

# Measuring the service gaps in the roles of quantity surveyors in the emerging market

Measuring the service gaps

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## Abstract

**Purpose** – The opportunities that the emerging markets present to the players in the construction industry means that the players need to expand on the scope and size of their responsibilities and duties to the stakeholders. Each of the professionals now demands more specialised and sophisticated services from one another. The other players in the construction industry now require more emerging responsibilities and duties from the quantity surveyors. The purpose of this paper is to examine the roles that “modern” quantity surveyors play by measuring the gaps that exist in the services that the quantity surveyors provide.

**Design/methodology/approach** – Primary data are collected through survey questionnaires. In total, 23 roles played by modern quantity surveyors are identified and addressed to the respondents to rank the rate at which quantity surveyors provide these “emerging” services. The collected data were analysed statistically.

**Findings** – The results of the findings led to the conclusion that the quantity surveyors were not meeting the expectations of other players. Therefore, for competitiveness, quantity surveyors need to better meet demand expectations.

**Research limitations/implications** – This findings of this research are constrained to the services or functions that the quantity provide in the construction industry.

**Practical implications** – This knowledge is valuable to academic institutions that offer quantity surveying programmes, to practicing quantity surveyors, governments, and other players in the construction industry. It will allow quantity surveyors to reconcile supply and demand expectations.

**Originality/value** – There is no known conclusive empirical study on services offered by quantity surveyors in any emerging markets. Therefore, the findings offer a fresh understanding on the services of quantity surveyors not only in Nigeria but elsewhere. While some of the services are common, others are peculiar to emerging markets.

**Keywords** Performance measurement, Service quality, Construction industry, Benchmarking, Competitive advantage, Project management, Quantity surveying, Service gap, Demand side

**Paper type** Research paper

## Introduction

The construction industry is an economic investment and its relationship with economic development is well posited. The contributions of the construction industry towards the advancement of the national economy are significant. While some have recognised that the construction industry can be used to regulate the economy, others tend to differ. What is certain is that, irrespective of the position one takes regarding the relationship of the construction industry to economic growth, it does not in any way invalidate the importance of the construction industry in regards to providing the necessary infrastructures that stimulate economic development (see, e.g. Myers, 2013). The importance of the construction industry is unique among the major economic sectors in any country regardless of whether the country is underdeveloped, developing, or developed. Fast developing countries are now referred to as emerging economies.



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Emerging economies are committing the larger part of their expenditure on massive urbanisation, globalisation, and infrastructure renewal.

However, the performance of the construction industry is poor. This poor performance is cited by various reports notably the Latham (1994), Egan (1998), and Wolstenholme (2009). However, while the poor performance of the industry is affecting its image, emerging countries have brought with it different requirements that are complicating a changing construction industry. As a result, the construction industries of the emerging countries are facing many challenges with the changing construction market, changing new technologies, changing new products, changing new skills and techniques, changing rules and regulations, increasingly sophisticated projects, conflicting client value systems, diverse clients, changing roles of clients and contractors, diverse working cultures, overlap of services, advancement of materials and components, government policies, statutory regulations, and laws. The implications of these new requirements and challenges are the need for more diversified services from the various construction professionals that could match the changing construction markets and practices in order to enhance mobility and to benefit from current developments.

One group of professionals that have received intense criticisms for causing the poor performance and the low clients' satisfactions is the quantity surveyor. The very need for such a position has of late come into question by Egan in the Construction Industry Task Force report *Rethinking Construction* (Cartlidge, 2006). Latham is also of the understanding that quantity surveyors are misleading clients by advising clients to accept the lowest tender (Wolstenholme, 2009). It has also been opined that the traditional cost reduction measures provided by the quantity surveyor could also lead to a reduction in the quality of works thereby increasing operation and maintenance costs (Seeley, 1997). While similar reports are not available in Nigeria, the situation is similar if not worse in most emerging countries including Nigeria. However, research has shown that the issues of poor quality, delay, cost overrun (Elinwa and Joshua, 2001; Aibinu and Jagboro, 2002; Kasimu, 2012) and client dissatisfaction are major issues in Nigeria. The need for quantity surveyors in Nigeria to provide services at the strategic stage of the projects have been previously questioned (Olanrewaju and Anavhe, 2008). While the quantity surveyors have some "centres of excellence", overall they were perceived as not providing any value added service to the construction process and sometimes failed to offer services that meet clients' expectations.

There are many definitions for quantity surveyors. For simplicity, and without loss of generality and significance, a representative definition is quantity surveying takes a "whole life' approach to construction economics, including client, contracting and consulting roles in the industry" (Royal Institute of Chartered Surveyors, 2014a). This definition is useful and comprehensively illustrates the roles, duties, and responsibilities of quantity surveyors. Quantity surveyors provide services that are beyond the construction industry. Their services pertain to residential, commercial, and industrial, leisure, agricultural, retail, roads, railways, airports, waterways, sea ports, coastal defences, power generation, and utilities and these services could involve those in process engineering, chemical engineering, and oil and gas (Royal Institute of Chartered Surveyors, 2013). Quantity surveyors are involved in all phases of a facility's life cycle such as feasibility, design, construction, extension, refurbishment, maintenance, and demolition. Their competencies aim at producing projects that meet the stakeholders' value systems. Quantity surveyors can be engaged in all phases of the construction process, but with diminishing levels of return. To provide optimal

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services, they should be engaged by the clients before any major decision is made as to whether to construct or not.

There is theoretical support for the need for quantity surveyors to diversify their services to be competitive. To ascertain the exact scope of the professional development required of them, there is a need to measure the service gap better the current services offered and the services demanded. However, there remains weak empirical research in this area, specifically:

- on the extent of the required services;
- if the quantity surveyors actually provide the emerging services;
- if other players are familiar with the emerging services that quantity surveyors should provide; and
- if quantity surveyors actually understood the emerging services they are required to offer.

In view of this lacuna in the literature, this paper examines the roles of quantity surveyors in emerging construction markets. Specifically, the new services that quantity surveyors believe they should provide is compared with the experience of “other players” on the new services that quantity surveyors offer in an effort to reveal if there are service mismatches, and if gaps exist, to what extent are they mismatched. In this study, “other players” refers to architects and engineers. Studies on the measure of the mismatch with respect to the services or responsibilities of quantity surveyors are inconclusive. Existing research is not in the context of the roles of quantity surveyors in the emerging construction market (see Lip, 2006). Similarly, the remaining researches that do not focus on general services of the quantity surveyors are restricted to the quantity surveyors’ skills (see, e.g. Nkado and Meyer, 2001; Said *et al.*, 2006; Perera and Pearson, 2011; Boon and Prigg, 2012; Dada and Jagboro, 2012) and some specifically on ICT. However important these may be, this current study focuses on services provided not “skills” or knowledge. Clearly, skills are very important and meaningfully contribute to provide value added services. An illustrative reason why the quantity surveyors need to pay attention to the requirements of the emerging market is that, the quantity surveyors in Nigeria have to work with other nationals and will to export their services abroad, particularly to the emerging economies. In fact, it was observed that construction professionals have not been providing services outside Nigeria (see, e.g. Central Bank of Nigeria (CBN), 2012). This study aims to provide a fresh understanding of the current services provided by quantity surveyors and the gap between the services offered and those that are expected. This knowledge is valuable to academic institutions that offer quantity surveying programmes, to practicing quantity surveyors, governments and other players in the construction industry.

### **Economic development and the construction industry**

There are many different definitions for “emerging market”. International institutions like the IMF, World Bank, the Economic, and BMI have different countries in their classifications. However, the major yardsticks that constitute important variables for the consideration of a country is the desire to urbanise, develop, liberalise, close infrastructure gaps, increase the middle class group, poverty reduction, and economic diversification. The emerging markets enjoy rapid and faster economic growth as measured by GDP, making them the driver of global growth. For instance, as emerging

economies aim to “emerge” [transform] into a developed country, government spending on the provision and maintenance of the needed infrastructures are significantly higher compared to how it used to be. The emerging countries are estimated to grow two to three times faster than developed nations and more than 80 per cent of global investment is currently coming from the emerging markets; the current investment opportunity with China and India alone account for about 40 per cent of that growth (see BlackRock Investment Institute (BII), 2011). Accordingly, there are high investment opportunities in the emerging countries for the global construction industry. It was estimated that the emerging countries will contribute approximately 55 per cent of investments in the construction industry by 2020 (see also Schilling, 2013). In 2010, China became the largest construction market, overtaking the USA.

While some of the leading institutions or agencies have included Nigeria in their list of “emerging markets” others have not. For instance, the IMF, the Economic, and FTSE are yet to consider Nigeria as an emerging country but the BRIC, BBVA, Columbia University EMGP, and BMI include Nigeria in their list of emerging countries. It is not surprising that most of the institutions have included Nigeria in their lists. Nigeria’s economy is large and there is a greater commitment to develop. It is also Africa’s largest economy with a GDP of \$510 billion (Opiah, 2014). In ten years, the GDP has expanded by 97 per cent from 2002 (actual value ₦251, 052.28 million) to 2012 (value: ₦888, 893.00 million (1 USD = ₦160)) (Nigerian Bureau of Statistics (NBS), 2015). As of December 2012, the country’s external reserves, stood at US\$43.83 billion (CBN, 2012).

The Nigerian economy is set to experience a boom as the nation gears towards closing the infrastructure gaps. Nigeria is expected to be among the ten largest economies in world by 2050 and is in fact predicted to grow at the highest rate (Citi Investment Research and Analysis, 2011). Nigeria has embarked on economic development and reformation initiatives and has begun to liberalise, diversify, and launch its markets on the global scene. The government, through its Transformation Agenda, seeks to address the lack of jobs and poverty, high food importation/food security, poor infrastructures, high inflation, rising domestic debts, high recurrent expenditure, falling foreign reserves, housing deficit, and the nation’s dependence on oil. Nigeria has established sovereign wealth funds to cater for its infrastructures. For more than a decade, there has been a considerable increase in foreign direct investment (FDI) to the Nigerian economy. The FDI stood at ₦1, 113.5 billion, and constituted 28.3 per cent of the total inflow in 2012 (CBN, 2012). Nigeria is also one of the “Next 11”. The “Next 11” is the 11 countries with the most potential to be among the largest economies in the twenty-first century. Based on the indicators that most institutions use in their categorisations, Nigeria is an emerging market.

The above statistics have major implications on Nigeria’s construction industry. For instance, due to increases in the rate of physical development, players will need to learn how to better position themselves to manage the supply side and capture the increased demand (see Accenture, 2012). The construction industry in Nigeria is a major economic sector. On average, the contribution from 2002 to 2012 to the GDP has expanded by 55 per cent (Table I). Specifically, it contributed 1.41 per cent in 2002 but by 2012, this increased to 2.19 per cent. The annual growth rate of the construction industry in 2010, 2011, and 2012 and in the first quarter of 2013 was 11.85, 12.58, and 12.66 per cent, respectively (Jonathan, 2013). Apart from the employees in financial institutions, mining and quarrying, construction employees are the highest salary earners. The government is the major client. Table I further suggests that the contribution of the construction industry to GDP is consistent. The industry will

Table I.

Gross domestic product (per cent)

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Agriculture	42.14	41.01	40.98	41.19	41.72	42.01	42.13	41.70	40.87	40.19	39.21
Industry	27.43	30.35	29.66	28.32	26.04	23.92	21.80	20.79	20.38	19.32	18.34
Building and construction	1.41	1.40	1.44	1.52	1.62	1.72	1.84	1.92	1.99	2.08	2.19
Wholesale and retail trade	12.99	12.54	12.90	13.75	14.95	16.18	17.41	18.14	18.69	19.37	19.92
Services	16.04	14.70	15.01	15.21	15.66	16.17	16.84	17.44	18.08	19.05	20.35
Total GDP	100	100	100	100	100	100	100	100	100	100	100

Note: Constructed from data obtained from NBS (2014)

experience a massive boom as the government has outlined measures to meet its infrastructural deficits. For instance, Nigeria requires over US\$10bn annually over the next ten years towards meeting its infrastructural needs (Sanusi, 2012). Similarly, the current 17 million housing shortages alone requires ₦59.7 trillion. When these are considered, the Nigerian construction industry is large and it is expected to grow.

### The changing roles of quantity surveyors

The construction industry is changing rapidly due to various indictments of poor performance and changing client requirements. There is increasing awareness on accountability and transparency. Today's clients are more demanding and sophisticated. The clients want their projects to be completed on schedule, within budget, with maximum performance, reliability, safety, and meeting other criteria within their client value system. From an economic perspective, the principle of scarcity and choice, to be specific, human wants (client value system) are insatiable but the resource (money) to satisfy the want is quite limited. Therefore, there is a need for efficient resource utilisation. The clients are pushing the construction industry to take a cue from the automobile and electronic industries. The stringent requirements of the progressive clients to achieve their value system are the drivers of the transformation in construction (Cartlidge, 2006) and it will continue to be so in the years ahead as clients will always demand the best value for their money. Construction clients are becoming increasingly impatient with their investments in the construction industry. While this is happening, the changing requirements brought by emerging markets are further complicating the construction business' environment.

While there are many problems facing the industry, professional inadequacies in the industry is a major problem. In the light of these, a need is thereby created for the construction players to provide added services and embrace new skills, experience, and knowledge. Quantity surveyors have been at the forefront of the challenges facing the construction industry. In particular, the skills and nature of services that the quantity surveyors provide have received consistent criticisms as cited above. Also, on the infrastructure gaps in Nigeria, some of the major constraints militating against the provision of infrastructures is the unavailability of funds, absence of risk sharing structures, lack of clarity on the governance of the public-private partnership framework, and a lack of competent experts to assist banks and other firms engaged in infrastructure financing which collectively hamper development efforts (Sanusi, 2012). Clearly, there is a need for the quantity surveying services to meet such needs. Procurement and contractual issues in the construction industry are some of the advice that quantity surveyors could

provide to stakeholders. For quantity surveyors to be part of the Nigerian government's Transformation Agenda, they need to provide innovative services. For the country to indigenise its construction industry there is a need for the players including the quantity surveyors to acquire the necessary knowledge and expertise.

Modern quantity surveyors perform various types of services that extend beyond the services that the traditional quantity surveyors provide. Since the inception of the profession, there has been a paradigm shift in the practices and services that quantity surveyors provide, from someone who was concerned with cost reduction and substitution of materials and components to someone who is concerned with delivering value added services (Cartlidge, 2006). The services that the quantity surveyors currently provide have shifted from the "downstream" to "upstream". Such services are required in all sectors of economic development including the financial, insurance, oil and gas, construction, as well as in the academic sector. The services that quantity surveyors provide situate them in a strategic position as process managers.

Quantity surveyors are now required to learn and acquire how to better position themselves to manage the demand side in the supply chain. Quantity surveyors must learn to work with expatriates as some of the projects are procured under joint ventures with other countries that bring with them a different construction culture. The prequalification criteria are different from what most of the quantity surveyors in Nigeria are familiar. Some of the countries do not even have quantity surveying services in their own countries. Access to capital is becoming more challenging. In this context, the quantity surveyors have the opportunity to diversify more to the upstream supply chain by promoting different procurement strategies and work practices.

Quantity surveyors provide advice on the procurement planning of a project. This advice affects clients' decisions on whether to build or not, and if the client decides to build what effect does cost have on other criteria within the clients/users value systems including time and quality, function, satisfactions, comfort, and aesthetics. As is usually the case, even under the traditional procurement system where the quantity surveyor is not usually the lead or prime consultant, all other members of the team, including the clients relate with him and supply valuable information to the quantity surveyor to enable the quantity surveyors to prepare "accurate estimates". Regardless of the procurement strategies adopted, the roles of quantity surveyors are prominent for a successful completion of projects. Modern procurement strategies like public-private partnership arrangements have exposed the potential and relevance of quantity surveyors towards best service delivery.

### **The gaps model of service delivery**

A service is an activity provided by one party to another. Service users may be delighted, satisfied, or dissatisfied with the services they received depending on whether or not the service met or exceeded their assessment of the services (Johnston *et al.*, 2013). The extent of the differences depends on many factors. For our purpose, differences refer to the "gap" or service quality deficiencies. Research that focused on analysis of this gap is the SERVQUAL model. The SERVQUAL model has been tested extensively (Parasuraman *et al.*, 1985; Zeithaml *et al.*, 1993; Parasuraman, 2010). The application of the principle involves comparing actual performance of one organisation (i.e. producers) on a set of services with the perceptions of another organisation (i.e. consumers) on the same set of services. A gap or mismatch exists if actual performance fails to meet expectations. In addition, a gap exists between what a member of a team believes he or she provides, with what the other members believe they provide. By extension, with respect to the service

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provided by quantity surveyors, the hypothesis is that the perceptions and expectations of other players in the construction industry do not differ from the understanding of the services quantity surveyors service deliver. In other words, there is no relationship between the measurements of the quantity surveyors and the measurements of other professionals on the modern services that the quantity surveyors provide.

Studies conducted in the service sector by Zeithaml *et al.* (1990) and Parasuraman (2010) revealed that service quality deficiencies occur due to five key organisational shortfalls or gaps within the organisation:

- (1) GAP 1: inconsistency between user expectations and management's understanding of those expectations;
- (2) GAP 2: inconsistency between management's understanding of user expectations and service quality specifications;
- (3) GAP 3: inconsistency between service quality specifications and actual service delivery;
- (4) GAP 4: inconsistency between actual service delivery and what is communicated to customers about the service delivery; and
- (5) GAP 5: inconsistency between actual services delivered and service user perceptions of those services.

This paper reports the inconsistencies that exist with respect to the services provided by the quantity surveyors. What is addressed in this paper is whether or not the quantity surveyors are actually providing services that the construction industry requires and if they are providing the services, to what extent are the services provided. Furthermore, we hope to gain some insight on the reasons for discrepancies, if any. Naturally, a question that emerges is "are the services that the quantity surveyors claim they provide the same in comparison with those that the architects or engineers perceive them to provide? If they are providing or not providing the services, what aspects of the services are they not providing? This analysis is pertinent because quantity surveyors must recognise the other players' concerns in order to be able to provide value added services". The performance of the construction industry is likely to be enhanced if quantity surveyors are aware of these "gaps" and take them into consideration in response to the clients' satisfactions and industry performance. Therefore, identifying what aspects other construction players use to measure the roles of quantity surveyors will contribute to better service delivery.

The only way for the quantity surveyors to know whether or not they are provide the required services is for them to benchmark the roles they believe they provide with the understanding of other players in the industry. Specifically, the indices of the services for the quantity surveyors, engineers, and architects are compared and contrasted to determine the "value mismatch". The perceptions of other professionals with regard to the services that quantity surveyors provide in the Nigerian construction industry have not been adequately exploited. One needs to know what he/she is doing to know whether he/she is providing value added service or not. Gap analysis (or benchmarking or performance measurement) allows businesses to know where it needs to improve and where it is providing more than required. Certainly, both areas are important. Providing more than required is a waste because it is not adding any value to the client's needs and satisfactions. Although from supply side theory, supply could create its own demand, but in many cases, demand may fall short of supply.

### Outline of the methodological issues

In order to achieve the aim of this study, the study combined a literature review and survey questionnaire. Altogether, 23 services expected of quantity surveyors in an emerging market are addressed to respondents. The emerging roles are the roles that the quantity surveyors do not “traditionally” offer. These new roles are consistent with the requirements of the emerging market. However, while some of the services are gradually being offer by quantity surveyors in other places like the UK, Australia, New Zealand, and South Korea, in most developing countries like Nigeria, these services are yet to be accepted as quantity surveyors duties and responsibilities. The roles were modified based on a literature review (see Table II). Table II tabulates the services against their authors. There is no consensus on the services quantity surveyors offer in different economies. A very plausible reason for this is that the nature and scope of the services depend on the knowledge, skills, and experience of the quantity surveyors and the nature of the industries or sectors within which the quantity surveyors provide their services. Experience of the clients and nature and types of the projects is crucial in the engagement of quantity surveyors. Latest researches are also constrained in terms of the exact scope of the services that quantity surveyors should or are providing. This research, though built on the existing studies, goes beyond current research by sensitising the current knowledge on the services that quantity surveyors should provide in the emerging economies in addition to measuring the gaps in the services that quantity surveyors provide.

The questionnaire used to collect primary data for this study was divided into two parts. Part one focused on the respondent’s profiles while the second part aimed to measure the extent to which the quantity surveyors provide the services. The survey was conducted in two stages. In the first stage, the questionnaire was administered to participants who attended the “1st NIQS Research Conference” entitled “Innovation and sustainable management of building and infrastructure projects” in September 2013 in Abuja. At this conference, a total of 63 useable responses were received. The second stage was based on convenient sampling. Here, the questionnaire was administered by hand and e-mail through the office of the co-author. The questionnaires were administered within three weeks, 8-23 September, 2013. In total, 69 useable questionnaires were returned from the second stage.

Data obtained was analysed with IBM SPSS statistics/PAWS statistics. When there is a need to measure services delivery, the issue of “extent” becomes important. To measure the types of services that the quantity surveyors currently offer, respondents were asked, based on their current experience, to tick the extent to which the quantity surveyors had performed each of the services on a five continuum scale of 1-5; where 5 denotes extremely often, and 1 denotes not often at all, 3 represents often, and 2 and 4 are located in between. The degrees at which the roles are performed are determined by average relative index (ARI) (Equation 1). The index is based on the cumulative weighting of the initial frequency score of each of the services:

$$ARI = \frac{\sum_{i=0}^5 a_i x_i}{5 \sum_{i=0}^5 x_i}, (0 \leq ARI \leq 1) \quad (1)$$

Where  $a_i$  is the index of a group; constant expressing the weight given to the group;  $x_i$  is the frequency of response;  $i = 1, 2, 3, 4, 5, x_1, x_2, x_3, x_4, x_5$  are the frequencies of the response corresponding to  $a_1 = 1, a_2 = 2, a_3 = 3, a_4 = 4, a_5 = 5$ , respectively. The mode technique was used to analyse the demography of the respondents. The mode was also used to



Services	Ashworth <i>et al.</i> (2013)	Cartledge (2006)	Towey (2012)	Lee <i>et al.</i> (2011)	Royal Institute of Chartered Surveyors (2014b)	Arup (2014)	Lip (2006)	Potts and Ankrah (2013)
Prepare BoQ for engineering services	✓				✓			
Insurance advice	✓				✓			✓
Preliminary cost advice/cost planning	✓	✓	✓		✓	✓	✓	✓
Prepare cost options of developing difference sites	✓				✓	✓		✓
Prepare development appraisal	✓		✓	✓	✓	✓	✓	✓
Prepare contract documents and participate in contract administration for construction works	✓		✓	✓	✓	✓	✓	✓
Provide services on arbitration matters					✓		✓	
Provide information for use in future management and/maintenance of the buildings	✓				✓		✓	✓
Provide advice on cost benefit analysis					✓			
Provide service to a contractor in connection with negotiations of claims	✓			✓	✓	✓		
Advise on entitlement to liquidated and ascertained damages					✓			
Advise on litigation matters	✓		✓	✓	✓			✓
Assist in application of grants and its documentations	✓				✓			
Provide value engineering and value management services	✓	✓			✓	✓	✓	✓
Provide risk assessment and management services	✓	✓	✓		✓		✓	✓
Advise on adjudication proceedings	✓				✓			✓
Provides project management services	✓		✓	✓	✓	✓		✓
Prepare life cycle cost studies and estimate of annual running cost	✓	✓	✓	✓	✓	✓	✓	
Advise effect of capital and revenue expenditure					✓			
Act as an adjudicator				✓	✓			
Advise on fire or other damage to the buildings and preparing claim associated with these								
Provide advice on environmental impact assessment	✓	✓	✓		✓			
Advice on insolvency services	✓	✓			✓			

**Table II.**  
An overview of emerging services of the quantity surveyors

determine the distribution of roles with respect to the scales. The measurements of the services that the quantity surveyors performed are displayed in frequencies but the rating of the roles is determined by “average relative index”. An independent sample *t*-test was conducted in order to determine whether the roles the quantity surveyors believe they provide are different from that of engineers or architects. (statistically notations:  $H_0: u_q = u_a$ ;  $H_A: u_1 \neq u_2$  and  $H_0: u_q = u_a$ ;  $H_A: u_q \neq u_a$  where *q* = quantity surveyors; *a* = architects and *e* = engineers). Furthermore, Pareto analysis was used to identify 20 per cent of services that both engineers and architects believed quantity surveyors were not providing or meeting current market expectations.

The construction industry comprises of many stakeholders including clients, design professionals, construction professionals, and operational teams (e.g. in case of the PPP/PFI schemes). The major professionals in the industry in terms of their initial contact with the clientele and involvement with the design and construction stages of the construction projects are the respondent of this study. These professionals include engineers (notably, civil, electrical, mechanical, and building), quantity surveyors, and architects. The architects are specialists in the art and science and development of concepts and building design. During the construction phase, the architects continuously revised plans and drawings to meet client requirements and statutory regulations. While the civil engineers are mostly concerned with the public constructions (i.e. roads, dams, quays, shipyards, and bridges), building engineers are involved in calculating the strengths, loads, and forces of the proposed building construction. They also prepare structural drawings and specifications from architectural drawings and other relevant contract documents. Their works are mostly to ensure that the buildings can carry and withstand the forces they will encounter while in operation.

The mechanical and electrical engineering personnel often term together as services engineers and are now an important aspect of modern construction with service engineering contributing up to 30 per cent of the total contract sum. Much of their work in the industry is related to the building aspect. In other words, they have more contact with the architects and quantity surveyors in comparison with the civil engineers. The architects under traditional procurement are the head of both design and construction teams for the building works. Similarly, the engineers lead the engineering works. However, these roles are being challenged by other professionals like the quantity surveyors, project managers, and construction managers particularly with the management-based procurement strategies. However, the traditional procurement is still the most dominant procurement methods (Royal Institute of Chartered Surveyors (RICS), 2007; Olanrewaju and Anavhe, 2012; National Building Specification, 2013) despite its various shortcomings.

### Data presentation, analyses, and discussion

#### *Respondents' profile*

Altogether, 132 usable questionnaires were received and analysed. The results of the data analyses on the respondents' profiles are contained in Tables III-VII and displayed

**Table III.**  
Distribution of  
respondent's academic  
background

Background	Quantity surveying	Engineering	Architecture	Others
Frequency (%)	62.82	24.25	12.13	0.80

**Note:** Respondent's academic background

in Figure 1. The profiles of the respondents indicated that most (63 per cent) of the respondents were quantity surveyors (Table III). This is explained by the research design. 80 per cent have obtained their professionals certifications (Table IV). 64 per cent of them were consultants (Table V) and more than 70 per cent of the surveyed respondents have more than five years working experience within the construction industry (Table VI). Table VII contains the respondents' positions. More than 90 per cent of the respondents held strategic positions in their organisations, 60 per cent of the respondents have completed more than ten projects in the last ten years, and approximately 30 per cent have completed more than 30 projects each in the last ten years (Figure 1).

Qualification	Corporate	Fellow	Member	Honorary	Others
Frequency (%)	10.7	25.4	36.9	7.4	19.7

**Note:** Respondent's professional qualification

**Table IV.**  
Distribution of respondent's qualification

Organisation	Clients	Developers	Consultant	Government	Contractors
Frequency (%)	3.10	1.50	63.80	2.30	29.20

**Table V.**  
Respondent's organisation

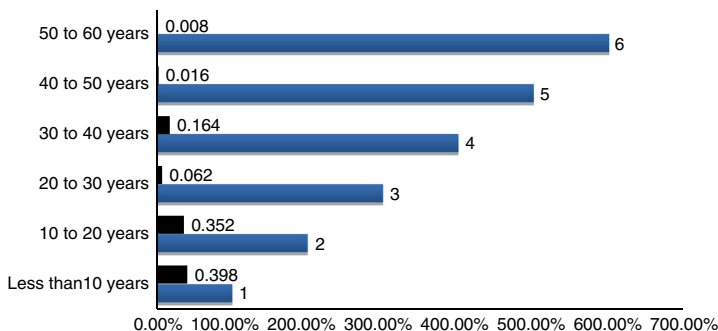
Experience	Not more than five years	5-10 years	10-15 years	15-20
Frequency (%)	26.9	46.2	24.6	2.3

**Table VI.**  
Respondent's working experience

Position	Managing director	Partner	Principal partner	Contract manager	Project manager	Senior surveyor	"Surveyor"	Others
Frequency (%)	4.8	19.4	24.2	4.8	15.3	12.9	13.7	4.8

**Note:** Respondent current position in the organisation

**Table VII.**  
Distribution of respondent current position



**Figure 1.**  
Number of projects respondent's organisation completed in the last ten years

On the basis of the respondents' profiles, their opinions of the construction industry are considered reliable and sufficient to report these findings.

*Analysis of the gaps in the services of the quantity surveyors*

In the following sections, the measurements of the services that quantity surveyors provide are presented. To determine the strength of the data, reliability and validity tests were performed. The reliability test results indicate that the Cronbach's  $\alpha$  for all the services are satisfactory. The validity test, using the "Commonalities", produced values that ranged from 0.587 to 0.969. In general, if the  $\alpha$  reliability or validity test is above 0.50, it is sufficient to consider that the measurement of a service is valid or reliable. The quantity surveyors scores on the services ranged from 0.348 to 0.933 (Table VIII). The measurement of the quantity surveyors' services by architects ranged from 0.50 to 0.888 (Table IX) while that of the engineers ranged from 0.475 to 0.813 (Table X). The average cumulative scores of the roles by the quantity surveyors, engineers, and architects are 0.633, 0.644, and 0.677, respectively. The service that the quantity surveyors believe they seldom provide is acting as adjudicator (0.348). However, the architects and engineers ranked the quantity surveyors capability of providing advice on insolvency services as the least. Curiously, the quantity surveyors themselves also rate their capability on this service as very low.

Services	5	4	3	2	1	Index
Prepare BoQ for engineering services	59	19	4	4	1	0.933
Insurance advice	63	12	6	2	1	0.919
Preliminary cost advice/cost planning	55	14	8	6	1	0.876
Prepare cost options of developing difference sites	39	31	10	2	2	0.845
Prepare development appraisal	52	12	10	5	5	0.841
Prepare contract documents and participate in contract administration for building works	42	24	12	3	3	0.836
Provide services on arbitration matters	16	40	23	2	3	0.752
Provide information for use in future management and/maintenance of the buildings	14	29	24	12	5	0.683
Provide advice on cost benefit analysis	7	31	22	19	5	0.638
Provide service to a contractor in connection with negotiations of claims	6	29	30	8	11	0.626
Advise on entitlement to liquidated and ascertained damages	8	30	21	9	16	0.612
Advise on litigation matters	9	18	34	10	13	0.600
Assist in application of grants and its documentations	12	14	31	14	13	0.595
Provide value engineering and value management services	8	29	32	7	8	0.557
Provide risk assessment and management services	12	10	31	7	25	0.552
Advise on adjudication proceedings	10	8	26	25	15	0.536
Provides project management services	13	8	22	17	24	0.526
Prepare life cycle cost studies and estimate of annual running cost	17	32	15	13	7	0.491
Advise effect of capital and revenue expenditure	12	8	12	16	36	0.467
Act as an adjudicator	7	13	15	11	38	0.457
Advise on fire or other damage to the buildings and preparing claim associated with these	6	20	14	18	2	0.452
Provide advice on environmental impact assessment	9	6	8	21	40	0.417
Advise on insolvency services	7	11	7	22	37	0.348

**Table VIII.** Understanding of the quantity surveyors on the services they provide

**Notes:**  $n = 84$ . Reliability test: 749-785; validity test: 0.587-0.818

Services	5	4	3	2	1	Index
Prepare BoQ for engineering services	10	3	1	2	0	0.863
Insurance advice	7	5	2	1	1	0.800
Preliminary cost advice/cost planning	10	5	0	0	1	0.886
Prepare cost options of developing difference sites	9	3	4	0	0	0.863
Prepare development appraisal	7	4	2	3	0	0.788
Prepare contract documents and participate in contract administration for building works	4	6	4	0	2	0.725
Provide services on arbitration matters	3	4	4	4	7	0.725
Provide information for use in future management and/maintenance of the buildings	5	6	2	0	3	0.725
Provide advice on cost benefit analysis	6	2	3	4	1	0.700
Provide service to a contractor in connection with negotiations of claims	4	4	4	2	2	0.675
Advise on entitlement to liquidated and ascertained damages	3	3	6	3	1	0.650
Advise on litigation matters	3	5	5	0	3	0.663
Assist in application of grants and its documentations	5	1	6	2	2	0.663
Provide value engineering and value management services	3	6	2	1	4	0.638
Provide risk assessment and management services	1	6	6	0	3	0.625
Advise on adjudication proceedings	4	4	1	4	3	0.625
Provides project management services	5	1	4	2	4	0.613
Prepare life cycle cost studies and estimate of annual running cost	3	3	3	4	3	0.588
Advise effect of capital and revenue expenditure	3	2	4	5	2	0.588
Act as an adjudicator	3	3	3	2	5	0.563
Advise on fire or other damage to the buildings and preparing claim associated with these	3	2	4	2	5	0.550
Provide advice on environmental impact assessment	3	3	2	3	5	0.550
Advice on insolvency services	1	1	7	3	4	0.500

**Notes:**  $n = 16$ . Reliability test: 0.444-569; validity test; 0.738-0.969

**Table IX.** Understanding of the architects on the roles that quantity surveyors play

It is interesting to find that the average scores for each of the professionals are low. The roles are emerging services that quantity surveyors are providing or expected to perform due to the changing profile of the construction industry and economic environments. Table XI contains the variability scores between the quantity surveyors and the engineers and between the quantity surveyors and the architects. The variability is derived by subtracting the scores of the engineers and designs each from that of the quantity surveyors, respectively. A positive sign indicates that quantity surveyors measured that they offer the services in excess of what the engineers or architects measured or required. A negative sign means the quantity surveyors are not meeting the expectations of the engineers or architects. The Table presents a bleak outlook on the performance of the quantity surveyors. For instance, out of the 23 services, the engineers observed quantity surveyors over measured themselves on 12 services while the architects identified 15 services in which the quantity surveyors have over measured themselves.

Using the *t*-test for independent samples, significant differences were found between quantity surveyors and architects on their measurement on “‘advise on adjudication proceedings’, ‘provide information for use in future management and/maintenance of the buildings’, ‘provide advice on cost benefits analysis’ and ‘provide project management service’”. Therefore, the research hypotheses are unsubstantiated on the remaining 19 services. With respect to engineers, the research’s hypotheses are substantiated on “prepare BoQ for engineering services, preliminary cost advice/cost

Services	5	4	3	2	1	Index
Preliminary cost advice/cost planning	17	6	6	3	0	0.831
Provides project management services	21	1	3	5	2	0.813
Prepare cost options of developing difference sites	13	9	7	1	2	0.788
Insurance advice	13	9	5	4	1	0.782
Provide advice on cost benefit analysis	12	10	6	1	2	0.763
Prepare BoQ for engineering services	15	3	5	9	0	0.75
Provide information for use in future management and/maintenance of the buildings	3	19	5	3	2	0.713
Prepare development appraisal	7	9	10	4	2	0.694
Prepare contract documents and participate in contract administration for building works	6	14	5	3	4	0.694
Provide value engineering and value management services	9	6	8	5	4	0.669
Provide service to a contractor in connection with negotiations of claims	6	8	9	4	5	0.638
Provide advice on environmental impact assessment	4	10	9	3	6	0.619
Advise on entitlement to liquidated and ascertained damages	9	6	3	6	8	0.613
Advise effect of capital and revenue expenditure	2	9	6	13	2	0.575
Assist in application of grants and associated services	3	8	11	2	8	0.575
Act as an adjudicator	5	9	4	4	10	0.569
Provide risk assessment and management services	2	9	11	1	9	0.563
Advise on fire or other damage to the buildings and preparing claim associated with these	5	5	8	6	8	0.556
Prepare life cycle cost studies and estimate of annual running cost	6	5	4	8	9	0.544
Advise on adjudication proceedings	6	6	3	7	10	0.544
Advise on litigation matters	5	4	7	8	8	0.538
Provide services on arbitration matters	3	9	4	4	10	0.506
Advise on insolvency services	1	5	10	5	11	0.475

**Notes:**  $n = 32$ . Reliability test: 697-750; validity test: 718-924

**Table X.**  
Understanding of the engineers on the roles that quantity surveyors in play

planning, act as adjudicator and provide project management services”. Perhaps, the likely reason why most of the services are not statistically significant is because of the sample size. Statistically, the sample size of both the architects and engineers are not sufficient particularly when compared with the size of services. Therefore, the variability scores are considerable (Table XII).

The variability of the services highlights significant inadequacies in the competencies and capabilities of the quantity surveyors. Taking into account the professional background of the respondents, the variability is not consistent, but both the architects and engineers over measured the performance of the quantity surveyors with respect to 12 services. The service that quantity surveyors offer excessively, in the understandings of the engineers, was to provide BoQ for engineering services while the services that engineers believe the quantity surveyors are doing badly is to act as an adjudicator. However, it is surprising that the engineers noted that the quantity surveyors are providing more than required on 15 services. Does this mean that the quantity surveyors are providing the services without knowing? This is difficult to interpret. Specifically, the variability on the service the quantity surveyors provide with regard to preparing BoQ for engineering services is high and positive and the *t*-test produced a significant result seeing that the quantity surveyors have more contact with the architects.

It is commendable to find that both the architects and engineers noted that quantity surveyors are active in the preparation of the bill of quantity for engineering works. While this might be of interest to the quantity surveyors elsewhere, this is not peculiar

Services	QS and engineers (variability)% +/-	QS and architects (variability)% +/-
Prepare BoQ for engineering services	12.6	1.3
Insurance advice	5.9	4.1
Preliminary cost advice/cost planning	8.8	3.3
Provide information for use in future management and maintenance of the buildings	3.9	2.7
Provide advice on cost benefit analysis	8.2	14.5
Provides project management services	12	32
advise effect of capital and revenue expenditure	6.3	5
Prepare cost options of developing difference sites	4.8	-2.7
Assist in application of grants and its documentations	2	-6.8
Advise on entitlement to liquidated and ascertained damages	1.3	-2.4
Prepare development appraisal	-20.3	-29.7
Prepare life cycle cost studies and estimate of annual running cost	-9.2	-9.7
Advice on insolvency services	-5.8	-8.3
Provide value engineering and value management services	-5.68	-2.6
Provide risk assessment and management services	-0.6	-6.8
Prepare contract documents and participate in contract administration for building works	-1.1	-4.2
Act as an adjudicator	-22.1	-21.5
Advise on adjudication proceedings	-7.7	-15.8
Advise on litigation matters	-0.2	-12.7
Advise on fire or other damage to the buildings and preparing claim associated with these	-3	-2.4
Provide services on arbitration matters	-4.9	-26.8
Provide service to a contractor in connection with negotiations of claims	-8.6	-12.3
Provide advice on environmental impact assessment	-1.9	5

**Table XI.**  
Variability of  
measurement

in Nigeria, as the engineers still want to perform cost management of engineering works even when the quantity surveyors are part of the design team. Therefore, it is difficult to interpret this outcome, because most quantity surveyors do not provide detailed cost estimates for engineering services. Estimates for M&Es are often marked as a provision sum while detailed estimates are considered with contractors when the work is already in progress. In practice, only few quantity surveyors possess sufficient knowledge to provide detailed estimates for engineering services. The nature of the dominant procurement system-the traditional procurement-whereby the drawings and specifications for the engineering services are not ready until a later stage is also responsible for this. The traditional quantity surveying syllabus also does not put sufficient effort on this aspect of the works in comparison with the building construction, thereby producing graduates with limited knowledge on the measurement of engineering services. Such a practice has to change.

The findings also suggest that the quantity surveyors are active with respect to cost planning services. In other words, the quantity surveyors are involved in projects before major decisions on what to construct are established. This is interesting, and will enable the quantity surveyors to provide value added services at the upper stream of the supply chain. However, while the quantity surveyors are traditionally supposed to

Roles	Architects			Engineers		
	<i>t</i>	df	Sig. (2-tailed)	<i>t</i>	df	Sig. (2-tailed)
Prepare BoQ for engineering services	-0.247	98	0.806	-2.762	114	0.007
Insurance advice	-0.778	98	0.438	-1.279	114	0.203
Preliminary cost advice/cost planning	-0.674	98	0.502	-2.372	114	0.019
Prepare cost options of developing difference sites	0.482	98	0.631	-1.187	114	0.238
Prepare development appraisal	1.432	98	0.155	0.018	114	0.986
Advise effect of capital and revenue expenditure	-0.832	98	0.408	-1.409	114	0.162
Prepare life cycle cost studies and estimate of annual running cost	0.939	98	0.350	0.433	114	0.666
Advise on insolvency services	1.174	98	0.243	1.100	114	0.274
Assist in application of grants and its documentations	0.992	98	0.324	-0.336	114	0.737
Advise on entitlement to liquidated and ascertained damages	0.387	98	0.700	-0.260	114	0.796
Provide value management service	0.385	98	0.701	1.079	114	0.283
Provide risk assessment and management services	-0.461	98	0.646	-1.904	114	0.059
Prepare contract documents and participate in contract administration for building works	0.673	98	0.502	0.085	114	0.932
Act as adjudicator	1.753	98	0.083	2.381	114	0.019
Advise on adjudication proceedings	1.975	98	0.051	1.164	114	0.247
Advise on litigation matters	-0.547	98	0.586	-0.083	114	0.934
Advise on fire or other damage to the buildings and preparing claim associated with these	0.145	98	0.885	0.517	114	0.606
Provide service on arbitration matter	0.962	98	0.339	0.983	114	0.328
Provide service to contractors in connection with negotiation of claims	1.732	98	0.086	1.674	114	0.097
Provide advice on environmental impact assessment	-0.973	98	0.333	0.452	114	0.652
Provide information for use in future management and/ maintenance of the buildings	-3.506	98	0.001	-0.929	114	0.355
Provide advice on cost benefits analysis	-2.626	98	0.010	-1.897	114	0.060
Provide project management service	-5.075	98	0.000	-2.029	114	0.045

**Table XII.**  
*t*-test between quantity surveyors with architects and engineers

offer cost planning services (see Hughes and Murdoch, 2001), this is not always the case. For best value for money, projects should be adequately appraised at the inception before major decisions are taken. In general, more than 50 per cent of capital costs are committed before the design reaches the schematic stage. But often the quantity surveyors are not allowed in project delivery, until all major drawings and specifications are completed. But at this stage, it is often too late to provide value added services to the clients. The services that the quantity surveyors could offer at this stage are to produce bill of quantities and monitor cost as the work progresses. The active participation of the quantity surveyors in the preparation of the cost planning also tally with the services that the quantity surveyors provide on the preparation of development appraisal. The development appraisal is the evaluation of financial implications of designs before the design stage. Both the architects and engineers considered that the service of the quantity surveyors on this role is impressive.

While, the SERVIQUAL could not be simply assimilated into this study, probably because the SERVIQUAL model was develop for in-house assessment. While, the players in the construction industry are considered homogenous, though heterogeneous because of their diverging goals and responsibilities. However, on this



basis, deductively it is postulated that the reasons of the deficiencies in the service that the quantity surveyors provide can be attributed to the five gaps. For instance, the mismatch in Gap 1, was caused by a lack of understanding of the “other players” expectations and poor service delivery design. Gap 2 exists because of poor service provisions by the quantity surveyors and poor perceptions of their services. With respect to Gap 3, this arises if the quantity surveyors wrongly conceived the expectations of the players thus leading to poor conformance with quality factors in service delivery. Gap 4 could occur due to the lack of teamwork among the various stakeholders in the industry. Lack of teamwork would lead to poor communication and poor understanding. Quantity surveyors need to ensure the marketing and strategy functions and understand the nature and scope of services that can be provided and what cannot be provided. Since perception is a personal interpretation of a service, Gap 5 could be normalised through effective communication.

A Pareto analysis was also conducted on the services offered by the quantity surveyors. The Pareto analysis is based on the outcome of the variability scores. It measured the 20 per cent of services with the negative variability scores. Pareto analysis is preferred on the frequencies only because this would reveal the reality-actual gaps. As a result, the engineers measured the quantity surveyors low with respect to “act as an adjudicator, prepare development appraisal and to prepare life cycle cost studies and estimates of annual running costs”. Similarly, the analyses on understanding of the architects on the services that the quantity surveyors were not doing well are to prepare development appraisal, provide services on arbitration matters, and to advice on adjudication proceedings. This analysis has helped identify the three major roles in which quantity surveyors are deficient. The engineers and architects are critical of contractual issues and the inabilities of the quantity surveyors to provide meaningful advice with respect to operational costs of projects. The quantity surveyors are expected to provide sound advice on operational cost of projects through the life cycle appraisal.

The life cycle appraisal is an important tool that enables a practical economic comparison of alternatives, in terms of both the present and future costs. In the final evaluation, this determines how much additional capital expenditure is warranted today in order to achieve future benefit over the entire life of the project. Often, the role of quantity surveyors is limited to management of capital cost. However, in Nigeria, much emphasis is placed on the new construction and the quantity surveyors are not engaged in the project’s whole life appraisal. Today, clients are critical of the collateral cost of their investments. They want to know what the future holds for their current investments. To illustrate that the quantity surveyors do not provide advice on total cost can be explained considering that both the architects and engineers considered that quantity surveyors are not sound in providing value management services. Providing value management services would probably introduce the quantity surveyors much earlier on the project life cycle to provide value added services. Value management will not only make the client value system explicit, but prioritise value systems and guide in the selection of suitable procurement strategies for projects.

As can be seen, both the engineers and architects measured the involvement of the quantity surveyors on litigations and adjudication matters as poor. A salient point of this finding is that the construction industry is entangled in disputes, claims and court cases. The results of the survey could be interpreted to mean that services that are related to dispute and claims are given critical consideration, but more importantly, the quantity surveyors should be in a better position to provide expert witness because of

their knowledge in contractual and procurement issues. When disputes and claims arise, it is important to seek amicable (i.e. negotiation or any of ADR methods) solutions instead of litigation. The risks and complexities associated with international projects are many, but these require experts to provide the required advice when the needs arise. The roles of the quantity surveyors in this aspect is strategic as all cases that refer to adjudication, mediation and litigation have financial implications on the projects, in which the disputing parties make a lot of documentation and submissions that require quantity surveyors to make inputs at the different stages of the hearing.

It is not surprising that the players are critical of the roles of the quantity surveyors in terms of preparing development appraisals. Decisions that are made before major commitment to drawings are critical to project survival. It thereby becomes imperative that the financial implications of the project are sufficiently conducted. Quantity surveyors are experts on providing financial advice on projects whether for new buildings, maintenance, refurbishment, alteration, and conversion. Quantity surveyors need to provide accurate and detailed cash flow analysis for projects. The analysis is critical to developers/investors. Many projects are abandoned or referred to court cases due to inaccurate cash flow. Financiers will request for the project's cash flow before making any commitments. Foreign partners need this information to make sound decisions.

Hence, quantity surveyors should have knowledge of feasibility studies, viability studies, demand analysis, supply analysis, cash flow analysis, interest rate, government policies, and exchange rates. The knowledge of quantity surveyors in areas of construction appraisal is extensive and should facilitate developing accurate cost estimates for the total projects even before site work begins through to completion and operation of the works. All accounting activities to payment of contractors, subcontractors, and suppliers and other payments and receipts should be accurately presented.

### **Conclusion and implication**

This paper evaluated the services that quantity surveyors provide to create awareness on the services that quantity surveyors provide in changing construction markets. It also depicted the extent to which quantity surveyors are involved in the total procurement and management of built assets. The original hypothesis for this study is that quantity surveyors are providing the services required of them in an emerging construction market. The roles of the quantity surveyors are evolving, but for them to remain relevant they need to diversify and provide services that meet the requirements of other players and are created by the current construction culture. Given the increasing difficulty to access capital, varying clients' interests, quantity surveyors should take the opportunity to diversify more to the upstream supply chain by promoting different procurement strategies. The construction industry must meet growing demands for sustainable built environments and harness technology to drive innovation, especially in energy efficiency. The construction industries in other emerging markets have been rapidly responding to this demand. This is sharply in contrast with the services that Nigerian quantity surveyors provide that are largely cost management at the tactical stage of the project. The services discussed in the paper specifically relate to the construction industry. The roles of quantity surveyors in other industries including the oil and gas and petrochemical are not addressed. In addition, the experiences of the clients on these services are not addressed. This is largely because of the one-off nature of the industry clients and comparing their experiences on the topic would not be adequate.

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