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Adoption of VUCA Model in Building Construction Firms for Effective Manpower Operations in Abuja, Nigeria

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ABSTRACT
Poor service delivery is faced by building construction industry in Nigeria despites the importance of the industry for national development. The research was aimed at assessing the adoption of VUCA model in building construction firms for effective manpower operations in Abuja, Nigeria. A quantitative research design was adopted on the 300 accessible sample frame of core building construction professionals (Architects, Builders, Civil Engineers, and Quantity Surveyors), administered with a questionnaire research instrument to collect the primary data which was analysed using Statistical Package for Social Sciences (SPSS version 23) as a tool for analyses concentrating on the frequency, percentage, mean scores and, regression analyses. The results established that: The professionals are somewhat aware of VUCA model in the building construction industry. Imagination to adapt and flexibility; Shifts in client and stakeholder expectations & High levels of unemployment leading to poverty and insecurity; Social and financial uncertainties; Government and international regulation; Sectorial terrorism; Changing nature of the workforce/demographic and social forces and employee dissatisfaction; and, Agile global competitors are the factors hindering the adoption of VUCA Model in building construction firms for effective manpower operation factors hindering the adoption of Model in building construction firms. Firm reputation, material management, relaxation allowances to manpower, and, site layout are the most relevant factors for effective manpower operations in building construction firms. VUCA model has effect on manpower operations in building construction firms; which ensures project success, adequate resource allocation, efficiently and effectively affects time and cost management of building project delivery, also, ensures quality of project out-put by manpower operations as parts of most effect of VUCA model. The is a positive and significant relationship between factors hindering the adoption of VUCA model and relevant factors for effective manpower operation in building construction firms. The study also recommended that: To cope with effect of VUCA world in order to ensure effective manpower operation, professionals must have new perspectives and create stronger ideas, be creative, gain flexibility to challenges, as well as to develop responsible professional leadership styles that are generous, capable of developing construction ideas and networking, and paying attention to ethical rules. Professionals must be agile and sustainability conscious in the VUCA world in order to curtail factors hindering the adoption of VUCA model by ensuring relevant factors for effective manpower operations for timely delivery of building projects within cost and quality.

I. INTRODUCTION

The Volatility, Uncertainty, Complexity and Ambiguity (VUCA) concept was first cited and introduced in War College documents in 1987 by the U.S. military after the end of the Cold War to describe the conditions of a world ever more difficult to predict and rely on (i.e., describing the unfavourable condition) shaped by Volatility, Uncertainty, Complexity and Ambiguity (Shambach, 2004). According to the military, VUCA is an innovative set of strategies inspired by military leadership to deal (Yasmina, 2018). In the 1990s, the concept was quickly embraced by other fields such as strategic decision-making, risk management, and situational problem-solving (Chermack, 2011;

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Tovstiga, 2010), recently COVID-19 pandemic has emerged as a perfect example of VUCA landscape, this is because there is a given rapid change taking place on social, economic, political and technological fronts in the current environment. VUCA is like an on-going test that any organization needs to pass in order to succeed (Mitika&Farhat, 2020).

Manpower is considered the most critical to an organizational survival, because it is that resource which ensures that adequate supply of material and financial resources is made available and effectively utilized to bring about the desired goals of the building construction firms (McSane&Glinow, 2008). However, the success of a construction projects is an important issue for most of the governments, users and communities; and in modern construction projects there are significant challenges for both the clients and contractors to deliver the project successfully due to increasing complexity in design and the involvement of stakeholders (Doloi, 2009). Hence, there will be no meaningful delivery of building construction projects without a manpower operation (Thenya, 2017).

Each letter of the acronym VUCA represents a type of change that construction professionals in the construction industry should identify to contend fully with the environmental flux without wasting resources due to incorrect issue identification. Volatile changes are frequent and cause instability; uncertain changes are those of which professionals/leaders lack full knowledge; complex changes are confounding due to the interconnectedness of processes and information; while ambiguous changes are those that lack precedence (Bennett &Lemoine, 2014). The greatest challenge in managing and understanding VUCA in organizations is not just the unrelenting change but also the lack of a complete appreciation of VUCA as a business and leadership concept (Rimita, 2019). To enhance this understanding, Bennett and Lemoine (2014) recommended that professionals/leaders in building construction industry possess a thorough appreciation of what each factor of volatility, uncertainty, complexity, and ambiguity represented to avoid erroneous diagnosis that affected firm performance and project delivery.

There are lot of building constructions projects taking pace in Abuja with lots of multi-disciplinary professions making all effort to the realization of the end-product meet; using different models and approaches to ensure the building projects come into limelight at the end of the day. This led to this research assessing the adoption of VUCA model into building construction firms in respect of its manpower operations in the success of its projects.

II. LITERATURE REVIEW

A. Volatility:

Volatility may be defined as a frequent, rapid and significant change for which the duration may be unknown. Sillivan (2012), define volatility where things change rapidly but not in a repeatable pattern or predictable trend. While, Lawrence (2013), volatility means the speed, volume, magnitude and nature of change that is in an unpredictable pattern. Also, Bennett and Lemoine (2014) define the volatile situation as "one that is unstable or unpredictable; it does not necessary involve complex structure, a critical lack of knowledge or doubt about what outcomes may result from key events".

In a modern context, according to Schick, Hobson and Ibisch (2017), it could describe strong fluctuations in macroeconomic conditions, financial markets, and commodity prices, and to extreme environmental pressures affecting nation states. However, it is still difficult to pinpoint the precise elements within a system where these rapid changes occur. This is especially true if the elements are observed in isolation. A good many conceptual models of the studied sites describe systems that are undergoing a transition from a past situation that has been shaped mainly by local threats to the current situation that is dominated by globally driven threats, or at least its local manifestations. The speed of these changes is often rapid, and to be able to provide a more comprehensive account of the causes of volatility would require a process of monitoring over an extended period of time. Still, a snapshot assessment can provide enough detailed insight, particularly if results are drawn together from a number of different studies.

B. Uncertainty:

Uncertainty may be defined as the lack of predictability of the future. It is a situation where events and outcomes are unpredictable. Uncertainty is a term used to describe a situation characterized by a lack of knowledge not as to cause and effect but rather pertaining to whether a certain event is significant enough to constitute a meaningful cause" (Bennett &Lemoine, 2014). Furthermore, in uncertainty, according to Lawrence (2013); Sullivan (2012), major 'disruptive' changes occur frequently

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and there is a lack of predictability in issues and events; in which in uncertainty environment, the past issues and events cannot predict the future accurately and it makes extremely difficult to identify and prepare for "what will come next" and decision-making challenges. Uncertainty is not volatility. In volatile situation change is likely but only that it may come quickly and at different magnitudes. On the other hand, in the uncertain situation, there may be no change inherent at all (Bennett &Lemoine, 2014).

Schick et al. (2017) pose that, uncertainty is characterized by the lack of predictability and the likely prospects for surprise. Uncertainty is the result of the multiple feedback loops and interactions that are inherent to complex systems (Gunderson &Holling, 2002).

C. Complexity:

Complexity may be defined as a phenomenon having many interconnected parts or variables resulting in an overloaded information network. According to Sullivan (2012), complexity indicates where "there are numerous and difficult-to-understand causes and mitigating factors involved in a problem". Furthermore, complexity adds turbulence of change, makes decision making difficult due to the absence of past predictors and also leads to confusion that can cause ambiguity (Lawrence, 2013). Complexity situation differs from a volatile or an uncertain situation. For instance, organization doing business in many countries may face complexity due to the regulatory environment and political climates but this does not necessary mean that the situation is volatile or uncertain (Bennett &Lemoine, 2014).

Presence of VUCA in Building Construction Industry

The world is dynamic and changing at a fast pace, which according to Schoemaker, Heaton and Teece (2018) today's businesses operation has become not only riskier, but also more volatile, uncertain, complex, and ambiguous (VUCA). Similarly, the companies and leaders have been operating in an environment which is highly unstable (Mitika&Farhat, 2020), and the consequences may be adverse (Gruwez, 2017). Organisations including construction industry are trying to be proactive in this constantly changing and unpredictable world. In their study, Doheny, Nagali and Weig (2012) have highlighted several factors that have been impacting organisations across the globe viz: incremental globalisation, interconnected operations, and disruptive trends such as fluctuating demand, labour rates or commodity prices and other factors such as natural calamities. All these obstacles and roadblocks have been rising in the recent years making market conditions even more challenging. The desire for the welfare of the future generations is important (Shen, Ochoa, Shah & Zhang, 2011). Studies show a broad consensus that the whole world is experiencing Volatility, Uncertainty, Complexity and Ambiguity. It therefore becomes important for leaders/construction professionals and organisations worldwide to think out of the box in order to stay abreast of the current scenario (Bennett &Lemoine, 2014).

Factors for effective manpower operations in building Construction Industry

The role of manpower resources in building construction industry cannot be over emphasized (Ola-Awo, Olonilebi, Ganiyu&Alumbugu, 2020). The target of many construction firms is to improve labour efficiency. Human factors influence greater the efficiency, performance and project success in the productivity determines the profitability of many projects. Several studies believe that productivity growth can be achieved through the effective and optimum use of the human resource (Shinde&Hedaoo, 2017; Mbazor&Okoh, 2015). Organisation workers are directly influenced by the motivation to satisfy their esteem, physiological, safety, social safety, psychological and self-actualization levels (Omotayo, 2014).

In Nigeria in particular, Aiyetan and Olotuah (2006) examined the relationship between motivation and performance of workers in the Nigerian construction industry from the perspective of management staff and the other on operatives. The study recommended the use of financial incentives such as salary increase via promotion, overtime allowances, and holidays with pay. Adedokunet al. (2013) investigated the vulnerability of motivation schemes in enhancing construction site workers' productivity in Nigeria through the questionnaires administered to construction site operatives only. They found out that both non-financial and financial motivational schemes are crucial to improve the productivity of operatives on site. While Afuyeet al. (2016) in a study conducted in the Nigerian construction industry in determining the relationship between motivation and productivity via the questionnaire administered to craftsmen on the sites. Afuyeet al. (2016) established that motivation has a

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positive impact on productivity and craftsmen are basically motivated by financial incentives.

Many researches acknowledged that there are numerous factors having a significant bearing on construction labour productivity, namely: training, project planning and control, team building, organizational strategy, supervision aspects, job security, general management and incentive and motivation (Robles et al., 2014; Mbazor&Okoh, 2015; Zannahet al., 2017). Most of these studies ranked motivation highest amongst other factors. Since construction works are directly involved in project execution, suitable motivation is necessary for maximizing their productivity. Productivity improvement and employee job satisfaction could be achieved through motivational supports (Adedokunet al., 2013). It may be difficult for a construction organisation to accomplish its desired objectives and goals without motivating its employees (Adedokunet al., 2013; Ng et al., 2004). Moreover, Ng et al. (2004) affirmed that unmotivated workers tend to make only a minimal effort.

In a study conducted in the South Africa construction industry on motivation factors influencing construction projects (Uguluet al., 2016). It was found that skills enhancement, transport provision, lunch breaks, days off, site amenities, and financial incentives are the top factors that motivate the labourers to be more productive. If these motivational items are appropriately channeled on labours on site there would be significant productivity optimisation. The influential motivation factors affecting labour perspective with the five highest motivation factors indicated to be personal growth/career improvement; pay on time; decision-making ability; decent and respectful job, and rewards/promotions (Al-Abbad&AgyekumMensah, 2017). To ensure effective manpower to discharge their duties accordingly, some motivations were classified into financial and non-financial (Ogwueleka& Maritz, 2014; Adedokunet al., 2013); as non-financial motivation can be said to be as intangible, such as: advancement, responsibility, relations with co-workers, company policy recognition, training, and friendly work environment and working institutions. While financial motivational strategies are leave allowances, bonus, and payment of due fringe benefits, medical insurance availability and accessibility, pension fund scheme. Also, it was added that, semi-financial incentive schemes with money benefits but are not directly linked to output and wages exists in between financial and non-financial (Ogwueleka& Maritz, 2014). For instance, semi-financial incentive scheme include: housing provision, site welfare, health schemes, saving schemes, and pension schemes. According to Omotayo (2014), in the construction industry, the application of motivation techniques is rooted in basic Maslow, Herzberg, and theories.

A study was reported that, the construction industry is among the labour-intensive industries considered under high-risk by contractors due to the relatively high labour component, and, thus, any reduction in this wastage presents enormous potential for the increased efficiency (Kazaz, Manisali&Ulubeyli, 2008). Also, as stipulated by Kazazet al. (2008) that, many factors for effective manpower operations such as: economic factors, physical factors, socio-psychological factors as well as, organizational factors (as organizational factors shown in figure 3 below).

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Figure 1: Organisational factors for effective manpower operation
Source: Kazazet al. (2008)

OBJECTIVES

i. To assess the professionals' level of awareness of VUCA model in building construction firms for effective manpower operations.

ii. To determine the factors hindering the adoption of VUCA model in building construction firms for effective manpower operations.

III. MATERIAL AND METHOD

Objective 1: To assess the professionals' level of awareness of VUCA model in building construction firms for effective manpower operations

Decision: From: 0.00 – 1.49 = Not Aware (NA), 1.50 – 2.49 = Somewhat Aware (SA), 2.50 – 3.49 = Moderately Aware (MA), 3.50 – 4.49 = Aware (A), and 4.50 – 5.00 = Highly Aware (HA).

Table 8 disclose the level of the professional's awareness of volatility dimension in building firms for effective manpower operations. The mean scores ranged from 1.6375 – 3.0542 and, standard deviation of 0.99257 – 1.77888.

Speed of change in building materials and its instability is identified with a mean score of 3.0542 and standard deviation of 1.77888. Rapid and violent changes bring about instability on behalf of professionals and organisations is identified with a mean score of 2.5875 and standard deviation of 1.38456 as moderately aware by the respondents. Constantly increasing change in building materials and its complication is identified with a mean score of 2.3750 and standard deviation of 1.37255 as somewhat aware. Where volatility is present, information about conditions and situations of building is obtained and results of activities can be predicted is identified as somewhat aware with a mean score of 2.1583 and standard deviation of 1.45502. Strategies can be used against the state of volatility to outstrips technology for building delivery success is identified as somewhat aware by the respondents with a mean score of 1.6375 and standard deviation of 0.99257.

The average mean score value of 2.3625 means that, the respondents are somewhat awareof volatility dimension of VUCA Model.

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Table 1: Professionals' awareness on volatility dimension for effective manpower operations

Volatility awareness for effective manpower operations	X	Std. D	Decision
Speed of change in building materials and its instability.	3.0542	1.77888	Moderately Aware
Rapid and violent changes bring about instability on behalf of professionals and organisations.	2.5875	1.38456	Moderately Aware
Constantly increasing change in building materials and its complication.	2.3750	1.37255	Somewhat Aware
Where volatility is present, information about conditions and situations of building is obtained and results of activities can be predicted.	2.1583	1.45502	Somewhat Aware
Strategies can be used against the state of volatility to outstrips technology for building delivery success.	1.6375	.99257	Somewhat Aware
Average Mean Score = ∑X / 5 = 11.8125 / 5	**2.3625**		**Somewhat Aware**

N = Respondents Population = 240. Std. D = Standard Deviation. X = Mean.

Objective 2: To determine the factors hindering the adoption of VUCA model in building construction firms for effective manpower operations

Table 2: Rotated Component Matrix[a] of Extraction method (Principal Components Analysis) & Rotation method (Varimax with Kaiser Normalization)

	Component						
	1	2	3	4	5	6	7
Imagination to adapt and flexibility.	.859						
Ineffective leadership/performance failure and shared vision.	.831						
Rampant structural (operational) in the business.	.680						
New ideas in building construction.	.624			.523			
Shifts in client and stakeholder expectations.		.986					
High levels of unemployment leading to poverty and insecurity.		.986					
Social and financial uncertainties.			.850			-.309	
Growth in economy.			.835				
Ecological (environmental) dilemma.			-.676			-.306	
Government and international regulation.				.743	-.333		
Political issues in the business world.				-.693			.474
Poor infrastructure & implementation of development plans.				.547		-.476	
Sectorial terrorism.					.838		
Technology.	.344				-.612		-.317
Changing nature of the workforce/demographic and social forces and employee dissatisfaction.						.785	.311
Devastating levels of corruption.					.407	.770	
Agile global competitors.							.865
Globalization.		.343					.480

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 11 iterations.

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IV. SUMMARY OF FINDINGS

The findings revealed that the respondents of this study are very adequate in terms of their demographic characteristics based on the needed level of education and profession (Architecture, Building, Civil Engineering, and Quantity Surveying) even though majority of them were males. Even their working experience was adequate. However, more than two-third of the respondents 202(84.2%) are not familiar with VUCA model.

The findings also revealed that the professionals were somewhat aware of the VUCA Model.

The factors hindering the adoption of VUCA Model in building construction firms for effective manpower operation include: Imagination to adapt and flexibility; Shifts in client and stakeholder expectations & High levels of unemployment leading to poverty and insecurity; Social and financial uncertainties; Government and international regulation; Sectorial terrorism; Changing nature of the workforce/demographic and social forces and employee dissatisfaction; and, Agile global competitors.

Also, the four most relevant factors for effective manpower operations in building construction firms include: firm reputation makes manpower to stick to effective operation in VUCA model, manpower appreciates material management for effective operation in VUCA model, relaxation allowances to manpower ensures effective operation in VUCA model, and, site layout gives manpower sense of effective operation in VUCA model site layout is relevant.

The effect of VUCA model in building construction firms for effective manpower operations was determined with the average mean score value of **3.5026** which signified that, VUCA model has an effect on manpower operations in building construction firms. The four most effect of VUCA model in building construction firms include: ensures project success from manpower operations, ensure adequate resource allocation for manpower operations, efficiently and effectively affects time and cost management of building project delivery, also, ensures quality of project out-put by manpower operations

Lastly, the relevant factors for effective manpower operation, does not contribute significantly to the model at the levels of 0.05, and as, 1% increase in relevant factors for effective manpower operation resulted in significant increase of 0.184 in efficiency of the manpower operation system. Also, the variable; relevant factors for effective manpower operation is critical in ensuring effective and efficient VUCA Model adoption. Therefore, building construction firms needs to take relevant factors for effective manpower operation as a priority so as to ensure effective and efficient VUCA model adoption.

V. CONCLUSION

The study is concluded based on the findings of the research as follows:

i. The professionals are somewhat aware of VUCA model in the building construction industry.

ii. Imagination to adapt and flexibility; Shifts in client and stakeholder expectations & High levels of unemployment leading to poverty and insecurity; Social and financial uncertainties; Government and international regulation; Sectorial terrorism; Changing nature of the workforce/demographic and social forces and employee dissatisfaction; and, Agile global competitors are the factors hindering the adoption of VUCA Model in building construction firms for effective manpower operation factors hindering the adoption of Model in building construction firms.

iii. Firm reputation, material management, relaxation allowances to manpower, and, site layout are the most relevant factors for effective manpower operations in building construction firms.

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