

# RETHINKING PARTNERING AMONG QUANTITY SURVEYING FIRMS IN NIGERIA<sup>1</sup>

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## Abstract

This paper explores the benefits and barriers to partnering in quantity-surveying (QS) firms in Nigeria, and suggests projects and professional services best served by this practice. A mixed research design informs the identification of related concepts from extant literature and data collection from 132 registered members of the Nigerian Institute of Quantity Surveyors (NIQS) which were analyzed using statistical tools. The commitment of top management is found to be a key barrier to QS firm partnering. The facilitation of knowledge exchange and inclusivity is the most significant benefit. In this paper, feasibility studies, expert advice, and lifecycle costing are key services of QS firms that would benefit from partnering, and research findings also favor engineering projects as core projects in which QS firms should utilize partnering. This study presents project stakeholders with practical and efficient strategies to facilitate the implementation of partnering arrangements to execute construction projects and has considerable implications for the quantity-surveying practice because it recommends professional services and projects with greater viability for the partnering arrangement.

**Keywords:** Partnering; Benefits; Barriers; Quantity-surveying firms; Nigeria; Organizational issues.

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## Introduction

The increasing complexity of construction projects has led to a debate about the current management of projects and to a search for new concepts and theories through which to understand and support the overall management of such projects (Alderman and Ivory 2011). Partnering seeks to recast relations between actors in projects by promoting the use of collaborative, more open, less managerial, and less hierarchical relationships (Alderman and Ivory 2007). Partnering is fundamental to successful procurement and delivery of building and civil engineering projects (Aibinu et al. 2008). There are several explanations for why people or firms will be cooperative or tend to engage in a partnering arrangement for a project. First, social exchange theories postulate that the greater the perceived favorability of the proposed project, the more likely people will be to reciprocate in the form of co-operation (Adams 1965; Aibinu et al. 2008; Blau 1964). Secondly, procedural fairness suggests that people's behavior in a decision-making situation will depend not only on the outcome they receive but also on their perceptions of the fairness of the procedures used to arrive at the decision outcome (Aibinu et al. 2008; Lind and Tyler 1988; Thibaut and Walker 1975). Therefore, people tend to react to what happens (outcome) and to how it happens (procedural fairness) (Brockner et al. 2000). Third, studies have documented that outcome favorability and procedural fairness both work together to influence people's attitudes and behaviors (Aibinu et al. 2008).

Quantity-surveying (QS) firms are set up to provide an organizational structure for the effective performance of quantity-surveying services, which include cost estimating and planning, cost control, contract negotiation, assessment of variations, preparation of final accounts, and so on. The structure of QS firms in the Nigerian construction industry is fragmented, with 60% of firms having 1–7 staff, relatively few QS firms (15%) having more than 15 staff, and (25%) of firms having between 8 and 15 staff. Egan (1998) described this fragmentation of QS firms as part of the weak/negative side of the construction sector, which inhibits performance improvements. Studies relating to consultancy firms' partnering in the Nigerian construction industry are nonexistent. Therefore this study attempts to (1) assess the applicability of part-

nering arrangements to quantity-surveying firms, (2) investigate the current practice among quantity-surveying firms, (3) assess the challenges hindering its application, and (4) evaluate derivable benefits from its implementation in the Nigerian construction sector with the primary purpose of increasing the adoption of the partnering approach by quantity-surveying firms in Nigeria.

### **Partnering in the Construction Sector: An Overview**

Partnering is another word for cooperation in the construction industry (Phua and Rowlinson 2004). The building sector is a team industry (Anvuur and Kumaraswamy 2007; Anumba et al. 2002; Holti et al. 1999; Love et al. 1998; Male 2002; Turner 1997) and very competitive (Tang et al. 2006). Kadefors (2002) and Loraine and Williams (2000) opined that the main purpose of a partnering project is to create a win-win situation for all participants, a view supported by the Construction Industry Board (1997), which described partnering as “a structured management approach to facilitate team working across contractual boundaries.”

Harback et al. (1995) and Åkerström and Lindahl (2007) described confidence as another vital ingredient for success in partnering, which is achievable if the participants act consistently with their common objectives. However, Alderman and Ivory (2007) held the view that partnering is not a traditional way of organizing projects, but one of several competing ways of organizing them.

Cox and Townsend (1998) made a distinction between “one-off” partnering arrangements and strategic partnering. One-off partnering follows the spirit of a partnering culture (nonadversarial) but involves only a single project. In strategic partnering, the client has an extended relationship with a limited number of suppliers over many projects. However, given the one-off requirements of most construction clients, the former approach remains the most common. A one-time partnering approach for consultancy firms is one in which two or more firms collaborate to undertake a single project, whereas a strategic approach for

consultancy firms may involve firms coming together to undertake a series of projects for the clients because of their differing specialisms or the size of the projects.

Loraine and Williams (2000) identified cultural issues as the most significant limiting factors for creating a relationship between project participants. The greatest barrier to partnering involves three kinds of factors as deduced from the literature (Table 1): organizational-related factors, attitude-related factors, and tradition-related factors (Loraine and Williams 2000; Bennett and Jayes 1995; Koraltan and Dikbas 2002; Alderman and Ivory 2007).

### **An overview of Quantity Surveying firms' partnering**

There is no evidence in the literature suggesting that partnering is an approach suitable for some countries but not others. However, as noted by Koraltan and Dikbas (2002), organizations in different countries wishing to adopt partnering have found ways of adapting the process to accommodate the restrictions imposed on them by local regulations, although the Nigerian architectural, construction, and engineering (AEC) sector is still far behind other countries (Olatunji et al. 2016a, b).

Quantity surveyors work in all sectors of the built environment worldwide (Olawumi and Ayegun 2016). Therefore, the need for an enabling environment for the adoption of partnering arrangements among quantity-surveying firms is vital because of its industrywide impact and effect on project baseline, clients' satisfaction, operational dynamics, and efficiency in management, among others. Quantity surveying consists of complex projects involving highly specific technologies with new methods of implementing and operating them. This, coupled with the misconception about quantity surveyors' roles in engineering projects (Olawumi and Ayegun 2016), has resulted in the non-inclusion of quantity surveyors in some of these engineering projects because of a misconception about their competencies. The scenario calls for collaboration and allocation of specific resources among these QS firms to be able to successfully procure and manage some of these projects.

Meanwhile, quantity-surveying firms' scope of work covers residential, commercial, industrial, leisure, agricultural, and retail projects and the provision of infrastructure (Olawumi and Ayegun 2016). Based on the previously stated scope of work, quantity-surveying firms provide several essential services to clients (basically regarding engagement). These include preliminary cost advice, advising on contractor selection, obtaining or negotiating tenders/bids,

**Table 1 - Summary of literature on the barriers to partnering**

<b>Barriers to Partnering</b>	<b>Description</b>	<b>References</b>
1. Unclear or lack of a defined partnering methodology/procedure	The non-existent of an industry-wide standard for the undertaking of a partnering arrangement and project-specific partnering charters are often ambiguous.	Bennett and Jayes (1995), Loraine et al. (2000), Al-Saadi and Abdou (2016), Qiao et al. (2001), Kwak et al. (2009), Abdou and Al Zarooni (2011), Jacobsson and Roth (2014)
2. Inflexibility of QS firms and representatives to new roles and procedures	It relates to the rigidity of QS firms' staff to adapt and work in a partnering environment and implement the partnering charter.	Koraltan and Dikbas (2002), Loraine et al. (2000), Griffith and Gibson (2001), Qiao et al. (2001)
3. Failure of senior management to 'buy in' to the partnering ethos	Top management and senior partners of firms' unwillingness to venture in a partnering arrangement due to their apathy about it.	Alderman and Ivory (2007), Koraltan and Dikbas (2002), Loraine et al. (2000), Kadefors (2002), Qiao et al. (2001)
4. Communication problems	It relates to misunderstanding among individual and businesses and the lack of structure to provide an efficient communication flow. It occurs on a larger scale among the partnering companies and a smaller scale within firms.	Loraine et al. (2000), Kadefors (2002), Anvuur and Kumaraswamy (2007), Bygballe et al. (2010), Lau and Rowlinson (2009), Gottlieb and Haugbille (2013), Suprpto et al. (2015), Anvuur and Kumaraswamy (2007)
5. Lack of continuous improvement	It refers to the hesitancy to engage and improve on previous partnering engagements.	Loraine et al. (2000), Griffith and Gibson (2001), Qiao et al. (2001)
6. Insufficient effort to keep partnering going	It relates to the loss of drive and impetus to keep the cooperative and collaborative culture in motion.	Bennett and Jayes (1995), Loraine et al. (2000), Anvuur and Kumaraswamy (2007), Griffith and Gibson (2001), Hartmann and Bresnen (2011), Anvuur and Kumaraswamy (2007)
7. Unstructured risk and reward framework	The non-existent of a structure that maps and align each firm's share of risk and reward from such partnering arrangement.	Bennett and Jayes (1995), Al-Saadi and Abdou (2016), Qiao et al. (2001), Li et al. (2005), Kwak et al. (2009), Abdou and Al Zarooni (2011)
8. Lack of requisite skills and competencies among QS firms' representatives	The non-existence of competent and qualified staff with previous experience on a partnering project.	Loraine et al. (2000), Kadefors (2002), Anvuur and Kumaraswamy (2007), Qiao et al. (2001), Jefferies et al. (2002), Kwak et al. (2009)
9. Disagreement on project emphasis and goals	It relates to the objections and refusal of partnering firms to reach and agree to a concrete proposal on the project objectives.	Koraltan and Dikbas (2002), Anvuur and Kumaraswamy (2007), Griffith and Gibson (2001), Packham et al. (2003), Jacobsson and Roth (2014), Bygballe et al. (2010), Lau and Rowlinson (2009), Anvuur and Kumaraswamy (2007)
10. Conflicts between individual organizational goals and project goals	The mismatch between individual's organizational goals and project goals often generate disharmony and even feud because project goals have a short-term span as opposed to firms' long-term targets.	Koraltan and Dikbas (2002), Bennett and Jayes (1995), Anvuur and Kumaraswamy (2007), Griffith and Gibson (2001), Packham et al. (2003), Al-Saadi and Abdou (2016), Qiao et al. (2001), Jacobsson and Roth (2014), Anvuur and Kumaraswamy (2007)

**Table 1 - Summary of literature on the barriers to partnering (cont'd)**

<b>Barriers to Partnering</b>	<b>Description</b>	<b>References</b>
11. Loss of confidentiality	A greater proportion of the firms' professional services is often of a confidential nature. The risk of losing such confidentiality often constitute a barrier towards adopting partnering arrangement.	Bennett and Jayes (1995), Loraine et al. (2000), Griffith and Gibson (2001), Bygballe et al. (2010), Lau and Rowlinson (2009)
12. Poor attitudinal and cooperative capabilities among QS firms (commitment)	Quantity surveying firms' exhibition of non-collaborative attitude towards each other.	Fisher (2004), Alderman and Ivory (2007), Loraine et al. (2000), Anvuur and Kumaraswamy (2007), Griffith and Gibson (2001), Packham et al. (2003), Bygballe et al. (2010), Lau and Rowlinson (2009), Gottlieb and Haugbille (2013), Suprpto et al. (2015), Anvuur and Kumaraswamy (2007)
13. Cultural problems	It relates to firms and industry practitioners' difficulty or refusal to change from their conventional approach to procuring construction projects.	Bennett and Jayes (1995), Koraltan and Dikbas (2002), Griffith and Gibson (2001), Packham et al. (2003), Hartmann and Bresnen (2011), Gottlieb and Haugbille (2013), Suprpto et al. (2015)
14. Exaggerated hierarchies and internal conflict	The breeding of rivalry within a firm hinders the deployment of staff members to a partnering project because not all QS professional services are available for partnering and those with such proficiency/specialization is such services may refuse to cooperate for such adventure and success of the project.	Alderman and Ivory (2007), Koraltan and Dikbas (2002), Loraine et al. (2000), Kadefors (2002), Anvuur and Kumaraswamy (2007), Griffith and Gibson (2001), Packham et al. (2003), Jacobsson and Roth (2014), Hartmann and Bresnen (2011), Gottlieb and Haugbille (2013), Suprpto et al. (2015), Anvuur and Kumaraswamy (2007)
15. Poor documentation and process standardization	It relates to the poor record keeping and lack of structure for enforcing a measure of good work practice.	Bennett and Jayes (1995), Loraine et al. (2000), Al-Saadi and Abdou (2016), Qiao et al. (2001), Kwak et al. (2009)
16. Fundamental distrust among QS firms	The existence of a competitive culture among the firms breeds distrust and makes each firm to be skeptical of each other motives and intentions of entering partnering.	Alderman and Ivory, 2007), Loraine et al. (2000), Griffith and Gibson (2001), Packham et al. (2003), Jacobsson and Roth (2014), Bygballe et al. (2010), Lau and Rowlinson (2009), Anvuur and Kumaraswamy (2007)
17. Higher consultancy costs	The engagement and collaboration among QS firms to provide a 'full' service to the clients might increase the cost of such professional services.	Bennett and Jayes (1995), Packham et al. (2003), Dada and Jagboro (2012), Qiao et al. (2001), Kwak et al. (2009),
18. Poor interchange between the QS firms and the academic	Non-existent of a collaborative and exchange structure between the academia and the industry.	Loraine et al. (2000), Kadefors (2002), Griffith and Gibson (2001), Al-Saadi and Abdou (2016), Qiao et al. (2001), Abdou and Al Zarooni (2011), Gottlieb and Haugbille (2013), Suprpto et al. (2015)
19. Investment risks	It relates to the probability or likelihood of occurrence of losses relative to the expected return on the implementation of the partnering arrangement. These include- strategic, compliance, financial, operational or reputational risk, etc.	Koraltan and Dikbas (2002), Bennett and Jayes (1995), Al-Saadi and Abdou (2016), Qiao et al. (2001), Li et al. (2005), Amponsah (2010), Dulaimi et al. (2010), Abdou and Al Zarooni (2011), Kwak et al. (2009), Abdou and Al Zarooni (2011), Grant (1996), Qiao et al. (2001),

20. Limited delegation for problem-solving	The small staff size of most QS firms reduces the possibility of deploying personnel for such partnering arrangement.	Akintoye et al. (2003), Li et al. (2005), Zhang (2005), Amponsah (2010), Dulaimi et al. (2010), Abdou and Al Zarooni (2011), Cheung et al. (2012) Koraltan and Dikbas (2002), Loraine et al. (2000), Anvuur and Kumaraswamy (2007), Griffith and Gibson (2001), Qiao et al. (2001), Gottlieb and Haugbille (2013), Suprpto et al. (2015), Anvuur and Kumaraswamy (2007)
21. Dependence or over dependency risks	Firms fear the risk of their organization relying too much on another firm or be relied on, due to the misconception of such affecting their ability to expand or grow.	Bennett and Jayes (1995), Koraltan and Dikbas (2002), Jacobsson and Roth (2014), Hartmann and Bresnen (2011), Gottlieb and Haugbille (2013), Suprpto et al. (2015)

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valuing construction works, preparation of taxation and insurance documents, feasibility studies, technical auditing, cost control and post-contract management, project control, and risk management.

Furthermore, essential services provided by QS firms also include expert advice, security management, investment appraisals, conditions surveys, project management analysis and coordination engineering, due diligence studies, and value management (Olawumi et al. 2016). Other services include analysis and engineering, scheduling and planning, financial analysis, lifecycle costing, procurement management, asset management, property management, facilities management, property condition appraisals, and contract auditing, among others.

These areas of specialized services provided by several QS firms can form avenues or areas for partnership arrangements among Nigerian quantity-surveying firms. Moreover, Anvuur and Kumaraswamy (2007) noted that the selection of participating members of the partnering team should be based on their complementary technical and functional expertise and personality traits. Olawumi (2016) revealed that many quantity surveyors in Nigeria have an average of eight years of experience in electrical work; this necessitates the need for partnering in such engineering aspects.

Partnering is judged by its outcomes or the processes involved in its implementation (Crowley and Karim 1995). Hence, as stressed by Alderman and Ivory (2007), partnering has been influential in highlighting new focuses for managers of corporate relationships, namely, the importance of openness, clear communication, inclusion, exclusiveness, and equality. Table 2 summarizes the benefits of quantity-surveying firms' partnering according to the extant literature.

Nevertheless, disagreement on project emphasis and goals among project stakeholders can affect the partnership; these differences in success emphasis are a result of poor team alignment. Alignment is the condition in which appropriate project participants work within

acceptable tolerances to develop and meet a uniformly defined and understood set of project objectives (Griffith and Gibson 2001).

**Table 2 - Summary of literature on the benefits of partnering**

Benefits of Partnering	Description	References
1. It stimulates knowledge exchange and inclusivity	Partnering helps to mutually empower rather than create closed groups of firms with privileged access to knowledge and ideas. It also maximizes excellence through cooperation rather than senseless competition, ensures diversity, ethical optimization and continuous response to the business environment.	Amod (2007), Abbott and Jones (2007), Alderman and Ivory (2007), Abdou and Al Zarooni (2011), Cheng (2016), Cacamis and El Asmar (2014), Cheng and Li (2004), Doloi (2013), Anvuur and Kumaraswamy (2007)
2. More informed decision-making and standardization	Partnering improves the decision-making process and enhances firms' consultancy services with resultant job performance and increased chances of getting more work in the future.	Alderman and Ivory (2007), Jefferies et al. (2002), Tiong et al. (1992), Akintoye et al. (2003), Dulaimi et al. (2010), Cheng (2016)
3. It facilitates more effective communication	Partnering improves information flow among organizations and facilitates the exchange of resources and ideas.	Abbott and Jones (2007), Alderman and Ivory (2007), Cox and Townsend (1998), Cheng (2016), Cacamis and El Asmar (2014), Cheng and Li (2004), Doloi (2013), Jacobson and Choi (2008), Lau and Rowlinson (2009), Bygballe et al. (2010), Gottlieb and Haugblle (2013); Suprpto et al. (2015), Anvuur and Kumaraswamy (2007)
4. It creates synergic between the industry and the academics	The industrial and academic engagements ( <i>such as staff exchanges, business support, and consultancy, collaborative and contract research, establishment of joint ventures, licensing agreements and spinout companies</i> ) are achievable through the partnering arrangements	Lambert (2003), Abbott and Jones (2007), Alderman and Ivory (2007), Jefferies et al. (2002), Abdou and Al Zarooni (2011), Cheng (2016), Cacamis and El Asmar (2014), Cheng and Li (2004), Doloi (2013), Jacobson and Choi (2008); Lau and Rowlinson (2009), Anvuur and Kumaraswamy (2007)
5. Improved learning and increased job effectiveness	Partnering ensures efficiency and unified responsiveness to project challenges through a non-adversarial culture and trust and facilitate on the job learning experience.	Anvuur and Kumaraswamy (2007), Alderman and Ivory (2007), Cox and Townsend (1998), Tiong et al. (1992), Akintoye et al. (2003), Dulaimi et al. (2010), Cheng (2016), Cacamis and El Asmar (2014), Cheng and Li (2004), Doloi (2013), Jacobson and Choi (2008), Lau and Rowlinson (2009), Bygballe et al. (2010), Anvuur and Kumaraswamy (2007)

## **Research Methodology**

This study assessed the applicability of partnering to QS firms' services and the challenges hindering its application. The study also investigated the current practice of partnering with QS businesses and evaluated the derivable benefits from its implementation in Nigeria. A mixed research approach involving both questionnaire survey and structured interviews helped to elicit necessary data for the study. Secondary data sourced through a literature review of relevant publications and information from libraries and the web pages aided the research. The data collection technique played a key role in the establishment of the criteria and theories against which the empirical research was measured and in the compilation of the questionnaire for the survey.

The respondents for the questionnaire survey were registered and up-to-date financial members of the Nigerian Institute of Quantity Surveyors (NIQS) as published by the professional body. A link to the online survey form was sent to their email addresses. The study took place between August and December 2016 among the NIQS members in Nigeria. The questionnaire survey link was sent to 494 email addresses; some hosting servers returned a few emails as either incorrect or invalid (especially the privately maintained emails). A total of 132 responses were received and analyzed in greater detail in this study. The questionnaire survey had six sections. Section A elicited background information about the respondents such as academic and professional qualifications, their organizations, the number and types of projects on which they had utilized partnering approach, and the cost and the success rate of such projects. Sections B and C dealt with the suitability (or applicability) of utilizing partnering for QS principal services (27 services), and type of projects (eight projects). The respondents were asked whether each service and project was core, optional, or not applicable for a partnering arrangement. Sections D and E dealt with the significance of the barriers (21 factors) faced by QS firms engaging in partnering and the benefits (five benefits) derivable from a partnering arrangement on a five-point Likert scale from very low to very high. Section F elicited further comments and opinions of the respondents. Before uploading the questionnaire to the internet and making it available to the respondents, the questionnaire was pretested.

## Data Analysis

The first step in the data analysis was to carry out a reliability test to determine the internal consistency of the factors and to confirm whether the factors and their associated Likert scale measured what they were designed to measure (Field 2005). For this study, the calculated  $\alpha$  was 0.854, which demonstrates excellent reliability and internal consistency of majority of the data; Nunnally (1978) regarded a reliability score of  $\alpha \geq 0.70$  to signify higher consistency. Further statistical analysis was carried out using Statistical Packages for Social Science (SPSS). This included (1) raw data reliability test; (2) data summary (descriptive statistics); (3) statistical analysis, including the ranking, inferential statistical tests, and classification by percentage score; and (4) Interview summary.

### *Raw Data Reliability Test*

The questionnaire factors and their associated Likert scale were assessed for both their internal consistency and whether they reflected the constructs they were meant to measure. According to Field (2005) and Akinade et al. (2017), Cronbach's  $\alpha$  value ranges from 0 to 1, and the higher the reliability coefficient, the greater is the internal consistency of the data. An  $\alpha$  value of 0.70 is acceptable and  $\alpha > 0.80$  indicates good internal consistency (Akinade et al. 2017). The alpha value of each question in this questionnaire is shown in Table 3.

**Table 3: Reliability analysis for the components of this study.**

Questionnaire components	Alpha value
Principal services rendered by QSs firms available for partnering	0.838
Projects QSs firms can initiate partnering	0.727
Barriers faced by QSs firms in partnering arrangements	0.868

## ***Data Summary***

The data in this section characterize the respondents' demographics as elicited in Section A of the study questionnaire survey. The survey participants came from diverse organizational setups; a majority (43.8%) came from consultancy firms, 25% were from government establishments such as the ministry of works, a physical planning unit of government agencies; 18.8% were from contracting firms; and 12.5% were academics. These manifold differences in the participants' organizational setups ensured that differing viewpoints were captured in this survey.

The majority of the survey participants had master's degrees (50%) whereas 31.3 and 18.8% had bachelor's degrees and higher national diplomas (HNDs), respectively. It can be presumed (although it is not necessarily a rule) based on these high educational attainments of the respondents that they not only had practical experience in participating in a partnering project but also had theoretical knowledge of partnering. Moreover, partnering-related subjects are part of undergraduate quantity-surveying courses in Nigeria, and it is a standalone subject for master's degree students. Furthermore, 6.3% of respondents were fellows of NIQS and 93.80% were either associate or probationary members of NIQS.

In addition, 75% of the respondents had participated in one form of partnering arrangement in the course of their professional practice. Approximately 19% of respondents had utilized partnering arrangements in more than 11 projects, the same percentage of respondents had undertaken 6–10 partnered projects, and 31.3% of the participants had only used partnering for 1–5 projects. For the types of projects, the respondents had utilized partnering most often in building construction (66.7%), followed by civil engineering works (26.7%) and industrial or heavy engineering works (13.3%). Meanwhile, the cost of the projects ranged from above NGN50 million (58.3%), NGN10–50 million (16.7%), NGN1–10 million (25%), and below NGN1 million (8.3%). Based on the respondents' opinions, the projects were successful (37.5%), very successful (25%), and somewhat successful (12.5%); those who had not participated yet in a partnering arrangement deemed the question not applicable (25%).

The participants were probed further on whether they could advise their organizations or quantity-surveying firms to utilize partnering in discharging their professional duties; 87.5% of the respondents answered yes. However, 6.3% of the respondents noted that they were not sure, and another 6.3% of the respondents replied that it depends on the situation and its necessity for the project. The respondents who participated in this survey are competent both academically and professionally, and the fact that a very high percentage of the participants had taken part in a partnering arrangement gives credence to the data collected.

### ***Statistical Analysis***

The ranking analysis was in three stages: (1) the ranking—mean (M) and standard deviation (SD); (2) inferential statistical tests (ANOVA); and (3) classification by percentage score.

### **Ranking**

The survey result of the classification of the barriers faced by quantity surveyors or quantity surveying firms during partnering and the benefits of the partnering arrangement are presented in Table 4 and Table 5 respectively.

### **Barriers to partnering faced by quantity surveying firms**

For the 21 challenges identified, the mean values have a broad range from the lowest value of  $M=3.13$  ( $SD=1.204$ ) '*Higher consultancy costs*' to the highest value of  $M=4.19$  ( $SD=0.834$ ) '*Failure of senior management to 'buy in' to the partnering ethos.*' The rule of the ranking is that of both the mean score and the standard deviation as expressed by Tsai, Mom, and Hsieh (2014) that "when two or more factors have the same mean score, factors with a smaller standard deviation are assigned higher ranks." However, some factors in this result have the same mean and standard deviation. Therefore, they have the same rank.

Also, based on Lu et al. (2008) who benchmarked the mean scores of 4 of the 5-point Likert scale as important, six (6) factors of the 21 barriers faced by quantity surveying firms during partnering are highly important. These include- "*failure of senior management to 'buy in' to the partnering ethos*"

(M=4.19, SD=0.834); “*unclear or lack of a defined partnering methodology/procedure*” (M=4.13, SD=1.025). Others include, “*poor attitudinal and cooperative capabilities among QS firms (commitment)*” (M=4.00, SD=0.816); “*fundamental distrust among QS firms*” (M=4.00, SD=0.816). Others are, “*inflexibility of QS firms and representatives to new roles and procedures*” (M=4.00, SD=0.966); “*conflicts between individual, organizational goals and project goals*” (M=4.00, SD=0.966). From the research findings, if senior partners in quantity surveying firms refused to ‘buy in’ to the partnering approach, it might hinder its adoption and implementation in the discharge of their professional practice.

From the perspective of the consultant quantity surveyors, who constitute the majority of the respondents- “*limited delegation for problem-solving*” (M=4.29, SD=0.488) is the greatest barrier to partnering faced by quantity surveying firms. This finding was followed closely by “*poor attitudinal and cooperative capabilities among QS firms (commitment)*” (M=4.29, SD=0.756). This finding was because most QSs firms in Nigeria have little staff strength and prefer engaging freelance QS rather than partnering another QSs firm to discharge their professional duties. However, the same barrier was lowly rated by another category of respondents, contracting firms, client organization & the academic with the rank of #18, #17 and #13 respectively. These findings are because quantity surveyors in such organization collaborate more easily with each other compared to the rivalry among consultancy firms, although they regarded “*poor attitudinal and cooperative capabilities among QS firms (commitment)*” has a barrier with high significance in the discharge of their professional practice. Furthermore, there is a consensus among the diverse groups of respondents that ‘*higher consultancy costs*’ (M=3.13, SD=1.204) has the least significance of the 21 identified barriers to partnerships among quantity surveyors. This result is because the professional fee of Nigerian quantity surveyors are calculated based on a nationally prescribed sliding scale fee, hence, the QS consultancy fee is not expected to increase.

### **Benefits derivable by quantity surveying firms from partnering**

For the five benefits identified, the mean values have a range from the lowest value of M=3.81 (SD=1.167) ‘*it creates synergic between the Industry and the Academics*’ to the highest value of

M=4.81 (SD=0.403) '*it stimulates Knowledge Exchange and Inclusivity.*' Four (4) of the five identified benefits are significant benefits derivable by QSs firms engaging in partnering. These include- "*it stimulates knowledge exchange and inclusivity*" (M=4.81, SD=0.403); "*it facilitates more efficient communication*" (M=4.44, SD=0.727); "*more informed decision-making and standardization*" (M=4.37, SD=0.619); "*improved learning and increased job effectiveness*" (M=4.31, SD=0.602). Findings reveal that if quantity surveying firms do utilize partnering effectively in discharging their professional duty, it could facilitate the exchange of information and knowledge while establishing a streamlined and efficient communication framework among the partnering QS or QSS firms.

The various category of respondents fully agreed to that partnering can aid knowledge exchange and inclusivity. Meanwhile, the academics added that it could also aid "*learning and increased job effectiveness*" (M=4.50, SD=0.707). Also, the contracting firms (M=4.67, SD=0.577), and the consultancy firms (M=4.57, SD=0.535) also noted that could facilitate effective communication among the parties involved. However, respondents working in government establishment believes that it enables the parties involved to make informed decision-making and standardized their practice (M=4.75, SD=0.500).

Also, the diverse groups of participants rated '*it creates synergic between the industry and the academics*' as the least significance benefits derivable from using partnering approach. However, the synergy between the construction sector and the academic is a prominent issue in Nigeria of late, of which no approach or framework have been developed to facilitate it. The issue is not peculiar only to the Nigerian construction sector but spread across sectors of the economy; this is often claimed to be because of lack of enforceable legislation to facilitate the academia-industry collaboration, lack of infrastructure in higher institutions (colleges & universities) to carry out industry-driven research among others.

**Table 4: Barriers to partnering in quantity surveying firms**

Barriers to Partnering	Academics		Contracting		Consultancy		Clients		Overall			F	Sig.
	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	SD	Rank		
1. Failure of senior management to 'buy in' to the partnering ethos	3.50	3	4.33	4	4.14	4	4.50	1	4.19	0.834	1	0.627	0.611
2. Unclear or lack of a defined partnering methodology/procedure	4.50	1	4.33	1	4.29	3	3.50	17	4.13	1.025	2	0.634	0.607
3. Poor attitudinal and cooperative capabilities among QS firms (commitment)	3.50	3	3.33	13	4.29	2	4.25	5	4.00	0.816	3	1.446	0.278
4. Fundamental distrust among QS firms	3.50	3	3.67	8	4.14	4	4.25	5	4.00	0.816	4	0.559	0.652
5. Inflexibility of QS firms and representatives to new roles and procedures	3.00	13	4.33	1	3.86	8	4.50	2	4.00	0.966	5	1.321	0.313
6. Conflicts between individual organisational goals and project goals	3.50	3	4.00	5	4.14	6	4.00	10	4.00	0.966	6	0.193	0.899
7. Loss of confidentiality	3.50	3	3.67	8	3.86	7	4.50	2	3.94	0.680	7	1.524	0.259
8. Insufficient effort to keep partnering going	3.50	3	4.00	5	3.57	14	4.50	2	3.88	1.025	8	0.768	0.534
9. Unstructured risk and reward framework	4.00	2	3.67	8	3.86	10	3.75	13	3.81	0.911	9	0.053	0.983
10. Investment risks	3.50	3	4.33	1	3.57	17	4.00	8	3.81	1.167	10	0.330	0.804
11. Poor documentation and process standardisation	3.50	3	3.33	13	3.71	12	4.25	5	3.75	0.856	11	0.708	0.565
12. Limited delegation for problem-solving	3.00	13	3.00	18	4.29	1	3.50	17	3.69	0.873	12	3.117	0.066
13. Communication problems	3.50	3	3.00	18	3.86	8	4.00	12	3.69	1.014	13	0.623	0.614
14. Lack of continuous improvement	3.50	3	3.33	13	3.57	15	4.00	8	3.63	0.957	14	0.270	0.846
15. Disagreement on project emphasis and goals	3.00	16	3.67	12	3.57	15	4.00	10	3.62	1.204	15	0.269	0.847
16. Poor interchange between the QS firms and the Academia	3.00	16	3.33	17	3.86	11	3.25	19	3.50	1.317	16	0.284	0.836
17. Dependence or over dependency risks	2.50	18	3.67	11	3.43	19	3.50	16	3.38	0.957	17	0.629	0.610
18. Cultural problems	3.00	13	2.67	20	3.57	18	3.75	15	3.38	1.408	18	0.386	0.765
19. Lack of requisite skills and competencies among QS firms' representatives	2.00	21	2.67	21	3.57	13	3.75	14	3.25	1.000	19	2.571	0.103
20. Exaggerated hierarchies and internal conflict	2.50	18	3.33	13	3.43	19	3.25	20	3.25	1.183	20	0.279	0.840
21. Higher consultancy costs	2.50	18	4.00	7	3.00	21	3.00	21	3.13	1.204	21	0.703	0.568

**Table 5: Benefits of quantity surveying firms' partnering**

Benefits of Partnering	Academics		Contracting		Consultancy		Clients		Overall			F	Sig.
	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	SD	Rank		
1. It stimulates Knowledge Exchange and Inclusivity	4.50	1	4.67	1	4.86	1	5.00	1	4.81	0.403	1	0.818	0.509
2. It facilitates more effective communication	3.50	4	4.67	1	4.57	2	4.50	4	4.44	0.727	2	1.399	0.291
3. More informed decision-making and Standardisation	4.00	3	4.00	3	4.43	3	4.75	2	4.37	0.619	3	1.152	0.368
4. Improved learning and increased job effectiveness	4.50	1	3.67	4	4.29	4	4.75	2	4.31	0.602	4	2.502	0.109
5. It creates synergic between the Industry and the Academics	3.50	4	3.67	5	3.86	5	4.00	5	3.81	1.167	5	0.083	0.968

### Inferential Statistical Tests

To understand and clarify further the difference between the opinions of the diverse organizations (government establishment, consultancy firms, contracting firms and the academics) and the professional status (fellow, associate and probationer member of NIQS) of the respondents. An analysis of variance (ANOVA) was conducted on the 21 identified barriers and five benefits of adopting partnering by quantity surveying firms. As noted by Tsai et al. (2014), ANOVA is a parametric statistical test that “requires the data to be normally distributed,” also, parametric test results are derivable from means of scores. Furthermore, a *post hoc* Tukey’s test- honestly significant difference (HSD) test was carried out on factors that are important ( $p < 0.05$ ).

### Statistical test based on organizational setup

The ANOVA conducted on the results (at Sig. < 5%) showed no difference in the opinion among the groups of respondents both for the barriers and benefits of partnering. These findings may be because most Nigerian quantity surveyors do engage in private professional practice and some cases may engage their colleague to assist them. Moreover, most of the

respondents have both theoretically and practical knowledge on partnering and have utilized in some projects in the past. Also, there is only a thin line bordering the practice of these groups of respondents, because most Nigerian quantity surveyors may have practiced their profession in two or more of these organization setups.

### **Statistical test based on professional status**

The ANOVA conducted on the results (at Sig. < 5%) showed the difference in the opinion among the groups of respondents in two (2) items of the benefits and one (1) item of the barriers to partnering. For the benefits of partnering, the two small but significant differences are: “it stimulates knowledge exchange and inclusivity” ( $F(2,129)=4.591, p=0.031$ ) and “it facilitates more efficient communication” ( $F(2,129)=4.083, p=0.042$ ). Based on a post hoc Tukey’s test evaluation on the two items significant benefits of partnering. Factor such as “it stimulates knowledge exchange and inclusivity” was perceived by probationer members ( $M=5.00, SD=0.000$ ) of the Nigerian Institute of Quantity Surveyors (NIQS) to be more important than the NIQS fellows ( $M=4.00, SD=0.000$ ) at a high significance difference ( $p=0.004$ ). Meanwhile, for “it facilitates more effective communication” there is a moderate importance ( $p=0.031$ ) by the probationer members ( $M=4.88, SD=0.354$ ) scoring this factor higher than the associate members of NIQS ( $M=4.00, SD=0.816$ ).

For the barriers to quantity surveying firms’ partnering, the result indicated “*cultural problems*” ( $F(2,129)=4.971, p=0.025$ ), has the only factor with a significant difference based on the perception of the groups of respondents. Moreover, a *post hoc* Tukey’s test conducted on this factor reveals a moderate significance ( $p=0.030$ ) for the factor with the fellows of the professional body ( $M=5.00, SD=0.00$ ) seems to perceive it to be more significant than the probationer members ( $M=2.50, SD=1.195$ ).

### **Classification by Percentage Score**

This section report and discusses the results of the classification of the identified (i) quantity surveyors’ essential services and (ii) projects appropriate for a partnering arrangement. The

detail results are as shown in Table 6 (QS principal services) and Table 7 (projects). Three (3) main classifications were identified- 'Core,' 'optional' and 'not applicable' QS principal service and projects.

The principle of classification is in the majority opinion of the respondents- (1) if over 65% of the respondents is for *core classification*, the service or project is classified as a "core QS service or project." (2) *For optional classification*, there are two set of conditions. If the first condition is not applicable, then the second condition will be applied. (i) The service or project is less favored by less than 65% of the respondents as core classification (ii) The service or project is favored as optional by more than 40% of the respondents but less than 65%. (3) If less than 40% of the respondents favor optional classification and then, less than 50% favor core classification, the service or project is *not applicable* for quantity surveying firms' partnering.

### **Principal services of quantity surveying firms or QS**

Identified in the questionnaire survey form are 27 essential services of quantity surveying firms, of which the respondents identified seven (7) of the services as core classification and the remaining 20 principal services as optional for adoption in a partnering arrangement. The 7 core classifications include: feasibility studies (75%), expert advice (75%), lifecycle costing (68.8%), project control (75%), financial analysis (68.8%), procurement management (68.8%), cost control and post contract management (75%). This core classified principal services for partnering are key and significantly require a partnering approach to enable QS firms to discharge their duties efficiently and effectively. A closer look at those factors reveals that it would require active collaboration and coordination of duties among QS firms to perform such services.

Top of the list among the optional services classification is value management (62.5%), preliminary cost advice (62.5%); scheduling and planning (62.5%), advising on contractor selection (56.3%). These optional classified services although with high recommendations

from the respondent, may or may not require a partnering approach to discharge it and its choice for a partnering arrangement should depend on the project at hand and the technical competence of staff of such quantity surveying firm.

Also, based on the mean ranking of the essential services (with mean values in the range of  $M=3.13$  and  $M=3.43$ ). Services such as “*due diligence studies*,” “*conditions surveys*”; “*security management*,” “*preparation of taxation and insurance documents*,” are of less importance among the services discharged by QS firms. However, factors such as “*feasibility studies*” ( $M=4.58$ ,  $SD=0.447$ ), “*expert advice*” ( $M=4.58$ ,  $SD=0.447$ ), and “*lifecycle costing*” ( $M=4.48$ ,  $SD=0.479$ ) are key services of quantity surveyors and quantity surveying firms. Lifecycle costing is inclusive of the preparation of bill of quantities (BOQ), cost plan at the design stage, cost control (construction phase).

### **Projects for partnering**

Identified in the survey form are eight (8) projects usually embarked on by quantity surveying firms and quantity surveyors. Four (4) of the projects are core (highly suitable) for partnering, another set of three (3) projects were classified as optional while one project was classified as ‘not applicable’ for a partnering approach. The four (4) core classified projects include civil and structural engineering projects (87.5%), heavy/industrial engineering projects (81.3%), building construction (81.3%), cost and production engineering (68.8%). The classification of “*civil and structural engineering projects*” as a core classification is presenting a statistical evidence (of the earlier anecdotal reports), that a good number of quantity surveying firms and even quantity surveyors in Nigeria ‘shy away’ from civil engineering projects such as roads, bridges, and so forth. Olawumi and Ayegun (2016) also, highlighted a barrage of factors and reasons for low participation of Nigerian quantity surveyors in civil construction works.

Environmental economics are not applicable for partnering while mechanical, electrical and other engineering services (56.3%), landscaping and interior design projects (56.3%), planning and urban development (50%) were deemed optional for quantity surveying who

which to utilize partnering in such projects. These are optional because of most times; these projects are usually part of the bigger project classified under the core classification. Also, the respondents favor more participation of quantity surveying firms in civil and structural engineering projects (M=4.68, SD=0.544). Others are heavy/industrial engineering projects (M=4.68, SD=0.403) and building construction (M=4.58, SD=0.577). This finding corresponds to the observations of Olawumi and Ayegun (2016).

**Table 6: Classification for suitability of QS's principal services for partnering**

QS's Principal services for Partnering arrangement	Core	Optional	Not Applicable	Preferred Classification	Mean	SD	Rank
Feasibility studies	75.0%	25.0%	0.0%	Core	4.58	0.447	1
Expert advice	75.0%	25.0%	0.0%	Core	4.58	0.447	2
Lifecycle costing	68.8%	31.3%	0.0%	Core	4.48	0.479	3
Project control	75.0%	18.8%	6.3%	Core	4.48	0.602	4
Value management	62.5%	37.5%	0.0%	Optional	4.38	0.500	5
Financial analysis	68.8%	25.0%	6.3%	Core	4.38	0.619	6
Advising on contractor selection	56.3%	43.8%	0.0%	Optional	4.27	0.512	7
Preliminary cost advice	62.5%	31.3%	6.3%	Optional	4.27	0.629	8
Scheduling and planning	62.5%	31.3%	6.3%	Optional	4.27	0.629	9
Procurement management	68.8%	18.8%	12.5%	Core	4.27	0.727	10
Cost control and post contract management	75.0%	6.3%	18.8%	Core	4.27	0.814	11
Risk management	50.0%	50.0%	0.0%	Optional	4.17	0.516	12
Technical auditing	50.0%	43.8%	6.3%	Optional	4.07	0.629	13
Project management analysis and coordination engineering	50.0%	43.8%	6.3%	Optional	4.07	0.629	14
Analysis and engineering	56.3%	31.3%	12.5%	Optional	4.07	0.727	15
Valuing construction works	56.3%	31.3%	12.5%	Optional	4.07	0.727	16
Contract auditing	56.3%	31.3%	12.5%	Optional	4.07	0.727	17
Investment appraisals	43.8%	50.0%	6.3%	Optional	3.97	0.619	18
Facilities management	43.8%	43.8%	12.5%	Optional	3.85	0.704	19
Obtaining or negotiating tender/bid	50.0%	31.3%	18.8%	Optional	3.85	0.793	20
Property condition appraisals	37.5%	50.0%	12.5%	Optional	3.75	0.683	21
Asset management	31.3%	56.3%	12.5%	Optional	3.65	0.655	22
Property management	25.0%	62.5%	12.5%	Optional	3.55	0.619	23
Due diligence studies	25.0%	56.3%	18.8%	Optional	3.43	0.680	24
Conditions surveys	31.3%	43.8%	25.0%	Optional	3.43	0.772	25
Security management	12.5%	62.5%	25.0%	Optional	3.13	0.619	26
Preparation of taxation and insurance documents	18.8%	50.0%	31.3%	Optional	3.13	0.719	27

**Table 7: Classification for suitability of projects for partnering**

Projects for Partnering arrangement	Core	Optional	Not Applicable	Preferred Classification	Mean	SD	Rank
Civil and structural engineering projects	87.5%	6.3%	6.3%	Core	4.68	0.544	1
Heavy/industrial engineering projects	81.3%	18.8%	0.0%	Core	4.68	0.403	2
Building construction	81.3%	12.5%	6.3%	Core	4.58	0.577	3
Cost and production engineering,	68.8%	31.3%	0.0%	Core	4.48	0.479	4
Mechanical, electrical and other engineering services	56.3%	43.8%	0.0%	optional	4.27	0.512	5
Landscaping and interior design projects	37.5%	56.3%	6.3%	optional	3.85	0.602	6
Planning and urban development	37.5%	50.0%	12.5%	optional	3.75	0.683	7
Environmental economics	31.3%	37.5%	31.3%	Not applicable	3.33	0.816	8

### ***Interviews summary***

Eight (8) respondents participated in the interview aspect of the study. These included two (2) probationer members, five (5) associate members and one (1) fellow of the Nigerian Institute of Quantity Surveyors (NIQS). More so, some solutions to the barriers to partnering are given. Moreover, these include a call from NIQS probationer members for “proper training and skill development of [QS firm] staff and workshop on partnering by NIQS, QSRBN [Quantity Surveyors Registration Board of Nigeria]” and that “partnering [should be made] more satisfying and user [or project] specific.” The NIQS associate members identified “team building [has been] critical to the development of the profession” while another suggested that “project partners should encourage each other and help ascertain goals are ready and matched.”

Furthermore, an associate member argued that “positive result in due time and adequate value for money should be the priority of partnership in project executions” while another advocated “change from adversarial to share culture and commitment of all stakeholders especially those at the management level.” However, another associate member believed that “the biggest problem with partnering is that there is limited knowledge of it in Nigeria and [in QS] firms.”

Moreover, the fellow member advocated for a “well-articulated and written partnership agreement with a well spelled out exit window.”

The interviewees gave their professional viewpoints regarding the participation of QS firms in partnering: The probationer members of NIQS believed that it is a welcome development which is of high importance, and that, it will create greater synergy among the QS firms and enable them to win the bigger contract and encourage knowledge sharing. For the associate members of NIQS, partnering would help to improve project outcome when individual QS firms partnered together than when they are ‘doing it alone.’ They also noted, the need to have legal backing for every professional partnership and that “nothing is undertaken without it binding on code and conducts.” Another believed that it is a “plus to every phase of the project execution,” since it facilitates the sharing of ideas, views, and ensures “disagreements are ironed out to create a better understanding of parties involved.”

However, to another corporate member, partnering is “costly and risky at the initial stage but with trust and commitment, it is more rewarding and solution to adversarial relationships associated with traditional procurement,” he further noted that it has many benefits but usually applicable to big projects. Also, another associate member believed that ‘borrowing a leaf’ from the UK construction industry where it has been very successful, he opined that it is the way forward for QS firms and that it has the high possibility of increasing substantial profit margin. Therefore, based on the perception of the NIQS fellow, partnering in the discharge of quantity surveyors’ professional duties will encourage specializations in various areas and enable partners to concentrate on areas where they have greater competence.

## **Discussion of Results and Future Directions**

Partnering seems to be gaining momentum among quantity surveying firms and quantity surveyors in Nigeria. Majority of the participants ( $\frac{4}{5}$ ) of the online survey has utilized partnering in the discharge of the professional duties, and one-half have a master degree which revealed the urgent desire of most Nigerian QS to have a higher degree after their first-

degree program. The ranking analysis identifies six (6) key factors as barriers to partnering with quantity surveying firms having values above the cut-off value of 4. These include: 'failure of senior management to 'buy in' to the partnering ethos,' 'unclear or lack of a defined partnering methodology/procedure,' 'poor attitudinal and cooperative capabilities among QS firms (commitment).' Furthermore, we have 'fundamental distrust among QS firms,' 'inflexibility of QS firms and representatives to new roles and procedures,' and 'conflicts between organizational goals and project goals.' These findings which aligned with previous studies (Alderman and Ivory 2007; Kwak et al. 2009; Abdou and Al Zarooni 2011; Jacobsson and Roth 2014; Gottlieb and Haugbølle 2013; Suprpto et al. 2015) indicated that a right disposition and support by top management of quantity surveying firms is key to the successful adoption and implementation of partnering with quantity surveying firms in Nigeria and elsewhere. Also, the development of mutually agreed goals, partnering charter will facilitate collaboration and cooperation.

Also, the study identified two (2) key factors as benefits of quantity surveying firms' partnering with mean values above the cut-off value of 4.5. These include: 'it stimulates knowledge exchange and inclusivity,' 'it facilitates more effective communication.' This result which is consistent with previous literature (Anvuur & Kumaraswamy, 2007; Cacamis & El Asmar 2014; Cheng & Li, 2004; Doloi, 2013; Jacobson & Choi, 2008) shows that quantity surveying firms are going to gain immensely through the sharing of ideas and concepts when they undertake their professional duties using partnering. More so, there is an added benefit of reducing the communication gaps between QS firms.

The statistical test shows a high significant difference between the perception of probationer members and fellows of NIQS regarding the benefit of 'knowledge exchange and inclusivity' gained through partnering. This finding explains the fact the fellow with more years of practical experience are more knowledgeable and may not gain much of this benefit during partnering compared to the probationer members who have fewer years of experience and would value and appreciate whatever knowledge they may gain during partnering. Also, the views of the

probationer members of NIQS differ slightly from the associate members on the benefit ('effective communication') acquired during partnering. This finding reveals the fact that the probationer members will likely benefit more from getting more contacts and direct links with other members of the institute and even other professional bodies if they are fortunate to partake in a partnering arrangement than the associate members who may already establish contacts within the NIQS and other professional organizations.

The analysis also revealed that the fellows of NIQS perceived 'cultural problems' as a more significant barrier to quantity surveying firms' partnering than the probationer members. Nigeria is a multi-ethnic community of people in western Africa with over 350 ethnic groups and fraternities. However, the low importance attached to this factor by the NIQS probationer members is noteworthy because, at that early stage of their career, it would be absurd for them to bother themselves with such. More so, it will aid the professional development of such probationer member and increase their exposure and knowledge of their profession while working under their supervisors.

The analysis also revealed seven (7) core quantity surveyors' essential services, which are available for partnering. These include: 'feasibility studies,' 'expert advice,' 'lifecycle costing,' 'project control,' 'financial analysis,' 'procurement management,' and 'cost control and post contract management.' These set of QS's essential services also have mean values above the cut-off value of 4. This finding provides to quantity surveyors and estimators alike on what professional service they should readily embrace partnering. Also, four (4) key projects are classified as core and available for partnering, these include: 'civil and structural engineering projects,' 'heavy/industrial engineering projects,' 'building construction,' and 'cost and production engineering.' This set of projects also has mean values above the cut-off value of 4. This revelation is a clarion to quantity surveyors to be more involved in engineering projects as they have hitherto been less involved in such projects and the use of a partnering arrangement will provide them a platform to practice effectively in such projects.

Studies on partnering abound about the construction sector. However, this is the first study to focus on the quantity surveying firms. Future research in this field could adopt a case study approach to assess the approach to partnering with quantity surveying firms and identifying critical success factors that can assist them to discharge their professional practice using partnering successfully. Also, a framework for partnering with quantity surveying firms should be developed to serve as a guide to QS firms on how to approach and implement partnering in their projects.

### **Research Limitation**

The limitation of the scope of this research to the Nigerian AEC industry was done to garner and assess the partnering arrangements in quantity-surveying firms from the perspective of a major developing country; however, it constitutes a limitation to the study. Nevertheless, the concepts assessed and discussed in this paper are applicable to other regions and countries (whether developed or developing countries). This is because the services provided by quantity surveyors hardly vary from country to country, and therefore the suggestions and recommendation in this paper could be applicable to practicing quantity surveyors and QS firms elsewhere.

### **Conclusion**

This case study captured the broad scope of quantity surveying firms' partnering in Nigeria, identifying the QS principal services, projects, benefits and barriers to partnering among others through an empirical approach using questionnaire-based survey, interviews and a series of data analyses. The study is the first of its kind in Nigeria AEC sector, particularly among members of the Nigeria Institute of Quantity Surveyors (NIQS) with 132 responses collected and analyzed.

Twenty-one (21) barriers to partnering identified during literature review of which six (6) factors were highly critical; of the five benefits of partnering, two factors are highly significant. Of the twenty-seven quantity surveyors' principal services, of which seven are core services suitable

for partnering; likewise, for QS's projects, eight projects were identified of which 4 of the projects are core projects suitable for partnering arrangement. An analysis of variance carried out between the groups of respondents reveals that probationer members of NIQS are more likely to benefit from engaging in partnering than either associate members or fellows of NIQS. The summary of interviews pointed to the fact that quantity surveyors of all categories support the need for quantity surveying firms' partnering and there is a need for a clearly-defined partnering agreement and provision of an exit window. It can be deduced from these research findings that quantity surveying firms are optimistic of utilizing partnering arrangement and of the benefits derivable from utilizing partnering for their projects and with necessary policies and strategy being put in place, it would result in a greater level of project delivery and success for the AEC industry.

Based on the findings of this study, the following recommendations are for the Quantity Surveyors professional bodies (*including the Nigeria Institute of Quantity Surveyors [NIQS]*) and quantity surveying firms alike. (1) successful adoption and implementation of partnering require strong support and commitment from top management (2) the QS' professional organizations should utilize its various workshop, symposium, seminars, and conferences to harp on the need for QS and quantity surveying firms to partner among themselves to discharge their professional duty as the benefits of such are enormous. (3) the QS' professional organizations and the various quantity surveying firms should collaborate to develop a standard partnering charter to serve as a template and guide for QS and quantity surveying firms willingly to engage in partnering. (4) There should be more facilitation and exchange of ideas between the academic, QS' professional organizations and the quantity surveying firms for the overall benefits of all.

This research findings would be useful and of great benefits to QS' firms and QS' professional organizations to understand areas of possible improvement in employing partnering as a strategy for improving the efficiency of their professional practice. It also has considerable implications for the practice of quantity surveying as it recommended the professional services

and projects with greater viability for the partnering arrangement. This study also contributes to the establishment of more practical and efficient strategies to facilitate the implementation of partnering arrangement to execute construction projects.

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## **Data Availability Statement**

Data generated or analyzed during the study are available from the corresponding author by request.

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