services to the designer and client throughout the entire of the building course (Ashworth et al., 2013). Traditional services by the quantity surveying profession includes the production of bill of quantities, builder's measures, estimating cost planning/budgeting and contract administration (Smith, 2004).

Nevertheless, various trends of career trajectories have emerged within the quantity surveying profession within the few decades. Numerous authors devise commended modernization in positions of its skill to produce price, attain incremental development to organizations or creation and eventually, decrease charges (Owusu-Manu, et al., 2012; Drucker, 1995; Mohanty, 1999; Radjou, 2006). The varying occupational setting is driving administrations/professions to continually modernize and consequently participate efficiently. A key factor here is the ability to quickly adapt and meet strategic goals (Rasli, 2004).

A report by RICS indicates a superior growth of likely services that can be perform within and outside the building industry (Ashworth, et al., 2013). Since the advent of the millennium quantity surveying professional has diversified addicted to non-local regions such as viability readings, life cycle cost analysis, tax policy information, adjudication/arbitration, skilled observer/assessment, valuations of insurance, management of risk, excellence controlling, value management, facility management, project/construction management among others (Smith, 2004).

According to Smith (2004) the advancement of IT delivers the profession through massive occasion to really reinforce our station in the business as this will place the quantity surveyor to

develop the main info handler on building projects. However have these emerging trends been examined to understand its nexus to the Ghanaian Construction Industry?

Most quantity surveyors in Ghana appear to be used to the preparation of estimates, valuation of contractors work done, contractual issues and pre-tender issues with regards to procurement Chong (2012) documented that the environment for quantity surveying exercise nowadays has reformed sideways per the nation speedy financial expansion. Many authors in current years have stated on the evolving parts of the quantity surveying together with the changes in the built environment (Page et, al., 2001; Page et, al., 1999; Boon, 2001; Fellows et, al., 2003; Hardie et, al., 200 5; Fadhlin and Ismail, 2006)

During the last 20 years there are various writers who have commented on the future parts of the quantity surveying within the building industry. Ghana as a nation is undergoing a rapid infrastructural development both in the cities and beyond, and the role of the Quantity Surveyor (QS) in this development cannot be over-emphasized. In this regard the demand for the services of the Quantity Surveying profession has been on the increase calling for diverse skills.

This has cause the QS profession in Ghana and even the world at large to experience significant changes in terms of expanding the frontiers of skills and competency levels within the construction industry. It is expedient to examine these career trajectories within the QS profession on the Ghanaian Construction Industry in order to provide directives for its positive impact on the industry.

1.3 RESEARCH AIM

The chief drive of this research is to explore the emerging career trends within the quantity surveying profession and to examine its relevance with regards to changes and practicality in the Ghanaian construction industry.

1.4 RESEARCH OBJECTIVES

In direction to attain the aim set above, the subsequent goals have been set:

1. To conduct a literature survey to establish the different aspects of the quantity surveying profession.
2. To determine the degree of adaptation of these emerging career pathways within the Ghanaian construction industry.
3. To study the effect of the emerging trends of these career trajectories within the construction industry in Ghana.
4. To identify the challenges associated with these emerging trends in quantity surveying within the Ghanaian construction industry.

1.5 RESEARCH QUESTIONS

To guide the examination of the specific objective, the following research question has been outlined:

1. What are the emerging career trajectories in Ghana's construction industry?
2. What are the adaptability levels of the emerging trends in the quantity surveying?
3. What are the effects of these new trends on the construction industry?

4. What are the main challenges in the emerging trends in Ghana's industry and how do we nip it in the bud?

1.6 SCOPE OF THE STUDY

The scope of the study will be based on existing quantity surveying consultancy firms and consortiums operating within Greater Accra region of Ghana. This is due to the fact that most of bigger consultancy firms operating in the Ghana have their head offices based in Accra. The research will also focus on selected construction companies in Accra. The characteristics of the consultancy firms will be those who have been operating within the last 20 years.

1.7 RESEARCH METHODOLOGY

The study will use in tandem both quantitative and qualitative research approaches. The qualitative approach will enable the study to focus on subjective information, such as the experience of the players within these emerging trends whilst the quantitative provides a platform where the study can use statistical analysis to establish the relationships between the study's variables.

Based on simple random sampling, various firms will be selected from firms and construction companies in Accra who have been operating for the within 20 years in Ghana. These firms and construction companies will be carefully chosen because it is believed that they will give a clear picture of the phenomenon being studied. The use of survey, interview and observations will contribute immensely to the validity of the study findings. Based on the literature and personal experience within the industry, a good survey will be designed capable of getting answers to the research problem. The survey will be validated and piloted to ascertain its veracity.

1.7.1 Analysis

In lieu of precision of the finding, a record will be advanced and the regularities and crosstabulations will be recognized when the data has been gathered, corrected and coded. Statistical analysis will be passed by means of a statistical package. The use of means and standards deviations will enable the reading to measure statistical meaning and the connotation among the numerous variables. For the qualitative findings, descriptive analysis will be employed. The comprehensive nature of the study required important exertion in direction counting the managing of a huge data agreed and conjoining data from many review valuations in production centres in Ghana. Also, the analysis for this vigorous plan drive be difficult, demanding the adoption of progressive methods of multivariate analysis. Substantial time will be invested in conducting the existence literature review and study strategy.

1.8 SIGNIFICANCE OF THE STUDY

The essence of this research is to first of all identity the various aspects of the quantity surveying profession. Secondly the research seeks to come out with the emerging career trajectories in the quantity surveying profession in Ghana. In so doing, the study will provide useful information to many about the diversification in quantity surveying profession. This will also afford the profession in Ghana not to be limited in our career choice from the traditional preparation of tender documents, preparation of interim payment, advising on contractual issues with regard to project and venture in these emerging trends.

1.9 RESEARCH ORGANIZATION

The written format of this research works will be organized into five main interrelated chapters focused on addressing the aim and specific objectives.

Chapter one will deal with the introduction of the topic, background, problems statement, aim and specific objectives. It will also focus on the scope of the research methodology and the how data from the field will be collected and analyzed. Chapter two covers the literature review which will presents a comprehensive development of the quantity surveying profession. It will synthesize what other scholars have written on the phenomenon and more importantly the gap to fill. Chapter three will covers the study's methodology which entails the research design, population, selection of sample size, design of survey and collection of data from the field and the data analysis plan. Chapter four consist of the analysis and interpretation of data from the field and finally Chapter five will consist of the key findings from the analysis, draw conclusion and make recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.0 INTRODUCTION

This chapter is devoted to the synthesis of pertinent literature in order to ascertain the vacuum created within scholarly discussions on examining the emerging career trajectories within the Quantity Surveying profession in Ghana. It deals with the scholarly discussion on the Quantity Surveying profession, its education, career trajectories within the Quantity Surveying profession and other evolving careers. The review which forms the theoretical and conceptual framework of the study is largely based on discussions on peer reviewed journal articles and conference papers, books and accredited institutional and organizational reports.

2.1 QUANTITY SURVEYING EDUCATION

The Quantity Surveying Education has evolved over the years from the early 60' to date with predominant methods of producing qualified surveyors through a graduate entry scheme via the Royal Institute of Chartered Surveyors (RICS) accredited degree. The Royal Institute of Chartered Surveyors (RICS) initiated in 1868 and up to date has roughly 130,000 followers functioning in concluded 140 states of which about 35,000 are Quantity Surveyors (Ashworth, 2013). Since 1984, the RICS has recognized the importance of Continuous Professional Development (CPD) to be for the profession. It should be mandatory for professional membership and some form of registration is necessary. The RICS has also particular preparation direction through HND/Base point and nowadays over assistant connection (Ashworth, 2013).

The RICS has credited the competency denoted to beyond that requires co-operation among the hypothetical zone and the industrial sector through the operation of their business. These competencies level are clear by the RICS as follows:

Stage 1: Proving awareness and thoughtful

Stage 2: Proving the ability to relate the beyond awareness and thoughtful

Stage 3: Proving the ability to well-structure assistance.

The profession is one of the fastest growing sectors of the occupational structures in Britain.

The main parts of the RICS are to

1. Standardize and stimulate the occupation
2. Uphold the main informative and proficient criteria
3. Defend client and regulars over a firmly code of ethics
4. Make available neutral assistance, investigation and strategies

Ashworth (1994) and Ashworth and Hogg (2007) has documented the historical development of quantity surveying and revealed that QS traditionally entered the profession through an articled pupil scheme where a partner or senior surveyors would personally supervised the embryonic surveyor. This was later augmented through correspondence course and day release at a local college for preparation for professional examination for institutional membership.

2.1.1 QUANTITY SURVEYING EDUCATION IN GHANA.

According to Badu (2004), Quantity Surveying training in Ghana is normally in British. The Quantity Surveyor, in modern built environment, expends his skill to evaluate cost mechanisms of a construction project in a logical manner and applies the outcomes of his analysis to a multiplicity of economic difficulties threatening the designer. The educational systems for this profession in

Ghana according to Badu (2004) are namely, second cycle, tertiary and post tertiary phase. The outline of the Professional Bodies Registration Decree 1973 (National Redemption Council Decree No.143, Section 18:20) permitted those going to the Quantity surveying sector of the Ghana Institute of Surveyor to exercise quantity surveying.

2.1.2 SECOND CYCLE EDUCATION

Any potential quantity surveying student in Ghana has to be able to pursue the following course in the following General Science and Arts programmes. Under this course structure within the second cycle system in Ghana, students should be able to study four core subject including English language, general science, social studies and mathematics. In addition to this core studies, one should be able to either offer a course in general arts, general science or technical programme as a prerequisite for quantity surveying profession in Ghana.

2.1.3 TERTIARY EDUCATION

Higher education in Ghana for quantity surveying profession is provided by the universities (Badu, 2004). The Polytechnics and university colleges which have been accredited by the National Council for Tertiary Education directed by the Office of Education of Ghana can offer courses in quantity surveying (Badu, 2004).

Entrance requirement for Bachelor degree program in quantity surveying are either by advance (A) level with five credits in all subjects and aggregate of not more than 24 for the senior secondary school certificate examination. Currently some of the polytechnics in Ghana are offering courses in the quantity surveying programme. Formally only the Kwame Nkrumah University of Science and Technology provide courses leading to qualification for the quantity surveying profession. The

department of Building Technology of the College of Art and Built Environment has the accountability of training qualified persons in discipline of quantity surveying. The duration of the course is for a four years level. Lately private universities have also started programme leading to the award of degree in quantity surveying.

The general course offered included material and construction, theory of structures, measurement of construction works, construction management, workshop/laboratory training, contract administration and professional practice, construction keep and construction economic, (Badu, 2004). These courses are carefully designed to strengthen their thinking capabilities and develop to face future emerging issues like client single-mindedness, growth and request of information and communication know-hows, investigation and its distribution, advance competence and preparation dimension.

With particular focus on graduate capability Ashworth and Hogg (2007) offered that "the total of graduates in quantity surveying is unlikely to alter significantly in the short period from the lesson figures qualified in the late 1990s. The comparative deficiency in quantity has previously had the influence of growing earnings. Graduates with decent practical thoughtful, a wider adoption of professional services and a word concerning enduring knowledge are possible to be in great call. For new graduates they will want to brand themselves both extra valued to performs and contractors or not as much costly.

2.1.4 MEMBERSHIP REQUIREMENT OF GHANA INSTITUTE OF SURVEYORS

According to Badu (2004) entry requirement into association of the Ghana Institution of Surveyors (GhIS) is regulated by a test on Practical application of Quantities. The examination encompasses four written papers in the area of the following:

- Quantity
- Construction Economic
- Qualified Practices procedures, and
- Construction contract, Claim and adjudication.

An applicant need to score a normal of 55 grades and not below 45 grades in any of the papers. The circumstances fixed for appropriateness are that the person need to record primary as a probationer with the institute and experience exercise in an accepted organization for two (2) years when he/she has complete the domestic services (Badu, 2004)

For candidate coming out of the polytechnic system, entry into direct membership option means that the candidate need to be 35 years or above and with 15 years' practice and in the view of the council has achieved wide series of quantity surveying knowledge in the succeeding area:

- Cost planning and design cost advice
- Pre contract work
- Initial assistance to regulars.

If accepted, the applicant will proceed to take a written examination in the following area:

- Pricing and Tendering
- Building Cost Management

- Business Management and Finance
- Law and Arbitration

If successful, one will be register for the examination of professional competency.

2.2.0 QUANTITY SURVEYING PROFESSION

Quantity surveying is a specialized field that primarily lends itself to contractual and financial managing of building projects offering a different provision in the construction industry. Nkado and Meyer (2001) were also of the view that there are broader spectrums of services that can be offered by the individual going into this field of study. An experienced quantity surveyor need to have an array of expertise, understanding and thoughtful that can be useful in an array of perspectives.

Furthermore the work environment is not static but changing. As the Royal Institute of Chartered Surveyors (RICS) would suggest, continuous modification in the nature of client demand and the competitive environment for construction services requires changes in the knowledge base at the core of the professional practices (Royal Institute of Chartered Surveyors, 1992). This is essential as the primary aim should be to satisfy the clients' needs (Rust and Zahorik, 1993).

According to RICS (1991) clients want readily purchasable design, procurement and management of construction. They question the relevance of some professional services and knowledge and they tend to challenge the worth of many of their functions, this includes quantity surveyors. Quantity surveying goes through periods of higher or lower demand just like any other profession and these situations are generally influenced by a country's economic position. The inference could be drawn from the above that for the QS to survive the economy of any sort, the construction

companies have to be proactive and explore other career trajectories in addition to their traditional functions.

The most important core functions for a quantity surveyor is to deliver a Professional service Cost advice and planning; Project procurement and documentation; Tendering nd predetermined relations; Agreement facilities; Professional services connected to quantity surveying services; Quantity surveying connected to business services; and Building development.

The professional quantity surveyor in the building industry is the one who has the skill to analyze both cost components and practical physical construction works of a project in successfully way to be able to apply the result of his analysis in solving problem peculiar to each project (Badu, 2004). By this definition the quantity surveyor is seen as a cost advisor, estimating and measurement experts as describe by Perera, (2010). Fellow et al., (2003) describes the quantity surveyor as the project cost advisor and the consultant to the client and further associates of the project players on issues connecting to procurement and the contract. Cartlidge (2009) intimated that quantity surveyor are engaged in diverse grounds which the categorized mainly as private practice training and contracting surveying.

From the various definitions submitted by these writers, a common underlying word that runs through all is that the QS serves as a cost advisor in all building and infrastructure works. The inference that could be drawn is that since the services of the QS are an indispensable one in the construction industry it is expedient to always examine emerging career trajectories of the profession.

Quantity surveyor often works as consultant in a private practice where they are expected to advice the client on issues relating to contract administration of a project. They are normally described as Professional Quantity Surveyor (PQS). Cunningham (2014) states that Professional Quantity Surveyor is a construction economist concern with the financial management of a construction project. Hores et al., (2009) describe the professional quantity surveyor therefore as one who ensures that client safe worth for money and the finished projects offer considerable extra price to the client assets.

However for the quantity surveyor in a contractor's organization, its duties lies centre on cost and contract management (Ofori, 2006). They are described as Contractor's Quantity Surveyor (CQS). Towey (2012) advocated that the service provider quantity surveyor is accountable to the project manager and perform duties as checking that protections are existing, checking health and safety and environment submission by subcontractors. Contractor's Quantity Surveyor also performed tasks are cost managers, cost engineers, contractual consultant and procurement specialists.

2.2.1 TRADITIONAL ROLE OF THE QUANTITY SURVEYOR

Smith (2004) stated that the former period has seen the quantity surveying firm expanding and adapting the choice of services to much the varying business loads. The adoption of the outmoded "bread and butter" of the career bill of measures has dropped. According to (Smith, 2004) quantity surveyors are engaged by client to prepare quantities for tendering purpose. As stated by the writer, traditional quantity surveying practices in Australian indicates that in the 1980, preparation of Bill of quantities accounted for approximately 80% of the total work load of the profession. However this has declined to less than 10% in the year 2003. This is submission from Smith about the decline

of bills preparation is not different from the situation in Ghana. Can this be attributed to other emerging career trajectories within the profession?

According to Ashworth (2013), the traditional role of the quantity surveyor still adopted by others and particularly on standard project can be concisely describe as a quantity and worth method. Rough estimates of the early cost of construction are organized by means of a simple price technique of approximating and where the cost is adequate to the regular then the designed is established by the Designer.

Successively surveyors would give out bill of quantities for tendering purpose. The works would be quantified for improvement payment and a finishing record set on the foundation of the biding documentation (Ashworth, 2013).

Throughout the 1960, to escape tender actually established that were above financial plan, planning of cost services were extra to the repertories of the responsibilities completed by the quantity surveyor engaged in private exercise (Ashworth, 2013). On occasion where the contractor sensed that they were not actually compensated in the standings of the agreement, they submit the entitlements for additional payment. This process is further predominant on civil engineering project.

Practicality and pragmatism are of the qualities greatest extremely appreciated by clients in quantity surveyor, (Davis, Landgon and Everest, 1991). Ashworth (2013) and Smith (2004) stated that some of the traditional roles of the quantity surveyor as follow:

- Particular rate estimated estimate

- Cost planning
- Procurement information
- Quantity and measurement
- Certificate preparation particularly bill of quantities
- Cost regulator in building
- Interim valuation and payment
- Financial statement
- Final account preparation and contract
- Payment of contractual claim

2.2.2. THE EVOLVING CHARACTER OF THE QUANTITY SURVEYOR

Chalkley (1990) stated that professions are largely creatures of public demands. Professions remain in existence because of continuing recourse to them by the public. Deacon (2005) cited J. F. Kennedy saying that "Changes is the law of life and those that looks only to the past or present are certain to miss the future". With quotes of the above and in reply to the likely end of bill of quantities, quantity surveyor started discovering original latent parts for their services as stated by (Ashworth, 2013).

Procurement a word not used till the 1980 becomes an imperative extent of activities mostly as of the snowballing display of decisions that were existing as suggested by (Ashworth, 2013). As construction becomes new engineering, services focused on, amplified stress was actually sited on the quantity, cost and value of such services. Quantity surveyors have traditionally dispensed with this work done prime ccost and provisional sum.

According to (Smith, 2004) and (Circa, 2012) as cited by (Ashworth, 2013) some of the emerging career trajectories within the quantity surveying service as follow:

- Investment appraisal
- Information on Cost Limit and budget
- Entire cycle costing
- Value managing
- Analysis of risk
- Liquidation services
- Cost engineering services
- Sub contract management
- Green services quantity and costing
- Technical auditing
- Planning and supervision
- Valuation for insurance drives
- Project management
- Facility management
- Administering upkeep programme
- Information on agreement disputes
- Organization manager
- Employers' agent
- Programme management
- Cost modelling
- Sustainability consultant

2.2.3 REASON FOR THE EMERGING ROLE OF QUANTITY SURVEYING

Quantity surveying has been painstaking as an active profession and the abilities area has experienced several alterations in its growth over the previous eras. According to Thayaparan et al., (2011) in its old-style logic, quantity surveying, quantifying building works has measured as the chief duty of the profession. The RICS (1971) emphasized the services in "measurement" and "valuation" as the divergent capabilities controlled by Quantity Surveyors. This "quantification and estimation" was seen as the technical responsibility accepted worldwide. As a result, countless supposed that the purposes accomplished by the quantity surveyor can simply be assumed by any individual or a mechanism adept of accomplishing guileless mathematics calculations. Hence, the building industry professionals have constantly elevated their fears about the simple existence of the quantity surveying profession.

According to Wood (2008) in the order of things "the Quantity Surveyor is not a requirement in the demand of effects. Any suitable and inexpensive technique of increasing designs and stipulations and employing replicas with respective estimator would response similar drive and get liberate of the QS for good" (Anon, 1889 cited in Wood, 2008).

Notwithstanding all the upstairs conjectures, Thayaparan, et al., (2011) lay bare that the Quantity Surveying career lived and presently observed as one of the well rewarded professions within the built environment with a pure ability deficiency. Countless thought that at the core of this endurance exist in the active nature of the occupation, which formed up the services and the skills of the profession to supply for appropriate loads. This vitality is plain in the diverse services and abilities of Quantity Surveyors decorated by the RICS at dissimilar periods.

As designated previous, RICS has documented "quantification and assessment" main capabilities of a Quantity Surveyor in initial 1970s. Contradictory since its customary "official" part, in mid80's RICS have stimulated the part of the Quantity Surveyor as "the Construction Economist", "Cost Engineer", "Procurement consultant" and as a "Cost Consultant" (RICS, 1986; RICS, 1991).

These parts have accredited extra of a "executive" appearance to the profession.

Inside the customary practical part of the quantity surveyor the key actions were partial to a thin possibility. It is renowned that the customary part of the quantity surveyor underway with the invention of the Bill of Quantities and done at the clearing of the ultimate financial statement (RICS, 1984). Though, the opportunity of work and the nature of work done by the quantity surveyor improved extremely when mid 80's where the quantity surveyor is anticipated to add through the whole lifecycle of the building project (and further than) in a further management ability.

In its modern part, quantity surveyors assume a variety of effort stretching from giving venture reviews to building project managing. The beyond stated pattern modification in the part of the quantity surveyors was activated by several expansions in the profitable situations, study and industrial growths. A severe appraisal of these influences will expose that the progress movements in the construction financial side focus area, that have happened in the later measure of the twentieth period, made the principal influence on the altering parts of quantity career.

As a result, the modifications in market, building industry, client needs posed threats and opportunities to the quantity surveying profession forcing it to change for it mere survival.

Certainly this point has been recognized and stressed by the RICS in its account noble 'The test of change' floating a notice to the quantity surveying profession that if the profession did not adjust to alteration then it would not happen in the upcoming (Powell, 1998). Thus, rare developing parts

appeared in the quantity surveying career with improved position and stress on gathering clients' requirements. This encompasses quantity surveyors to work on procurement, plan cost design, whole life costing, value management, and analysis of risk and managing. As constructions have developed additional engineering facilities concerned with, prominence was positioned on quantity, cost and value of such services. New advanced parts have also involved construction and project management, facilities management, contractual disputes and litigation (Ashworth and Hogg, 2007).

Ashworth (2013) suggested that the imminent improvement of quantity surveying services is probable be effect by the subsequent significant influence:

- Focus of client
- Expansion and use of info and communication know-hows
- Investigation and propagation
- Sustainability schedule

2.2.3.1 FOCUS OF CLIENT

The cost of construction of principal works project will be an imperative module on the decision to build. The cost will include whole life cost. According to Ashworth (2013) consultant on projects are occasionally perceived as totaling too much cost to project and worker's contribution late services, of reduced excellence and of uncertain great costs. Apart from this important submission from Ashworth, Powell (1998) added more to the evolving roles of quantity surveyor. Powell was of the view that to the client and even the QS practical completion must represent entire finishing point and not approximately complete. The process of working must be simplified and thorough understanding of the procurement process and also keys not projects.

The simple requests of client according to Powell (1998) for the evolving roles of quantity surveyor are outlined as follows:

- Reduced time scales
- Practical completion must mean total completion not nearly ready
- Streamlined method
- Whole appreciative of the procurement process
- Comprehensive service including mechanical and electrical installation
- Eliminating the omissions
- Operative modification managing
- Solutions not projects

2.2.3.2 DEVELOPMENT AND APPLICATION OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)

As recognized by Cartlidge (2012), in reply to clients' demands for additional value extent surveyors are winning in all level of e-business from the use of email and fully electronic procurement and tendering. Barlow (1996) has stated that the building industry must longed-for the more prevalent use of data know-hows and grip the up-to-date know-how prudence inventiveness. The inference could be drawn from the above submissions that QS must embrace the highest form of information transfer if the best of constant flowing of communication is required. It also means that there must be a constant development of the information technologies in order to make the profession very competitive within the construction industry.

This obviously calls for periodic study on such an emerging career trajectories to understanding its effects on the profession in order to provide the way forward. Arif and Karam (2001) stated

that the QS can develop in expert's structures; non-natural intellect; information based structures; synthetic neural interacting; automation and computer assisted designs. These new careers within the QS profession have had profound impact on the activities of the QS in the construction industry. Honey (1998) reported that in the last century in the United Kingdom, there has been a drastic reduction on the use of paper since electronic-led procedures are chief to less dependency on attractive off-sheets and other additional writing materials. These developments obviously come with challenges and the object of this present study is to examine how the Quantity Surveying Profession in Ghana is utilizing the rapid expanding of technological dispensation in which it operates to the maximum benefit.

According Smith (2004) the evolving roles of the quantity surveyors has happened principally in answer to altering engineering/client loads, info know-how development and race for services. Information technology improvement gives the career with massive chance to really reinforce its location in the business. It is evitable that certification and information will be progressively computerized where quantity and other methodological procedures will necessitate marginal human involvement.

2.2.3.3 SUSTAINABILITY AGENDA

Sustainability agenda is an important aspect of every profession because without sustainability, all work done is reduced to nothing**.** According to Ashworth (2013) the increasing awareness of the assistances and essential to cogitate entire life cost, green influence valuations and the estimation of carbon discharges. Sustainability agenda is will enable the quantity surveyor not only to consider the construction cost of the project but to take in consideration the after mark of the erection of the project.

2.3.0 EVOLVING ROLES OF QUANTITY SURVEYING PROFESSION

Quantity surveying is knowledge – intensive profession. Keenness rest on ways its specialists produce, preserve and effectively relate knowledge (Lengnick-Hall and Lengnick-Hall, 2003). Many authors argue that knowledge management is crucial for the effective performance of organization (Daveprt and Prusak, 1998) as cited in Ofori (2012).

Therefore since profession is a knowledge base one, one should be able to apply this knowledge and experience various field of endeavor to enhance performance within the construction industry. With this in mind hence there is the need for these explore the emerging trajectories within the quantity surveying profession.

2.3.1 OIL AND GAS INDUSTRY

The oil and gas industry has been one industry of immense importance to any nation. Asamoah (2011) stated that the oil and gas discovery in Ghana brings about expression of interests and acquisitions for licenses for oil and gas in Ghana. This will include infrastructure, management of oil and gas offices, consultancy and the likes and obviously the services of the Quantity Surveyor will be required. Ajator (2014) stated that the oil and gas industry is very significant to the Nigerian economy as earning from the sector constitute the financial source of revenue and foreign exchange use for financing government expenditure. As the nation's professional cost advisors and managers it becomes imperatives for the quantity surveyor to extend it cost monitoring and cost control services to the oil sector.

Cost of oil and gas projects presents great opportunity for the quantity surveying consultant as it is the case in advanced countries where cost engineers perform the role. Aside from the cost estimates and cost plan, cost control and management is a critical competence of the quantity

surveyor to ensure that the integrity of the planned project cost are sustained within a continuum of project delivery amidst several construction risk that tends to steer project towards cost overruns.

According to Ajator (2014), oil and gas plant is chaotic web of equipment, piping, building etc. The cost of this plant means costing of the processing machines equipment, pipes, etc and other electro-mechanical components including building and civil works infrastructure which form the basis of procurement and management of the fluid process. Estimating cost of process projects are done using techniques ranging from conceptual (approximate stochashes) method to determine (detailed or definitive) methods (Ajator, 2014)

The accuracy of cost prediction, control and management at all stages of project development pose great challenge to the quantity surveyor as the construction cost watchdog. As stated by Ashworth (2013) quantity surveyors has remained elaborate in this kind of heavy engineering works in many years as a upshot of altering circumstance in this where more stress is place on value for money. The oil and gas industry employs a lot of specialist and the quantity surveyor is one of such specialist with their concrete experience, profitable intelligence, knowledge of cost and legal considerate has much to give this business (Ashworth, 2013)

Aside from the installed machinery and its actifed component the factory would also have some or all of the following building and civil works infrastructure and possible more as cited by Ajator (2014):

- Building to shelter
- Building for storage
- Administrative building

- Civil works such as roads, drains etc
- Power supply, water etc
- Storage and distribution
- Environment management facilities such as waste disposal facility, etc

From the ongoing discussions, it is pertinent therefore that we examine the career trajectories in order to develop emerging issues any industry will require from the Quantity Surveyor.

2.3.2 LIFE CYCLE COSTING

Life Cycle Costing (LCC) as defined in the British Standard (BS) International Standard Organization ISO 15686- Part 5 (2008) as a practice for logical trade and industry concern of all total life cost and aids completed a period of scrutiny. According to the Office of Government of Commerce (OGC) (2003) also define life cycle costing as the cost of acquiring the property, the cost of operating it and the cost of maintaining it over it whole life through to it disposal, i.e. the total ownership cost. A client volunteering in a building project many need direct a necessity to fulfil the environment difficulties yet has concern about the extra cost to construct a structure and he cost of sustaining warming and conserving when it is engaged.

Life cycle valuations are figure oriented and are not definite but gives an indication of the value of a construction afar a price to construct. Towey (2012) offered that if Life cycle factors are a reflection, then they should be lectured with possibilities as timely as conceivable to aid the design procedure as additions concerning redesigns could cost time and money. The life cycle cost can be determined by calculating the Present Value (PV) factors of the entire component into the acquisition of the property (Kehily, 2012). According to BSI and ISO documents and cited by Kehily (2012) indicates that Whole Life Cycle Costing are broken down in four classification categories as indicated in Table 1.0

Table 1.0 Classification of Life Cycle Costs ISO 15868 - 5

Whole Life Cycle cost	Non construction	
	Life Cycle Costing	Construction, Maintenance, operation, occupancy and End of Life cost
	Income	
	Externalities	

2.3.3 RISK MANAGEMENT

The British Standards 4778 Section 3.1 1991 and cited by Pott (2012), defined Risk Managing is the practice whereby conclusions are complete to admit an identified or evaluated risk and or the application of activities to lessen the costs or possibility of happening. In line with this Perera (2010) also pushed forward that risk managing gives an organized technique of giving risks in building projects allowing projects to be accomplished with better mark of eagerness and consideration. According to PMBOK (2004) and cited by El-Sayegh (2014), risk management planning with regards to construction project parts the risk managing methodology, roles, responsibility, budgeting and time requirement, risk classes and likelihood and influence environment.

Risk management should be conducted on every project before commencement, however this is not done by industry professional. Egan (2002) decided that an astounding 40% of building projects are carried lost, 50% are over budget and 30% flop to meet expectation. The business's difficulties are multiple by the lack of dependable past data of the indecisions faced by the building professional, (Dallas, 2006). A conclusion of these influences has introduced a evaluation in the relative to the managing know-hows approved on a building project. This has ran to the outline of

the idea of orderly risk managing over risk documentation, risk analysis and risk reaction approaches as standard constituents of a risk managing structure (Perera, 2010).

Modernizing building which settled that the unsuitable and scarce use of risk managing coupled with a inadequate thoughtful is a chief difficulty to the development in building performance quoted by OGC (2003). Professional quantity surveyors quarter risk by the attachment of a eventuality payment at tender phase in the bill of quantities. Whiles formal risk managing approaches are obtainable they are rarely implementation by the quantity surveyor (Hogg, 2000).

2.3.3.1 RISK IDENTIFICATION

Comprehensive documentation of the source of risk and its influence within the built environment is vital to permit the expert to effectively succeed risk therefore avoiding the aims of the project being jeopardized and afterward ensuing project achievement, OGC (2003). Risk documentation depend seriously on the know-how and the awareness of the strategic project personnel (Bajaj et al., 1997) and quoted by El-Sayegh (2014). Documentation of risk is a challenging undertaking as a result of upsurge in project complication and increase industrial alteration (Grey, 1995).

The fruition of risk management in recent years resulted in the development of many risk identification techniques as stated by Theverdrans (2003). According to Walker (2002) these technique may be classified as intuitive and deductive. In this vein Zou et al., (2007) suggested that risk management process would realized and considered in a more methodical and absolute manner throughout the life cycle of the project.

According to El-Sayegh, (2014) the following are risk identification tools and techniques use during risk management in any project:

- Delphi Technique
- Influence Diagram
- Cause and Effect Diagram
- SWOT Analysis
- Interviews
- Systems or Method flow chart
- Source Documentation
- Assumption analysis
- Brainstorming
- Check list analysis

According to Barkley (2004) and cited by El –Sayegh (2014) checklist analysis and brainstorming are the most favorite methods used by most companies. This is the result of comfort of specification preparation. However, for an actual agenda analysis companies should have an wellorganized record custody and the lesson learnt systems.

2.3.3.2 RISK ANALYSIS

Risk examination goals is to recognize and measure the likelihood of key risk stirring and fundamentally measure it latent result on project accomplishment, OGC (2003) shaping the likely cost, time and possible result where both possibility and influence stages are provided Williams (1996). Risk recognized in the risk identification stage may be evaluated using either qualitative or quantitative way of risk analysis significance is determined by assessing predictability, probability and impact, Galway (2004). This can be uttered as the modest formula:

Risk exposure = impact x probability

Implements and systems adopted to analyse risk contain brainstorming, flowchart and risk decision trees as stated by Walker (2002). More erudite approaches such as understanding analysis and the Monte Carlos techniques can be engaged to count the influence and possibility of the risk incidence (Flanagen, 1993)

2.3.3.3 *RISK RESPONSE*

Latham (1994) reports in construction projects, there abound lots of stress and that no project is risk free. The writer directed that risk should be properly succeeded by affiliates of the strategy team. Risk retort is the advice minimization, regulator and distribution of risk including removal, retaining, transmission and decrease of risk as stated by Rafferty and cited by Baker et al., (1997).

Risk transmission includes a change in the load of risk from one participant to an additional, Edwards (2005), whiles risk transfer may attain a transfer of liability from one participant to another, it infrequently engrosses the client of accountability from the risk. Notwithstanding, risk may be abridged in an effort to succeed it. This includes a mindful effort on behalf of the participant to measure the risk in an effort to decrease the likelihood of it happening, its influence and the period of the disclosure (Fening, 2005). It is recognized that the providers of fall of risk involve a delivery of considerable means typically in the practice of an eventuality payment to safeguard the stakeholders as a result of it occurence (Mills, 2001).

Akintoye (1997) cites Williams (1989) as advocating that where risk reduction or transfer is unbearable, economically excessive risk is not posed and in nuisance where existence is viewed as improbable.

There is instance where risk is total acceptable and thoughtful actions for project re approval are indispensable. When the project is considered impracticable it may result to project dissolution

(Ashworth, 2007). Mills (2001) states that the utmost operative practice response to risk is to allot risk to the party best proficient of dealing it but in authenticity that is not the instance as ascertain by Kartan (2000).

2.3.3.4 TECHNICAL APPRAISER

The work of the quantity surveyor has changed over the years and the current QS practices competencies in a diversified path in the built environment as well as beyond the limitations of the building business (Brandon, 1990). Between the progressed and increasing path of the job is technical appraiser.

Finance is a lucrative industry providing a broad scope of opportunities in insurance, banking and investment. Financial lending is vital in the economic growth of any country and the Ghanaian financial structure so far has structured itself to give thoroughgoing in this aspect of operation. For instance, development/project and housing financing are very much encouraging in every country. Technical appraiser is imperative task in the financial industry leading particularly with advance backing lending. The quantity surveyor by his or her training has competency to handle issue within the financial industry and technical appraiser.

According to Holmes (1993) and cited by Nkado (2001) capability is well-defined as a depiction of an act, conduct or result which one should be capable to prove within the work-related area. Hassell, et al., (1996) states that the competency of a Quantity surveyor must be within an array of abilities, knowledge and understanding which can be applied in a range of context and organization.

Individual may apply for housing loan or grant to fulfill housing requirement for the building of an innovative building, obtaining a new house or used house. These loans or grants are received

from a bank or financial institution. These financial institutions or banks evaluate borrowers and their proposed project on three aspects:

1. Credit appraisal for the borrowers
2. Legal appraisal
3. Technical appraisal for the project.

2.3.3.5 TECHNICAL APPRAISAL

The financial institution requests to determine the worth of the project to be guaranteed or on finishing point obligatory sale value of the planned project to be initiated. This is a condition to shelter the loan. Technical assessment is essential to determine the values. Technical assessment of accommodation loan has numerous stages. Primarily valuation essential to be approved for the planned project giving to the wide-ranging valuation chiefs, the planned expansion needs to be appraised. In that technical appraisal has to undergo approval building plan and specification. Technical appraiser should authenticate some dynamics such as market value, forced sale valued of the property, ground situations, entree road and usual instructions and guidelines of different specialists.

2.3.3.6 FACILITY MANAGEMENT

Facility management is a combined method to functioning; sustaining, enlightening and adopting the building and infrastructure of a society in effect to generate an environs that intensely upkeep the prime aims of the organization, Atkin (2009). In exercise, facility management shelter an extensive array of services containing real estates, managing, financial controlling, change management, human resource managing, health and safety and contract management.

According to Atkin (2014) the placing of facility managing in the life cycle of a construction or other constructions is such that it can be viewed as a connection among the end of building (commission and delivery) and the commencement of project (for a modification of use or the constructing of fresh facilities). Information for briefing in the facility management area can be categorized in three directions:

1. Explanation of operation and doings to be performed in the building or facility. This info is required to design the plan and organization of space and function.
2. Description of info essential from the plan course and deemed acute for the actions team to evaluated plan clarifications, taking into reason long term operation costs
3. As built info in records of how the facility was built is dynamic for its successful process and need to be preserved from the primary theme then end ordinance in a facility handbook for handing over to the owner

2.3.3.7 VALUE MANAGEMENT AS QUANTITY SURVEYING SERVICES

Value Management (VM) is a controlled, efficient and logical route that pursues to attain value for money by expending all the essential purposes at the bottom whole price tag dependable with the mandatory excellence and act (Mohammed et al., 2011). VM benefit of a project are prepared obvious and assessed with a value structure determine by the client (Kelly et al., 2004). VM is also a technology for enlightening regular value in developments, product, procedures and methods which has been international accepted for virtually forty years (Kelly et al., 2004).

The demand for VM has steady increase as client pursue improved results for their investment in positions of capital or the resource contributions and returns may be sedate in social trade and industry or commercial terms (Kelly and Male 2004). The process has been modified into the built environment in various countries as a dynamic part in improving project cost and value. Value

Management education should take place at the beginning of a building project in making clear client value structure.

Ashworth (2004) titles that the key drive of VM is to decrease pointless cost as project can be design and built in many dissimilar methods and each dissimilar designs appeals certain cost. Wherever two dissimilar strategies fulfil the key regular necessities then the modification concerning the costs of theirs of projects can be defined as a pointless cost.

Kelly and Male (1991) contended that the elimination of cost only does not pay to the complete objective of Value Management which is the attainment of improved value for money. Value Management (VM) was viewed to afford the quantity surveying profession with amply of chance to development fresh expertise and support drive fresh descriptions of the profession (Hogg, 1999).

A study conducted by Hogg (2004) and cited by Mohammed (2011) on principal UK cost advisor exposed that most reasons for the low practices of VM between QS specialists is due low demands from the client and their unwilling to devote further charges for the services. Judging for the above statement the researcher to seek the view of quantity surveying practitioners in Ghana about this emerging trajectory in the profession.

2.4. CHALLENGES IN THE QUANTITY SURVEYING PROFESSION

The changes in the built environment pose a lot of challenges to all profession that work within it with the quantity surveyor being no exception. However, these challenges offer business opportunities and avenues for greater achievement. According to Ofori (2012) the challenges of the profession can be divided into two namely sustainability and unethical leadership qualities.

On the issues of viability, the improvement and use of wide-ranging valuation tools for green building incorporating the existing tools which focus only on environment aspect. Ofori (2012) intimated that the area of sustainability is the aspect in which the quantity surveyor can focus on. This offers the quantity surveyor the opportunity to go afar the current attention on cost but to offer leadership in the extent of complete economic capability of built matters which joins the issues of sustainability.

Secondly the building industry according to Transparency International (2006) and cited by (Ofori, 2012) found to be the most corrupt industrial sector. Fan et al., (2001) cited by Ofori (2012) propose that the cumulative principled difficult in building profession may view opening roughly principled matters among senior professional and comparatively undeveloped professional. From the statement above it will not be out of place to explorer some of the reasons leading to this perception of corruption among construction profession and for that matter the quantity surveyor.

Smith (2004) intimated some of the major challenges to the profession of the quantity surveying are as follows:

1. Fee competition
2. Profession indemnity insurance
3. The development of Computer Aided Design (CAD)
4. Conservatism/ability of change
5. Other professions
6. Poor marketing
7. Quality of Graduate
8. Lack of interest of school leaves

2.4.1 FEE COMPETITION

Most quantity surveying firms have to compete against each other in order to secure consultancy services with the construction industry. Despite the fact that the Ghana Institute of Surveying has a scale of fees which serves a guide to quoting for their services, firms had to undercut in desperate situation to win jobs and be able to stay in business. When this happens, it affects the quality of services and documentation to be delivered.

This intends affects the development of the profession in that the firm is not able recruit high quality profession and also purchase Computers and other software in the development of new emerging trajectories.

2.4.2 PROFESSIONAL INDEMNITY INSURANCE

Quantity surveyors are required to provide professional services. Therefore, in the event of the professional given advice that will lead to the client suffering injury or incurring most cost that it should ought to be, the client will sue the consultant for damages. In such cases the quantity surveyor is therefore expected to indemnify it services.

2.4.3 DEVELOPMENT OF COMPUTER AIDED DESIGNS

Smith (2004) stated that the development of computer aided designs (CAD) and automatically generated quantities are seen a chief challenge mainly in footings of the practical character of the quantity surveyor. This is because quantity surveying was seen a profession where measurement was taken physically on the site and taking off done manually before the preparation of Bill of Quantities (BOQ). This challenge is as result of the fact that the computer will be taken away section works been performed by human.

2.4.4 INABILITY OF CHANGES

The built environment is largely traditional by its nature but the quantity surveying profession happens to be the one that is most conservative in terms of information technology. Most firms fill that the failure to alter and re-engineer procedures to take benefit of high-tech developments is bringing the profession depressed.

2.4.5 OTHER PROFESSIONS

Most quantity surveying firms has documented the point that development cost managing is not high-class purview of the quantity surveyor and that other professional are carrying out those services. Project management firm and large accountancy firm are seen as major threat to the quantity surveying profession in terms of cost management and planning issues.

2.4.6 POOR MARKETING

Most quantity surveying firms are of the view that their companies are not been marketed enough. However, the notion that your works speaks for you and that company plaque are small in size are disincentives to the marketing of the profession. Most quantity surveyor's hold the view that the mother association should do enough to make the profession marketable.

2.4.7 QUALITY OF GRADUATES

Quantity surveyors within the industry are disgruntled with the excellence of graduates coming from our tertiary institutions principally in relations of main expertise in quantity and building information. This is because most graduate are not interested in the technical knowledge but are interested in becoming project managers.

2.5 SUMMARY OF CHAPTER

The chapter has reviewed literature pertinent to the study. Notably, literature has pointed to the fact that there are emerging career trajectories in the developed and some developing countries however, these career trajectories have not been examined to offer more informed conclusions

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 INTRODUCTION

This section presents the overall plan used in divulging data for the answering of the research problem. It presents the research design of the study, the research philosophical underpinning, sampling and sampling procedures, instrumentation and data collection techniques. The chapter also provides the data analysis plan and the ethical considerations of the study.

3.1 PHILOSOPHICAL CONSIDERATIONS AND STANCE OF THE RESEARCH

This study adopts the positivist stance of knowledge that the examination of the emerging career trajectories will enable the profession in Ghana address possible challenges, broaden skills and competencies and place the QS in a competitive position in the construction industry. The positivist stance allows an objective way which can be simulated by all. The study on the emerging career trajectories in the Quantity Surveying profession must be studied by objective criteria.

The positivist approach offers objectivism which allows an independent approach of what the study purported to do and that benefits, ethics, views, etc further no influence on what is being studied or the methodical approach. Knowing the emerging career trajectories within a profession is of great importance to any profession and therefore objectivism philosophical approach is key to bringing out the true picture of the phenomenon.

With respect to the study's objectives, the objectivists' philosophy assisted to identify and explore the fundamental descriptions and basic laws that explain uniformities in social conduct as

suggested by Easterby-Smith et al. (1991). To achieve this close, the generality of outcomes from sufficient sample scopes is necessary utilizing an inferential procedure. This procedure entails the design of research questions established from the study's theoretical of the occurrence being studied. If there are emerging trends in careers in QS, then definitely there must be something driving these emerging trends. This reductionism enhanced the understanding of the research problem and subsequently the results.

The sum of the above considerations is that, the research adopts a scientific and an objective way rather than a normative position in determining what were recognized as facts and their corresponding interpretations which were made in addressing the research concerns.

3.2 RESEARCH APPROACH

The research design provides the overall plan for the study. This study aimed at examining the emerging career trajectories within the Quantity Surveying Profession and the research problem was best answered by both qualitative and quantitative approaches. The two research approaches were expedient as quantitative study technique implicates an arithmetical methodology to investigation strategy. The method of a quantitative research retains the theory of a pragmatist pattern (Creswell, 2003). This enabled the study to be very independent and as result the reality of the results obtained was objectively measured. This provided the opportunity for the study to examine the relations between the traditional practices of the Quantity Surveying Profession and the emerging career trajectories. The intent is to explore these new trajectories and their effect on the profession.

The researcher remains distant and independent of what is being researched. With such knowledge, the study worked in normal locations engaging a mixture of opinions, meetings, and article

periodicals. The qualitative nature of the study enabled the study to systematically describe, analyse and interpret the insights of these emerging trends. Brewer (2004) was of the view that for a researcher to get first- hand information, he must participate directly in the setting. In this regard, interviews were held to ascertain the roles of these emerging careers through field and office discussions.

3.3 STUDY'S POPULATION

The population for the study was generally practicing professionals in the construction industry in Ghana. This includes quantity surveyors in the construction consultancy firms, construction firms, the educational institutions, financial institutions, oil and gas sector, ports and harbours etc. who have had over 2 years' experience practicing in Ghana.

3.4 SAMPLING TECHNIQUE AND SAMPLE SIZE

The study critically considered how large the sample should be. This was very expedient because to proceeds a great sample than is wanted to attain the preferred outcomes is inefficient of means while very small samples frequently prime to that are no applied use of constructing good result. In this vein, the study adopted the formula proposed by Cochran (1963) in calculating the sample size of the respondents. This formula was chosen ahead of the Kish formula since the number of target population of study could not be scientifically determined. Although data about registered members could be retrieved from the Ghana Institute of Surveyors, the professionals are scattered and working all over Ghana. Hence this formula was used:

$$N = Z^2pq/e^2$$

Where: N= sample size

Z = abscissa of the normal curve that cuts off on the area at the tails; and it is equivalent to 1.645 for a confidence level of 90%.

p = maximum variability, 50% = 0.5 q q

= 1 – p; thus 0.5

e = desired level of precision, i.e. $\pm$ 10

Therefore, the required sample size is: 10% (6.8) was added as questionnaires to cater for missing questionnaires, gross errors and inconsistencies in the answers provided by respondents that are anticipated in the questionnaire administration. Hence, the sample size is;

N = 68 + 6.8

= 74.8

$\approx$ 75

Accordingly, a total of seventy-five (75) copies of the questionnaire were administered to the target respondents who are practicing QS in Ghana. The study used the simple random sampling technique which ensures that biasedness is reduced to the barest minimum. The study used simple random because due to the researcher's background and working experience in the field of quantity surveying, there was the availability of the location of most construction sites and QS related works on going in the cities and towns in Ghana.

3.5 INSTRUMENTATION

The nature of the research problem calls for more than one source of data collection. Moreover, in order to account for these emerging career trends, their degree of adaption by the profession in

Ghana, the career effects on the profession and possible challenges, there was the need to triangulate the instrumentation. In this vein, the questionnaire designed for data collection was backed by succinct interviews and field observations.

3.5.1 QUESTIONNAIRE DESIGN

A seven-page questionnaire was designed capable of divulging data from the study's respondents. The extensive literature review on pertinent discussions on the phenomenon being studied provided guidelines for the designing of the questionnaire.

The questionnaire was of four section lettered A-E all aimed at providing answers to the research objectives (see Appendix A). Section A captured the respondent's profile whilst Section B elicited answers pertaining to the emerging career trajectories. Section C was concerned with response to the adaptation of the emerging career in the Quantity Surveying profession whilst Section D looks at the effect of these trajectories on the profession in Ghana. The last but not the least section looks at how to address emerging challenges with these emergences.

The items on the questionnaire were mostly closed ended ones because statistical validity was a prime objective. However, there were some open ended ones meant to capture the qualitative data from the respondents. A five (5) point likert scale was developed based on experts' opinion and from empirical research findings in order to ascertain the adaptation and the effect of the new careers. The questions were completely and adversely expressed in order to make up for the respondents' inclination to "agree" with the questions (Tavsancıl & Keser, 2002).

The questionnaire was reviewed and validated by three (3) professionals within the Quantity Surveying Profession who had over fifteen years' professional experience. Content rationality was certified at the early stage of cogency and consistency readings of the measure before a pilot study

was carried out involving 10 respondents practising as Quantity Surveyors. Theory cogency of the scale was done by factor analysis and item analysis.

3.5.2 QUESTIONNAIRE ADMINISTRATION

In order to gather detailed data from the respondents, research assistants were trained to gather data from the large respondents. The training afforded the research assistants to have deeper knowledge in retrieval of data from respondents. Following the method adopted by Badu et al (2012) to obtain the full aids of investigation survey and minimalize related flaws, this study as well implemented and modified the Total Design Method (TDM) developed by Dillman (1978) and utilized by Wahab (1996). Accordingly, the respondents were not pressurized in providing information but were humbly asked to complete the survey within time.

Out of the copies of questionnaire administered, 75 were received. Perhaps, due the appropriateness of questions asked based on validity by experts and supervisor coupled with training for the research assistants, all answers too were valid. This made the study an 100% retrieval rate. The data collected was therefore very adequate for analysis.

3.5.3 INTERVIEWS

Interviews played an indispensable role in the divulging of data from the respondents. It provided the platform where unclear answers from the survey were clarified. This also helped in the triangulation of answers provided by the survey. The interviews were conducted mostly in offices and construction sites were respondents work.

A structured interview guide was designed to enable the study collect data capable of answering the research problem (see Appendix B). At some places the interview became more of focus group discussion as there were more than three professionals. This was very helpful since it brought out very beneficial and informed discussion about these emerging trends.

3.6 DATA ANALYSIS PLAN

A vivid description was done on the various data that were obtained from the field work. Transcription and interpretation of data were identified as the essential hurdles that qualitative researchers must satisfy in their quest to ascertain rich outcome in the data analysis process (Atkinson, 1998). Care was taken in analysing the minute detail of all information obtained.

In order to make meaning out of the responses from the interview, the content analysis of the reported cases and the questionnaire, the responses were edited and coded using the Statistical Package for Social Scientists (SPSS) version 19 to categorize connected influences. For easy understanding of the findings, the results were presented in numbers, tables and charts. For lucidity of the results, a database was established and rate of recurrence as well as cross-tabulations developed once the data had been gathered, corrected and coded.

In analyzing data retrieved from the open ended questions and subsequently the interviews, the information was read over and over again to understand patterns in answers. Apart from the descriptive statistics, the literature reviewed was more detailed and therefore assisted in the discussion of the results. The study also used a more simplistic and easily understood framework as suggested by Field (2005) and Badu et al, (2012).

3.7 ETHICAL CONSIDERATIONS

In a study of this nature, there is the need to seek consent from the authorities of the professional body and the participants of the study. The researcher sought the green light from the Ghana Institute of Surveyors. This enabled the retrieval of vital information from the members and various firms registered under the association. The respondents were assured that the study was strictly for academic purposes and subsequently improve service delivery within the Quantity Surveying Profession.

Before any form of interview or questioning begins, each respondent was taken through the objectives of the study and made aware that he or she has the right to be involved in the study or not. In this vein, consent forms were read and made available to the respondents to convey the purpose of the study and their right not to answer any question they are uncomfortable with.

3.8 LIMITATIONS

The analyses in this study are based on information from a designed questionnaire and succinct interviews. It is not likely to gain full and direct access to the internal state of these respondents. To address this, the study adopted Waller (2005) idea of readers making their own understanding and meanings by presenting relevant details of the interview by the respondents and officials. The use of questionnaire on occasion make respondents leather their thoughts, might not demand to expose the info or they might consider that they will not value from answering conceivably even be disciplined by giving their actual view. In this regard, they were stated why the info is being composed and how the outcomes will be useful to their course of study. The answering of the questionnaire was consequently unidentified. Hacksaw (2008) exposed that there are restrictions

of statistical analysis when observing causes and relations. It was therefore significant to permit for confusing variables. The likert enabled the addressing of such issues through descriptive statistics.

3.9 SUMMARY OF CHAPTER

This section has conferred thoroughly the methodology for the study. The study adopted both qualitative and quantitative research designs in tandem and largely employed surveys and interviews as the main instrumentation. It distinctively described the population and its characteristics and the sampling procedure before the collection of data. The data analysis plan was discussed and ethical issues considered.

CHAPTER FOUR

PRESENTATION AND DISCUSSION OF FINDINGS

4.0 INTRODUCTION

This chapter presents the data collected from the field work and it's analyzes in connection to the research objectives. The results from the survey are largely presented in statistical tables and charts in order to facilitate comprehension of the study. The results are discussed thoroughly using descriptive statistics in order to understand the relationship between the study variables.

The first section deals with the sample characteristics and the influence these attributes have on the study. The other aspect deal with the analysis on the emerging trajectories within the profession. The discussion of the results is directed towards the examination of the career trajectories within the Quantity Surveying Profession in Ghana and how these trajectories can help promote the practicing of the profession in Ghana.

4.1 SAMPLE CHARACTERISTICS

To accomplish the goals of the study, a total of seventy-five (75) respondents were sampled for the study. The characteristics have been presented in tables and charts in order to be subservient to the comprehension and generation of confidence in the reliability and veracity of the data collected.

4.1.1 PROFESSION AND WORKING SECTORS OF SAMPLE

Table 4.1 and Figure 4.1 summarized the sectors in which the respondents are working within the construction industry and the status in the construction industry respectively. Results indicated that the respondents are all quantity surveyors. Results revealed that a majority are in the building

(32%) and road sectors (24.7%), partners and associate members were 17.3% whilst other quantity surveyors working in the other industries such as oil and gas, the financial institutions amounted to 24%. The reality of the results is that the respondents are qualified professionals who are capable of providing the needed data for onward analysis.

Table 4.1 Working areas of respondents

Type	*Building*	*Roads*	*Partners*	*Others*	*Total*
% response	*32.00*	*26.7*	*17.3*	*24.00*	*100*
Number	*24*	*20*	*13*	*18*	*75*

Source: Fieldwork, 2015

4.1.2 STATUS OF THE RESPONDENTS

Figure 4.1 shows the status of the respondent for the study. It shows that 85% of the respondents are registered members of the Ghana Institute of Surveyors. This result lends interpretation to the fact that the data collected for the study is reliable since its findings are largely from professionals working in the field.

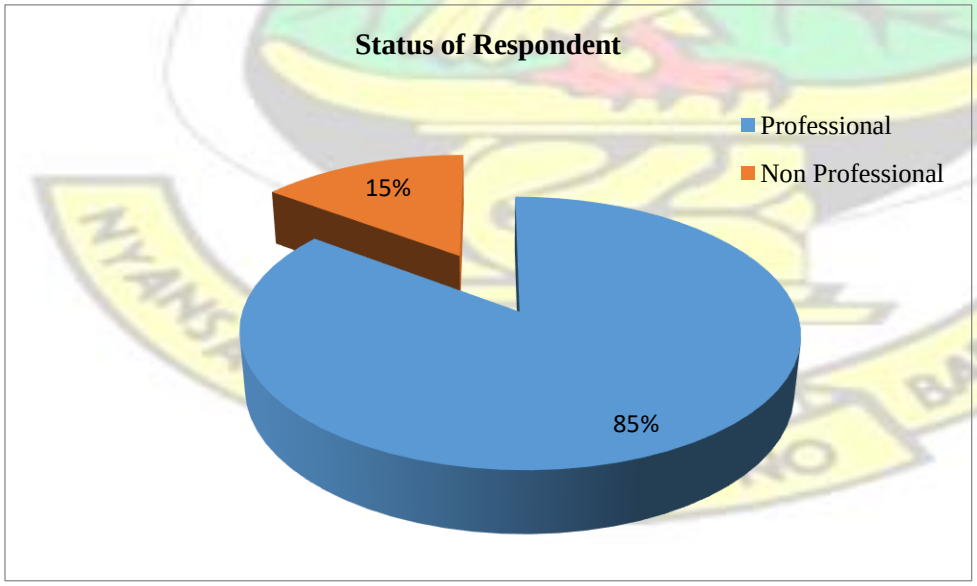

Figure 4.1: Status in the Construction Industry Source: Fieldwork, 2015

4.1.3 WORKING EXPERIENCE IN THE QUANTITY SURVEYING PROFESSION

Figure 4.2 which required to create the skill of the respondents in the QS profession also top to this understanding. At this time, above 68% of the respondents directed that they have more than 10-year experience in the construction industry in Ghana.

The know-how of the respondents in the perspective of this study is resolute as the integer of years of exercise and dynamic participation in the construction industry. The impression at this point is that an individual's years of knowledge is possible to have a positive impact on his understanding on the emerging career trajectories and thus founded on **Figure 4.2** those who answered to the examination are adequately knowledgeable in the QS profession to make available reliable data.

Also, 22% indicated they have had experience in the profession for up to 10years. Generally, these groups have considerable experience and can also provide very credible data. Another reason for their inclusion in the study is the fact that year experience bracket had the opportunity of studying from an improved and current syllabus from their institutions and therefore would provide beneficial data to the phenomenon being studied.

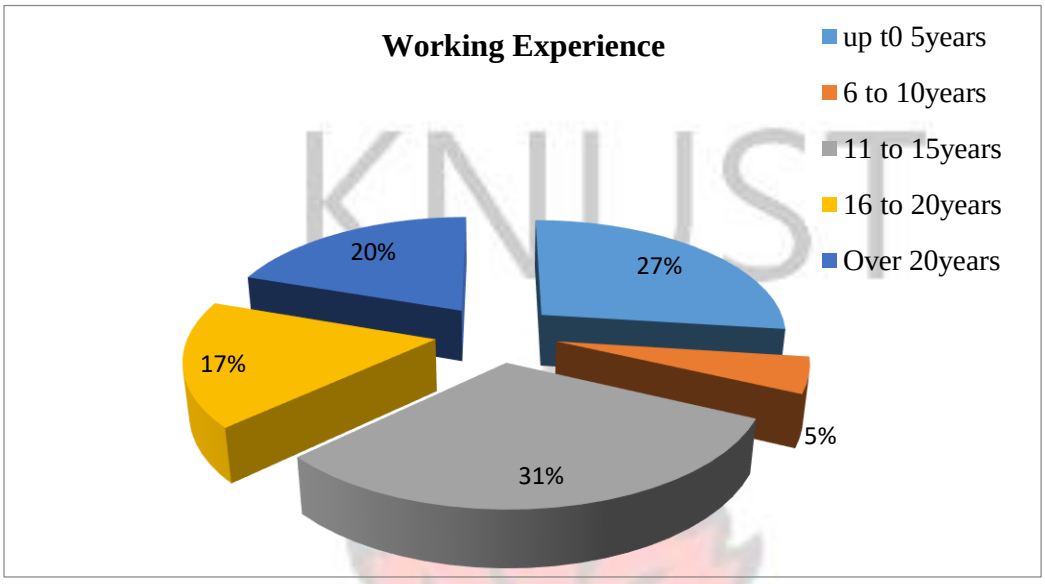

Figure 4.2: Working experience of respondents
Source: Fieldwork, 2015

4.1.4 WORKING SECTORS OF THE RESPONDENTS

Figure 4.3 indicate the result of areas in which the respondents are working. A majority of the respondents are working in the public sector. This result is necessary as the public institutions appear to be the mouthpiece of the government in any national project.

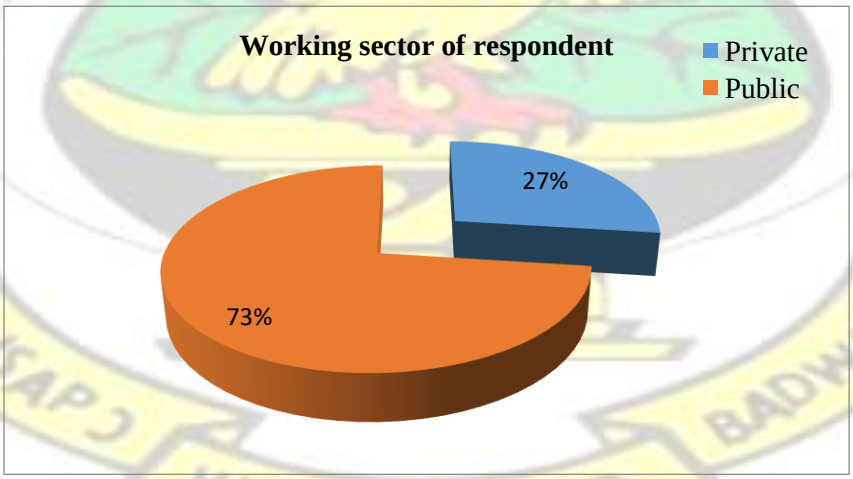

Figure 4.3: Working sectors of the respondents

Source: Fieldwork, 2015

4.2 BACKGROUND OF QUANTITY SURVEYING PROFESSION IN GHANA

The Quantity Surveying Profession in Ghana has been practiced by qualified and trained professionals who have had tertiary education (university, polytechnic and accredited university colleges) and subsequently passed the professional examinations. This means that after the initial degree in Building Technology or Quantity Surveying, one has to apply through a graduate entry scheme via the Royal Institute of Chartered Surveyors (RICS) accredited degree. This result finds expression in Ashworth (1994) and Ashworth and Hogg (2007) who documented the historical development of quantity surveying and revealed that QS traditionally entered the profession through an articled pupil scheme where a partner or senior surveyors would personally supervised the embryonic surveyor. This was later augmented through correspondence course and refreshers courses for preparation for professional examination for institutional membership.

Results also show that this graduate entry scheme which makes one a recognized Quantity Surveyor is important because the Ghana Institute of Surveyors (GhIS) which is a branch of the Royal Institute of Chartered Surveyors recognizes the importance of Continuous Professional Development (CPD) to be for the profession. This means that GhIS which was formed on February 28, 1969 has the mandate for professional development and therefore expedient that they regulate the practices of the profession. However, in 1973, the Professional Bodies Registration Decree under the National Redemption Council No. 143, Section 18:20 offered the Quantity Surveying division of the Ghana Institute of Surveyor to exercise quantity surveying.

In this vein, entry requirement into participation of the Ghana Institute of Surveyor (GhIS) is measured by an examination on Applied Use of Quantities. The examination includes four written papers in the area of Measurement, Building Economic, Professional Practices procedures, and

Building Contract, Claim and arbitration. An applicant need to get an average of 55 marks and not less than 45 marks in any of the four papers. The circumstances customary for suitability are that the person must roll first as a probationer with the association and go through preparation in an accepted place of work for two (2) after completions of national services.

For candidate coming out of the polytechnic system, entry into direct membership option means that the candidate must be 35 years or over and with 15 years' knowledge and in the view of the council has achieved wide array of quantity surveying involvement in the resulting area: Design cost advice and cost planning, Pre contract work and Early guidance to clients. If an applicant is found to be knowledgeable in these areas, the applicant will take a written test in the following areas: Tendering and Pricing; Construction Cost Management; Organization Management and Finance and Law and Arbitration.

4.2.1 QUANTITY SURVEYING PROFESSION IN GHANA

Results from fieldwork revealed that the Quantity Surveying is required to retain the uppermost informative and expert values, defend client and regulars done a strictly code of ethics and provide impartial advice, analysis and guidelines in the construction and other related industries. Quantity Surveyors in Ghana are professionals providing services for projects largely in the building industry. Traditional services comprise the preparation of Bill of quantities, Builders' Quantities, Cost Planning/Budgeting, Estimating and Contract Administration. Currently there are the emergences of other career paths such as investment appraisal, whole life costing, risk management, project management and procurement services. In order to adapt to the dynamic and demanding changes of clients, the profession is embracing wider services to remain relevant in the Ghanaian Construction industry.

The profession practice under the Ghana Institute of Surveyors (GhIS) with a comparatively smaller number. The membership is made up of registered members and probationers. Students upon completion of their required programme need to work under a registered member for at least 2years before taking a prescribed examination. However, these probationers are all included in the conduct of this study.

There are quite a large number of construction companies who have been employing the services of these professionals. The public sector which is run by the government makes a great deal use of the quantity surveyor. Such governmental organizations are found in almost every region of Ghana with the head offices in Accra. These include organizations such as Ghana Highway Authority, Department of Urban Roads, Department of Feeder Roads, Architectural Engineering Services Limited; Ghana Ports and Harbour etc. This reflects the fragmented nature of the industry in Ghana. For most development projects where government agency does not have the capacity, private consultant is called upon to offer those services. Some private consultancy as a result of the funding arrangement for the project.

Results showed that initially in Ghana when the Institute was formed in 1969 the profession was mainly involved in single rate rough estimation, cost planning, procurement assistance, measurement and quantification, document preparation particularly bill of quantities, cost control through building, interim valuation and payment. Respondents indicated that based on a basic price method of estimating, the QS at the first instance provides estimates of the initial cost of the project for clients' acceptance before the actual project commences. Consequently, the quantity surveyor would provide bill of quantities for tendering purpose. This means it was more of measurement and evaluation as pointed out by Ashworth (2013).

These traditional roles of the Quantity Surveyor however have obviously evolved naturally due to the dynamic demands of clients and the technological environment in which we live in also requires career trajectories for construction services in order to satisfy clients wants and needs.

In this satisfaction driven era, the adoption of the customary "bread and butter" of the profession bill of quantities has declined in Ghana and other specialized fields within the profession have evolved. The profession in Ghana now lends itself to economic and contractual managing of building projects offering a separate service in the construction industry. This calls for development of an array of abilities, understanding and thoughtful which can be functional in an array of settings within the industry.

4.3 THE EMERGING CAREER TRAJECTORIES IN THE GHANAIAN QUANTITY SURVEYING PROFESSION

Results from fieldwork indicate that there are emerging career trajectories in the Ghanaian Quantity Surveying profession as recorded in literature in other developed and developing countries. Interesting 100% of the respondents indicated that there are the emergences of career trajectories in the profession. The respondents indicated that they have to satisfy the demands of the clients. This is a clear indication that the profession is largely rested on clients' demands and their continuous existence is depended on the array of services that the profession can provide at the barest minimum cost. With client satisfaction on the thinking board, new career paths have evolved to make the profession a competitive one in the construction industry. Results revealed the following are emerging within the profession:

4.3.1 INVESTMENT APPRAISAL

Results indicate that Investment Appraisal has emerged within the Ghanaian Quantity Surveying profession. With Ghana embracing the need for long and short term investments, the quantity surveyor has become more visible in the acquisition of properties. The forecasting and feasibility analysis for properties and projects do not adequately cater for uncertainty and incomplete information. Clients therefore need an Investment appraisal in order to avoid less realistic decisions than might be considered desirable.

Respondents indicated that the investment appraisal has an additional value to the quantity surveying professional and has made them more competent and trusted by the clients. The interpretation of this result is that investment appraisal allows the quantity survey to determine whether the investment would be profitable or not. The respondents see investment appraisal as a financial planning process, which they use to determine whether an organization long term investment such as machinery, new project or infrastructure project is worth pursuing. By undertaking an investment appraisal for a prospective project, the investor is able to make an informed decision about the viability of the project.

Investment appraisal is about assessing the income from the proposed investment against the cost needed for the investment. This is due to the fact that most investment project has a life span. Therefore in calculating the viability of the project one needs to know the total amount of money to be invested into the project at the initial stage. Once this amount has been invested, it is important to see how the initial amount invested will be recouped and the recovering time. Investment appraisal will therefore give you an idea as to the amount of funds needed for the project, the time it will take to recover the initial investment and the profit from the investment.

In investment appraisal the time value of money is taken into consideration. This is because value of money today will not have the same value in ten years to come. Hence the effect of inflation and interest rate is taken into consideration when undertaking investment appraisal. The following are some of the investment appraisal methods:

1. Payback method (PB)
2. Net Present Value (NPV)
3. Internal rate of return (IRR)
4. Accounting rate of return (ARR)

4.3.2 PROCUREMENT SERVICES

Another emerging career trajectory in the Quantity Surveying profession is that of procurement services. Procurement is the process of selecting a contractor, supplier or consultant to execute a particular service. Procurement has to be done in a free, fair and transparent manner. Some of the areas that procurement services are needed includes works, goods and services. Procurement of works involves the process of securing the services of contractor to undertake construction activities. The process includes giving access to prospective contractor to submit bids for the construction of a project. The contractors may or may not be given blank bill of quantities for which rates are entered against and the total cost of the works obtained by adding all the individual works items. The prospective contractor is selected by evaluating all the bids obtained against predetermined criteria. The predetermined criteria may include the following:

- Work experience
- Personnel of the contractor
- Equipment holding of the contractor

- Financial capability of the contractor

However there are various methods of procurement of works. The following are some of the methods as specified in the Procurement Act 663.

- International competitive tendering
- National Competitive tendering
- Price Quotation
- Restricted tendering
- Single source or sole sourcing

Procurement of goods is also done in similar manner as compared to that of works. Procurement of service in other works is also known as selecting of consultant for a specialized task of work. This involves specialized skills within a particular field of operation such as construction, finance, IT, Agriculture, etc. These services are intellectual based.

The process in the procurement of consultancy services involves the issuance of expression of interest in the newspapers or journals for prospective firms to express their interest. This expression of interest includes the knowledge of the works been requested for or advertised and the firm demonstrating the capacity in terms of the personnel and experience of work of similar nature.

The next stage in the procurement process is the short listing of firms from the ones that expressed interest and given what is known as Request for Proposal (RFP). The request for proposal has in it the Terms of Reference (TOR) which details the how the proposal will be evaluated. Some of the requirements in the RFP are as follows:

- The personnel requirement for the task

- Things to be provided by the client
- Technical requirement as to how the task will be carried out
- Financial proposal for the assignment

The Value and Cost Based Selection (QCBS) customs a modest method between short-listed industry that takes into account the measure of the offer and the cost of the services. Cost as an influence of choice will be used carefully. The comparative load to be given to the quality and cost will be showed for each case contingent on the environment of the project Guideline selection of and employment of consultant by World Bank borrowers, (2002).

From the respondents Architectural and Engineering Services Limited, Associated Consultant, Twum Boafo and Partners, Addis Consult Limited, Department of Urban Roads, etc are but a few that indicated as firms that carry out procurement services.

4.3.3 WHOLE CYCLE COSTING

Results also indicated that Whole Cycle Costing (LCC) has emerged as a career trajectory within the Ghanaian Quantity Surveying profession. According to respondents, clients are now demanding to know the life span of their properties. In this direction, the whole cycle cost career is dedicated to providing the cost of ownership from acquisition to its decay. According to the Office of Government of Commerce (OGC) 2003 report, life cycle costing is the cost of acquiring the property, the cost of operating it and the cost of maintaining it over it whole life through to its disposal, i.e. the total ownership cost.

Life cycle valuations are figure oriented and are not certain but provide a sign of the value of a constructing afar a value to construct. Towey (2012) offered that if Life cycle factors are a thought, then they should be talked with selections as early as likely to aid the plan procedure as additions

connecting restructures could cost time and money. The life cycle cost can be determined by calculating the Present Value (PV) factors of the entire component into the acquisition of the property (Kehily, 2012). According to BSI and ISO documents and cited by Kehily (2012) indicates that Whole Life Cycle Costing are broken down in four classification categories as Construction, Maintenance, operation, occupancy and End of Life cost.

4.3.4 VALUE MANAGEMENT

Value Management (VM) is an organized, orderly and logical procedure that pursues to attain value for money by giving all the essential purposes at the bottom total cost reliable with the requisite level of excellence and act (Mohammed et al., 2011). VM is a practice in which role benefit of a development are made clear and evaluated with a value structure determine by the client (Kelly et al., 2004). VM is also a technology for enlightening client value in projects, product, processes and systems which has been international recognized for almost forty years (Kelly et al., 2004). Value Management is also known as Value Engineering in the United States of America and Japan.

Kelly and Male (1993) argues that, a trade and industry managing of projects needs a blend use of value and cost in which the addition among Value Managing (VM) and Cost Management (CM) are seen to provide benefit to the quantity surveying profession. Value Management (VM) was seen to afford the quantity surveying profession with plenty of opportunity to development new skills and help shape fresh pictures of the career (Hogg, 1999).

A study conducted by Hogg (2004) and cited by Mohammed (2011) on leading UK cost advisor exposed that most reasons for the low practices of VM among QS practitioners is due low demands from the client and their unwilling to devote other charges for the services.

4.3.5 RISK MANAGEMENT

Risk management is one sensitive area in the field of construction since when ignored could bring huge financial losses and fatalities. In Ghana, risk management has been of great concern as there have been several reports of building that have collapsed due to not adhering to standard construction principles. In line with this Perera (2010) also pushed forward that risk management offers an organized way of assigning risks in building projects allowing developments to be succeeded with better mark of expectation and consideration.

Respondents indicated that risk management should be conducted on every project before its commencement; however, this is not done by industry professionals and the cost is obviously very huge. The risk management approaches are existing but are seldom exercise by the quantity surveyor (Hogg, 2000). Egan (2002) determined that a surprising 40% of building projects are provided lost, 50% are over budget and 30% fail to meet expectations. The industry's difficulties are compounded by the nonexistence of consistent past data of the doubts met by the building professional (Dallas, 2006).

Most construction companies in Ghana now are taking risk management seriously since clients and the public are demanding a better service. Some companies have introduced periodic assessment of their projects to enable them have responses capable of delivery the best to the client and the public. This perhaps is based on Zou, et al (2007) suggestion that risk management can be achieved and considered on a further systematic and total way through the life cycle of a project. The professional quantity surveyor accommodates risk by the presence of an eventuality payment at tender stage in the bill of quantities.

With literature pointing to the fact that construction projects are stress bound and full of risks (Latham, 1994; Baker et, al, 1997), respondents indicated that the risk involved in the construction projects should be managed initially by the design team before the project even starts. Risk response may be also perform by carefully reviewing the Condition of Particular Application or Contract Data well so as to avoid claims that will arise due to failure by the parties to the contract. When this is done well some aspect of judgement debt will be eliminated as failure to by one party results in these claims. From the survey it was evident that firms like the Ghana Home Loan, AKon Consults Limited and Taysec Limited are a few of the firms that carry out risk analysis on the project they undertake.

4.3.6 TECHNICAL AUDITING

The part of the quantity surveyor has altered ended the years and the current QS practice capabilities are in expanded trails in the building industry as well as outside the limits of the built environment (Brandon, 1990).

Technical auditing is an investing that goes to access the process involve in the administration of a particular project. In most cases government assess loan or grant facilities from donor partners to undertake a specific project. The project is to be executed within certain predetermined criteria with regards to how the procurement process should be carried and the condition of contract in which the project is to be administered. Technical auditing therefore seeks to investigate the processes that are involved in the procurement process, contract execution and closure of the project. The audit intends to ensure the process given in the guideline is followed to the later. Therefore, in carrying out technical audit, all that it takes is to follow the guidelines.

Therefore, in the loan agreement between the Government of Ghana and the Africa Development Bank (AFB)/AFD for the construction of the Awoshie – Pokuase Road, it was agreed that the bank will conduct technical audit on the process in line with the AFD guideline for procurement and Condition of Contract. The banks sometime carry out periodic review of the process and make recommendation where the need be.

This technical audit is to help identify lapses and the good practices and to find solutions should the need be. Economics is a profitable industry if a comprehensive possibility of chances in cover, banking and investment. Financial loaning is energetic in the financial development of any country and the Ghanaian financial structure so far has structured itself to donate all-out in this aspect of operation. For instance, growth/scheme and housing financing are very much encouraged in every country. Technical appraiser is one of the important tasks in the financial industry leading particularly with mortgage backing loaning. The quantity surveyor by his or her training has competency to handle issue within the financial industry and technical appraiser.

In Ghana, with the accessibility of loans for huge projects from banks and other financial institutions, these financial institutions or banks evaluate borrowers and their proposed project. This makes the technical auditor more valuable as he/she is expected to give technical reports on three aspects:

1. Credit appraisal for the borrowers
2. Legal appraisal
3. Technical appraisal for the project.

The financial institution or bank wants to determine the value of the project to be built or on conclusion involuntary sale value of the future project to be promised. This is an obligation to safe

the advance. Technical assessment is obligatory to determine the above values. Technical assessment of housing loan has numerous stages. Originally, estimate essential to be approved for the proposed project rendering to the complete estimate principals, the planned expansion needs to be estimated. In that technical appraisal has to go through approval constructing plan and specification. Technical auditing should confirm numerous issues such as market value, involuntary sale valued of the property, ground circumstances, access road and usual guidelines and rules of numerous establishments.

4.3.7 PROJECT MANAGEMENT

Project managing is the use of information, abilities, tools and methods to project doings in direction to meet or exceed participant wants or expectation. It generally seeks to meet the needs and requirement of stakeholders.

Typical project management involves identifying stakeholder requirements. Identifying the stakeholders who have those requirements and needs. Project management also involves balancing competing demands and constraints. Project management may be done by a team of consultants or by an individual. When done by individual then the person will be accountable for organizing the doings of all the sides complicated in the project.

From the respondent is was evident that most project management services are been perform by the private sector. The project manager in this regard is responsible for the coordination of the whole construction process to enable the client achieve value for money in the investment. The project manager also takes responsibility for anything that transpire with the execution stage of the project. The project manager together with the client aims at ensuring value for money in the construction process.

It is evident from the survey that Ghana Home Loans, Associated Consultancy, Twum Boafo and Partners, Addis Consult are some of the firms that indicated that perform technical audit on implemented projects.

4.3.8 FACILITY MANAGEMENT

Facility management is a combined method to functioning; sustaining, enlightening and adopting the building and infrastructure of a society in effect to generate an environs that intensely upkeep the prime aims of the organization, Atkin (2009). In exercise, facility management shelter an extensive array of services containing real estates, managing, financial controlling, change management, human resource managing, health and safety and contract management.

According to Atkin (2014) the placing of facility managing in the life cycle of a construction or other constructions is such that it can be viewed as a connection among the end of building (commission and delivery) and the commencement of project (for a modification of use or the constructing of fresh facilities). Information for briefing in the facility management area can be categorized in three directions:

1. Explanation of operation and doings to be performed in the building or facility. This info is required to design the plan and organization of space and function.
2. Description of info essential from the plan course and deemed acute for the actions team to evaluated plan clarifications, taking into reason long term operation costs.
3. As built info in records of how the facility was built is dynamic for its successful process and need to be preserved from the primary theme then end ordinance in a facility handbook for handing over to the owner.

Base on the respondent from the survey a few firms like Ghana Home loans, A-Kon Consults Limited and Taysec Limited indicated that they are also offering services in facility management.

4.3.9 SUSTAINABILITY ADVISOR

Sustainability advisor seek to sought greening advise to the kind of construction works that go on which the eco system. This is a new trend where construction is to be carried out in a manner so as not to adversely affect the environment.

4.3.10 ENVIRONMENTAL SERVICES MANAGEMENT AND COSTING

Environmental services management deals with the management and costing of all environment services in the construction industry. It deals with the costing of sanitation of land fill site and sanitary facilities. Results indicate that although Environmental Services Management and Costing have emerged in the profession, the degree of adaptation is very low. Environmental Services Management is very crucial.

4.3.11 SUB CONTRACT ADMINISTRATION

Sub Contract administration deals with issues concerning big projects that have a number of sub contract works within it. In multiple infrastructure projects such as oil and gas processing plant or construction of airport, due to the large number of specialized areas, one needs to look at all the sub-contract. Sub contract administration can be executed by consultancy firms by making sure that the scope of works under that particular sub contract are done according to specification, within cost and in accordance with the Condition of Contract.

4.4 DESCRIPTIVE STATISTICS

Table 4.2 presents the descriptive statistics of the emerging career trends. In this vein, the study was interested in knowing what these emerging career paths are and how significantly have they been emerged in the construction industry. Consequently, the respondents were requested to rate the level of emergence of the criteria from 1 to 5, where 1 signifies Very Low, 2 signifies Low, 3 signifies Substantially Low, 4 signifies High and 5 signifies Very High. This question was analyzed based on the previous question which had an affirmative answer that indeed there are emerging trends. Table 4.2 shows the statistical analysis of the career emergence within the QS profession in Ghana. In the analysis, the standard deviation tells us the spread scores from the means and the closer the standard deviation to zero the lesser the movement away from the mean and hence the higher the mean.

Therefore as can be seen on Table 4.2, Environmental Services Management and Costing had average scores which were below 3.0. This lends to the interpretation that their emergence is above low but below substantially low. Further examinations of the results point to the fact that Investment Appraisal, Whole Life Costing, Value Management, Risk Management, Technical Auditing, Facility Management, Sustainability Advisors and Sub-Contract Administration had average means that were above substantially low but below high. Also, only Procurement Services and Project Management had high emergence rate since their means were 4.3 and 4.1 respectively. Thus it can be said that, even though all these trajectories are emerging in Ghana, the most dominant ones are procurement services and project management.

Table 4.2: Emerging Career Trajectories in Ghana

Variable	Observation	Mean	Std. Dev.	Min	Max	Rank
Investment Appraisal	75	3.58667	1.04096	1	5	5th

Procurement Services	75	4.346667	0.83007	3	5	2nd
Whole Life Costing	75	3.36	1.14656	1	5	7th
Value Management	75	3.38667	1.28287	1	5	6th
Risk Management	75	3.14667	1.27017	1	5	8th
Technical Auditing	75	3.38667	0.97111	2	5	7th
Project Management	75	4.14667	0.72956	3	5	1st
Facility Management	75	3.62667	0.99693	1	5	4th
Sustainability Advisors	75	3.04	0.96479	1	5	9th
Environmental Services Management and Costing	75	2.56	1.21076	1	5	10th
Sub Contract Administration	75	3.93333	0.94916	2	5	3rd

Source: Fieldwork, 2015

4.5 SIGNIFICANCE OF CAREER TRAJECTORIES WITHIN THE CONSTRUCTION INDUSTRY AND ADAPTATION WITHI THE INDUSTRY

As part of it specific objectives, this research considered it necessary to establish from the professionals the relevance of these emerging trajectories for both the construction industry and other industries in Ghana. Sequentially, the respondents were asked to rate the level of significance from 1 to 5, where 1 signifies not important, 2 signifies less important, 3 signifies moderately important, 4 signifies important and 5 signifies very important.

Table 4.3 shows the statistical analysis of the significance level of the emergence of these career trajectories. In the analysis, the standard deviation tells us the spread scores from the means and the closer the standard deviation to zero the lesser the movement away from the mean and hence the higher the mean.

Results indicated that Project Management is the highest significant career trajectory within the construction industry. It had a mean score of 4.5 meaning higher ratings above high. This was followed by Procurement Services with a mean score of 4.49. Interestingly, Investment appraisal

(M=4.4), Whole life Costing (M=4.0), Value Management (M=4.2), Risk Management (4.1), Sub-Contract Administration had high ratings in terms of significance.

Sub-Contract Administration (M=4.2) all had high significant ratings. Further examination of the results show that technical auditing, facility management, sustainability advisor and Environmental Services and Costing had significant ratings as moderately significant. These results are surprising as the importance of sustainability cannot be over emphasized. In addition, the issue of environment should be of great concern since projects must be done with minimum of damage to the environment.

Table 4.3: Summary of Rating of Career Trajectories

Variable	Observation	Mean	Std. Dev.	Min	Max	Rank
Investment Appraisal	75	4.4000	0.6151	3	5	3rd
Procurement Services	75	4.4933	0.7600	3	5	2nd
Whole Life Costing	75	4.0000	0.7352	3	5	7th
Value Management	75	4.1600	0.6584	3	5	5th
Risk Management	75	4.0667	0.7229	3	5	6th
Technical Auditing	75	3.7333	0.7941	2	5	9th
Project Management	75	4.5600	0.4997	4	5	1st
Facility Management	75	3.8667	1.0045	2	5	8th
Sustainability Advisors	75	3.5600	0.8094	2	5	10th
Environmental Services Management and Costing	75	3.4400	0.9040	2	5	11th
Sub Contract Administration	75	4.1733	0.8443	3	5	4th

Source: Fieldwork, 2015

The interpretation of the results is that these emerging trajectories have averagely adapted within the construction industry in Ghana.

4.6 DRIVERS INFLUENCING EMERGING CAREER TRAJECTORIES WITHIN THE

GHANAIAN QUANTITY SURVEYING PROFESSION

Results indicated that one of the drivers influencing the emergence of career paths within the profession is the satisfaction or the focus of the clients. This finding is substantiated by Powell (1998) and Ashworth (2013) who were of the view that construction cost of the capital works is as important and clients wants a complete work and not nearly finished projects. Respondents indicated that the clients are now knowledgeable in what they want and are conscious of what they want. They become part of the designing process and are involved in all the stages of the project. In this vein, the clients focus or demand influences the quantity surveyor to explore more and become confident and competent in whatever services been rendered.

Results show that with the advent of information technologies, clients' have become more sophisticated in their service demand as they want electronic business services. The development of ICT in Ghana is therefore driving clients to ask for more value to what they pay to professionals. This finding finds expression in Cartlidge (2012) quantity surveyors are attractive in all level of ebusiness from the use of email and fully electronic procurement and tendering and Barlow (1996) who suggested an embracement of a well-known use of info know-hows and present technology forethought ingenuity. This study therefore calls for the professionals to be abreast with the current technologies in order to offer an efficient service. We must not lose sight of the fact that technology in itself does not do the job but we must be used as a tool in getting the client satisfied.

Results also indicated that research development is one of the drivers influencing the emergence of these career trajectories within the profession in Ghana. Research informs policies and offers insights into our everyday activities. Through research the needs and wants of the public are known and better services are provided.

Results also showed that sustainability of the profession is as much variable a driver to the influencing of these career trajectories. The quantity surveyor apart from the 'measurement and evaluation' would want to offer extra in order to be in competition. This is necessary because without sustainability, you become extinct and not valuable to the public. In this vein, the profession hooks on to related jobs to increase its services and visibility to the public and clients.

4.7 THE AVAILABILITY OF COMPETENCIES OF EMERGING CAREER TRENDS WITHIN THE PROFESSION

Based on the results that there are emerging career pathways, the study was interest in the availability of competencies of the emerging career trajectories within the Ghanaian profession to inform the way forward. Figure 4.3 shows responses to the availability of professionals to these emerging career paths. Since the nature of the question enables the respondent to tick as many as fits, the results was analyzed in percentages of the number of ticks to the variable. Results indicated none of the respondents indicated that there are no professionals working in the area *project management*. This means that 100% of the respondents are of the view that project management has the availability of competency levels working in that field. This was followed by procurement services with only 5 out 75 respondents indicating that there are skills shortages in the area of procurement. This lends to the interpretation that this emerging career path has the availability of professionals who are providing essential services to clients in the process of selecting a contractor, supplier or consultant to execute a particular service. Procurement has to be done in a free, fair and transparent manner. The process includes giving access to prospective contractor to submit bids for the construction of a project. Sub-contract administration was ranked third on the scale of

availability of competencies in these emerging career trajectories. Sub-contract administration recorded 22/75 respondents answering that there are shortages in the field. This is a good result in terms of competencies as it lends to the interpretation that there are more than half asserting that there are more services being rendered to clients.

In the areas of Technical Auditing and Facility Management, results indicated that there are quite the availability of professionals offering that services as the variables recorded 27/75 each. Value management was considered average in terms of professionals offering that service. Interestingly, Risk Management and Whole Life Costing recorded 59/75 responses as an area having low number of professionals operating or offering services to clients. However, sustainability advisors recorded the highest in terms of non-availability of professionals offering that services. 74/75 respondents indicated that although the career is emerging little is been done in terms of providing services in that direction.

The case of sustainable advisor was not different from the services of Environmental Services Management & Costing where 59/75 indicated that there are low numbers of professionals in that field. This is of great concern as the issue of the environment accounts to the health status of the public. Interestingly, although investment is becoming very popular in Ghana, there are low quantity surveyors in that direction as depicted on Fig. 4.4.

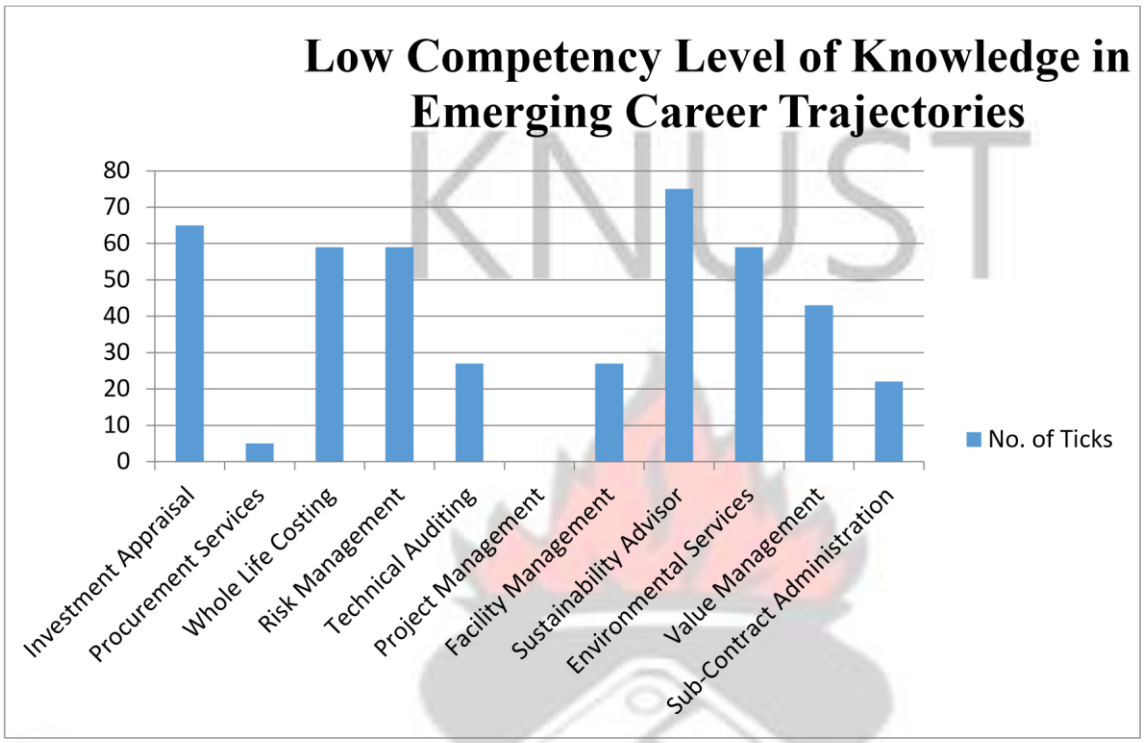

Figure 4.4: Showing number of skills level available within emerging career trajectories
Source: Fieldwork, 2015

4.8 EFFECTS OF EMERGING CAREER TRAJECTORIES ON PRACTICE

Again, in satisfying the effect of the emerging trend on practice, the study revealed that there have been positive effects on practice. Results indicate that there has been a great impact on the development of skills and competencies and better affiliations to other industries. What these results mean as shown on Fig. 4.4 is that these career trajectories have equipped the professionals to improve on their skills through training and development. We must not over-look that for one to practice and provide services calls for further intellectual thinking.

The results also can be interpreted that the Quantity Surveyor now is better placed or has more value in the construction industry and other industries. With the emergence of the oil and gas

industry in Ghana, the financial institutions etc, the quantity surveyor can compete and also have affiliations with other industries outside the construction segment.

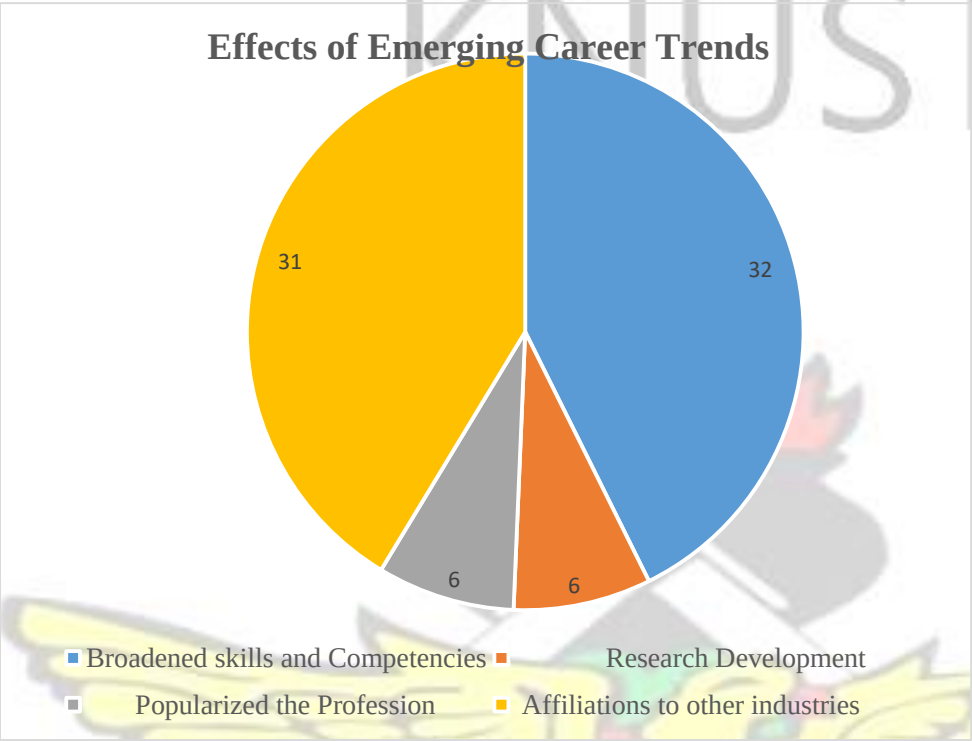

Fig 4.5: Effects of emerging career on profession Source: Fieldwork, 2015

4.9 THE MAINTENANCE OF PROFESSION IDENTITY

The Quantity Surveying profession traditionally has been one of cost advisor that is measurement and evaluation. In this regard, the study was interested in finding out whether these new career trajectories are making the Quantity Surveying lose its professional identity. The result was determine by a likert scale where 1 represent to a very large extent; 2 = To an extent; 3=Averagely; 4= Low Extent and 5= Very Low Extent.

Although there were responses that it is maintaining the identity of the profession as Quantity Surveyors, the results from very low extent and low extent speak volumes. 22% (Very Low and Low options) responded that these career trajectories are not maintaining the identity of the

Quantity Surveying Profession as seen on Fig. 4.6. This is a result that must be looked at and calls for education of both professionals and the public taking into consideration that the respondents are all professionals of the profession.

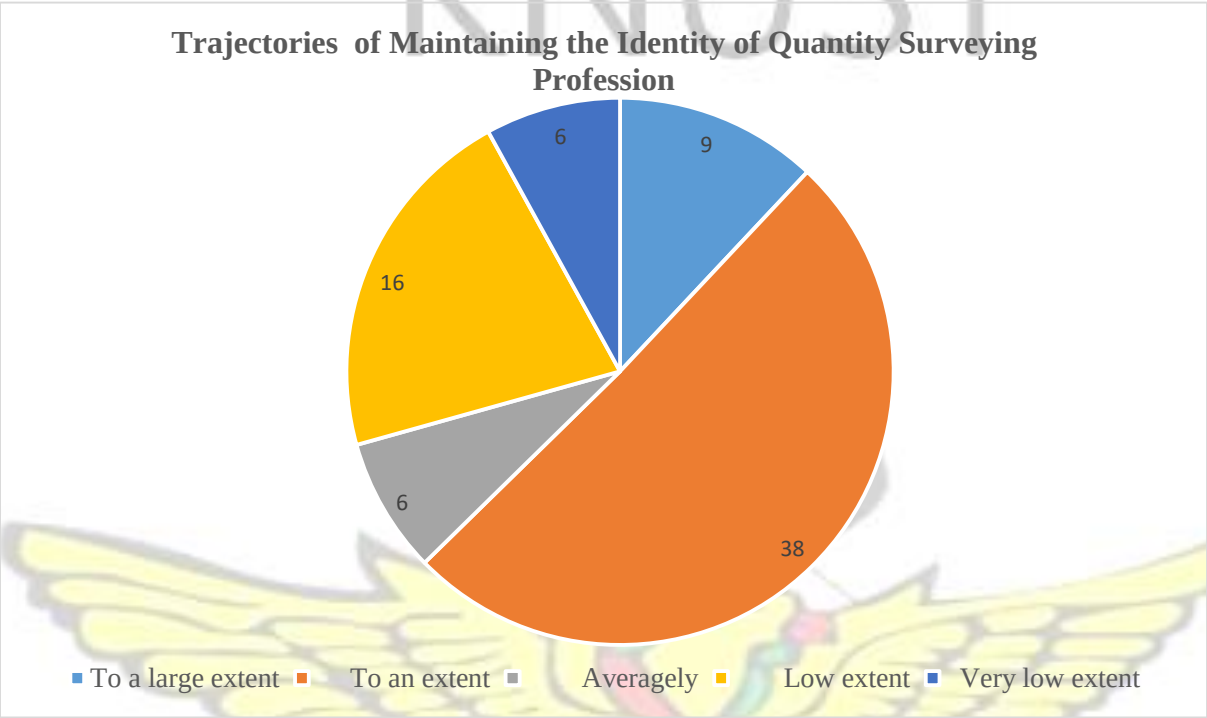

Fig. 4.6: Trajectories and maintenance of Identity Source: Fieldwork, 2015

4.10 PROSPECTIVE CHALLENGES OF EMERGING CAREER TRAJECTORIES

As measure of its exact objects, this investigation sound supposed the challenges associated with these emerging career pathways within the profession. It careful also that information of this kind would deliver some foundation to have an vision into what should be done to cater for these challenges in order to make the profession more valuable to clients and the public.

Although literature point to numerous challenges within the Quantity Surveying profession, the study was more interested in the challenges these new career trajectories would bring along. Definitely, results have shown that these career trajectories have made the profession more

valuable in terms of the wider services been provided to clients. This is as a result of the changes that are occurring and the need to adapt to these changes. Respondents indicated that the leading challenge within these new career trajectories is the *role of leaders*. The role of leaders is paramount to the success of these services and can as well the challenge if leaders do not play their roles well. Already, the leaders must be able to project the image of these career trajectories. This study calls it the need for professional identity for the current trends. Without a clear, coherent and relevant identity, and without strong professional structures in which these leaders must provide for the current trajectories, the profession may survive, but it will struggle to flourish.

Furthermore, respondents were of the view that competency level of knowledge in the areas of service is as much a challenge to the profession. This is not strange as earlier results point to a fact that there are some areas within the emerging career trajectories with low competency levels. In this dynamic changing technological world with sophisticated clients, the profession will be fumbling in such areas such as risk management, investment appraisal, whole life costing, environmental services and costing, etc and would not provide satisfactory services to clients. The issue of competency level as a challenge has a link with the *focus of prospective clients* and is a challenge to the profession.

4.11 DISCUSSION

The results of this study point to an undeniable fact that there are new career trajectories within the Ghanaian Quantity Surveying profession. The results indicate that among these emerging trajectories project management and procurement services are the dominant services being provided. These services are perhaps dominant due to its physical roles in the start and finishing of projects. The two services work hand in hand as procurement services looks at making materials

available for the smooth running of the project and the project management doing the role of making sure every aspect of the project is smoothly on course. Smith (2004) and Ashworth (2013) revealed in their studies that project management and procurement services are the non-traditional services which have been embraced by the Quantity Surveying profession. Their studies also revealed that in the United Kingdom and Australia there is high demands for value management, risk management, investment appraisal and sustainability advisor. These revelations from the authors however were not found to be the case within the Ghanaian Quantity Surveying profession. This can be attributed to low number of professionals who have specialized in the areas of risk and value managements. It was therefore not surprising when respondents offered that emerging careers trajectories such as investment appraisal, environmental services and costing, whole life costing and facility management were very significant areas of the profession but had lower mean scores in terms of adaption of these services within and outside the construction industry.

It must be emphasis that although some of these emerging trends within the quantity surveying profession in Ghana might has not adopted the officially laid down routes for performing this trends but has developed their own means by which these trajectories are carried out. For instance in the area of risk analysis, there might not be a risk register or risk management plan but quantity surveyor has developed some means to access the risk and how to mitigate it when they arise.

The results also indicated that the effect of these emerging trajectories is on skills development and competencies. With skills development and improved competency, the profession is place very high in the construction industry and other industries and can compete with other professionals found in the construction industries.

Smith (2004) stated that the development of computer aided designs (CAD) and mechanically made quantities are seen a main challenge chiefly in footings of the practical part of the quantity surveyor. This is because most quantity surveying was seen a profession where measurement was taken physically on the site and taking off done manually before the preparation of Bill of Quantities (BOQ). This challenge is as result of the fact that the computer will take away section works been performed by human. Interestingly, the issue of information technology and the development of computer aided designs was not found to be a challenge with the emergence of career path in Ghana. This is attributed to the fact that all professions have realized the importance of technology and have developed themselves in the areas of technology. In this vein, many of the professionals in Ghana have moved from more paper works to less paper works and deeply using high level technology in the rendering of services to clients and the public.

4.12 SUMMARY OF CHAPTER

This episode was keen to the examination and deliberations of the outcomes gotten from the arena review. It started with a short-lived conversation of the survey questionnaire and descriptive statistics of the results got from the field. The section decided with mean score index of the emerging career trajectories in Ghana and its relevance and effect on practice. In addition, descriptive statistics based of standard deviation score enabled the study to assess the significance of 11 emerging career trajectories in Ghana.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.0 INTRODUCTION

The preceding sections obtainable have elucidated the theoretic, untrue, technical, and applied methods for speaking the investigation plan. These investigations concluded here as this section précises the subjects elevated in the study. In addition, a swift of how the main objects were attained is clarified and afterward the chief deductions of this study. Lastly, the section accomplishes with commendations for additional study that can be showed founded on the deductions and limits of the study.

Through the pillars of this dissertation, the term emerging career trajectory has been used often. For the drive of this study, emerging career trajectories refer to other services being rendered by quantity surveyors in addition to the traditional ones such as preparation of Bill of Quantities, Builders' Quantities, Cost Planning/Budgeting, Estimating and Contract Administration.

5.1 ATTAINING THE RESEARCH OBJECTIVES

This study was started with the main goal of examining the career trajectories in the quantity surveying profession with the opinion to knowing the level of adaption by the construction companies and other industries. In order to attain these objectives, four research questions were customary. To guide the examination of these objectives, the following research questions were outlined:

1. What are the emerging career trajectories in Ghana's construction industry?
2. What are the adaptability levels of the emerging trends in the quantity surveying?
3. What are the effects of these new trends on the construction industry?
4. What are the main challenges in the emerging trends in Ghana's industry and how do we nip it in the bud?

5.1.1 REVIEW OF OBJECTIVES

In order to examine the emerging career paths within the quantity surveying profession in Ghana, in depth integrative review was done to identify these issues and other drivers influencing these changes. The chief goal of this study, as well-known previous, was to examine the level of adaption and these emerging career paths within the QS profession and consequently a number of study purposes were advanced in direction to jointly content this goal. Here, the study goals reviewed to highpoint the level to which they were consummate complete the numerous stages of the investigation.

OBJECTIVE 1: To conduct critical literature survey to establish the different aspects of the quantity surveying profession;

To achieve this objective, extensive literature was reviewed mostly from journal articles, referenced conference papers and edited annual reports. Important issues regarding career paths within the quantity surveying profession were recognized from the wider career literature containing new aids in journal and books publications. The review exposed that indeed there are career paths evolving in the quantity surveying profession and this is due to the fact that the profession needs to adapt to change and provide satisfactory services to clients. The study also

revealed four drivers influencing these career paths. These drivers are Client focus, Development and application of information and communication technologies, Research and dissemination and Sustainability agenda.

OBJECTIVE 2: To determine the level of adaptation of these emerging career pathways within the Ghanaian Construction Industry

The study revealed that the Quantity Surveying profession is experiencing significant change in terms of scope and type of services. This objective was answered using the likert scale scheme and by descriptive statistics revealed that the new career paths are being adapted by construction companies in Ghana. The study also identified 11 career paths within the profession namely investment appraisal, procurement services, risk management, whole life costing, value management, technical auditing, project management, facility management, sustainability advisors, environmental services management and costing and sub-contract administration. Project Management and Procurement appeared to be the dominant career trajectory adapted by the construction and other industries. The study revealed that although most of these career paths have been adapted by the construction and other industries some remain very low in terms of its services.

OBJECTIVE 3: To study the effect of the emerging career paths within the construction industry in Ghana

To achieve this objective, the effect was measured on what was being done before these emerging career trajectories evolved. The study revealed that, to an extent these emerging career paths have mainly broadened the skills and competencies of the professionals in Ghana and subsequently made them more competitive to the other skills found within the construction industry. Invariably,

this skill that has brought value to them has popularized the profession. However, in the area of research development, there is little effect.

OBJECTIVE 4: To identify the challenges associated with these emerging trends in quantity surveying within the Ghanaian Construction industry and provide practical solutions

In addressing this objective, the outcome of the survey, interview and discussions revealed that the major challenge associated with these emerging career trajectories is the role of leadership in the emerging trends. The study also captured the competency level of knowledge in the areas of services, difficulty of the use of developed information technologies and the focus of the prospective clients. The issue of the consultancy fees by the would-be clients was seen as the least of the challenges.

5.1.2 OTHER FINDINGS

There are emerging career trajectories within the Ghanaian Quantity Surveying Profession, however competency level and low services exist in the areas of investment appraisal, sustainability advisors, environmental services and costing and some aspect of risk and value management. The profession is doing very well in project management and procurement services.

5.2 CONCLUSIONS

The quantity surveying profession in Ghana is on the cusp of potentially significant change with the emergence of these career trajectories. Whether this will have positive impact on the profession depends greatly on the development of competencies and skills of the professional. The study has

examined the emerging career trajectories within the Ghanaian Quantity Surveying profession and evident that these career pathways are emerging and providing valuable services to clients and public. The relevance of these paths is enormous to the profession as it has become a "value adding" level to a profession that was traditionally for measurement and evaluation. Although the adaptation of these paths have made the profession more competent in and outside the construction industry, there is the need to guard against challenges and move towards complete training and development in order to be more efficient in service providing and clients satisfaction. The world is moving more towards efficiency and specialization and in order for the profession to remain relevant, career trajectories are imperative.

The QS profession in Ghana is also been urged to develop a strong strategic partnership with other countries so as to learn and adapt to the current emerging trajectories in the profession.

5.3 RECOMMENDATIONS

The study has shown that there are obviously emerging career trajectories within the Ghanaian Quantity Surveying as seen globally. However, for the best to be gained out of these trajectories, the study recommends the following:

1. The emergence of career trajectories within the Quantity Surveying Profession in Ghana calls for strong policies and regulations. There is the urgent need to develop strong strategic partnerships with other countries that have already developed these emerging career pathways such as the United Kingdom, Australia and South Africa. Through these strategic partnerships could inform the Ghanaian profession on the way forward.
2. The study highly recommends that professionals within the profession should consider training and development in the areas of sustainability advisors, environmental services

and costing and investment appraisal as there are low competencies in that important areas of the profession. This form of training and development calls for both academic institutions and the association to create the environment for such training. Apart from studying to acquire further degree in such fields, there is the need to have seminars and workshops as part of career development to sensitize members of these low competencies in the areas of services. This training must be organized by the academia and the Ghanaian Institute

3. The study has shown that the profession must adapt to the changing demands of the clients in order to be more valuable. This can only happen when we begin from the scratch. With such emerging issues, there is the need for a paradigm shift in or tertiary curriculum to cater for these emerging career trajectories. This must be done through a concerted efforts and linkages between the industry and academia. When this is done, graduates from these institutions will be ready for the market and become more valuable to clients.
4. The study again strongly recommends that the professionals in these emerging career pathways be more customer focused. The customer or the clients are the users of our services and as such professionals must focus on the satisfaction of the clients so long as it falls within the ethics of the profession. This makes the profession business oriented. This recommendation can be achieved through periodic educational programmes such as seminars and colloquia.

5.3.1 DIRECTION FOR FUTURE RESEARCH

This research disclosure a number of areas, which need study responsiveness. The subsequent recommendations are made for impending study:

- A periodic study of the emerging and emerged trends in order to address challenges associated with it practice within the Ghanaian construction industry.

- The study's findings were largely based on survey opinions and interviews of the emerging trends. A study on a particular trajectory is recommended.

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APPENDIX A

SAMPLE OF QUESTIONNAIRE

KWAME NKRUMAH UNVERSITY OF SCIENCE AND TECHNOLOGY, KUMASI

COLLEGE OF ART AND BUILT ENVIRONMENT

DEPARTMENT OF BUILDING TECHNOLOGY

Dear Sir/Madam,

I am a postgraduate student working on a thesis titled **Examining the Career Trajectories in the Quantity Surveying Profession in Ghana**. The objectives of the study are to conduct a literature survey to establish the different aspects of the quantity surveying profession. Also to determine the degree of adaptation of these emerging career pathways within the Ghanaian construction industry, to study the effect of the emerging trends of these career trajectories within the construction industry in Ghana and also to identify the challenges associated with these emerging trends in quantity surveying within the Ghanaian construction industry and provide practical solutions.

I would be very grateful if you provide your candid opinion on the following questions to enable a successful completion of the study. Please be assured that the information you provide in the survey would be treated with utmost confidentiality.

Thank you

Yours Faithfully

Emmanuel Nortey

Student

TOPIC: EXAMING THE CAREER TRJECTORIES IN THE QUANTITY SURVEYING PROFESSION IN GHANA

SECTION A: RESPONDENT PROFILE

1. Professional Position ……
2. Institutional Status Private [ ] Public [ ]
3. Gender Male [ ] Female [ ]
4. How long have you worked within the Quantity Surveying Profession?

   Up to 5years [ ] 6-10years [ ] 11-15years [ ] 16-20years [ ] Over 20years [ ]

SECTION B: EXAMINING THE EMERGING CAREER TRAJECTORIES)

5. Please indicate which sector of the Quantity Surveying Profession you generally practice?

   Building Sector [ ]

   Road Sector [ ]

   Oil and Gas Sector [ ]

   Railway Sector [ ]

   Port and Harbour Sector [ ]

   Others, please state …….

6. Please indicate your particular role in Quantity Surveying Services within your organization.

   Measurement and Taking off [ ]

   Preparation of Valuation Certificate [ ]

   Preparation of Cost Plan and Visibility Studies [ ]

   Preparation of Bill of quantities [ ]

   Preparation of Risk Management Plan [ ]

   Others, please specify ……..

7. Apart from these traditional services, do you see emerging career trajectories within the QS profession in Ghana?

   Yes [ ]

   No [ ]

8. If you answered "Yes" to question 7, how will you rate the following emerging career trajectories in quantity surveying profession in Ghana? (Please indicate the appropriate number by circling).

   Key: 1 – Very Low 2. – Low 3. – Substantially Low 4. – High 5. Very High

   Investment Appraisal 1 2 3 4 95

   Procurement Services 1 2 3 4 95

   Whole Life Costing 1 2 3 4 5 Value Management 1 2 3 4 95

   Risk Management 1 2 3 4 95

   Project Management 1 2 3 4 95

   Facility Management 1 2 3 4 95

   Sustainability Advisors 1 2 3 4 95

   Environmental Services Management & Costing 1 2 3 4 5 Sub Contract Administration 1 2 3 4 95

   Technical Auditing 1 2 3 4 5

SECTION C: DEGREE OF ADAPTATION OF EMERGING CAREER TRAJECTORIES WITHIN THE QS PROFESSION IN GHANA

9. Would you say that these emerging career trajectories have been adapted within the Ghanaian Construction Industry?

   To a large Extent [ ]

   To an Extent [ ]

   Averagely [ ]

   Low Extent [ ]

   Very Low Extent [ ]

10. How significant are the emerging career trends in quantity surveying profession in Ghana's Construction Industry? (Please indicate the appropriate number by circling)
Key: 1 – Not significant 2. – Less significant 3. – Moderately significant 4. – Important 5. -Very important

Investment appraisal	1	2	3	4	5
Procurement Services	1	2	3	4	5
Whole Life Costing	1	2	3	4	5
Value Management	1	2	3	4	5
Risk Management	1	2	3	4	5
Technical Auditing	1	2	3	4	5
Project Management	1	2	3	4	5
Facility Management	1	2	3	4	5
Sustainability Advisors	1	2	3	4	5
Environmental Services Management & Costing	1	2	3	4	5
Sub Contract Administration	1	2	3	4	5

11. Which of the following emerging services has your institution/firm adapted?. Please tick as many as adapted by your institution/firms

Investment Appraisal	[ ]
Procurement Services	[ ]
Whole Life Costing	[ ]
Value Management	[ ]
Risk Management	[ ]
Technical Auditing	[ ]
Project Management	[ ]
Facility Management	[ ]
Sustainability Advisors	[ ]
Environmental Services Management & Costing	[ ]
Sub Contract Administration	[ ]

Others, please specify ……..

12. Do you find skills shortages in specialisms of the emerging trend in the Ghanaian Quantity Surveying Profession?

    Yes [ ]

    No [ ]

13. If you answered "Yes", which of the following are there skills shortages in the Ghanaian Quantity Profession?

    Investment Appraisal [ ]

    Procurement Services [ ]

    Whole Life Costing [ ]

    Value Management [ ]

    Risk Management [ ]

    Technical Auditing [ ]

    Project Management [ ]

    Facility Management [ ]

    Sustainability Advisors [ ]

    Environmental Services Management & Costing [ ] Sub

    Contract Administration [ ]

    Others, please specify ……..

14. In your own interest, do you intend to upgrade your knowledge in any of these emerging trends?

    Most definitely [ ]

    Definitely [ ]

    Not too sure [ ]

    Not at all [ ]

SECTION D: THE EFFECT OF EMERGING CAREER TRENDS ON THE PROFESSION

15. In your opinion, what is the key effect of these emerging careers on the Quantity Surveying Profession in Ghana?

Broadened Skills and Competencies [ ]
Research Development [ ]
Popularized the Profession [ ]
Affiliations to other industries [ ]

16. Do you think these emerging career trajectories still maintain the identity of the QS Profession in Ghana?
To a large Extent [ ]
To an Extent [ ]
Averagely [ ]
Low Extent [ ]
Very Low Extent [ ]

17. Has these emerging career openings and services provided in your institutions/firms made your institutions/firms more competent and competitive as compared to the former traditional services rendered?
To a large Extent [ ]
To an Extent [ ]
Averagely [ ]
Low Extent [ ]
Very Low Extent [ ]

SECTION E: IDENTIFICATION OF CHALLENGES OF EMERGING TRENDS

18. Please indicate the challenges encountered with regards to the emerging career trajectories in the quantity surveying profession. (Please rank your options)

Competency level of knowledge in that area of service [ ]
Difficulty in the use of Information Communication Technology (ICT) [ ]
The focus of Prospective Client [ ]
The issue of consultancy fees by the would be client [ ]
The role of leadership in the emerging trends [ ]

19. What does the profession need to do in order to become better recognized and understood by clients and community with regards to emerging career trajectories?

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20. How should the profession respond to the challenges of these emerging career trajectories taking into consideration the effect of globalization on the profession?

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THANK YOU

APPENDIX B

INTERVIEW GUIDE

1. What are the emerging career pathways within the Quantity Surveying profession in Ghana?
2. How relevant are these career pathways to the development of the profession both within and outside the construction industry?
3. Which of these career pathways are you providing services?
4. Which of them is your company or institution able to offer to clients and the public?
5. Do you have challenges with these career trajectories?
6. What are these challenges?
7. How do we make these career trajectories very relevant to the clients and public