EVALUATION OF THE NIGERIA CONSTRUCTION INDUSTRY PREPAREDNESS TO ADOPT SUPPLY CHAIN MANAGEMENT PRACTICES

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Supply chain management has received a lot of attention in the third world countries since the latham and Egans report due to benefits such as streamlining extensive cost and time overruns which have besieged the Nigerian construction industry, in Nigeria However, it is yet to receive such attention. This research through the use of questionnaire administered to professional in the built environment sought to elicit information on the construction professionals level of awareness, level of involvement in supply chain management, the benefit so derived from the adoption of supply chain management and limitation to its full adoption as well as the degree of preparedness of the industry as a whole to adopt supply chain management. Of the 385 questionnaires distributed 200 were returned (52%). It indicates that professionals to certain degree are aware of supply chain management practices with the top three being relationship development, management leadership, and information sharing. Professionals are also involved in supply chain management practices with the top three being information sharing, early appointment of partners, and relationship development. Top three benefits of supply chain management according to respondents are better resources utilization, Cost saving and improved productivity while the limitation to adoption of supply chain management has lack of management support, dearth in understanding of supply chain management concept and poor organisation structure as top three. The level of preparedness of the construction industry was determined using VERDICT readiness assessment model and reveals that the industry has achieved process readiness but is yet to achieve management, people and technology readiness.

Keywords: supply chain management, construction industry, preparedness, practices, Awareness, Nigeria.

INTRODUCTION

The idea of Supply Chain Management (SCM) originated from the manufacturing industry with its first visible signs traced to Toyota Motor Factory which used the concept to regulate supply (Vrijhoef & Koskela, 2000). The construction industry possesses a lot of similarity with manufacturing industry which makes SCM adoptable to the construction industry (Aloini, *et al* 2012). Its goal was to greatly decrease inventory, reduce cost and duration of project thus improving project performance, to transfer site activities offsite to a more favourable condition, and to use integrated management options so as to effectively regulate supplier interaction (Saka & Mudi, 2007). The Nigerian construction industry is however known for high inventory, absence of formal relationship and interaction with supplier (Saka & Mudi 2007), and cost and time overruns (Babalola *et al* 2012). The Nigeria construction industry faces immense challenges in managing its supply chain which is critical to a successful project delivery Saka & Mudi (2007). These challenges in the opinion Aje *et al* (2015) could have resulted from paucity of awareness or paucity of involvement in supply chain management practices by various professionals. Aje *et al* (2015) surveyed the extent of awareness and involvement of quantity surveyors in supply chain management practices and concluded that though the awareness was high, the level of involvement of quantity surveyors was however low, this is a result of inadequate infrastructure in information Technology.

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The extent of awareness and extent of involvement of other professionals is the Nigeria construction industry is yet to be determined. The implementation of supply chain management is limited by paucity of understanding of supply chain management concept, unclear strategic benefits to the organisation; lack of trust among other limitations which has restrains its adoption and application in the Nigeria construction industry (Amade *et al*, 2016). Supply Chain management in Nigeria is also restricted by the difficulty of operating in the business environment in Nigeria which is characterized by poor infrastructure such as bad road, the unstable socio-political environment in Nigeria, corruption pandemic even among security and law enforcement agencies further limits the adoption of supply chain management in Nigeria.

The average level of awareness and involvement of quantity surveyors in supply chain management as asserted by Aje et al (2015) could be an outcome of the degree of preparedness of organisations in the construction segment to adopt supply chain management practices which Saad, *et al* (2002) opined that is a fundamental issue that affects the effective adoption of supply chain management.

Problem Statement

Supply chain management is a network of organizations or entity, that are tied through an upstream and downstream linkages via different processes and activities with a view to producing valuable goods and services to satisfy end users Tiwari *et al* (2014). Supply chain management is therefore important to satisfying the clients and end-users. This highlights the need for professionals to be aware, and fully involved in supply chain management encouraged by an industry prepared to fully adopt the innovation.

Aje *et al* (2015) investigated the level of quantity surveyors awareness of supply chain management praxis; the research similarly examined involvement extent of quantity surveyors and factors constraining their involvement in supply chain management activities. Amade *et al* (2016) asserts that paucity of understanding of supply chain management concept alongside unclear strategic benefits is the major constraints to the deployment of supply chain management. construction industry's Supply chain management is however not narrowed to quantity surveyors alone as all parties plays a crucial role it is therefore imperative to investigate the extent of awareness of other professionals in the built environment and construction practices, their level of involvement in supply chain management activities alongside the constraints to successful adoption of supply chain management practices.

Saad *et al* (2002) identified and raised a fundamental issue related to the effective implementation of supply chain management practices which is the degree of preparedness of the organisation to adopt supply chain management practices. This was confirmed in Aje *et al* (2015) where there was an average level of awareness of supply chain management practices among quantity surveyors however; there was low level of participation and involvement of quantity surveyors in supply chain management practices. This could be attributed to the degree of preparedness of the organisation towards adopting supply chain management practices.

It is consequently imperative to ascertain the degree of preparedness of organization towards adopting supply chain management practices alongside barriers that restrain the effective implementation of supply chain management despite the benefits of this innovation.

LITERATURE REVIEW

The Concept of Supply Chain Management

The concept of supply chain management is believed to have stemmed from and thrived well in the production and manufacturing segment. The first obvious evidence according to Adebayo (2012) and Shingo (1988) in Vrijhoef and Koskela (2000) were in JIT delivery (appropriate delivery time) system used by Toyota Automobile; it's a practice that was majorly to regulate the supply of Toyota Products in the appropriate small quantity in the

appropriate needed time. Deming (1982) asserts that the stimulus was born in 1950 when Deming in a statement to Japanese leaders suggested a collaborative working which incorporates suppliers in a long term relationship built on trust and loyalty would lead to improvement in quality and decrease unnecessary high production cost. Vrijhoef and Koskela (2000) and Chen (2004) stipulates that the idea of supply chain management was introduced from the management principle during the 1960s, on the conviction that a solitary activity cannot guarantee the success of a system or series of activities.

The concept can be said to have emanated from the need to improve performance by improving quality, decreasing cost and time of production. The concept of supply chain management having worked effectively in other segments needs to be adapted to the sector of construction in spite of the difference of this sector with other sectors like the manufacturing and production in these three ways; projects are one-off in nature, production are usually onsite and organisation is temporal (Koskela, 2003 as sighted in Khalfan, 2004) efforts have been made by researchers and workers in the construction industry to implement this concept

Supply Chain Management like other innovations from the production and manufacturing industry was developed in the 1960s based on the conviction that a solitary activity from a party (be it client, consultant, contractor or subcontractor) cannot ensure the effectiveness of an entire system (Chen, 2004). A supply chain therefore consist of a network system of that shows the relationship and interdependencies of all parties (client-supplier, consultant-main contractor, and sub-contractor–manufacturer) and the transfer of money, material, ideas and resources, information and knowledge to satisfy the specified requirement of the client.

Readiness Assessment Models

To ascertain the degree of preparedness of the construction industry to adopt supply chain management a model for assessing Readiness would be used. This tool has been used to determine the readiness of organisations, societies and even nations to adopting certain innovations and practices such as e-commerce readiness, IT readiness, and lean construction readiness. It is therefore a viable tool for determining the preparedness of the construction industry in Nigeria to adopting supply chain management practices.

Readiness has been defined by various authors in literature. Each of the various definitions of readiness from literature is dependent on the context, and subject matter. The first attempt to define readiness as available on known literature was by CSPP (computer system policy project) in 1998 which attempted to define readiness as defined with reverence to a society which has sophisticated internet access and application of information technology in schools, homes, offices, business centres, healthcare facilities; user confidentiality and security when online; and policies of government which are encouraging in advancing use of connections to network (Beig et al 2007). Another attempt by Dada (2006) sees readiness as ―the extent of the degree and level to which an economy be it a sector, country, nation may be ready, prepared or willing to achieve the advantages and dividends that result from information and communication technologies (ICT).

Readiness as defined by the authors above depends on the context and perspective being viewed by the author. In this context it can be defined as a measure of capability and preparedness to adopt a new paradigm shift of supply chain management. Earlier before the adoption of this paradigm so many models for assessing and determining readiness have been developed. Ruikar *et al* (2006) asserts that each instrument measures how prepared an economy or a community is to gain from information and communication technology, e-commerce, etc. Peters (2001) conversely, asserts that the range of instrument employs broadly diverse methods for readiness assessment which includes different measurement approach. Each assessment model has a distinct fundamental objective and definition of readiness where some are concerned with readiness of an economy especially of communities and nations to embrace information and communication technology by adopting internet technologies on a global platform, some are more interested in determining the readiness of a specific entity or industrial sectors to embrace certain innovation or technologies, this research is concerned the readiness of the construction industry to embrace the new paradigm shift to supply chain management.

some instruments determines readiness of a country and an economy to adopt and apply information and communication technologies on a universal basis, whereas others concentrate more on determining the readiness of particular sectors like the construction sector to embrace or apply certain technologies such as supply chain management. Centre for international development (CID) of Harvard University in 2001 developed a model called "Readiness Index model" which measures a countries capacity to utilize information and communication technology facility. In its definition of readiness sees it as the extent to which a society is prepared or ready to partake in a network developed society and its development to join a globally networked society of the nearest future (Kirkman *et al.,* 2002) as cited in Olamilokun (2014). In the same way, the Asia Pacific Economic Corporation (APEC) e-readiness assessment concentrated policies of government for e-commerce, whereas Mosaic global diffusion of the internet project readiness assessment instrument which targeted evaluating and assay the growth of internet world over (Ruikar *et al*, 2006).

In another context other models were more concerned with measuring the readiness of a sector to adopt certain engineering concept and approaches. For instance, Readiness Assessment for Concurrent Engineering (RACE) invented in Virginia University, America during the early 90s. It covered two major aspect or components which include process aspect and technology aspect. It is commonly used in software engineering, and automotive electronic industries (Ruikar *et al.,* 2006). Race can however, be adapted for usage in the construction industry as asserted by Khalfan and Anumba (2000). Furthermore, Supply Chain Assessment and Lean Evaluation System (SCALES) specially invented for the manufacturing industry in so as to determine companies'(especially SMEs) preparedness for adopting supply chain management practices and Lean manufacturing techniques. Similarly, Standard process Improvement for concurrent Engineering (SPICE) invented by the University of Salford, United Kingdom in 1998 was developed to determine key construction process within construction organisations (Spice Questionnaire, 1998). Furthermore, Benchmarking and Readiness Assessment Model for Concurrent Engineering (BEACON) developed for appraising the construction companies' degree of preparedness in applying concurrent engineering for the purpose of enhancing the process of project delivery. Additional models developed include the Capability Maturity Model (CMM) invented for developers and evaluators of software, and the IQ Net readiness scorecard (Khalfan and Anumba, 2000); (Ruikar *et al.,* 2006) and (Aminali, 2007) as in Olamilokun (2014).

The models for assessing readiness that is particular interest to this research is the VERDICT (Verify End-User e-Readiness using Diagnostic Tool) which is applicable to evaluate the degree of preparedness of construction companies, and sections within an organisation or company, as well as subdivisions within a section Aziz and Salleh (2010). It is a useful tool in measuring readiness of construction organisation for e-commerce (Ruikar *et al*, 2006). The key aspects to be considered for the successful implementation of verdict are; people, process, technology and a leader (management) to properly conduct and orchestrate the other aspect. The manager or management acts as the conductor, which coordinates the people, process and technology to achieve the adoption of a technology. All four aspects need to work complimentarily for an establishment or company to achieve e-readiness.

Ruikar *et al* (2006) asserts that after questionnaires have been successfully completed the report which summarizes e-readiness is presented to the users. The e-readiness assessment result comprises data in both text and graph formats which are subdivided into sections and tables with colour representing the summary of assessment as follows:

a. Red colour is used to indicate an average score of between zero and 2.5. Red used denotes that several aspects within a category need to be attended to urgently in order to attain readiness; and

b. Amber colour is used for an average score of between 2.5 to 3.5. Amber used depicts that certain aspects of the category needs to be attended to before achieving readiness; and

c. Green colour is used for an average score of 3.5. Green used in this sense implies that the organization has attained full readiness and that organization is matured and has the ability required in these aspects.

Aspects of Verdict Readiness Assessment Model

Several publications and articles point to the fact people, process and technology are key aspects considered for the implementation of any technology (Aziz and salleh 2010, and Ruikar *et al* 2006). Emmett (2002) as cited in Ruikar *et al* (2006) however asserts that people, process, and technology are in need of someone to lead same way a conductor leads an orchestra. Emmett (2000) however draws example from the performance of an orchestra where you have "people" as musicians, "process" musical scores, and technology "musical instruments", there is need for a leader/management provided by the conductor (leader/management) and coordinate the affairs.

People who have the required skill and understanding of and believe in technology is a key element of the verdict model, the people need to have the capability to apply the change and move to adopt quickly supply chain management, the staff has to be trained, and also improve their information technology knowledge. The organisational structure should be such that permits innovation and growth.

The organization technology facilities and infrastructure required for the sustenance of business functions, IT facilities should be made available, the organizational policy should be such that supports innovation and technology, and software facility related to such expertise should be made available to the organization

The process/project readiness should be such that support the successful adoption of supply chain management, it should display high level of quality assurance, and the use of supply chain management should reduce risk and improve client satisfaction

The management system should be such that have confidence in technology, and ensures planned tactical steps to initiate its application and utilization in order to obtain the dividends of supply chain management.

RESEARCH METHODOLOGY

The study adopted purposive sampling method to elicit information that is quantitative in nature. Questionnaires were administered to professionals on a sample comprised of duly registered construction firms of various sizes who remit their taxes with the Federal Inland Revenue Service of Nigeria (FIRS); a statutory authority mandated for the collection of taxes in Nigeria. According to the FIRS (2016), there are Ten thousand, two hundred and thirteen (10,213) active contractors across the country (Abdullahi, *et al* 2017). This is due to the fact that only companies who have remitted their tax are legally qualified to operate in Nigeria.

Building consulting and construction companies in Abuja, Nigeria were chosen for the population for this study. Building consulting and construction companies were chosen on the basis that they are a major party responsible for the application of supply chain management in the built environment; obtaining details with regards to their practices of supply chain management concept would provide an indication to how much professionals are aware of the concept. Abuja was equally chosen on the basis that they are developed and has a large concentration of building construction firms (Olajide, 2014).

The sample size of the research was calculated using Yamanes' (1986) formula for calculating sample size as indicated below.

$n= N/1+N(e)^2$

Where n represents Sample Size, N represents population= 10213, e=0.050

$n=10213/1+10213(0.050)^2$

Therefore, the sample size equals 385 (three hundred and eighty five)

DATA ANALYSIS

Descriptive statistics data was used to gain an overview of numeric data obtained from questionnaire administered. Data obtained from a questionnaire which is quantitative in nature and would require descriptive analysis, using frequencies, and mean score. Data was presented with the use of tables for all sections of the questionnaire. A reliability analysis using the Cronbach's alpha was applied to assess the internal consistency thus the reliability of the scale used for the questionnaire.

The second section of the questionnaire (degree of preparedness), was analyzed using the VERDICT readiness assessment model outlined by Ruikar *et al.* (2006). The assessment model "VERDICT" was adopted for the readiness assessment in this study as Abubakar (2012) noted, it is relevant for application to determine the degree of preparedness of organizations and companies, departments within an organization, or sections and subdivisions. Furthermore, colour indicator in form of lights from traffic used in this model shows the strength of the organization and weakness of the organization, visibly pointing parts that required to be improved upon. As outlined by Ruikar *et al.* (2006), the readiness assessment reports comprises of data presented both text and graphical form and are broken down into three sections as follows:

➢ Table showing summary of average scores in each category;
➢ Radar diagram showing overall scores; and
➢ Summary containing all responses.

The table showing summary of mean scores for each Aspect presents responses to various Aspects i.e. Management, People, Process, and Technology and presents the mean score in each Aspect. As outlined by Ruikar *et al.* (2006) an average of the score is taken, and based on the mean score, respondents are shown with traffic light' indicators which are red light, Amber light and green lights, to visually represent their readiness in each category, where:

➢ A mean score of between zero and 2.5 is represented with a Red which signify that several aspects within needs urgent attention to be prepared; and
➢ A mean score of between to 2.5 and 3.5 is represented with Amber colour signifies that certain aspects within needs attention to be prepared; and
➢ A mean score above 3.5 is represented with a green signifying that the organisation is fully matured and prepared.

The summary of all responses on the other hand, would include a list of all the assertions responded to by the respondents and the corresponding average score for each response, as well as emphasize of exact points within each aspect that needs to be improved upon to achieve readiness (Ruikar *et al.,* 2006). This studies however, only considers textual formats of the readiness assessment report (table with the summary of average score in each category and summary of all responses), and would be adopted. The graphical format of the report (radar diagram of overall scores) would not be considered because as explained by Ruikar *et al.* (2006), the radar diagram gives the professional a pictorial representation of their own level of overall readiness and compares it to the best-of-breed in construction. Best-of-breed for the Nigerian construction industry in terms of supply chain management in construction is however not available.

Response rate and information relating to respondents

Table 1 Percentage of Questionnaires Returned and Not Returned

Questionnaire	Number	Percentage
Distributed	385	100
Completed and returned	200	52
Not Returned	245	48

Table 1 shows the response rate of respondents in the study. As shown in this Table, out of a total of 385 questionnaires distributed, only 200 (52%) were completed and returned, while the remaining 245 (48%) were not returned. However, going by Moser and Kalton in Olajide (2014) assertion that the outcome of an investigation should be regarded as being biased and of little importance if the questionnaire returned is less than 30-40%, the number of questionnaires completed and returned were therefore considered adequate for analysis.

Table 2   Information relating to respondents

Academic Qualification	Number	Percentage
HND	77	38.5
B.Sc/B.Tech	75	37.5
M.Sc/ M.Tech	48	24
Ph.D	0	0

Table 2 provides information relating to respondents for the study. As shown in the table, 38.5% of the respondents had HND, 37.5% of the respondents had B.sc/B.Tech, while 24% and 0% had M.Sc/ M.Tech and Ph.D respectively. This shows that respondents have the relevant academic qualification to respond to the questionnaire.

Table 3   Years of working experience

Services rendered	Number	Percentage
Less than 5 years	20	14
6 to 10 years	36	18
11 to 15 years	45	22.5
16 to 20 years	18	9
21 to 25 years	30	15
More than 20 years	51	25.5

Table 3, shows that respondents have varying degree of experience as 9% of the respondents had 16-20 years of experience, 25.5% had 11-15years of experience, 25.5% had more than 20 years of experience, while 18% and 14% had 6-10years of experience and less than 5 years of experience respectively. It implies that respondent have acquired enough working experience to give relevant response to the questionnaire

Table 4 below presents the extent of agreement of industry's readiness assessment. As shown in this Table, the industry's readiness assessment were considered under four headings as identified by Abubakar *et al.* (2010)'s work. The barriers were ranked 21 using their respective mean score under each heading. As shown in Table 4.2.9, management been aware of SCM practices and recognised the benefits of SCM, management at all levels in our industry's have SCM mind approach were ranked as the most important management readiness; We have credible people who are competent to apply required change and move promptly to adopt the use of SCM and staff possess all the essential aspects of IT proficiency, useful skills as well as expertise to apply SCM were ranked as the most important process/ project readiness; Having capable people to employ the change and swiftly move to adopt the use of SCM and staff having the required aspects of IT literacy, proficient expertise and skills to apply SCM were ranked as the most important people readiness; present ICT facilities of the   are flexible industry's to accommodate swift modification as well as accessibility and we have functional extranet and intranet facilities that encourages information flow and dissemination and interoperability were ranked as the most important.

Table 5 Table showing summary of average score in each category of professionals of the building industry, based on boundaries defined by Ruikar *et al* (2006)

Consultants	Category Name	Average Score	Situation Based on Ruikar's boundaries
Project Managers	Management	2.77	Amber
	Process/ Project	3.8	Green
	People	3.28	Amber
	Technology	3.18	Amber
Architects	Management	2.76	Amber
	Process/ Project	3.8	Green
	People	3.28	Amber
	Technology	3.23	Amber
Quantity Surveyors	Management	2.78	Amber
	Process/ Project	3.8	Green
	People	3.3	Amber
	Technology	3.26	Amber
Engineers	Management	2.77	Amber
	Process/ Project	3.84	Green
	People	3.28	Amber
	Technology	3.25	Amber
Builders	Management	2.76	Amber
	Process/ Project	3.83	Green
	People	3.31	Amber
	Technology	3.27	Amber

Table 5 presents average scores indicating the level of readiness of each professional in each aspect i.e. management aspect, process/project aspect, people aspect and technology aspect. As outlined by Ruikar *et al.* (2006) an average score between zero and 2.5 is red, and indicates that several aspects within a category requires urgent attention to attain readiness;

4 Final organisational readiness

Readiness condition	PM	Arc.	Qs	Engrs	Builders	X
Management Readiness						
Our management is aware of SCM and recognized the benefits of SCM	3.47	3.44	3.40	3.39	3.44	3.47
All levels of management in our organization have a SCM mind approach	2.74	2.69	2.71	2.68	2.81	2.74
SCM strategy is well communicated to all levels within the organisation	2.68	2.72	2.74	2.74	2.63	2.68
We have provided adequate financial resources to facilitate SCM in our practices	2.47	2.49	2.52	2.55	2.44	2.47
We have a policy for training and capacity building to keep our staff up to date with SCM tools	2.47	2.46	2.50	2.48	2.50	2.47
Process/ Project Readiness						
We have people with ability to implement change and move quickly to adopt the use of SCM	4.16	4.13	4.21	4.16	4.25	4.16
Our staff have the necessary levels of IT literacy, functional expertise and skills to use SCM	4.00	4.05	3.98	4.03	4.00	4.00
Our current organisational structure provides an environment that is well suited to use SCM principles	3.98	4.00	3.93	3.87	4.06	4.00
Our staff fully understand the importance of Training required for using SCM tools	3.89	3.79	3.81	4.03	3.75	3.89
We have devised training procedures that will enable our staff to effectively use SCM tools	3.89	3.82	3.83	3.87	3.94	3.89
We are committed to address any issues/inhibitions that any staff may have about using SCM principles	3.79	3.74	3.76	3.81	3.75	3.79
People Readiness						
We have people with ability to implement change and move quickly to adopt the use of SCM	3.74	3.64	3.67	3.65	3.69	3.74
Our staff have the necessary levels of IT literacy, functional expertise and skills to use SCM	3.42	3.38	3.36	3.35	3.31	3.42
Our current organisational structure provides an environment that is well suited to use SCM principles	3.37	3.49	3.45	3.48	3.50	3.37
Our staff fully understand the importance of training required for using SCM tools	3.21	3.21	3.26	3.16	3.25	3.21
We have devised training procedures that will enable our staff to effectively use SCM tools	3.16	3.10	3.17	3.19	3.19	3.16
We are committed to address any issues/inhibitions that any staff may have about using SCM principles	2.79	2.85	2.88	2.87	2.94	2.79
Technology Readiness						
Our current ICT systems are flexible to accommodate rapid change and scalability	3.74	3.77	3.76	3.77	3.69	3.74
We have effective intranet and extranet facilities to facilitate information sharing and interoperability.	3.37	3.41	3.40	3.45	3.44	3.37
Our organization have well defined IT policy	3.00	3.00	3.07	3.00	3.13	3.00
We are familiar with the use of specialist software applications related to our expertise.	2.63	2.74	2.81	2.77	2.81	2.63

an average score of between 2.5 to 3.5 is amber, and shows that certain aspects within a category requires attention to attain readiness; and an average score greater of 3.5 and above

is green, and indicates that the company or organisation has the required ability and maturity in these aspects and therefore is ready (in those respects).

For this study however, it is evident from Table 1, that; the average scores for the categories; management, people as well as technology, were all greater than 2.5, but less than 3.5 (amber), for all the professionals considered in the study (Project managers, Architects, Quantity Surveyors, Engineers and Builders in Nigeria). This clearly shows that Project managers, Architects, Quantity Surveyor, Engineers and Builders in Nigeria all require attention on certain aspects to achieve management, people as well as technology readiness for adopting organisation readiness. Also, as shown in Table 1, for all the building consulting firms considered, process/project was the only category in which an average score of above 3.5 (green) was obtained. This also clearly indicates that Project managers, Architects, Quantity Surveyors, Engineers and Builders in Nigeria have the required ability and maturity required in this aspects and it's therefore ready to adopt this new innovation in supply chain management.

Table 2 shows the final readiness report of the readiness assessment carried out in the study, and provides a summary of response to all assertions put forward in each category. The essence of this report, as noted by Ruikar *et al*. (2006) is to highlight key areas within each category of an aspect that requires attention to attain readiness, thereby allowing organisations to concentrate and develop on, each aspects specified, even if they might have attained preparedness within aspect. As shown in Table 4.2.12, Project Managers, Architects, Quantity Surveyors, Engineers as well as Builders in the Nigeria construction industry, each scored less than 3.5 in all aspects of management readiness. This thus clearly indicates that they all require attention on all aspects of management to achieve management readiness to adopt supply chain management construction. Similarly, as shown in the Table, Architects, Quantity Surveyors, Engineers and Builders, scored less than 3.5 in just one aspect of project/process readiness i.e.; Present ICT facility is adequate for supporting supply chain management, while Project Management firms scored less than 3.5 in two aspects i.e.; organisational ICT facility is sufficient for supporting supply chain management and our use of supply chain management will improve health and safety during project delivery'. This clearly justifies the GREEN boundary which they all belonged to, and indicates that the construction industry is close to attaining people readiness as they require attention on at most, two aspects of people readiness.

Furthermore, Table 5 shows that Project Managers, Architects, Quantity Surveyors, Engineers as well as Builders in the Nigeria construction industry all scored less than 3.5 in almost all aspects of people readiness and technology readiness respectively. This also clearly justifies why all the professionals all lie in the amber boundary for these categories and indicates that a lot of attention is required to achieve readiness in both categories.

DISCUSSION OF FINDINGS

Level of preparedness of the Nigerian construction industry to adopt supply chain management.

The professionals (Architects, Builders, Engineers, Project Managers, and Quantity Surveyors) level of readiness was tested in categorically in four parts viz: Management readiness, project/process readiness, people readiness and Technology readiness according to Ruikar (2006) model. It was discovered that all professionals were process/project ready which indicates that the people have the capability to change and implement supply chain management, personnel are literate and have the skill and expertise to adopt supply chain management, an organisation structure that supports supply chain management, training procedure that supports supply chain management, and a strong inhibition to factors limiting the implementation of supply chain management.

The Nigeria construction industry however is yet to achieve full readiness in the other categories or aspect as discussed below:

Management and People Aspect/category requires the following to achieve full readiness; a supply chain mind approach, a well communicated supply chain management strategy by the management, it also requires financial resources to facilitate supply chain management practice as well as a policy for training and capacity building for supply chain management. While,

Technology Aspect/Category; Technological aspect or category requires the following attention to meet full readiness. They are; A well defined IT policy, intranet and extranet facilities as well as software application for specialists.

CONCLUSION AND RECOMMENDATION

In conclusion the readiness assessment result shows that the Nigerian construction industry has project/process readiness. Management readiness, people readiness as well as technology readiness however needs to be given urgent attention. Partial readiness from certain categories implies that the Nigerian construction industry is therefore not fully prepared to adopt supply chain management which reveals that certain aspects within require consideration and attention to attain readiness.

We recommend that urgent attention should be given to the aspects (Management aspect, People aspect and Technology aspect) within a category that requires attentions to achieve full preparedness so that the construction industry will be fully prepared to adopt and reap the benefits of supply chain management. Where necessary tools and equipment needs to be provided, provision should be made and where training is required, adequate training should be provided to meet readiness.

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