



MOTIVATING FACTORS AND BARRIERS OF INNOVATION IN THE NIGERIAN CONSTRUCTION INDUSTRY

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ABSTRACT

The construction industry has of recent been blamed for lack of innovation. This is believed to be responsible for the decreasing or stagnant levels of productivity in the industry in comparison with other industries. This study seeks to appraise drivers and barriers to innovation in Nigeria construction industry. Data on factors that propel and hinder innovation were obtained through Questionnaires administered to 100 construction professionals. Mean item score (MIS) was used to analyse drivers and barriers of construction innovation and demographic response of the respondents was through percentile. The findings of the study revealed that 'Need for improved performance is the greatest drivers with Lack of Technical knowhow and shortage of fund as the most critical barriers of innovation in Nigeria. It is concluded that company or organisation should include innovation as one of their main objectives and that construction professionals should be sent on periodic training. Besides, adequate funding should be devoted for such purpose.

Keywords: *innovation, construction professionals, construction industry, productivity, performance.*

INTRODUCTION

The Construction Industry, which is vital to growth and development, is one of the oldest in the world, indeed as old as civilization itself. Construction activity forecasts the general direction of an economy and for this reason; the industry is often described as a leading economic sector.

It is known that the construction industry is seen as environment that does not nurture creativity. But according to Dale (2007), construction by definition is seen a creative industry with unique environment. According to him, there is no project that is the same as another and that diversity brings about innovation and innovative problem can be solved at the practical level. As the industry is evolving changing, this calls for better integration and innovative ideas that will ensure a better scheme for providing public services and products.

According to pale (2007), the amount spent on construction in terms of innovation is small. But the issue of sustainability tops the agenda for innovative construction according to existing literatures. Also, in another publication by Australian Bureau of Statistics (ABS) on Construction Industry Innovation (2006), businesses within the construction industry spend about 0.5% of her total expenditure on innovation in organization processes and that innovation in the construction industry was 31% approximately

If the desire for the entire construction and infrastructure sector is to be innovative, then innovative methods should be considered for transformation to take place in construction and infrastructure industry. This will not only bring about enhanced innovation, but it will bring cost savings and valued will be added to the services.

The Nigerian construction market is among the largest construction markets in Africa, which has recorded impressive growth over the years. Though, government spending was a major contributor to the industry, especially the infrastructure sub-segment, other factors also contributed positively on the industry's growth. Despite, the strategic role of the industry in a growing economy like Nigeria, its contribution to the Nation's GDP of less than 2% is quite negligible when compared with some African Countries.

The players in the Nigerian Construction Industry can be classified into two categories namely formal and informal according to their business structure and mode of operations. The Nigerian construction market is dominated by foreign companies, which is similar to most African Countries. A large proportion of

these major constructing firms in Nigeria are subsidiaries/affiliates of European, North American and Asian construction firms. However, private clients especially individuals award building contracts to local construction companies. The performance of the construction industry in terms of productivity, quality and product functionality is considered low in comparison with other industries, and a low rate of innovation has been provided as the major explanation to this situation (Winch, 1998; Gann, 2000).

Construction is commonly characterized as a backward industry, one that fails to innovate in comparison to other sectors (Winch, 2003). Innovation, which according to Firth and Mellor (1999) means the application of new knowledge to industry including new products, new process, social and organizational change, is therefore desirable. Consistent with the authoritative and widely used OECD 2005 definition, innovation is defined here as a new or significantly improved product good or service process production or delivery method marketing method packaging, promotion, or pricing or managerial method internal practice.

The construction industry in Nigeria and other developing countries should similarly aim at being more innovative in order to satisfy the clients. It follows that productivity can be increased, especially in the context of developing countries, with increase in activities that support innovation. However, the barriers and enablers of activities that support innovation in the Nigerian construction industry have not been sufficiently studied and quantified.

This research aims at evaluating the readiness of innovation in the context of drivers of innovation in Nigerian Construction industry (NCI) with an attempt to reduce the barriers hindering the implementation of innovative ideas within the industry. Giving the following objectives:

1. To identify innovative ideas in the construction industry.
2. To examine the drivers of innovations in construction industry.
3. To examine the Barriers of innovations in construction industry.

LITERATURE REVIEW

According to Zaltman et al. 1973; Rogers 1983; Van de Ven 1986; Damanpour 1991, innovation is defined as the generation, development and implementation of ideas that are new to an organization and have practical or commercial

benefits. The term innovation also encompasses adoption and implementation of products or processes developed outside the organization.

Innovation in the construction industry has of recent been a subject of discussion in driving the performance of the construction industry (Egan, 1998; Lindsay, 2004). The fragmentation and low level of investment in research and development (R&D) have been highlighted in some studies (Egan, 1998). Dulaimi, Ling and Bajracharya, (2002), Investigated integrations and level of R&D on innovation using data from Singapore. Fragmentation and low level of investment in R&D are some of the key barriers to innovation but there are other important factors. Construction is commonly characterized as a backward industry, one that fails to innovate in comparison to other sectors (Winch, 2003).

Construction is a project-based sector within which individual projects are usually custom-built to client specifications. Fluctuations in the economic markets are reflected in considerable variations in the number, size and type of projects undertaken by construction organizations over time. Construction is by nature project driven and undertaken by an amalgam of firms, which change from project to project. The firms involved in each project are independent companies, which are organizationally interdependent. The finished products largely must be assembled at a point of use, subject to environmental factors in different geographical areas. These industry characteristics present a challenging context for innovation in the industry (Egan, 1998). Research has indicated that theories of innovation have room for improving the construction process (Widén, 2002). Sexton and Barrett (2003) acknowledge that although construction firms have always demonstrated an ability to innovate, construction practitioners are now very much getting to grips with the need for and management of innovation as an explicit endeavour.

(Nam and Tatum 1992a). asserted that construction projects tend to generate novel and complex problems that often require innovative solutions. Furthermore, as project owners become more sophisticated in terms of product needs and requirements, innovation becomes essential to the success of a construction project and also creates possibilities for achieving competitive advantages for the construction company (Pries and Janszen 1995; Slaughter 1998). However, the construction industry is known for its many barriers and resistance to innovations. To address these issues, significant research efforts

have been made in the past. Previous research on construction innovation has mainly emphasized the organizational aspect at the company level (Tatum 1987, 1989; Laborde and Sanvido 1994) and indicated that a supportive organizational climate can foster construction innovation (Tatum 1986, 1989) by overcoming barriers to it. Moreover, organizations need enthusiastic and committed individuals, often called “champions,” in the innovation process (Tatum 1986; Nam and Tatum 1997 1992a; Winch 1998).

Despite previous number of innovation-related research, there is lack of understanding of how project participants such as project managers (PMs) and project team members interact in a construction project environment to facilitate innovation.

While construction has not been as innovative as other industries, it has brought about some innovations during the 20th century, and a few examples will be briefly referred to here. In the first two or three decades, it responded to rapidly escalating land values in the inner cities of the United States by producing buildings that made the best use of very expensive land – it developed skyscrapers. These were very innovative projects, making use of the major developments in materials, in particular, structural steel. Steel become cheaply available in large amounts towards the close of the 19th century, and it was the best material for the frames of these huge buildings. Steel combined high strength, high stiffness and the ability to be pre-cut, drilled, and rapidly erected on site. This century has seen remarkable strides in bridge-building technology too. Again, the availability of steels (a material with high tensile strength) has made possible the building of firstly, large suspension bridges, and then more recently, the cable stay bridge, which is even more materials efficient. Another area of development and innovation has been in fastener technology used in construction. Many types of fastener have been introduced which speed up the construction process by reducing the number of operations required and reduce the number of operatives needed, and this process continues. There have been many more examples of innovation, such as novel piling and foundation systems, and new composite materials for the rapid erection of industrial buildings. These innovations have all been created by the industries that serve construction, they are all for specialist niche products, and they all come from industries that have invested heavily in the factors that favour innovation, and which, in

RESEARCH METHOD

This paper presents a part of the findings of a major research project which investigated the enabling and inhibiting factors of innovation in the construction industry. The research had the aim of identifying the important factors that drives and as well as factors that hinder innovation in Nigerian construction industry. To achieve this, a questionnaire data collection instrument was designed. The drivers and barriers of innovation were first identified through literature review. These factors were then operationalised into specific measures that may be taken

The methodology adopted by this research is the data collection procedure through Questionnaire which was self administered to the selected respondent from relevant professionals. Hundred(100) copies of Questionnaire was self administered during the round table organized by QSRBN May,2011, MCPDP 2011 Workshop organized by CORBON and seminar organised by ARCON, About Seventy(70) copies was retrieved with Fifteen(15) wrongly filled, Five(5) copies was not filled at all leaving a total of Fifty(50) useable Questionnaire. It become essential to state that this research was limited to building projects executed in Abuja because majority of the firms have their projects located in Abuja. The analyses of the data collected were carried out using percentile which was also used for analyse the demographic feature of respondents. Mean score was used to analyse drivers and barriers of innovation in Nigerian construction industry.

ANALYSIS AND RESULT

Drivers of Innovation in Nigeria Construction Industry

The identified Drivers of innovation in Nigeria construction industry are “Improving Communication within the industry”, “Reduced Administration Cost”, “Price reduction in Tendering”, “Gaining Competitive Advantage”, “Reduction in time to source Materials”, ”Reduction in Operating and Inventory Costs”, “Reduction in staffing levels in Procurement”, “Enhanced Decision Making and Market Intelligence”, “Negotiated Unit Cost Reduction”, “Enhanced Inventory Management”, “Increased Accuracy of Production Capacity”, “Enhanced Decision Making and Need for Improved performance. Out of all the aforementioned drivers of innovation, “Need for Improved performance was considered most as one of the drivers of innovation in Nigeria

construction industry (M= 4.64, SD = 0.59). While the Reduction in Staffing Levels in Procurement was adjudged least as the drivers of innovation in Nigeria construction industry among others (M= 3.40, SD = 1.12).Curran West, and Finch (1995) suggested that data could be said to be in excellent condition if skewness ranges is fewer than 2 and Kurtosis ranges fewer than 7.The results of the analysis affirmed the assertion of the authors, thus the result is good and reliable enough for this research work.

TABLE 4.2.5 Drivers of innovation in Nigeria construction industry

Drivers	Mean	Rank	Standard Deviation	Standad Error	Skewness	Kurtosis
Improving Communication	4.52	2	0.70	0.09	-1.51	2.26
Reduced Administration Costs.	3.66	9	1.17	0.16	-0.87	1.13
Price Reduction in Tendering	3.50	10	1.19	0.16	-0.55	-0.47
Gaining Competitive Advantage	3.84	8	0.95	0.13	-0.54	-0.51
Reduction in time to source material	3.88	7	1.08	0.15	-1.06	0.63
Reduction in Operating costs.	3.46	11	1.61	0.14	-0.68	1.38
Reduction in staffing levels	3.40	12	1.12	0.15	-0.05	-1.07
Enhanced Decision making	4.30	3	0.81	0.11	-1.08	1.80
Negotiated Unit Cost reduction	3.50	10	1.21	0.17	-0.63	0.19
Enhanced Inventory Management	3.94	6	1.09	0.15	-1.23	2.04
Increased Accuracy of Production	4.20	4	0.90	0.12	-1.10	0.65

Enhanced Decision Making	4.06	5	0.95	0.13	-1.72	5.43
Need for Improved Performance	4.64	1	0.59	0.08	-1.46	1.19

BARRIERS OF INNOVATION IN NIGERIA CONSTRUCTION INDUSTRY

The respondents expressed their opinions on the barriers of innovation in Nigerian construction industry on a likert scale ranging from “Very significant” to “Not significant”. Table 1:2:0 shows the result of analysis carried out on their responses using mean value. The top eight identified barriers to innovation in Nigerian construction industry are: “Lack of Technical know how and Shortage of fund” (M = 4.42, SD = 1.97, M=4.42, SD=0.88), “Lack of Technical Expertise”, “Shortage of supporting infrastructure”, “Lack of support from senior management”, “Different company’s culture”, “Interoperability concerns (i.e problem of interconnectivity)” and “Legal position in the country(M = 3.46, SD = 1.23). Curran West, and Finch (1995) suggested that data could be said to be in excellent condition if skewness ranges is fewer than 2 and Kurtosis ranges fewer than 7. The results of the analysis affirmed the assertion of the authors, thus the result is good enough for the research.

TABLE 1.2.0 Barriers of innovation in Nigeria construction industry

Barriers	Mean	Rank	Standard Deviation	Standard Error	Skewness	Kurtosis
Lack of technical expertise	4.32	2	1.13	0.16	1.81	2.62
Different company’s culture	3.56	5	1.12	0.15	0.55	0.57
Lack of support from management	3.76	4	1.13	0.16	0.72	0.24
Shortage of supporting infrastructure	4.10	3	0.90	0.12	0.88	0.15
Shortage of fund	4.42	1	0.88	0.12	1.50	1.48

Lack of technical know how	4.42	1	1.97	0.13	1.78	2.77
Problem of interconnectivity	3.54	6	1.16	0.16	0.38	0.50
Legal position in the country	3.46	7	1.23	0.17	0.61	0.50

DISCUSSION OF RESULTS

The ranking according to the mean rating of the drivers and barriers to innovation in the building industry as perceived by respondent is summarized in Tables 4.2.5 and 4.2.6. Table 4.2. 5 gives the ranking for drivers of innovation and Table 4.2.6 gives the ranking for barriers. “Need for Improved performance is the greatest drivers of innovation in Nigeria construction industry with mean value of 4.64, SD = 0.59). This is in line with Egan report (1996) which asserted that innovation requires some powerful driver(s), together with the right people and the right culture in which it can take place. As we approach the new millennium, it is very apparent that the construction industry faces some major challenges, including that of improving its environmental performance.(Egan1996). While Reduction in Staffing Levels in Procurement was adjudged least as the drivers of innovation in Nigeria construction industry among others (M= 3.40, SD = 1.12).

“Lack of Technical know how and Shortage of fund are rated as the greatest barrier of innovation in Nigeria construction industry with mean value 4.42, SD = 1.97, M=4.42, SD=0.88 respectively. This is might due to the fact that, if innovation come to play and there is no technical ability or know how to handle or implement it might prevent the creation of new thing or product. Innovation will not be beneficial to any one or construction industry if it lacks the technical hands to handle it or implement it. While the Legal position in the country is not very rated high with mean value of 3.46 and Standard deviation 1.23 and as such came last on the list of barriers of innovation in Nigerian construction industry.

All the identified drivers and barriers of innovation have got mean ratings of more than 3.0 which implies that all are taken as having at least fairly significant effect on innovation in the building industry. Among the drivers, Need for Improved performance was considered most as one of the drivers of innovation

in Nigeria construction industry which has a mean rating of 4.64, is highly regarded by respondents as having a big effect on innovation. Lack of Technical know how, Shortage of fund, Lack of Technical Expertise, Shortage of supporting infrastructure and Lack of support from senior management are the worst innovation barriers. This is in line with the result of finding by Henry et al (2007) on innovation barriers and enablers that affect productivity in Uganda Building industry.

CONCLUSIONS

This study concluded on the following premises that,

“Need for Improved performance is the greatest drivers of innovation in Nigeria construction industry with mean value of 4.64, SD = 0.59). This is in line with Egan report (1996) which asserted that innovation requires some powerful driver(s), together with the right people and the right culture in which it can take place.

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