INNOVATE TO COMPETE: AN EMPIRICAL ASSESSMENT OF MEASURES TO ENHANCE INNOVATION ADOPTION IN GHANAIAN QUANTITY SURVEYING FIRMS

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ABSTRACT
Innovation in construction services is a source of competitive advantage; thus, firms are constantly innovating new ways of working and producing new products in order to stay in competion. Regardless of this immeasurable benefit of innovation, the Ghanaian quantity surveying (QS) firms are very sluggish in adopting innovation. Also, there is a paucity of research work that will enable QS firms to maximize innovation adoption. This study was conducted to identify and examine measures to enhance innovation adoption in Ghanaian QS firms. Quantitative approach and census sampling technique were employed in the study. The dependent variables retrieved from 24 out of 43 questionnaires administered to QS firms in Accra and Kumasi were analysed using mean score and Kendall's coefficient of concordance test. The study concluded that leadership, information and communication technology, supportive work environment, education and training policy, collaboration with partners, and organisational resources are the most significant measures to enhancing innovation adoption in Ghanaian QS firms. It is recommended that QS firms constantly put into practice large spectra of new ideas in rendering services in order not to be out of competition. This study could serve as basis for management in various QS firms in drawing up policies to enhance innovation adoption. Also, QS firms in other developing countries particularly those in sub-Saharan Africa where the challenges impeding innovation are likely to be similar can also benefit from the findings. Future research could be focused on identifying the key attributes and managing the expectations of innovation champions in the QS firms.

Keywords: Innovation, Construction Industry, Consultancy Service, Quantity Surveying, Ghana

1 Introduction

Prior to the 1990s, only few researchers were able to identify the significance of innovation in services despite its astronomical contribution to the economy of most countries (Tether & Howells, 2007); services have been observed to be non-innovative and technologically backwards (Howells *et al.*, 2004). Miles (2000, pp. 371) attest to this by describing service innovation as "being neglected and marginal". Recently, the Department of Trade and Industry (DTI) (2007) has proved that services innovation is receiving more attention. Indubitably, services have adopted the use of technological and non-technological innovations in inventive ways instead of the normal ways through the 1990s to the 21st century (Howells *et al.*, 2004). Technological innovations consist of either product or process innovation and non-technological innovations consider changes to organizational structure, enhancing existing techniques used in management, and employment of advanced corporate strategies (Anderson & Manseau, 1999). Consequently,

the employment of human and organizational competences cannot be overlooked in service innovations (Van Ark *et al.*, 2003).

Innovation in the built environment has attracted a lot of interest over the last fifteen years from academics and policy makers (Gann, 2003). The realizing of the immense role technological and organizational change can play in enhancing the performance of the construction industry is the main stimuli in this burgeoning interest over the years (Gann, 2003). It has come into view that a lot of firms in the construction industry are in a vicious cycle of low performance, low levels of profitability, limited investment, and poor organizational capabilities (Reichstein *et al.*, 2005). Extant studies proffer that a major means of breaking free from this vicious cycle is by innovation (Barrett *et al.*, 2007; Reichstein *et al.*, 2005; Blayse & Manley, 2004; Seaden & Manseau, 2001). O'Mahoney (2011) attests that companies which invest in innovation during a recession or vicious cycle have higher chances of coming out of it faster than their competitors. The ability of firms to enhance their products, processes, services and operating practices by developing and implementing innovative strategies relates directly to their economic performance (Gann, 2003). As a result of this, innovation is globally distinguished as a driving force of economic growth (Baumol, 2002).

In knowledge-based economy, innovation plays a key responsibility in the growth of the economy, competitiveness, and advanced standard of living (Organisation for Economic Co-operation and Development & Eurostat, 2005). Seaden and Manseau (2010) posit that innovation is deemed to increase the value of a country. It is critically considered as a universal driver of the economy amongst other economic activities (Barrett *et al.*, 2007; Olatunji *et al.*, 2010). In the sense of construction, Ozorhon *et al.* (2010) agree that innovation in construction services is a source of competitive advantage by the industry practitioner. In order not to be out of competition, firms are constantly identifying new ways of working and producing new products, which simply means they must innovate to compete by way of putting into practice a large spectrum of new ideas (Seaden & Manseau, 2001; Blayse & Manley, 2004; Barrett *et al.*, 2007). Adow *et al.* (2013) affirm that for an industry to achieve its corporate strategy with innovation, it must frequently upgrade its services, products and new ideas.

The construction industry has been dominated by dramatic changes in ideas and practices which calls for the quantity surveying (QS) firms to adopt and implement innovative measures to meet the expectations of the industry's stakeholders (Hartmann, 2006; Sexton & Barrett, 2003). However, the Ghanaian construction service industry, to be precise, the QS firms are very sluggish in adopting innovation (Adow *et al.*, 2013). Also, there is a paucity of research work that will enable QS firms to maximize innovation adoption. Therefore, this study was conducted with the aim of identifying and examing measures to enhance innovation adoption in Ghanaian QS firms. This study is organized in seven main parts namely; an introduction to the study, a literature review on measures to enhance innovation, its benefits and measurement of its success, the methodology adopted, findings and discussion, and lastly, conclusion and further research.

2 Literature Review

Innovation adopted by most practices is a combination of revised existing services or practices and major and minor changes in these practices (Hertog & Bilderbeek, 1999). Furthermore, innovation depends on the perception of individuals, an innovation may have been discovered a long time ago, but it may still be an innovation to individuals who perceive it as new (Sahin, 2006). Internal research and development (R&D) and external R&D are the main sources of innovation (Chang *et al.*, 2012). Internal R&D boost the intensity of innovation performance, enhances the absorption capacity and position the firm to gain maximum benefit from opportunities involving external R&D (Chang *et al.*, 2012; Frenz & Ietto-Gillies, 2009). External

R&D provide firms with the opportunity to upgrade and perfect their innovation performance (Chang, 2003; Amara & Landry, 2005). Consultants, suppliers, customers, and competitors are the four main sources of external R&D (Johnston & Lin 2000; Segarra-Blasco & Arauzo-Carod, 2008; Frenz & Ietto-Gillies, 2009). However, knowledge from both internal and external sources of innovation can be efficiently managed to derive better information for decision making, thus innovative offers to consumers (Shoham *et al.*, 2005).

Blayse & Manley (2004) describe the construction industry as made up of manufacturing and services industry; quantity surveying, design and engineering are included in the services industry. This description is largely supported by extant literature. The clients, designers and contractors, depend on the services rendered by the QS all the way through the project life cycle to accomplish the objectives of the project and also to discharge their contractual and technical obligations (Musa *et al.*, 2010). Ghana Institute of Surveyors (GhIS), (2015, pp.1) recommended that, "the advice of a professional Surveyor is required at all stages of the life-cycle of property from the raw land, through measurement, planning, funding, design and construction, agency, management and investment, refurbishment and redevelopment". Olatunji *et al.* (2010) attribute this as part of the reason why QS has been identified to be an important discipline within the construction industry. This implies that the higher the level of innovation practices inputted into the services rendered by the QS consultancy firms the greater the probability that it will increase their contribution to the growth of the economy (Blayse & Manley, 2004).

2.1 Measures to Enhance the Adoption of Innovation Practices in the QS Firms

The factors that help promote the adoption of innovation according to Ozorhon *et al.* (2010) are the enablers of innovation within a firm. These factors include leadership; supportive work environment; collaboration with partners; deep understanding of the client requirement; education and training policy; knowledge management practices; encouraging staff to get involved with external networks; use of problem solving techniques; awards, grants, and funds; government schemes; reward schemes; culture and vision; R&D (Ozorhon *et al.*, 2010). Steele & Murray (2004) hammered on R&D as a key component to innovation in a firm because it creates the advances that bring about novel value-added products and processes thus enabling members of a firm to be effective and increasing the future sales growth. In addition, government policies also act as enabler of innovation by providing support, conducive climate, and encouraging innovation through public procurement and regulation (DTI, 2007). Furthermore, developing organizational resources which entails fostering a culture supportive of innovation, boosting in-house technical competence, buttressing innovation champions and building up effective innovation strategy can enhance innovation adoption within firms (Blayse & Manley, 2004). Finally, information and communication technology (ICT) is distinguished amongst other relevant technological strategies as a giant enabler of innovation because it is fundamental to all economic activities, it can be applied to various information processing tasks and most importantly it is pervasive (Hertog & Bilderbeek, 1999).

2.2 Benefits and Impacts of the Adoption of Innovation Practices in the QS Firms

Having identified the key measures to enhancing adoption of innovation, it has been established that innovation yields direct benefits to the QS firms (Adow *et al.*, 2013; Ozorhon *et al.*, 2010; DTI, 2007; Blayse & Manley, 2004; Veninga, 2000). These benefits include increase in competitive edge of the market, and reduction in the staff strength needed for the execution of a project (Adow *et al.*, 2013). DTI (2007) ascertains innovation to be a major driver of growth in productivity of a firm and Veninga (2000) affirms that firms that adopt and promote innovation practices are bound to increase productivity. The indispensable impact of innovation includes improving the company's image, enhancing the services rendered by the firm, improving client satisfaction and improving the current processes adopted by the firm (Ozorhon *et al.*, 2010).

Furthermore, other benefits that firms derive from innovation according to Ozorhon *et al*. (2010) include increase in technical capability, increase in organizational effectiveness, introduction of new services and processes, penetration of market and growth, growth in revenue due to new services, short and long term profitability, enhancement of organizational structure, and of human resources. Blayse & Manley (2004) attest the benefits of innovation identified by Ozorhon *et al.* (2010), and added that the more the QS firms innovate the greater their chances of winning more projects and also improving the financial results of these projects.

2.3 Measuring the Success of Innovation

The quality and success of services innovation are often difficult to ascertain due to the intangibility and diverse nature of services (Voss & Zomerdijk, 2007). The Service-Profit Chain proposed by Heskett *et al.* (1994) is the most preferred amongst other service performance measurement models (Voss & Zomerdijk, 2007). Heskett *et al.* (1994) created a link between internal and external service quality, employee satisfaction, customer satisfaction, customer loyalty and profitability as shown in Figure 1. The success of an adopted innovation (revenue growth and productivity) is stimulated by the loyalty of the customers, and loyalty depends on the customer's satisfaction. The value of an innovative service rendered to customers is a key indicator of satisfaction.

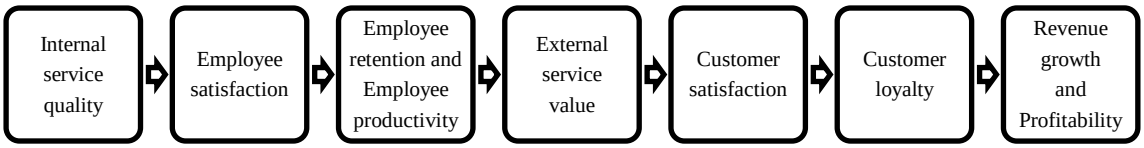

Figure 1. Innovation Success

(Source: Heskett *et al.*, 1994)

3 Research Methodology

A quantitative research approach was adopted due to the nature of this study. Furthermore, the study employed secondary data from extant literature review and primary data was source from QS firms in Accra and Kumasi, and they represent the unit of analysis for this study. Population refers to the complete set of people, cases, observations or data about which information is desired and is thus of interest to a researcher **(**Passer, 2004; Kothari, 2004; Beins & McCarthy, 2011). Therefore, the population for this study was registered QS firms in Accra and Kumasi. The list of registered QS firms in Ghana was obtained from the secretariat of the GhIS. The list provided 46 registered QS firms in Ghana with their respective locations and contact details. The survey was limited to firms located in Accra and Kumasi because most of the construction activities are focused in these two cities (Ahadzie, 2007). Moreover, from the obtained list 84.8% of the firms were located in Accra and 8.7% were located in Kumasi and 6.5% of the firms were located in other parts of the regions of Ghana. The population for the study (QS firms in Accra and Kumasi) was finally determined to be 43.

Sampling may not be necessary if the population under study is small (Taylor-Powell, 1998). The population for this study (43 firms) can be described as small because Owusu & Badu (2009) also described a population of 54 firms as small. Therefore, the sample frame for this study is the same as the population. Census sampling technique was adopted for this study. According to Israel (1992), this technique allows the researcher to collate data from all individuals in the population. Furthermore, sampling errors are also eliminated because data will be collected from each and

every unit in the population thereby increasing the level of precision (Israel, 1992; Owusu & Badu, 2009).

A questionnaire with a five-point Likert scale was adopted in this study to measure the response of each respondent. According to Bertram (2007), Likert scale is a psychometric response scale mostly adopted in questionnaires; it aids the researcher to easily ascertain the degree to which a respondent agrees with a statement. Respondents were asked to rate the extent to which thirteen (13) identified measures from extant literature could enhance innovation adoption in their firms. A five-point Likert scale ranging from (1) "strongly disagree" to (5) "strongly agree" was used to rate each identified measure. The target respondent for the questionnaire was the top management of each QS firm.

Out of the 43 questionnaires that were administered to the top management at each QS firm, 24 were retrieved representing a response rate of 55.81%. According to Baruch (1999), a response rate of approximately 35% is satisfactory for most academic studies targeting top management or organizations' representatives. This implies that the response rate obtained for this study (55.81%) is acceptable. Furthermore, the response rate achieved was compared with that of Owusu & Badu (2009) who recorded 53.7% and Ahadzie (2007) who also achieved a response of 45% therefore justifying the adequacy of the response rate for this study.

Table 1. Cronbach's Alpha Reliability Analysis and KMO Test

Measures		Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Leadership		48.42	12.254	.422	.800
Supportive work environment		48.63	11.114	.680	.778
Collaboration with partners		48.83	11.101	.578	.786
Deep understanding of the client requirement		48.96	11.955	.490	.795
Education and training policy		48.67	11.536	.537	.790
Knowledge management practices		49.33	10.928	.580	.785
Encouraging staff to get involved with external networks		49.54	11.216	.559	.788
Awards, grants, and funds		49.63	11.810	.374	.805
Government policies		49.58	11.993	.413	.801
Reward schemes		49.79	13.303	.026	.830
Organisational resources		48.92	12.080	.420	.800
Research and development (R&D)		49.71	11.955	.406	.801
Information and communication technology (ICT)		48.50	12.348	.333	.806
All item Cronbach's Alpha	.811				
KMO	.602				

Before the analysis, a reliability test of the measuring intrument was conducted using Cronbach's reliability test. All the 13 items were subjected to Cronbach's reliability test and Table 1 shows that the Cronbach's alpha for each item was more than 0.70 which means that the measuring instrument is reliable. In addition, all the 13 items were also subjected to KMO measure of sampling adequacy. The KMO value obtained (0.602) is greater than 0.5, thus confirming the adequacy of the sample size as shown in Table 1.

Upon the successful completion of the preliminary tests, the retrieved data were analyzed using descriptive statistics (mean score). From Table 3 it can be observed that the mean scores of the responses were used to rank each measure to provide a clearer understanding of the agreement reached by all the respondents. The measure with the highest mean score was ranked highest and the measure with the lowest mean score was ranked lowest. In cases where two or more variable have the same mean score, the one with the lowest standard deviation was assigned the highest ranking (see Field, 2005; Ahadzie, 2007).

4 Findings and Discussion

In an attempt to authenticate the credibility of the data retrieved from the questionnaire, it was deemed vital to critically analyze the demographic data of the respondents. The analysis of the demographic data is summarized in Table 2. The purpose of the respondents identifying their position in the firm was to make sure the targeted respondent actually answered the questionnaire. The information retrieved from this part will signify the validity of the other parts of the questionnaire. From Table 2, the results indicate that out of 24 responses, 37.5% were executive directors, 33.3% were managers, and 29.2% were senior executives. This implies that 100% of the respondents were top management of their firms.

Table 2. Demographic Data of the Respondents

Variable	Frequency	Percentage
Position in firm		
Manager	8	33.3
Senior Executive	7	29.2
Executive director	9	37.5
Years of existence of firm		
Less than 5 years	0	0
5 - 10 years	7	29.2
11 - 15 years	4	16.7
16 - 20 years	3	12.5
Over 20 years	10	41.7
Working experience		
Less than 5 years	0	0
5 - 10 years	12	50.0
11 - 15 years	5	20.8
16 - 20 years	2	8.3
Over 20 years	5	20.8
Firm ownership type		
Sole proprietorship	5	20.8
Partnership	7	29.2
Private limited	12	50.0
Size of firm		
Micro (up to 5 employees)	9	37.5
Small (6-29 employees)	14	58.3
Medium (30-99 employees)	1	4.2

Leadership was ranked as the most significant measure to enhance innovation adoption in Ghanaian QS firms with a mean score of 4.79 and a standard deviation of 0.415 followed by ICT and supportive work environment as shown in Table 3. Leaders who are keen on experiencing and initiating new ideas are more likely to create conducive environment for adoption of innovative practices. However, it is not surprising that almost all the respondents strongly agree to this measure and it is also consistent with the findings of Ozorhon *et al.* (2010) who also ranked

leadership as the topmost enabler of innovation. Also, Hertog & Bilderbeek (1999) identified ICT as a giant enabler of innovation amongst other relevant technology strategies. ICT plays a universal role in all economic activities and this could be the main reason why it was ranked the second most significant measure to enhance innovation. Leadership and supportive work environment work hand in hand to create and enhance innovation. Ozorhon *et al.* (2010) also suggested that other measures put in place to enhance innovation adoption are likely not to flourish without the presence of leadership and supportive work environment. In addition, one of the respondents also suggested commitment of staff as a measure to enhance innovation adoption. This measure can be categorized under supportive work environment.

Education and training policy, collaboration with partners, organisational resources, deep understanding of the client requirement and knowledge management practices are the next most significant measures to enhance innovation adoption as depicted in Table 3. Collaboration with partners was deemed a significant measure to enhancing innovation adoption in Ghana and it buttresses the argument raised by Ozorhon *et al.* (2010) which stated that innovative solutions are mostly co-developed during construction projects. Also, the significance the respondents attached to organisational resources reinforces the findings of Blayse & Manley (2004) and strengthen the point that developing organisational resources fosters a culture supportive of innovation, boosts in-house technical competence and supports innovation champions. Additionally, the need to deeply understand the client's requirement has been highlighted by Olatunji *et al.* (2010). Olatunji *et al.* (2010) observed that once the core client's needs have been understood it increases the ability of the QS firms to address these needs thus meeting the expectations of the client.

Surprisingly, the respondents ranked encouraging staff to get involved with external networks, government policies, awards, grants and funds, R&D and reward schemes as less significant as compared with the other measures as shown in Table 3. It should be noted that these measures were also described as less significant according to the findings of Ozorhon *et al.* (2010). R&D was ranked amongst the least significant measures by the respondents and it confirms the findings of Adow *et al.* (2013) that only 24% of the firms in the Ghanaian construction industry have R&D office that handles innovation. Therefore, it deducible that the QS firms in Ghana do not see the significance of R&D in enhancing innovation in their firms.

Further analysis of the results in Table 3 indicates an overall standard deviation less than 1.0 for all the measures identified to enhancing innovation adoption. This means that all the responses retrieved for this study are concentrated around the mean, that is, the respondents have common interpretation of the questions asked and there is consistency in agreement amongst respondents. Additionally, the standard error corresponding with all the means is approximately zero, implying that all the sample means are similar to the population mean. Therefore, the sample used for this study is an accurate representation of the population, thus confirming the credibility of the findings of this study.

Figure 1 shows a clearer understanding of the agreement reached by all the respondents on the measures to enhancing innovation adoption. The radar web represents the Likert scale from 1 to 5 and it can be observed that the respondents either agreed or strongly agreed to the 13 measures that can enhance innovation adoption in Ghana.

Table 3. Ranking of Measures to Enhance Innovation Adoption

Measures	Mean	Rank	Std. Deviation	Std. Error of Mean
Leadership	4.79	1st	.415	.085
Information and communication technology (ICT)	4.71	2nd	.464	.095
Supportive work environment	4.58	3rd	.504	.1.03
Education and training policy	4.54	4th	.509	.104
Collaboration with partners	4.38	5th	.576	.118
Organisational resources	4.29	6th	.464	.095
Deep understanding of the client requirement	4.25	7th	.442	.090
Knowledge management practices	3.88	8th	.612	.125
Encouraging staff to get involved with external networks	3.67	9th	.565	.115
Government policies	3.63	10th	.495	.101
Awards, grants, and funds	3.58	11th	.584	.119
Research and development (R&D)	3.50	12th	.511	.104
Reward schemes	3.42	13th	.504	.103

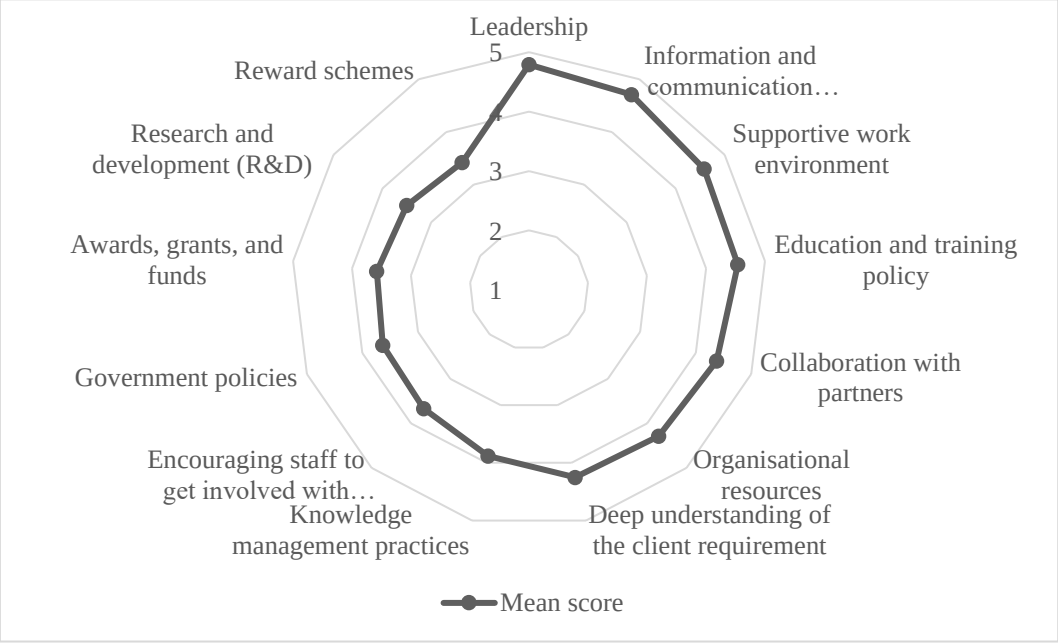

Figure 2. Rader Chart Showing the Mean Score of the Measures to Enhance Innovation

4.2 Analysis of Agreement Between Respondents - Kendall's Coefficient of Concordance (W)

Kendall's W proposed by Maurice G. Kendall and Bernard Babington Smith is used to measure the degree of agreement amongst ranks assigned by different respondents on different attributes (Legendre, 2010). The hypothesis for Kendall's W test is set thus:

Ho: $W = 0$,

Ha: $W \neq 0$.

Where Ho denotes the null hypothesis, Ha denotes the alternative hypothesis and W denotes the Kendall's Coefficient of Concordance. The null hypothesis was that there is no significant

agreement amongst the respondents in the ranking of the measures to enhance innovation adoption (Ho) and the alternative hypothesis was that there is a significant agreement amongst the respondents in the ranking of the measures to enhance innovation adoption (Ha). Furthermore, when perfect agreement exists between the respondents, W = 1 and when maximum disagreement exists, W = 0 (Verbic & Kuzmin, 2009). As a rule of thumb, values of W < 0 are considered poor agreement, from 0.00 to 0.20 slightly agreement, 0.21 to 0.40 fair agreement, 0.41 to 0.60 are considered moderate agreement, 0.61 to 0.80 substantial agreement, and 0.81 to 1.00 are considered almost perfect agreement (Landis & Koch, 1977).

The test statistics table, Table 4 informs the actual result of the Kendall's W test. From Table 4 it can be observed that Kendell's W = 0.589 and p = .000. Therefore, the null hypothesis that there is no significant agreement amongst the respondents in the ranking of measures to enhance innovation was rejected. Finally, it can be concluded that the QS firms in Ghana moderately agree to the rankings of the measures to enhance innovation adoption.

This result is presented graphically in Figure 3 where the X-axis represents the respondents and the Y-axis represents the rankings on the Likert scale (from 1 to 5). The lines represent the agreement reached on all the 13 measures identified to enhance innovation adoption in Ghanaian QS firms. The lines should be parallel to the X-axis when maximum agreement exists. The more the lines intersect the lesser the concordance of the rankings of the respondents. From Figure 3, it can be observed that all the respondents ranked the measures on a scale of 3 to 5. Furthermore, the lines that are parallel to the X-axis confirmed the result that agreement really exist amongst the respondents and the strength of this agreement is: W = 0.589.

Table 4. Kendall's Coefficient of Concordance Test on Measures to Enhance Innovation

Kendall's Coefficient of Concordance	Chi-Square	df	Asymp. Sig.	N
0.589	169.662	12	.000	24

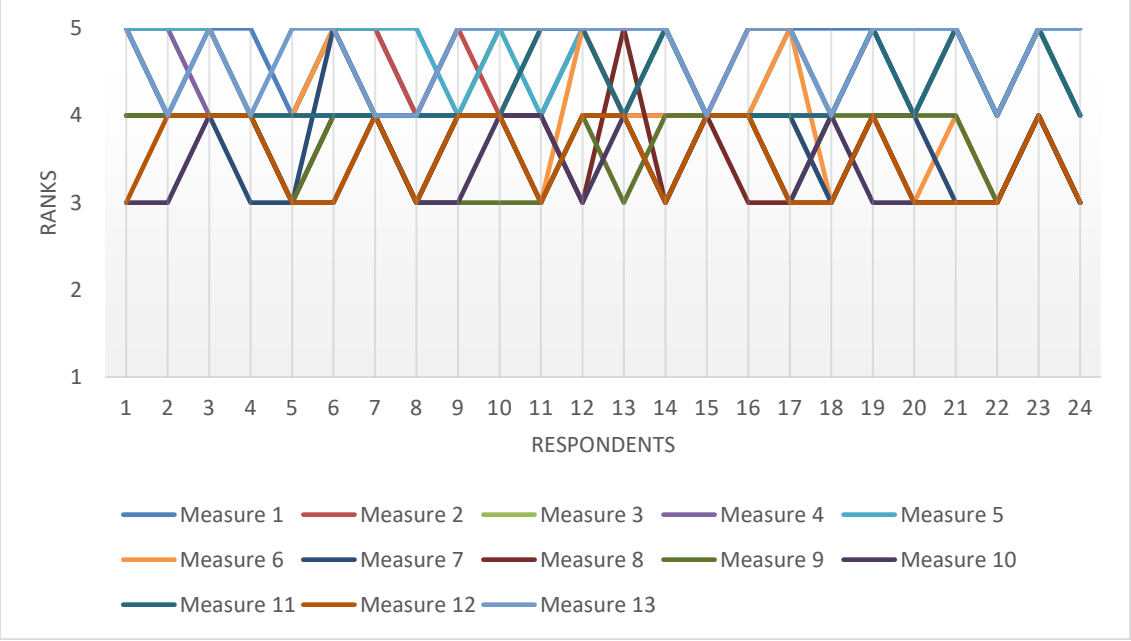

Figure 3. Concordance of Ranking

5 Conclusion and Further Research

The aim of this study was to identify and examine measures that can enhance the adoption of innovative practices in Ghanaian QS firms. To achieve this aim, respondents were asked to rate the extent to which thirteen (13) identified measures from extant literature could enhance innovation adoption in their firms on a five-point Likert scale ranging from (1) "strongly disagree" to (5) "strongly agree". The mean scores of the responses were used to rank each measure to provide a clearer understanding of the agreement reached by all the respondents. Further analysis was conducted using Kendall's coefficient of concordance test which verified that there was a significant agreement amongst the respondents in the ranking of the measures to enhancing innovation adoption. Amongst the 13 measures, leadership was ranked the most significant measure to enhancing innovation adoption, followed by ICT, supportive work environment, education and training policy, collaboration with partners, organisational resources, deep understanding of the client requirement, knowledge management practices, and encouraging staff to get involved with external networks. The lowest ranked measures were government policies, awards, grants, and funds, R&D and reward schemes.

The study finally recommended that the QS firms should constantly put into practice large spectra of new ideas in rendering services in order not to be out of competition. In view of this accession all QS firms in Ghana should consider reviewing the processes they adopt to render services periodically and in a more innovative way so they could increase their chances of winning more projects, and also improve the financial results of these projects. Finally, leaderships in the various QS firms in Ghana are recommended to be keen on experiencing and initiating new ideas and most importantly, they should create a conducive and supportive working environment which is likely to enhance innovation adoption. It is also recommended that the QS firms should incorporate ICT as a technological strategy in all aspects of the services they render. However, all these recommendations will be impractical if leaderships are not innovation champions; they need to constantly carry and support innovative idea. Another means of achieving this is to collaborate with partners who have the skills to incorporate new ideas into the QS firms as a whole. The findings of this study could serve as basis for management in the various QS firms in drawing up policies to enhance innovation adoption. Also, QS firms in other developing countries particularly those in sub-Saharan Africa where the challenges to innovation are likely to be similar can also benefit from the findings.

Innovation adoption measures are increasing being recognized as a viable option for enhancing competition in organisations. However, Van Ark *et al.* (2003), Howells *et al.* (2004) and Torku *et al.* (2017) confirmed that there is a significant varying difference in the challenges impeding innovation amongst individual service industries; no two-service industry will encounter the same degree of challenges impeding innovation. Therefore, the successful identification and examination of the measures to enhance innovation for the QS firms suggests that there is the potential for the subsequent identification of measures that tackle the challenges other service sectors in the construction industry face in adopting innovation. This study can form the basis for future research towards the identification of measures to enhance innovation adoption in the various construction industry services sector. Future research could also be focused on identifying the key attributes and managing the expectations of innovation champions in the QS firms.

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