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Research Article

Factors Influencing Professionals and Contractors' Resistance Behaviours towards Sustainable Construction Practices in Nigeria

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ABSTRACT

This study examined the factors influencing construction professionals and contractors' resistance behaviours towards sustainable construction practices in Nigeria. 56 variables identified from literature were categorised into four main factors. Questionnaire was designed based on the extracted variables and distributed to construction professionals and contractors in South-East Nigeria. The data generated through the questionnaire survey were analysed using Statistical Package for Social Sciences (SPSS) Software. The result revealed that industry, policy, human, and environment factors were significantly influencing professionals and contractors' resistance behaviours to implementation of sustainable construction practices. However, the Mean Score Index result revealed that policy factors with an average MSI of 4.68 exert the greatest influence on professionals' and contractors' resistance behaviours. The overall result showed that all the variables have significant influences on professionals' and contractors' resistance behaviours, but five sub-factors (limited knowledge and awareness, additional cost of change, the prevailing economic condition, incompatibility of change process and organisational culture, and laws and regulations) each with an average MSI of 5.00 have the greatest individual influences on construction stakeholders' resistance behaviours towards sustainable construction practices in Nigeria. The Mann-Whitney U Test result affirmed that there is no significant difference (p>0.05) between the rankings of professionals and contractors on the factors influencing their resistance behaviours. In view of this, the study raised concern about the training routes of the construction practitioners, conventional construction practices and existing policy and legislative frameworks including government commitment towards implementing sustainable construction practices in Nigeria.

Keywords: behaviours, contractors, professionals, resistance, sustainable construction practices

INTRODUCTION

The concept of resistance to change is ingrained in the Lewin's three-step organisational change model of unfreezing, moving and freezing of group standards (Lewin, 1947). This concept recognises the existence of driving forces that seek to either bring about or resist change in a given organisational setting. In spite of the fact that construction projects are agents or process of change (van Marrewijk, 2018), the changes in the construction practices have been much slower than expected to meet the tenets of sustainability (Bonanomi et al., 2016; Erdogan et al., 2005; Lines et al., 2015; Wong et al., 2018).

In the construction industry, the problems of resistance to change are identified as impediments to construction projects' improvement and implementation of sustainable construction practices (Ametepey et al., 2015; Pham et al., 2020; Powmya and Abidin, 2014). Successful implementation of new processes for procuring, contracting, and managing sustainable construction projects requires concerted change management efforts for owners of architectural, engineering, and construction industry (Erdogan et al., 2005; Lines et al., 2015). But for an inexperienced or incompetent construction practitioner it is difficult due to new technology, additional design requirement and rigorous practices (Powmya et al., 2019).

Forsell and Åström (2012) reason that resistance to change can be the cause of this difficulty when it is either too strong or too weak. It can also have affective, cognitive and behavioural components that create a psychological resistance to making a change in particular situations. According to

Harich (2010), "resistance to change is the tendency for a system to continue its current behaviour, despite the application of force to change that behaviour". Resistance itself is a representation of different power relations in an organisation that has aptitude to sway the cause of the change process (Courpasson and Vallles, 2016); any dissenting actions that slow, oppose and/or obstruct a change effort (Armenakis and Harris, 2009); or as observable deeds, conduct, and event that prevent the cause of change (Fiedler, 2010; Lines et al., 2014). Meanwhile, three dimensions of resistance to change (cognitive, effective and behavioural) have been recognised in the literature (Chung et al., 2012; Forsell and Åström, 2012; Pakdel, 2016; Smollan, 2011; Thakur and Srivastava, 2018). Resistance to change could be a combination of cognitive, effective or emotional, and behavioural or intentional components (Bouckenooghe, 2010). Behavioural dimension arises when the forces of resistance are applied against the forces of change (Hadavinejad et al., 2010) or action responses against the change, (Lines et al., 2015). Affective dimension deals with individual's failure due to decline of existing situation, emotional attachment about the change, fear of probable loss and imprecise future (Hadavinejad et al., 2010). Whereas cognitive dimension depicts how change is perceived by the individuals that they are reluctant to initiate it (Hadavinejad et al., 2010).

Nevertheless, resistance to change cannot ordinarily occur. Amarantou et al. (2018) and Karaxha (2019) attributed many reasons of failure of change initiatives to resistance to change. Other studies also identified culture of resistance to change behaviour as key issue militating against the implementation of sustainable construction practices in the construction industry (Al Amri and Marey-Pérez, 2020; Ametepey et al., 2015; Djokoto et al., 2014; Olowosile et al., 2019; Pham et al., 2020; Powmya and Abidin, 2014; Wong et al., 2018). Specifically, Harich (2010) and Harich et al. (2012) link the failure of human system to solve the problems of sustainability over the last two decades to the resistance to change. Wong et al. (2018) identifies resistance to practice change within the contractors' firms as one of the key barriers to more extensive adoption of prefabrication. Harich et al. (2012) further queries the opposition of changes from an unsustainable to a sustainable behaviour by the human system. According to Hammond et al. (2019), the reluctance to adopt sustainable construction practices by the construction stakeholders is usually demonstrated at the individual level of choice.

Regrettably, whether resistance to change behaviour towards sustainable construction practices among construction professional and contractors is customary is yet to be fully explored. Furthermore, whether the factors influencing their resistance to change behaviours towards the implementation of sustainable construction practices differ, is a subject of determination. Pieterse et al. (2012) suggest that resistance to change studies should consider different professional cultures in cross-functional project teams. Consequently, understanding the factors influencing professionals' and contractors' resistance behaviours towards sustainable construction practices vis-à-vis the differences in their perceptions, would explain why they oppose or promote such changes that can lead to sustainable construction.

LITERATURE REVIEW

Some studies have focused on the behavioural resistance to change (Bovey and Hede, 2001; Fiedler, 2010; Langstrand and Elg, 2012; Lines et al., 2015, Macrì et al., 2002; van Marrewijk, 2018). Whereas very few studies have actually looked at the factors influencing resistance to change in the workplace (Amarantou et al., 2016; 2018; Damawan and Azizah, 2020; Khan, Raza and Mujtaba, 2016; Ybema, Thomas and Hardy, 2016). **Table 1** is a summary of literature on the variables responsible for resistance to change behaviour.

From the foregoing literature, impliedly, it is obvious that there are many impediments to the implementation of sustainable construction practices. However, literature is silent on the factors influencing resistance behaviours of construction professionals and contractors towards the implementation of sustainable construction practices in Nigeria, and the extent these factors influence the professionals and contractors' behaviours. These are the thrust of this study and the gap in the literature to which this study was set to fill. The aim of this study therefore, is to examine the factors influencing construction professionals and contractors' resistance behaviours towards the implementation of sustainable construction practices in Nigeria. It would also investigate if there is any significant difference between the rankings of the professionals' and contractors' on their perceptions of the factors responsible for resistance to change behaviours.

Hypothesis

H_0: There is no significant difference between the perceptions of professionals' and contractors' on the ratings of factors responsible for change behaviours.

METHODOLOGY

This study is a survey research that made use of structured questionnaires distributed to the building construction consultants/professionals and contractors in the South-East of Nigeria. 315 respondents each from the professionals and contractors' groups were randomly selected from the population of 728 professionals and 989 contractors. This was obtained from the tenders' board of the five states of South East Nigeria in the last five years without repetition, and the register of various professional associations. The sample for the study was based on the calculated sample size using Cochran's sample size calculation (Cochran, 1977). 95% confidence interval and a margin of error of 5% were assumed to be acceptable for this kind of study (Bartlett et al., 2001; Gilliland and Melfi, 2010; Taherdoost, 2017).

Prior to the distribution of the questionnaires, the locations and contacts of most of the prospective respondents were first identified and their consent/permission was sought. The objectives of the study were clearly explained and those who refused to grant permission were skipped from the survey. The initial familiarisation made the actual survey easier because the respondents were already aware of what was expected of them.

Table 1. A summary of variables responsible for resistance to change behaviour

Sources	Resistance to Change Variables
Aghimien et al., 2019b; Fauzi et al., 2018; Sarhan et al., 2018	End-user/client perception and preference
Amarantou et al., 2016; Khan and ur Rehman, 2008	Perception that it is bad business
Khourshed, 2011	Lingering resentment
Damawan and Azizah, 2020; Davies and Davies, 2017; Khourshed, 2011	Lack of confidence
Damawan and Azizah, 2020; Khourshed, 2011	Loss of face and reputation
Ametepey et al., 2015; Angonese and Lavarda, 2014; Djokoto et al., 2014; Fauzi et al., 2018	Insufficient stakeholder drive
Damawan and Azizah, 2020; Khan and ur Rehman, 2008; Macrì et al., 2002	The fear of potential embarrassment
Macrì et al., 2002; Ybema et al., 2016	Threats to existing balance of power,
Amarantou et al., 2018; Djokoto et al., 2014; Macrì et al., 2002; Susanti et al., 2019	Intergroup conflicts that inhibit cooperation
Angonese and Lavarda, 2014	Degree of tolerance and formalisation
Amarantou et al., 2018; Angonese and Lavarda, 2014; Damawan and Azizah, 2020	Job security
Khan and ur Rehman, 2008; Khourshed, 2011	Previous experience
Djokoto et al., 2014	Scepticism about the need for change
Aghimien et al., 2019a; Aghimien et al., 2019b; Ametepey et al., 2015; Angonese and Lavarda, 2014; Davies and Davies, 2017; Djokoto et al., 2014; Lee et al., 2014; Schweiger et al., 2018	Limited knowledge and awareness
Angonese and Lavarda, 2014; Khan and ur Rehman, 2008	Trust/distrust about the change
Damawan and Azizah, 2020; Khan and ur Rehman, 2008	Level of stress and anxiety involve
Esezobor, 2016	Work values
Damawan and Azizah, 2020	Curiosity of difference
Ametepey et al., 2015; Bonanomi et al., 2016; Djokoto et al., 2014	Unstable investment requirements
Ametepey et al., 2015	Construction cycles
Ametepey et al., 2015; Esezobor, 2016	Fragmented construction market procurement
Aghimien et al., 2019b; Gunduz and Almuajebh, 2020; Davies and Davies, 2017; Khan et al., 2016	Additional cost of change
Macrì et al., 2002; Ybema et al., 2016	Changing work profile and inflexibility
Aghimien et al., 2019a; Ametepey et al., 2015; Esezobor, 2016; Hoxha and Shala, 2019; Pham et al., 2019	Lack of industry familiarity with new construction techniques
Khan et al., 2016	Demanding and tight project schedule
Bonanomi et al., 2016; Langstrand and Elg, 2012	Inefficient processes and fragmented supply chains
Ametepey et al., 2015; Davies and Davies, 2017; Esezobor, 2016; Langstrand and Elg, 2012; Lee et al., 2014	Complexity and expensive systems of construction project
Gunduz and Almuajebh, 2020	Legacy of sunk costs
Esezobor, 2016;	Site-based nature of construction project
Khan et al., 2016; van Marrewijk, 2018	Lack of time to implement or learn a new a new technology or process
Ametepey et al., 2015; Angonese and Lavarda, 2014; Singh, 2015	A reward system that reinforces old ways of doing things
Djokoto et al., 2014	Additional design and construction requirements
Ametepey et al., 2015; Daniel et al., 2018; Djokoto et al., 2014; Gunduz and Almuajebh, 2020; Pham et al., 2019	Lack of skilled management and supervising team
Ametepey et al., 2015; Macrì et al., 2002; Susanti et al., 2019	Skills and labour supply problems
Onubi et al., 2019	Health and safety implications
Lines et al., 2015	Transport infrastructure and equipment availability
Ametepey et al., 2015; Pham et al., 2019	Limited resources
Aghimien et al., 2019a; Djokoto et al., 2014; Susanti et al., 2019	Selective information processing
Singh, 2015	Increased workload
Amarantou et al., 2018; Djokoto et al., 2014; Macrì et al., 2002; Pham et al., 2019	Lack of project team support
Macrì et al., 2002	Prevailing economic condition
Ybema et al., 2016	Existing competitors
Damawan and Azizah, 2020; Khan et al., 2016; Langstrand and Elg, 2012	Existing trends or traditions
Macrì et al., 2002; Ybema et al., 2016	Work environment and society
Ametepey et al., 2015; Daniel et al., 2018; Davies and Davies, 2017; Djokoto et al., 2014	Demand fluctuations
Damawan and Azizah, 2020; Hoxha and Shala, 2019	Incompatibility of change process and organisational culture
Onubi et al., 2019	Impact on environment
Ametepey et al., 2015; Davies and Davies, 2017; Djokoto et al., 2014; Macrì et al., 2002	Standardisation and scalability
Ametepey et al., 2015; Bonanomi et al., 2016; Djokoto et al., 2014; Fauzi et al., 2018; Gunduz and Almuajebh, 2020; Pham et al., 2019	Government commitment
Ametepey et al., 2015; Davies and Davies, 2017; Djokoto et al., 2014	Heavy investment in previous decisions and courses of action
Ametepey et al., 2015; Djokoto et al., 2014	Professional ethics and practices
Lines et al., 2015	Problem of reallocation of resources
Davies and Davies, 2017; Khan et al., 2016	Weakness of the proposed changes
Amarantou et al., 2018; Angonese and Lavarda, 2014; Gunduz and Almuajebh, 2020; Langstrand and Elg, 2012	Bureaucratic inertia
Aghimien et al., 2019a; Ametepey et al., 2015; Davies and Davies, 2017; Djokoto et al., 2014; Gunduz and Almuajebh, 2020; Hoxha and Shala, 2019	Laws and regulations
Daniel et al., 2018; Djokoto et al., 2014; Esezobor, 2016; Pham et al., 2019	Operational strategy

The questionnaire was randomly distributed to each of the group of the respondents up to the required sample size. The distribution was done through mail and by hand. 127 professionals and 161 contractors completely filled and returned their questionnaires which were used in the analysis. This represented about 40.32% and 51.11% response rate respectively. The same set of questionnaire comprising of two parts was distributed to the two groups of respondents. Part 1 captured respondents' demographic information. Part 2 contained four main factors with 56 latent variables extracted from the literature as shown in **Table 1**. The variables measure the factors responsible for resistance to change towards the implementation of sustainable construction practices in Nigeria. The respondents were asked to rate the factors influencing their behaviours towards resisting of the implementation of sustainable construction practices on a 5-point Likert Scale. Where 1 = Very insignificant, 2 = Insignificant, 3 = Neutral, 4 = Significant, 5 = Very Significant.

The respondents to this study were building construction contractors and professionals. The professionals are the architects, builders, quantity surveyors, and engineers who provide professional services in the form of consultancy and other professional services in line with their trainings and statutory provisions in the construction practice. Contractors are representatives of construction organisations or firms involved in the execution of construction projects in line with the contractual agreements. Although there are many players in the building construction industry, the actual implementation of any change in the construction processes lies on the contractors and professionals (Adros and Abidin, 2019; Alzahrani and Emsley, 2012; Hussin and Omran, 2009). Hence the importance of these stakeholders in the implementation of sustainable construction practices.

The data generated from the survey were subjected to descriptive and quantitative analyses. The internal consistency of the research instrument was determined using the Cronbach's Alpha (α). The Cronbach's Alpha > 0.6 would imply that the instrument for data collection for this survey is reliable and acceptable (Ekolu and Quainoo, 2019; Tavakol and Dennick, 2011). Subsequently, the Mean Score Index (MSI) was computed to determine the level of effects of resistance factors on the attitudes of professionals and contractors towards the implementation of sustainable construction practices. Mann-Whitney U test statistic was conducted to determine significant difference in the ranking of the resistance to change factors between the professionals and contractors. The whole statistical analysis was done using SPSS Version 22. The MSI is computed using Equation 1.

$$MSI = \frac{\sum f_i x_i}{N} \quad (1)$$

Where MSI = mean score index; f = frequency of responses to each rating scale (integer value (i) between 1 and 5), x = score or rating given to each variable by the respondents; and N = total number of the respondents selecting a rating equal to i.

Table 2. Respondents background information

Variable	Responses (%)
Category of Respondents	
Professional	44.10
Contractor	55.90
Organisational affiliation	
Consultancy	22.57
Contracting	36.81
Academics	25.69
Consultancy/Contracting	14.93
Professional affiliation	
Building	8.68
Architecture	21.18
Engineering	31.25
Quantity Surveying	16.67
Estate Management	4.51
Others	17.71
Registered member of professional body	
Yes	72.22
No	27.78
Job Position	
Project/Construction Manager	15.28
Project Engineer	23.26
Consultant	14.58
Supervisor	24.31
Director	6.25
Others	16.32
Educational Level	
Primary	2.78
Secondary	9.03
Higher institution	50.69
Post-graduate	29.86
Others	7.64
Years of Working Experience	
0-5 years	13.19
6-10 years	14.93
11-15 years	20.49
16-20 years	42.71
Above 20 years	8.68

RESULT AND DISCUSSION

Background Information

Table 2 displayed the background information of the respondents. Based on the information primarily provided on education level, professional affiliations, years of experience and job positions, it shows that the respondents are suitable for the study.

Analysis of Factors Responsible for Resistance Behaviours towards Sustainable Construction Practices

Table 3 presented the result of the analyses of the MSI and consistency test of factors responsible for resistance behaviours towards sustainable construction practices in Nigeria. The result showed that the Cronbach's Alpha (α) values for all the factors responsible for professionals and contractors' resistance to change behaviours towards sustainable construction practices were >0.6. This implies that the research instrument was reliable, and therefore, can be used as instrument for data collection. It also implies that the test of construct reliability and internal consistency have been satisfied.

Table 3. MSI of factors responsible for resistance to change behaviours of construction professionals' and contractors' towards sustainable construction practices

S/N	Resistance to Change Factors	MSI		Average MSI
		Professionals	Contractors	
Human (Cronbach's Alpha = .726)				
1	End-user/client perception	4.89	4.89	4.89
2	Perception that it is bad business	4.14	4.53	4.34
3	Lingering resentment	4.33	4.39	4.36
4	Lack of confidence	4.52	4.75	4.64
5	Loss of face and reputation	3.61	4.40	4.01
6	Insufficient stakeholder drive	4.26	4.69	4.48
7	The fear of potential embarrassment	4.32	4.71	4.52
8	Threats to existing balance of power,	4.35	4.27	4.31
9	Intergroup conflicts that inhibit cooperation	4.46	4.78	4.62
10	Degree of tolerance and formalisation	4.69	4.67	4.68
11	Job security	4.20	4.25	4.23
12	Previous experience	4.83	4.85	4.84
13	Scepticism about the need for change	4.86	4.94	4.90
14	Limited knowledge and awareness	5.00	5.00	5.00
15	Trust/distrust about the change	4.95	4.89	4.92
16	Level of stress and anxiety involve	4.30	4.65	4.48
17	Work values	4.67	4.69	4.68
18	Curiosity of difference	4.76	4.91	4.84
Average Mean		**4.45**	**4.68**	**4.57**
Industry (Cronbach's Alpha = .705)				
1	Unstable investment requirements	4.74	5.00	4.87
2	Construction cycles	3.54	3.75	3.65
3	Fragmented construction market procurement	4.57	4.73	4.65
4	Additional cost of change	5.00	5.00	5.00
5	Changing work profile and inflexibility	3.82	4.53	4.18
6	Lack of industry familiarity with new construction techniques	4.71	4.81	4.76
7	Demanding and tight project schedule	4.58	4.77	4.68
8	Inefficient processes and fragmented supply chains	4.46	4.93	4.70
9	Complexity and expensive systems of construction project	4.85	5.00	4.93
10	Legacy of sunk costs	3.74	4.32	4.03
11	Site-based nature of construction project	3.79	3.93	3.86
12	Lack of time to implement or learn a new a new technology or process	4.27	4.62	4.45
13	A reward system that reinforces old ways of doing things	4.03	4.04	4.04
14	Additional design and construction requirements	4.80	4.86	4.83
15	Lack of skilled management and supervising team	4.84	4.88	4.86
16	Skills and labour supply problems	4.80	4.96	4.88
Average Mean		**4.41**	**4.63**	**4.52**
Environment (Cronbach's Alpha = .786)				
1	Health and safety implications	4.87	5.00	4.94
2	Transport infrastructure and equipment availability	3.49	3.40	3.45
3	Limited resources	4.58	4.92	4.75
4	Selective information processing	3.33	4.27	3.80
5	Increased workload	3.45	4.52	3.99
6	Lack of project team support	4.09	4.64	4.37
7	The prevailing economic condition	5.00	5.00	5.00
8	Existing competitors	3.95	4.76	4.36
9	Existing trends or traditions	4.17	4.85	4.51
10	Work environment and society	4.79	4.90	4.85
11	Demand fluctuations	4.66	4.58	4.62
12	Incompatibility of change process and organisational culture	5.00	5.00	5.00
13	Impact on environment	4.88	4.88	4.88
Average Mean		**4.31**	**4.62**	**4.47**
Policy (Cronbach's Alpha = .745)				
1	Standardisation and scalability	4.72	4.69	4.71
2	Government commitment	4.96	4.97	4.97
3	Heavy investment in previous decisions and courses of action	4.75	4.93	4.84
4	Professional ethics and practices	4.69	4.71	4.70
5	Problem of reallocation of resources	3.91	4.65	4.28
6	The weakness of the proposed changes	4.63	4.94	4.79
7	Bureaucratic inertia	3.68	4.46	4.07
8	Laws and regulations	5.00	5.00	5.00
9	Operational strategy	4.57	4.94	4.76
Average Mean		**4.54**	**4.81**	**4.68**

Table 4. Result of Mann-Whitney U Test

Test Statistics[a]				
	Human	**Industry**	**Environment**	**Policy**
Mann-Whitney U	9.980E3	9.848E3	9.382E3	9.772E3
Wilcoxon W	2.302E4	2.289E4	2.242E4	2.281E4
Z	-.347	-.536	-1.204	-.650
Asymp. Sig. (2-tailed)	.728	.592	.229	.516

a. Grouping Variable: Category of Respondents
Statistical significance at 5%

Table 5. Result of Mean Rank from Mann-Whitney U Test

Ranks				
Factors	**Category of Respondents**	**N**	**Mean Rank**	**Sum of Ranks**
Human	Professionals	127	146.41	18594.50
	Contractors	161	142.99	23021.50
	Total	288		
Industry	Professionals	127	147.46	18727.00
	Contractors	161	142.17	22889.00
	Total	288		
Environment	Professionals	127	151.13	19193.50
	Contractors	161	139.27	22422.50
	Total	288		
Policy	Professionals	127	148.05	18802.50
	Contractors	161	141.70	22813.50
	Total	288		

The factors responsible for influencing construction professionals' and contractors' resistance behaviours to the implementation of sustainable construction practices in Nigeria were classified into four groups as: Human, Industry, Environment and Policy. The average MSI of these factors (Human = 4.57, Industry = 4.52, Environment = 4.47 and Policy = 4.68) suggested that they are significantly influencing the professionals and contractors' resistance behaviours, since the average MSI of each of the groups of factors is > 4.00. However, the higher the MSI, the greater the level of influence on the professionals and contractors' resistance behaviours. Amidst the four main factors, the result showed that policy especially through laws and regulations, and government commitments have the greatest influence on the behaviours of the professionals and contractors to resist change towards sustainable construction practices in Nigeria. This may be indication that weak policy or legal framework encourages practitioners to resist change towards sustainable construction practices.

Furthermore, the MSI of the 56 variables in **Table 3** suggested that all the variables have potentials to influence the behaviours of the construction professionals and contractors to resist changes towards sustainable construction practices in Nigeria. The average MSI of the factors range from 3.45 for transport infrastructure and equipment availability to 5.00 for limited knowledge and awareness, additional cost of change, the prevailing economic condition, incompatibility of change process and organisational culture and laws and regulations. The five variables with MSI of 5.00 each signified that they have the greatest influence on the professionals and contractors' behaviours to resist change. That is to say that, though other variables have great potentials to influence the professionals and contractors' behaviours to resist change; limited knowledge and awareness, additional cost of change, the prevailing economic condition, incompatibility of change process and organisational culture and laws and regulations are very critical to the professionals and contractors' behaviours to resist change towards sustainable construction practices in Nigeria. This further underscores the importance of these variables in the implementation of sustainable construction in the building construction industry. It also shows the need for special considerations on the variables in an effort towards implementation of sustainable construction practices in Nigeria.

The significance of the difference in the rankings of the resistance factors between the professionals and contractors was tested for each of the four main factors using the Mann-Whitney U Test, the results are presented in **Tables 4** and **5**.

The result in **Table 4** revealed that there is no significant difference between the rankings of the professionals and contractors of the factors influencing their resistance behaviours towards sustainable construction practices. Specifically, the Mann-Whitney U test result for human factor indicated that U = 9.980E3, Z = -.347, and p = .728 > .05). The Mann-Whitney U test result for industry factor indicated that U = 9.848E3, Z = -.536, and p = .592 > .05). The result for environment factor showed that U = 9.382E3, Z = -1.204, and p = .229 > .05). Similarly, the Mann-Whitney U test result for policy factor indicated that U = 9.772E3, Z = -.650, and p = .516 > .05. Consequently, the null hypothesis is accepted in all cases. It signifies that the factors influencing resistive behaviours of professionals and contractors towards the implementation of sustainable construction practices are not different between the two groups of respondents. Hence, it affirmed that resistance to change factors influence the behaviours of professionals and contractors towards implementing sustainable construction practices in about the same way and magnitude.

The result of this study has highlighted the importance of certain factors that trigger the decisions of construction professionals and contractors to resist changes and at the same time their resistance to change behaviours towards sustainable construction practices. The result revealed that while all the four main factors have significant influences on the resistance to change decisions and behaviours of construction stakeholders, policy factors exert the greatest influence followed by human factors, industry factors, and environmental factors respectively. This suggests that construction practices in Nigeria are still entangled with fundamental issues bothering on policy frameworks, individual characteristics and organisational culture. For example, lack of individual knowledge, belief and perception; the structure and nature of construction practices and procurement routes; the technicalities and skill requirements, weak and polarised policy frameworks, and lack of government commitments are fundamental issues militating against the implementation of sustainable construction practices in Nigeria (Aghimien et al., 2019a; Aghimien et al., 2019b; Daniel et al., 2018; Davies and Davies, 2017; Djokoto et al., 2014). Contrarily, adequate knowledge, integrated procurement systems, and strong policy framework through regulations, laws and government commitment would inhibit such resistance to change towards sustainable construction practices.

Generally, the overall mean score result of all the 56 variables in **Table 3** showed that every variable has at least certain level of influence on the resistance to change decisions and behaviours of the professionals and contractors towards sustainable construction practices. This implies that these variables are very important and need to be considered while devising any means of promoting sustainable construction practices in Nigeria. However, the five individual variables with average MSI 5.00 each have the greatest influences and are very critical to the behaviours of professionals and contractors to resist changes towards sustainable construction practices in Nigeria. These variables have pivotal influence on the resistance to change behaviours or decisions of the construction stakeholders. The variables include: limited knowledge and awareness, additional cost of change, the prevailing economic condition, incompatibility of change process and organisational culture, and laws and regulations. This further implies that there is tendency of construction professionals and contractors to resist changes towards sustainable construction practices when they do not have adequate knowledge and limited awareness about the change. It also meant that the chances of the professionals and contractors to resist changes towards implementation of sustainable construction practices would increase when they perceive that the change would add significant costs to the project. Moreover, it is an indication that when the client or initiator of the project is not in good economic standing or when the project does not guarantee good profitability, the tendency of the professionals and contractors to resist any change perceived to suit the economy of the client is likely to be high. Relatively, it implies that when the change is not compatible with the organisational goals in addition to weak legislative framework, the practitioners are likely to resist such change.

The Mann-Whitney U test results indicated that the influence of the four main groups of factors on the behaviours of the professionals and contractors towards the implementation of sustainable construction practices are experienced in about the same way irrespective of designations and roles. Therefore, a holistic measure which encompasses the characteristics of the professionals and contractors is more desirable to overcoming the resistive factors influencing the sustainable construction practices implementation in Nigeria.

The strength of this study lies in its findings. While other studies have focused on different organisations other than construction, this study was carried out within the framework of construction organisation setting. However, this result may not be generally applied across Nigeria. The sample size is too small to be generalised when compared to the number of building contractors and professionals in Nigeria. However, this could be a pointer to what is obtainable in the construction industry and practice across Nigeria since the construction players operate in the same construction systems, economic and political environment. Furthermore, the study failed to consider the opinion of the clients' group as a critical stakeholder in the implementation of any change in construction project.

This result, however, supports that of Sarhan et al. (2018) who revealed that there was no significant difference in barriers to implementation of lean construction among construction professionals based on organisational and individual characteristics. This study is also in line with the result of Amarantou et al. (2018), though in health sector which suggested that resistance to change is indirectly and directly influenced by many factors. It complemented Langstrand and Elg (2012) who recognised that the physical environmental resistance could result from the decisions and intentions to resist changes which are human factors. The result of this study is also supported by that of Ametepey et al. (2015), Angonese and Lavarda (2014), and Bonanomi et al. (2016) which identified certain critical factors that are responsible for resistance to change in an organisation. Furthermore, the result aligned with that of Schweiger et al. (2018) who proposed that with participatory strategy and increase awareness about change, there would be less resistance to change.

CONCLUSION AND RECOMMENDATIONS

The need to implement sustainable construction practices at all levels of construction practice has been highlighted. Many efforts have also been made towards the actualisation of sustainable construction practices. However, sustainable construction practices are facing intense hurdles due to resistance to change behaviours of construction players. Within the construction organisations, construction practitioners are resisting certain actions that would have brought about sustainable construction practices. These decisions, intentions or behaviours to resist changes towards sustainable construction practices by construction practitioners are informed by certain factors. This study therefore, has identified and examined the factors responsible

for construction practitioners' resistance to change decisions and behaviours towards the implementation of sustainable construction practices in Nigeria.

The study has identified 56 variables which were grouped into four main factors: Human, Industry, Environment and Policy. The study demonstrated that construction professionals and contractors' behaviours to resist change towards sustainable construction practices are significantly influenced by these four main factors both at micro and macro levels. It further established that five variables that cut across the four main factors which include: Limited knowledge and awareness, additional cost of change, the prevailing economic condition, incompatibility of change process and organisational culture, and laws and regulations are critical to the behaviours of construction practitioners towards resistance to change. This implies that these variables possessed the greatest individual resistance to sustainable construction practices. Therefore, ignoring the variables could be fatal to the implementation of sustainable construction practices in Nigeria. Specifically, the study has highlighted the significance of policy, human and industry factors among other factors through the instrumentality of adequate training and knowledge about sustainable construction practices, government commitment and enabling laws and regulations, and adoption of integrated procurement systems that would restructure and change the conventional construction practices in Nigeria.

Without doubt, this study recognises the importance of social, physical and economic issues in taking decisions about resistance to change towards sustainable construction practices in Nigeria. It raises concern for a shift from conventional system of construction practices. It also queries the existing policy and legislative frameworks and the level of government commitment towards the implementation of sustainable construction practices in Nigeria. It raises further concern about the training routes of construction professionals and contractors. This study, therefore, has both practical and policy implications. Practically, it shows that there is still limited knowledge and awareness about the tenets of sustainable construction among construction stakeholders, which could be tamed through education and training. It also shows the need for a paradigm shift from what it is (traditional) to what it is supposed to be (integrated). Policy wise, it shows the deficiency and /or inadequacy of economic regenerative mechanisms, construction policies, government commitment, legislative frameworks and enabling laws for construction practices in Nigeria. Above all, it has added to the growing body of knowledge especially in the areas of organisational change and sustainable construction.

Finally, this study recommended for reinvigoration of legislative framework for sustainable construction practices with increased government commitments; training and retraining of construction practitioners on issues and importance of sustainable construction. A shift from conventional construction practices to a more sustainable integrated practices is also very desirable. It further recommended for further study that will examine the client's opinion on the factors responsible for clients' resistive behaviour towards the implementation of sustainable construction in Nigeria.

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