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Expanding Understanding on Attributes of Innovation Champions: Firms and Individual Perspectives of Professional Quantity Surveying Firms

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Abstract: Quantity Surveying Profession (QSP) globally has undergone significant revolution and has embraced career pathways in providing excellent services within and outside the construction industry. The QSP adapting to the changes in the construction industry, and innovating to remain competitive has allowed them to adopt some specific attributes which makes them process innovation champions. Identifying these characteristics of the QSP for appreciation and implementation gave the purpose for this studies. Drawing from quantitative research approach, and using purposive and convenience sampling technique, data was collected and analysed. The study adopted descriptive statistics, Relative Importance Index (RII) and cross tabulations as its tools of analysis. After analysis, the outstanding attribute of innovative Quantity Surveying (QS) firms' worthy of emulation were good managerial skills and capability, followed by team learning and competency. On individual perspective, all the identified variables were outstanding characteristics with interaction with others in the workplace ranking first, followed by open to experience while acting out of curiosity ranked last. Findings of this study could assist in understanding the set of characteristics which makes firms innovative. The identified attributes would also help other project teams in the construction industry to increase their innovativeness and output when they are examined, understood and implemented.

Keywords: Attributes, Construction, Ghana, Process Innovation, Quantity Surveying

1. Introduction

An expert in the construction industry who possesses the dexterity to analyse both cost components and construction activities effectively; obtaining results which can be used in solving problems peculiar to each project is a quantity surveyor [1]. Over the years, the Quantity Surveying Profession (QSP) have faced numerous changes which has caused it to innovate and stand up to the test of time [2]. During the 17th century when the profession developed into an occupation, the duties of the quantity surveyor were basically the production of bills of quantities, measurement of construction works, estimating, cost planning and contract administration [3]. However, since the recession period, the duties of professions in the construction industry have changed, so is that of the quantity surveyors [2, 4, 5].

Currently, the quantity surveyor in their quest to be innovative examines components of cost of building project in an organized manner, collects data, manage and monitor processes and relate the outcomes of investigation to a diversity of economic difficulties challenging the designer [1, 6]. In addition, the profession engages in consultancy services to governments and industries; help in improving performance through analysis of problems and bringing out solutions. Hence, it takes the form of exchange of outstanding performs, systematic methods, modification

managing and training abilities, knowhow application, and approach expansion [7].

An emphasis on Quantity Surveying (QS) directs the centre of innovation study from invention and production to the knowledge intensive transfer of expert services [8]. Quantity surveyors, throughout literature is seen to exhibit great deal of process innovation, hence making them innovation champions [3, 6, 9]. Process innovation, which is the improvement of production and management process in an organisation through the introduction of new management approaches and technologies [10] requires some specific attributes which firms and individuals in the firms must exhibit to ensure its effectiveness. Expatiating on the specific characteristics of QS firms and their members as process innovation champions gave the purpose for this study.

Grounded on an in-depth literature review, and adopting quantitative research approach, the identified variables from literature were strategically compounded into closed-ended questionnaires. The population was chosen to encompass only process innovation QS firms in Kumasi and Accra who were in good standing with the Ghana Institution of Surveyors (GhIS) as of the year 2016. Purposive and convenience sampling techniques were used in obtaining data from the respondents. The obtained data were analysed using descriptive statistics, Relative Importance Index (RII) and cross tabulations.

The findings of the study revealed that good managerial skills and capability, team learning and competency are the most outstanding attributes of the process innovation champions QS firms. Individuals in the QS firms were seen to possess important attributes like interaction with others in the work place, open to experience, and positive thinking and proactive. These identified attributes open up opportunities for management to understand the characteristics which is helping their firms to improve, so that they can flush out the bad and improve upon the good ones. Also, the identified characteristics set-up the pace and provide good examples of innovative characteristics which firms and individuals in the construction industry can adopt to improve upon their innovativeness and efficiency. This paper is unique as it expands knowledge on attributes of innovation champions and makes a remarkable insight into what makes innovative firms stand out: considering their values, characteristics and behaviours. However, this study is limited as far as qualitative research approach is concerned.

2. Expanding Understanding of the Concept of Innovation

With the increase in competition and constant change in the industry, organizations are under incessant pressure to deliver value added services, be creative, proactive and learn to survive and thrive [5]. Hence, innovation is being pursued as an art of refining the performance of the final product, which should unvaryingly be linked with the indicators of project performance [11]. Baregheh et al. defined innovation as "the multi-stage process whereby organizations transform ideas into new/improved products, service or processes, in order to advance, compete and differentiate themselves successfully in their marketplace" [12].

Meeus and Edquist classified innovation into product and process innovations [13]. Generally, process innovation is the introduction of new factors into an organization's production or service operations which include input resources, specifications of tasks, work and information flow mechanisms, and equipment used to produce a product or render a service with the ultimate aim of achieving lower cost and or higher product quality [14] while product innovation is defined as a new or (significantly) improved good or service [15]. As noted by Page et al., a focus on QS moves the centre of innovation research away from production and manufacture towards the knowledge intensive delivery of professional services [8]. Thus, innovation within QS firms relies on the management of knowledge acquisition and the capturing of project based learning for future use. Under reporting of such innovation explains why the other project teams are unable to appreciate the innovative skills of the QSP [6].

It very datable whether innovation can be forced, because they are often unexpected and very difficult to predict. In some cases, innovation spreads due to its intrinsic qualities but in others, the success of innovation depends on the activities of the innovator and the network she/he builds to support it [16]. The Economist Frymire argues that "the biggest challenge today is not finding or hiring cheap workers, but rather hiring individuals with the brainpower (both natural and trained) and especially the ability to think creatively" [17]. It is possible for troubled firms in hostile environments to shed past behaviours and adopt policies fostering entrepreneurship, some even to the extent of changing the industry rules [18]. The QSP adapting to the changes of the commercial revolution has enabled it to develop some specific characteristics which have caused its survival in the construction industry [2, 4]. Professionalism is one attribute which is eminent in the QSP. Undeniably, the professionalism concept as adopted in a specific firm gyrates around character, status, standards and methods instead of laid down expert ethical knowledge and rules [19, 20].

According to Stopford and Baden-Fuller, three common attributes radiates among innovators, which they added two other attributes based on observation. The first common attribute identified is proactiveness [18]. Stopford and Baden-Fuller however, disregard proactiveness to be the first to create something new but rather, thinking ahead and adopting the necessary changes for the unexpected future [18]. Quantity Surveyors, proactively thinking have been trying their skills in very important software packages like Master Bill, WinQS, Computer Aided Taking off (CATO), Super Project, RIPAC among others [9]. QS firms, seeking to be leaders in the construction industry aspire beyond their current capability (resources); aspiration beyond current capability too was identified as the second most important attribute among innovators which capsulize the goal of

progress and continuous improvement by finding better combinations of resources [18, 21]. Team-orientation is the third attribute, highlighting the crucial role played by teams of top and middle managers in creating alliances in the generating of creative ideas and innovative individuals [22]. The other two attributes identified based on observations by Stopford and Baden-Fuller are capability to resolve dilemmas and learning capability [18].

Competency is an attribute of the QSP which cannot be overemphasised [23]. Other attributes identified by Shafiei and Said as equally important for a competent quantity surveyor to possess are; versatility and adaptability, proactive and positive thinking, able to communicate effectively, high self-esteem, highly creative and innovative with problem solving ability, able to work in team, high ethical and moral value lifelong learning outlook [23]. Moreover, innovative individuals are persistent, tolerant of ambiguity, self-confident, willing to change, advance problem solving, open to experience, original and independent [24, 25, 26].

3. Methodological Setting

Based on the purpose of the study, and availability of information for the research [27], quantitative research approach was used to collect data on this study. Quantitative research is 'objective' in nature. It is defined as an inquiry into a social or human problem; it is based on testing a hypothesis or a theory composed of variables, measured with numbers, and analysed with statistical procedures, in order to determine whether the hypothesis or the theory hold true [28]. The primary data for the study was obtained by issuing out questionnaires to the target population. Walliman corroborated that a population does not refer to any number of people, units or elements, but rather a total quantity of a particular type of people, units or cases relevant to the subject of a researcher [29]. For the purpose of this study, the population was limited to only quantity surveyors in Kumasi and Accra, who were in good standing with the GhIS as of December, 2016. According to GhIS, the membership of the QS division who were in good standing consisted of 43 firms, 39 fellows, 313 professionals, and 37 technicians [30]. This sum up to 389 members and 43 QS firms [30]. Accra and Kumasi were chosen as the target population because most of the construction activities in Ghana are focused in these two cities [31]. The Kish formulae which is popularly used in most empirical works as evidenced in the works of Bolstein and Crow was used to obtain the sample size for the study as 80 [32]. Purposive and convenience sampling techniques were adopted for this study based on the purpose, design and practical insinuation of the research topic. Purposive sampling was used based upon a variety of criteria which includes specialist knowledge of the research issue, or capacity and willingness to participate in the research. Convenience sampling was also used to be able to obtain responses from the experts who were readily available – for instance, those that arrive on the scene by sheer coincidence in the innovation champions QS firms.

The close-ended questionnaire format was adopted to frame the questions for this study. The questionnaires were designed to address the aim, objectives and research questions of the study. The questionnaires were distributed to the top managers in the innovation champions QS firms, and also to the individual quantity surveyors in these firms. Both groups were allowed to provide responses to the firms' and individual perspectives sections of the questionnaires, because as being part of the firm, they should be able to tell the attributes which makes their firms process innovation champions, and as individuals, they should be able to also identify the attributes which they possess. After sending 80 questionnaires out, 68 of them were retrieved. Engaging the use of descriptive statistics and cross tabulations, the demographic section of the questionnaires was analysed. Also, using the five point Likert scale and adopting Relative Importance Index, the section which addressed the objective of the study was also analysed. RII is calculated based on the following equation: $RII = \Sigma W / A * N$, Where, W is the weighting given to each factor by respondents ranging from (1 to 5) N is the total number of respondents, A is the highest response integer (5 in this case).

4. Results and Discussion

4.1. Demographic Analysis

Upon analysis, it was identified that most of the respondents were working in QS firms (89.7%), while the rest were practicing the profession as individuals (10.3%). Also, 54.4% of the respondents were Junior quantity surveyors and probationers while 45.6% fell under top management (as Managing Directors and Senior Quantity Surveyors). To identify the attributes of innovation champions, a respondent must be an innovator, and must have some experience. Results show that 57.4% of the respondents have been in the industry for 0 – 5 years, while collaboratively 42.6% have been working more than 5 years, even exceeding 20 years. Respondents who were quantity surveyors themselves were asked whether they agree that they are process innovation champions. 91.2% agreed to the fact that Yes, they are process innovation champions while only 8.8% said No. Doing a further analysis on the demographic using cross tabulations revealed that, the 8.8% who said No, quantity surveyors are not process innovation champions were junior quantity surveyors, probationers and managing directors. These respondents who fell victims here confirms what Hardie et al. identified that, process innovation, the kind which the quantity surveyor is likely to innovate in, mostly goes unnoticed and appreciated by the other project teams who may not be directly involved in their duties [6]. The managing director, who is sparsely involved in QS activities, the probationer who is not well integrated in the QS practices, and the junior quantity surveyor who just joined the industry (upon further cross tabulation were also seen as people who have practiced the profession between 0 – 5 years); would not be abreast with the kind of innovation

which the quantity surveyor introduces and is mastery over.

4.2. Firms Innovative Attributes

Based on the five-point Likert scale rating, a success criterion was deemed significant if it had a mean of 3.5 or more. Where two or more criteria had the same mean, the one with the lowest standard deviation was assigned the highest significance ranking [31]. From Table 1, it could be seen that good managerial skills and capability was ranked first with an RII of 0.829, out of the 68 responses it had a mean of 4.150, standard deviation of 0.851, and standard error mean of 0.103. Team learning came second with an RII of 0.821, mean of 4.100, a standard deviation of 0.775, and standard error mean of 0.094. Competency was ranked third, with a standard deviation of 0.758, mean of 4.040, RII of 0.809, and standard error mean of 0.110. The rest of the variables follows chronologically as shown in Table 1 below.

Considering Table 1 and Table 2 below, all the identified variables had a standard deviation less than one, which shows a high level of consistency of agreement between the respondents' interpretations. More so, all the variables had their standard error means closer to zero which also signifies a great consistency among the agreement between the respondents.

4.2.1. Good Managerial Skills and Capability

For a firm to exhibit innovative ways of solving crucial problems on site, innovative ways of applying technology so that cost in projects are reduced to minimal, that particular firm must have good managerial skills and capabilities. Management is the process of designing and maintaining an environment in which individuals, working together in groups, accomplish efficiently selected aims. Frost and Egri argued that successful champions should be able to influence important players in their organizations to envision the strategic importance of their ideas [33]. Naturally, people in leadership positions are often important allies and champions of innovators [16, 34]. Therefore, it is of no surprising that good managerial skills and capability came first after ranking the responses of the survey. The past decades have seen a marked rise in the diversification of services of quantity surveyors into non-traditional areas such as Feasibility Studies, Life Cost Analyses and Management, Programme Management, Taxation Management, Arbitration/Mediation, Insurance Valuations and management, Risk Management, Quality Management, Value Management, Project/Construction Management and Facility Management [35]. Hence, showing the managerial and innovative skills of the QSP as they move into other building market economies [7].

4.2.2. Team Learning

After a company has exhibited good managerial skills, the firm can achieve the outmost best from its employees if there is a very good team learning ability. Thus, the employees do not keep knowledge from each other, and they learn new ways, technologies, shares ideas and help one another in the industry through team learning: this is the act of an innovation champion. Team learning came second after ranking the responses of the survey to determine the outstanding attributes of the innovation champions QS firms. This shows that, a company which eschew team work and for that matter team learning cannot move forward as a whole. Team learning is seen as essential to either renewal or frame breaking change, for it enables managers to conjure with new possibilities and create new options without becoming frozen into fixed patterns of thought that limit progress. Organizations that go far in developing corporate entrepreneurship can be expected to make sustained investments in facilitating the learning environment through team learning [18].

Table 1. *Identified outstanding attributes of innovators (QS - Firms perspective).*

Outstanding attributes of innovators (QS)	N	Sum	RII	Ranking	Mean		Std. Deviation
					Statistic	Std. Error	
Firms Perspective							
Good managerial skills and capability	68	282	0.829	1st	4.150	0.103	0.851
Team learning	68	279	0.821	2nd	4.100	0.094	0.775
Competency	68	275	0.809	3rd	4.040	0.110	0.905
Learning capability	68	273	0.803	4th	4.010	0.082	0.680
Professionalism	68	272	0.800	5th	4.000	0.076	0.623
Team-orientation	68	272	0.800	6th	4.000	0.089	0.733
Aspiration beyond current capability	68	271	0.797	7th	3.990	0.099	0.819
Interpersonal skills	68	264	0.776	8th	3.880	0.095	0.783
Versatility and adaptability	68	256	0.753	9th	3.760	0.096	0.794
Value orientation	68	251	0.738	10th	3.690	0.092	0.758
Tolerant of ambiguity	68	249	0.732	11th	3.660	0.100	0.822
Complexity	68	233	0.685	12th	3.430	0.094	0.779

(Source: Field survey, 2017)

4.2.3. Competency

Stopford and Baden-Fuller did their best with their attributes, but one of the attribute which exposed itself in Shafiei and Said is competency [23]. Holmes and Joyce defined competence as action, behaviour or outcome which a person should be able to demonstrate, or the ability to transfer skills and knowledge to new situations within an occupational area [36]. Quantity Surveyors are seen to be more competent in the work they do. They control and manage the contract from client brief up to handing over of

the project and even beyond. Roggema-van Heusden assayed to define competence from professional personnel point of slant: competence is the ability to perform well in a professional situation that involves the accomplishment of a certain task or the dealing with a problem, in a manner that can be observed and be judged by others [37]. In other words, a competent professional is capable of applying the necessary expertise in confluence with effective behaviour. Hence, the importance of this attribute is seen in it been ranked third by the respondent as one of the outstanding attributes that any firm should acquire in order to become innovation champions.

4.3. Attributes of Individual Innovators

Drawing from Table 2 below, it could be seen that interaction with others in the workplace was ranked first with an RII of 0.865, out of the 68 responses it had a mean of 4.320, the highest mean for that section. The standard deviation was 0.742, and the standard error mean was 0.090. Open to experience came second with an RII of 0.847; a mean of 4.240, a standard deviation of 0.775, and a standard error mean of 0.094. Positive thinking and proactive was ranked third, with a standard deviation of 0.666, mean of 4.220, RII of 0.844, and a standard error mean of 0.081. Variables with mean of 3.5 or more were considered as important. From Table 2 below all the variables have their mean greater than 3.5. This shows that the identified attributes are all important characteristics of individuals in the innovation champions QS firms.

4.3.1. Interaction with Others in the Workplace

Individual attributes are those that are exhibited by the individuals in the organisation themselves. The organisation as an entity cannot operate if there are no employees to work. If a firm is innovative, it means it members are also innovative. One thing about people who knows is that they like to share with others. It is therefore not overwhelming that interaction with others in the workplace ranked first as the most important attribute to make an individual innovation champions. This is of no wonder why most QS firms have moved from the cubicle and partition walls era to this open office where all the workers work together at an open space. With such a scenario, it is easy to solve problems, monitor each other and mentor others to greatness. It is debatable whether innovations can be forced, because they are often unexpected and very difficult to predict. In some cases, innovation spreads due to its intrinsic qualities but in others, the success of innovation depends on the activities of the innovator and the network she/he builds to support it [16].

Table 2. *Identified outstanding attributes of innovators (QS – Individual Perspective).*

Outstanding attributes of innovators (QS)	N	Sum	RII	Ranking	Mean		Std. Deviation
					Statistic	Std. Error	
Individual Perspective							
Interaction with others in the workplace	68	294	0.865	1st	4.320	0.090	0.742
Open to experience	68	288	0.847	2nd	4.240	0.094	0.775
Positive thinking and proactive	68	287	0.844	3rd	4.220	0.081	0.666
Capability to resolve dilemmas	68	279	0.821	4th	4.100	0.096	0.794
Persistent, self-confident, original and independent	68	278	0.818	5th	4.090	0.095	0.787
Able to work on team	68	278	0.818	6th	4.090	0.100	0.824
Effective communication abilities	68	277	0.815	7th	4.070	0.070	0.581
Highly creative	68	275	0.809	8th	4.040	0.099	0.818
Highly ethical with lifelong learning outcome	68	274	0.806	9th	4.030	0.075	0.622
High aspirations	68	265	0.779	10th	3.900	0.079	0.650
High self esteem	68	263	0.774	11th	3.870	0.093	0.771
Act out of curiosity	68	239	0.703	12th	3.510	0.108	0.889

(Source: Field Survey, 2017)

4.3.2. Open to Experience

Innovative individuals are open to experience. They are those who are ready to go out there to make it happen. Thus, they are ready to change the status quo, try their best, get themselves dirty, but get the work done. In short, they are ready to learn i.e. those who are ready to learn are the individuals who are open to experience. Quantity Surveyors being innovative individual means that they are open to experience [25]. Thus, they are also willing to change and try new ideas [24, 26]. The open to experience characteristics of quantity surveyors is evident in their services currently being sought for in several other fields like oil and gas industries, petro-chemical, manufacturing, telecommunications and power networks.

4.3.3. Positive Thinking and Proactive

The third ranked attribute, positive thinking and proactive is something that any individual must exhibit if they want to be an innovation champion. As an individual who wants to move forward in any business, you must think positive and be positive of any situation; whether on site, about your life, the health of your workers, the project itself etc. The individual must be proactive also. Stopford and Baden-Fuller disregard proactiveness to be the first to create something new but rather, thinking ahead and adopting the necessary changes for the unexpected future [18]. Quantity surveyors are proactive in renewal when they borrow others ideas as a

means of breaking from past behaviour. Quantity Surveyors are seen as been proactive by their usage of very important packages of software. Moreover, an emphasis was made that entrepreneurial organizations need to be proactive, but this is not the same as taking high risks [18].

4.4. Recommendations

Irrespective of the innovative characteristics identified in the QS industry, the profession needs to revolutionize and move to other types of innovation like technological and product innovation, so that their impact can be felt more in the construction industry. Moreover, for the QS industry to continue to remain champions in the process innovation, the industry must control some of its challenges like corruption and ensure high transparency and continuing professional development of its members.

5. Conclusion and Further Research

This study has expanded understanding on the attributes of innovation champions by considering quantity surveyors and QS firms in Ghana. Quantity surveyors throughout extant literature were seen to be undergoing periods of change and were tagged to be going on extinction, but the QSP through their innovating characteristics have stood up to the test of time. From the study, results revealed some of the characteristics of the QSP as good managerial skills and capabilities, team learning and competency which were attributed to the innovating QS firms in Ghana. Also, interaction with others in the workplace, open to experience and positive thinking and proactive were also determined as prominent characteristics of individuals in these innovating QS firms. The research was purely exploratory and non-empirical; hence it cannot be generalised in a broader context. Results from this study are useful to the QS industry to help management understand the attributes which they have formed so far and improved upon them. Other project teams upon understanding the attributes of the QSP could learn and adopt them to improve their respective fields. Throughout the study, there were some areas which became evident for further studies. Further research can be conducted in developing an approach which can help innovative QS firms to master the other kinds of innovation like product and technological innovations.

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