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INFLUENCE OF CONSTRUCTION FIRM SIZE ON THE LEVEL OF ADOPTION OF SUSTAINABILITY PRACTICES IN NIGER DELTA, NIGERIA

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Abstract. The need to address the problems facing the natural environment and social economic development cannot be overemphasised. The aim of the study was to assess the influence of firm size on the level of implementation of sustainability practices in Niger Delta, Nigeria. Survey design approach was used in the study. Data were obtained through interviews and one thousand one hundred and seventy-nine copies of structured questionnaire administered to representatives of the firms by researchers and research assistants. The methods of data analysis were simple percentage and Spearman's rank correlation. The result showed that small firms accounted for 84.7 %, medium-sized firms accounted for 11.61 % and large construction firms accounted for 3.73 %. Thus, a majority of firms are small and medium-sized construction companies in Niger Delta. The study revealed that the firm size influenced the level of implementation of firm sustainability practices in the study area. It was concluded that the size of firms had a significant influence on the level of adoption of sustainability practices among the construction firms operating in Niger Delta. It was also concluded that small and medium-sized construction firms recorded poor capacity building and human capital development. The study recommended that small and medium-sized construction firms operating in Niger Delta should improve their level of capacity building and human capital development.

Keywords: *construction firm size; influence; level of adoption; Niger Delta; sustainability practices.*

INTRODUCTION

Applying sustainable practices that ensure good returns on investment in a healthy environment and better social performance cannot be overstated and exaggerated. The Niger Delta region of Nigeria has been degraded due to the activities of oil companies in the region and construction operations being undertaken to accommodate exploration operations and a growing population.

Kadafa (2012) considered Niger Delta to be one of the most severely damaged ecosystems as a result of oil exploration in the region. This situation requires immediate attention. The concept of firm sustainability implies the ability of construction firms to strike a balance between economic, environmental and social

performance at the firm level (Porter, 2008). The variables for measuring the level of sustainability adoption in this study are firm sustainability practices and are tenth in number in this study. These include: leadership, knowledge management practices, organisational innovation, organisational culture and corporate governance. Others include stakeholder engagement, transparency and measurement, corporate social responsibility, employment practices and the protection of the natural environment.

Cox, Higgins, and Speckesser (2009) argued that the adoption of sustainability practices involved numerous control measures. The authors stated that different types of organisations would adopt different types of innovative practices, and different countries might place greater or less emphasis on specific practices. Studies have shown that firm size is a significant factor influencing a company's adoption of sustainable practices. Smaller companies are generally less aware of sustainability practices and do not have enough time and financial resources to learn about and invest in them (Darnall, Henriques, & Sadorsky, 2010). These factors may contribute to the fact that small companies are less likely to adopt sustainability initiatives than medium-sized companies (Brammer, Hoejmose, & Marchant, 2011).

Studies to date have focused so much on the environmental sustainability of construction firms and the neglect of other sustainability pillars. However, this study included other corporate sustainability practices, construction and dimensions apart from the environmental sustainability of construction firms. Various researchers have argued that organisational characteristics such as firm size have to do with the level of adoption of sustainability practices (Bacon & Hoque, 2005; Belt & Giles 2009).

Various studies focused on the manufacturing industry placing less emphasis on the construction industry. In addition, there are limited studies that have evaluated the influence of company size on the level of adoption of sustainability practices in Nigeria in general and the Niger Delta region of Nigeria in particular. Therefore, the aim of the present study is to establish the influence of company size on the level of adoption of sustainability practices among construction companies operating in the Niger Delta region of Nigeria.

1. RESEARCH METHODOLOGY

This study adopted a survey design approach. Data were obtained through interviews and one thousand one hundred and seventy-nine copies of structured questionnaire administered by researchers and research assistants to representatives of the firms. The researchers interviewed firm representatives, these included: project managers, architects, builders and civil engineers. The data for this study were collected using a five-point scale: 1, 2, 3, 4 and 5 (Kazaz, Manisali, & Ulubeyli, 2008) and were assigned the options of very low level of adoption, low level of adoption, moderate level of adoption, high level of adoption and very high level of adoption (Kazaz, Manisali, & Ulubeyli, 2008). Data analysis methods included simple percentage, mean score and Spearman's rank correlation. Spearman's rank correlation was used to show the influence of construction

company size on the level of implementation of sustainable construction practices among contracting companies operating in the Niger Delta region of Nigeria.

1.1. Sample Frame and Sample Size

The results in Table 1 showed the sample frame and sample size of the study. The results in Table 1 showed that the number of construction firms in Abia, Akwa Ibom, Bayelsa, Cross river and Delta State were 165, 214, 128, 223 and 200 respectively. Edo, Imo, Ondo and Rivers state also had 237, 143, 221 and 250 respectively. The total of the sample frame of the study was 1781. Yamane (1967) equation was used to compute the sample size as shown in Table 1. The sample size for Abia, Akwa Ibom, Bayelsa, Cross river and Delta state were 117, 139, 97, 143 and 133 respectively, while the sample size for Edo, Imo, Ondo and Rivers state were 149, 105, 142 and 154 respectively. Hence the total sample size for the study was 1179.

The results in Table 1 show the sample frame and sample size of this study. Yamane (1967) equation was used to obtain the sample size. Equation of sample size is provided as:

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

where

n = Sample size;
N = Finite population;
e = Level of significance (0.05);
1 = Unity.

Table 1. Sample Frame and Sample Size of Construction Firms in Niger Delta (developed by the authors) (Otali *et al.*, 2019)

State	Sample Frame	Sample Size
Abia	165	117
Akwa Ibom	214	139
Bayelsa	128	97
Cross River	223	143
Delta	200	133
Edo	237	149
Imo	143	105
Ondo	221	142
Rivers	250	154
Total	1781	1179

This study used the Yamane (1967) equation because of its simplicity, reliability and validity. These attributes of the equation have encouraged its increased adoption and have been used by researchers for a long time.

1.2. Distribution and Response Rate Questionnaire in the Study

One of the research tools used in this study was the structured questionnaire. The questionnaire was administered to construction companies in the Niger Delta region of Nigeria. The results of the analysis are presented in Table 2.

Table 2 shows the number of questionnaires administered to construction companies in the Niger Delta region of Nigeria. The results showed that 117 copies of the questionnaire were administered to construction companies in Abia, 139 to companies in Akwa Ibom, 97 to construction companies in Bayelsa and 143 to companies in Cross River State. It was also revealed that 133 copies of the questionnaire were given to companies in Delta, 149 to companies in Edo, 105 to companies in Imo, 142 to companies in Ondo and 154 copies to companies operating in River State.

The response rates recorded by the construction firms operating in each state were 76.1 %, 81.30 %, 87.60 %, 78.30 %, 94.70 %, 76.50 %, 87.60 %, 76.80 % and 90.10 % for Abia, Akwa Ibom, Bayelsa, Cross River, Delta, Edo, Imo, Ondo and River State, respectively.

Table 2. Questionnaire Distribution and Response Rate **(**Otali *et al.*, 2019) (developed by the authors)

S/N	States	Number of questionnaires administered	Number of questionnaires returned	Percentage of questionnaires returned, %	Overall response rate, %
1	Abia	117	89	76.10	
2	Akwa Ibom	139	113	81.30	
3	Bayelsa	97	85	87.60	
4	Cross River	143	112	78.30	
5	Delta	133	126	94.70	
6	Edo	149	114	76.50	
7	Imo	105	92	87.60	
8	Ondo	142	109	76.80	
9	Rivers	154	140	90.10	
10	TOTAL	1179	980		83.20

The results indicate that firms in Delta State recorded the highest response rate of 94.7 %, while companies operating in Abia State recorded the lowest response rate of 76.1 %. The overall response rate in this study was 83.2 %. According to Groves (2006), this response rate is considered very good and appropriate.

2. SIZE OF CONSTRUCTION FIRMS IN THE NIGER DELTA REGION OF NIGERIA

The analysis in Table 3 shows the average percentage distribution of construction companies in Niger Delta by their size over a ten-year period (2007–2016). The analysis shows that small companies represent 84.7 % of all companies, medium-sized companies account for 11.61 % and large construction companies – 3.73 %. This reveals a large number of small and medium-sized firms.

Table 3. Size of Construction Firms (developed by the authors)

S/N	YEAR	1–50 Freq. (NO)	Percent (%)	50–250 Freq. (%)	Percent (%)	Above 250 Freq. (NO)	Percent (%)
1	2007	857	87.40	88	9.00	35	3.60
2	2008	790	80.60	155	15.80	35	3.60
3	2009	842	85.90	103	10.50	35	3.60
4	2010	821	83.80	120	12.20	39	4.00
5	2011	813	83.00	129	13.20	38	3.90
6	2012	754	76.90	188	19.20	38	3.90
7	2013	811	82.80	131	13.40	38	3.90
8	2014	870	88.80	75	7.70	35	3.60
9	2015	868	88.60	77	7.90	35	3.60
10	2016	874	89.20	71	7.20	35	3.60
AVE.			84.70		11.61		3.73

This result is consistent with Abdullah *et al*. (2012), and Thwala *et al*. (2012) who postulated that small and medium-sized firms (SMFs) were found to be most prevalent.

3. RESULTS OF THE RESEARCH

3.1. Influence of Construction Firm Size on the Level of Adoption of Sustainability Practices

Table 4 reveals the results of Spearman's rank correlation test (at *p*-value ≤ 0.05) that was carried out to establish the influence of construction firm size on the degree of implementation of sustainable practices among the construction firms in the Niger Delta region of Nigeria. Table 4 shows that the association between the size of construction firms and the level of adoption of transformational leadership traits (charismatic leadership idealized influence) has*p*-values ranging from 0.017 to 0.031. These values are less than the 0.05 significant level given for the test; therefore, the hypothesis is rejected. It connotes that the size of the firm influences the level of adoption of the charismatic leadership traits among construction firms in Niger Delta.

Correlation between the size of construction companies and charismatic leadership –inspirational motivation has a *p*-value of 0.101, 0.007 and 0.021. It means that there is a significant relationship between the size of the company and the level of articulation of a compelling vision for the future (*p*-value = 0.007) and an expression of confidence that the goals will be achieved (*p*-value = 0.021). The result, however, shows that the size of construction companies has no correlation with the level of expression of power and confidence (*p*-value = 0.101).

Table 4 shows that there is a significant correlation between the size of construction firms and only one property of intellectual stimulation (*p*-value = 0.001). However, the two constructs do not affect the two features of intellectual stimulation (*p*-values = 0.180 and 0.097, respectively). This result shows that the size of the building does not affect the ability of construction firms to seek a wide range of perspectives when solving problems. It also indicates that the size of firms

does not affect the act of encouraging others to challenge the status quo by construction firms. However, the size of construction firms significantly affects the level of adoption of ideas that force employees to rethink and question the usual course of action.

The results obtained in Table 4 show that the correlations between the size of individual firms and the individual consideration have *p*-values between 0.009 and 0.044. These values are lower than the significant 0.05 level set for the test, so the hypothesis was rejected. Thus, there is a strong correlation between the size of the construction companies and the individual account. It means that the size of a construction company has influence on the level of individual consideration.

The result in Table 4 shows the relationship between the size of construction firms in Niger Delta and knowledge management practices. It was found that the size of construction companies significantly affected the adoption of the two knowledge management processes (brainstorm with the value p= 0.031; and the face-to-face interaction with the value p= 0.023). However, the size of construction companies has no effect on the level of approval of the directive among construction companies (the value p = 0.768).

The result of the association between the size of construction firms and the degree of organisational innovation adoption is shown in Table 4. It reveals that firm size influences the ability of firms to hire an experienced employee, and provides or supports training programs for the employees but does not affect the practice of actively encouraging employees to seek improvements and share ideas.

The result in Table 4 reveals that the size of construction firms influences firm participation in the creation standards and practices in the industry (*p*-value = 0.001). It also posits that the size of construction firms does not affect the level of improving company's technical capabilities and protecting company's intellectual property.

The result of Table 4 shows that there is no significant correlation between the size of construction companies and the practice of building relationships with existing customers, and providing products/services that reduce client's costs. However, there is a significant relationship between the size of construction firms and the ability of construction firms to attract new clients (*p*-value = 0.027).

The correlation between the size of construction companies and knowledge management strategies shows that the size of companies greatly affects the rate of maintaining a formal system for transferring project learning to firm ongoing business processes (*p*-value = 0.001).

The results in Table 4 show that the size of construction firms significantly influences the rate firm pursues alliance projects (*p*-value = 0.003). However, the size of the construction firm does not influence the rate firms reward employees to stay connected to strategic industries (*p*-value = 0.777) and seek cooperation on the project (*p*-value = 0.197).

The results of the correlation between the size of construction firms and organisational culture practices provided in Table 4 show that the size of firms significantly influenced the degree to which power was expected to be shared equally and the extent to which gender differences were maximised or minimised.

However, the size of construction firms did not affect the degree to which individuals were encouraged to integrate into groups.

The relationship between the size of construction firms and shareholder rights indicates that the size of firms significantly affects shareholder rights (secure ownership registration, *p*-value = 0.023; transfer or transfer of shares, p-value = 0.007, and timely acquisition of relevant information with p-value 0.006). The firm size also influences the level of respect for the law and collective rights, *p*-value = 0.001; performance improvement methods allowed for employee involvement; *p*-value = 0.007; and the level of entitlement to up-to-date, relevant and reliable information about their problems (*p*-value = 0.002).

The results provided in Table 4 show the relationship between the size of the construction firms and the transparency and disclosure. It was found that the size of construction firms significantly influenced the adoption of financial and operational result disclosure (*p*-value = 0.005) and salary policy disclosure for board members and executives (*p*-value = 0.001). However, it did not affect the disclosure of company goals (p-value = 0.366).

Table 4 shows the relationship between the size of construction companies and the corporate sustainability practices of the board of directors. *P*-values between 0.003 and 0.020 indicate that the size of the construction companies significantly affects the board. The size of the firm was found to influence the level of application of high ethical standards in the direct value panel (*p*-value = 0.003). It also shows that the size of construction companies significantly affects the board by considering the interests of other stakeholders (*p*-value = 0.020). Furthermore, the size of construction companies affects the ability of management to make objectively independent decisions (*p*-value = 0.003).

The results of the relationship between the size of construction companies in Niger Delta and stakeholder involvement are given in Table 4. The size of construction companies significantly affects the participation of individual stakeholders (identification of stakeholders, *p*-value = 0.015). The *p*-value of 0.375 indicates that there is no significant relationship between the size of the construction firms and the level of risk assessment. It also showed that there is no significant relationship between the size of the construction firms and the extent a firm can set goals for the stakeholders (*p*-value = 0.457).

Table 4 shows the results of the relationship between the size and transparency of construction companies and their measurement. As a result, the size of the construction companies had a significant impact on transparency and measurement practices (data collection, *p*-value = 0.003). However, there is no significant relation between firm size and mapping against standards (*p*-value = 0.129). In the same vein, the result showed that there is no significant relationship between firm size and site visits (*p*-value = 0.497).

This study reveals that the size of construction companies has relationship with their level of engagement in infrastructural development (*p*-value = 0.001) and human capital development (*p*-value = 0.001). However, the size of firms does not influence the level of provision of employment opportunities in the firms (*p*-value = 0.208).

Table 4 shows the results of linking the size of construction firms in Niger Delta and employment practices. *P*-values ranging from 0.001 to 0.007 indicate that there is a significant correlation between the size of the construction firm, the level of staff training and the practice of motivating its employees through wages and salaries. It also affects how well employees work as a team.

Table 4. Influence of Construction Firm Size on the Adoption of Sustainability Practices (developed by the authors)

Sustainability Practices	Mean	Firm Size			Remark
		SD value	*R*	*P*-Value	
Traits of Transformational Leadership: Charismatic Leadership-Idealised Influence					
It stresses the importance of a strong sense of mission	3.6663	0.72168	0.076	0.017	Significant
It goes beyond self-interest for the growth of the organisation	3.6520	0.77785	0.069	0.031	Significant
It encourages company members to think beyond the immediate situation	3.6469	0.72729	0.074	0.021	Significant
Charismatic Leadership-Inspirational Motivation					
It shows a feeling of strength and confidence	3.8541	0.92503	0.052	0.101	NS
It expresses a compelling vision of the future	3.6969	0.77564	0.087	0.007	Significant
It expresses confidence that goals will be achieved	3.6990	0.73730	0.073	0.021	Significant
Intellectual Stimulation					
When solving problems, it requires a wide range of perspectives	3.5735	0.73140	0.043	0.180	NS
It urges others to challenge the status quo	3.5286	1.21793	0.053	0.097	NS
It has ideas that require employees to perform and re-ask staff in the usual way	3.6020	1.21061	0.121	0.001	Significant
Individual Consideration					
Time is spent on teaching and training members of the organisation	3.5010	0.70530	0.064	0.044	Significant
It focuses on developing team strength	3.5316	0.73718	0.064	0.044	Significant
Striving to give due consideration to employees	3.5745	0.76140	0.083	0.009	Significant

Knowledge Management Practices					
Developing the mind	3.6857	0.76651	0.069	0.031	Significant
Talking face-to-face	3.1847	0.93920	0.073	0.023	Significant
Mentoring	2.7806	0.98913	0.009	0.768	NS
Organisational Innovativeness: Employee Strategies					
Recruitment of experienced workers	2.9888	0.76229	0.086	0.007	Significant
Actively encouraging staff to refine and share ideas	3.5041	0.77168	0.042	0.186	NS
Providing or assisting staff with training programs	3.2184	0.67893	0.067	0.036	Significant
Technology Strategies					
Improving the technical capabilities of one's business	3.2602	0.68297	0.062	0.054	NS
Protection of intellectual property of one's company	3.4316	0.70633	0.048	0.131	NS
Participation in the development of industry standards and practices	3.3582	1.19297	0.119	0.001	Significant
Marketing Strategies					
Building relationships with customers	3.5010	1.77400	0.050	0.121	NS
Providing products/services that reduce one's customers' costs	3.5786	0.74745	0.025	0.426	NS
Attracting new customers	3.3959	0.68873	0.071	0.027	Significant
Knowledge Strategies					
Following the best international practices	3.7000	0.88878	0.030	0.342	NS
Maintaining a formal project transfer system for ongoing business processes	3.4388	1.72801	0.106	0.001	Significant
Measuring the effectiveness of one's changes	3.4337	0.67245	0.019	0.543	NS
Relationship Strategies					
Rewarding employees to stay connected to strategic industries	3.3847	1.14074	0.009	0.777	NS
Seeking cooperation within the projects	3.3898	0.64326	0.041	0.197	NS
Pursuing alliance projects	3.3367	1.16507	0.095	0.003	Significant
Organisational Culture Practices					
Power distance: the degree to which the average shared power is expected	3.3735	0.72127	0.085	0.007	Significant

Individualism-Collectivism, the extent to which individuals are encouraged to integrate into a group	3.3031	0.52714	0.058	0.070	NS
Gender differences: the extent to which gender role differences are maximised or minimised	3.2112	0.65909	0.079	0.014	Significant
Corporate Governance:					
Shareholders Rights					
Secure ownership registration	3.9908	0.79382	0.073	0.023	Significant
Share transfer	2.1194	1.01924	0.086	0.007	Significant
Obtaining relevant information in a timely manner	2.1929	1.06603	0.087	0.006	Significant
Stakeholders in Governance					
Legal and mutually established rights of stakeholders are respected	2.5439	0.57733	0.124	0.001	Significant
Performance enhancing mechanisms for employee participation are permitted	2.4122	0.87495	0.087	0.007	Significant
Stakeholders have the right to timely access relevant and reliable information on governance issues, in which they have the right to participate	2.4929	0.91573	0.098	0.002	Significant
Transparency and Disclosure					
Disclosure of operating and financial results	2.3704	0.74717	0.089	0.005	Significant
Disclosure of company goals	2.6745	0.86538	0.029	0.366	NS
Disclosure of remuneration policies for the Board and Directors	2.3765	0.70607	0.128	0.001	Significant
The Board of Directors					
The board applies high ethical standards	2.6857	0.98050	0.096	0.003	Significant
The board considers the interests of other stakeholders	2.6755	0.98964	0.074	0.020	Significant
The board is capable of objective independent judgment	2.6786	0.97557	0.095	0.003	Significant
Stakeholder Engagement					
Opportunity risk examination	3.4000	0.74899	0.028	0.375	NS
Stakeholder identification	3.0888	0.71841	0.077	0.015	Significant
Setting of targets for stakeholders	3.3684	0.80981	0.024	0.457	NS
Transparency and Measurement					
Information Collection Review	3.2480	0.76887	0.094	0.003	Significant
Mapping against standards	3.4490	0.78965	0.049	0.129	NS
Sample site visits	3.3214	0.75208	0.022	0.497	NS

Corporate Social Responsibility					
Provision of employment opportunities	3.0255	0.52938	0.040	0.208	NS
Infrastructural development	2.6888	0.64562	0.199	0.001	Significant
Human capital development	2.9082	0.63857	0.129	0.001	Significant
Employment Practices					
Training of personnel	2.6602	0.89365	0.199	0.001	Significant
Wage/salary induced motivation	2.4592	0.71705	0.086	0.007	Significant
Teamwork	2.8306	0.83335	0.127	0.001	Significant
Protection of the Environment					
Construction designs, construction practices and environmentally-friendly and sustainable technologies	3.4765	0.78316	0.008	0.797	NS
Communicating sustainability and other environmental issues effectively among contractors, suppliers and other professionals employed by the organisation	3.1010	0.73924	0.029	0.358	NS
Implementation of standardised management systems (ISO 14001) or Environmental Management Systems (EMS) in one's firm	2.5816	0.77793	0.058	0.068	NS

NS – not significant, *SD* – standard deviation, *R* – correlation coefficient

The relationship between the size of construction firms and environmental practices shows that there is no significant relationship between the size of the firm and the extent of implementation of environmental practices. These include the use of green design, green construction practices and sustainable technologies in the built environment and effective communication. The perception of the firms operating in the Niger Delta region also shows that there is no correlation between the size of firms and their level of implementing standardised management system and environmental management system, such as ISO 14001.

4. RESULTS OF THE INTERVIEW

The present section consists of the respondents' characteristics and excerpts from the interviewees' responses to the questions.

4.1. Respondents' Characteristics

Table 5 shows that the construction professionals (project managers, architects, builders, civil engineers) that were sampled in this study possessed minimum qualification of Higher National Diploma (HND). The analysis showed that 20 % possessed HND, 30 % possessed BSc and 50 % possessed M.Sc. Fifty percent (50 %) of the respondents are project managers, twenty percent (20 %) of the respondents are architects, ten percent (10 %) are builders and twenty percent (20 %) are civil engineers. The work experience of the respondents ranged between the intervals of 5–10, 10–15, 15–20 and above 20 years. Fifty percent (50 %) of the respondents work at foreign owned firms, while fifty percent work at locally owned construction firms.

Table 5. Respondents' Characteristics (developed by the authors)

S/N	Ownership of firm	Highest educational qualification	Years of working experience	Professional affiliations	Mode of the interview	Duration of the interview (Minutes)
Case 1	Foreign	M.Sc	25	Project manager	semi-structured	30
Case 2	Foreign	M.Sc	18	Project manager	semi-structured	30
Case 3	Local	B.Sc	19	Architect	semi-structured	30
Case 4	Local	B.Sc	8	Architect	semi-structured	30
Case 5	Local	B.Sc	10	Civil Engineer	semi-structured	30
Case 6	Local	H.N.D	13	Civil Engineer	semi-structured	30
Case 7	Local	H.N.D	12	Builder	semi-structured	30
Case 8	Foreign	M.Sc	14	Project manager	semi-structured	30
Case 9	Foreign	M.Sc	15	Project manager	semi-structured	30
Case 10	Foreign	M.Sc	15	Project manager	semi-structured	30

Table 5 reveals that more than 50 % of the respondents have work experience above ten (10) years. It, therefore, implies that the educational qualification and work experience of the respondents are adequate and their responses can be relied on.

4.2. The influence of size of construction firms on the degree of implementation of sustainable construction practices among construction firms operating in the Niger Delta region of Nigeria

To improve the understanding of the interviewees on the research question, the researchers spent some time to explain sustainability practices and the variables that constitute each construct. The interviewees are the representative of the construction firms. The interviewees were given the assurance that their responses were strictly for research purpose and their responses would be anonymous. The aim of taking the case interview was to establish the correlation between firm size and the level of implementation of sustainable practices among construction firms operating in the Niger Delta region of Nigeria.

Question: What is the influence of the firm size on the level of implementation of sustainable practices?

Interviewee 1: Interviewee 1 observed that the size of the firm had an impact on the level of adoption of sustainable practices. For example, the size of a company affects its ability to adopt sustainable development practices.

Interviewee 2: The respondent said the size of the company was critical to the level of adoption of sustainable development practices. All companies may not implement sustainable practices at the same level, which can be attributed to their size (small, medium or large). For example, large companies have more resources than small businesses, which can also affect the level of adoption of sustainable practices.

Interviewee 3: The level of adoption of sustainable development practices may be affected by the size of the company. The size and quantity of resources affect the extent to which a company fulfils its corporate social responsibility.

Interview 4: The respondent said that large construction firms were more likely to use sustainability practices than SMEs. Large firms have opportunities and they can also keep up with the practice.

Interviewee 5: The respondent revealed that the size of the company would definitely influence the level of adoption of sustainability practices. He argued that large companies applied sustainability practices more than small ones. Small businesses also adopt their own practice, but the simple truth is that large companies adopt more practices.

Interviewee 6: The size of construction companies affects the level of adoption of sustainable practices. Small, medium-sized and large construction companies have different levels of enforcement.

Interviewee 7: The interviewee stated that the size of firms affected the level of adoption of sustainability practices. These small companies might not have the same capacity to adopt sustainability practices at the same level as large construction companies.

Interviewee 8: Company size contributes to the ability of construction firms to adopt sustainability practices. Firm resources also vary depending on the size of the company. The respondent noted that adopting sustainability practices required resources and this could not be overemphasised. Large companies have these resources, money, human power, and so on, more than small and medium-sized construction firms, and this will affect their level of adoption of sustainability practices.

Interviewee 9: Firm size influences the level of adoption of sustainability practices. The respondent stated that the level of implementation of sustainability practices among large construction companies was higher than the level of implementation of sustainability practices among small and medium-sized construction companies.

Interviewee 10: Firm size influences the adoption of sustainable practices because different construction companies may not be able to adopt them in the same way. For example, large construction companies adopt sustainability practices better than small and medium-sized construction companies.

5. DISCUSSION OF FINDINGS

This study shows a significant correlation between the size of construction companies and the idealized impact of charismatic leadership. It implies that the size of a company affects the extent to which charismatic leadership is adopted, and ideally has a high influence on construction companies in Niger Delta. It shows that there is a significant correlation between the size of a business and the level of clear expression of a convincing vision for the future and the expression of confidence in achieving goals. It also indicates a correlation between the size of construction companies and personal considerations. It means that the size of the construction company affects the level of adoption of personal considerations.

The research has shown that there is a correlation among the size of construction companies in Niger Delta, knowledge management practices, employee strategies, and the extent to which companies are involved in setting industry standards and practices. It also shows that there is a significant correlation between the size of construction companies and their ability to attract new customers, corporate governance, governance practice participants, transparency and disclosure.

It has been found that the size of companies greatly affects the level of application of high ethical standards in the Board of Directors. The study reveals that the size of construction companies greatly affects the Board of Directors considering the interests of other stakeholders and affects the ability of the Board of Directors to make an independent objective judgment. The study shows that the size of construction companies greatly influences the level of adoption of stakeholder engagement practice, transparency and measurement practices. The result demonstrates that there is a relationship between the size of the contracting firms, the corporate social responsibility (infrastructure development, human capital development) and recruitment practices. This study is consistent with Roxas, Battisti and Deakins (2013), who concluded that the size of the company had relationship with innovative practices. It is also in agreement with Lundvall (1992), who posited that the size of a company influenced firm inclination to embrace innovation. This study is also in line with Moohammad *et al*. (2014) who concluded that dimensionality had a positive impact on innovative practices.

This study reveals that the size of a firm has significant influence on the training of personnel, ability to motivate the employees through the use of wage/salary induced motivation and the extent the personnel can be encouraged to work as a team.

It is revealed in this study that there is no significant relationship between the firm size and the level of adoption of environmental sustainability practices in the Niger Delta region of Nigeria. This implies that the extent a firm implement

environmentally friendly and sustainable practices in the course of its operation is not influenced by the size.

The study shows that most construction companies operating in the Niger Delta region of Nigeria are small and medium-sized companies. This result is consistent with Abdullah *et al*. (2012) and Thwala *et al*. (2012), who believed that companies in the construction industry were mainly small and medium-sized enterprises. This study is consistent with Bacon and Hoque (2005) and Belt and Giles (2009), who pointed that, in general, the sustainability practices of large companies were higher than those of small companies. This study is also consistent with Messersmith and Guthrie (2010), who argued that the level of adoption of sustainable development practices was higher in large construction companies than in small construction companies.

This study agrees with Frambach and Schillewaert (2002), who observed that larger organisations were more prone to innovation because of their better resource benefits and greater need to continue and improve performance. However, this study is in contrast to Yusof and Yusof (2011), who noted that smaller firms had a higher tendency to practice innovation because of their greater flexibility.

CONCLUSION

This study assessed the influence of firm size on the implementation level of sustainability practices in Niger-Delta, Nigeria. The result shows that there is a significant correlation among the size of construction companies and the idealized impact of charismatic leadership, knowledge management practices, employee strategies, the level of application of high ethical standards in the Board of Directors, training of personnel, ability to motivate the employees through the use of wage/salary induced motivation and the extent the personnel can be encouraged to work as a team. It also reveals that the firm size influences the level of adoption of environmental sustainability practices in the Niger Delta region of Nigeria. This study reveals that most construction companies operating in the Niger Delta region of Nigeria are small and medium-sized companies.

Based on the findings, this study concludes that a majority of companies are small and medium-sized construction firms in Niger Delta. This study also concludes that the firm size has a significant influence on the degree of implementation of sustainable construction practices among construction firms operating in the Niger Delta region of Nigeria. It implies that the size of a construction firm influences the capability of the firm to adopt sustainability practices at the firm level. It is also concluded that small and medium-sized construction firms record poor capacity building and human capital development.

REFERENCES

Abdullah, A., Bilau, A. A., Enegbuma, W. I., Ajagbe, A. M., Ali, K. N., & Bustani, S. A. (2012). Small and Medium Sized Construction Firms Job Satisfaction and Evaluation in Nigeria. *International Journal of Social Science and Humanity*, *2*(1), 35–40. https://doi.org/10.7763/IJSSH.2012.V2.65

Bacon, N., & Hoque, K. (2005). 'HRM in the SME Sector: Valuable Employees and Coercive Networks. *International Journal of Human Resource Management*, *16*(11), 1976–1999. https://doi.org/10.1080/09585190500314706

Belt, V., &Giles, L. (2009). *High Performance Working: a Synthesis of the Key Literature*. Evidence Report 4, London, UK Commission for Employment and Skills.

Brammer, S., Hoejmose, S., & Marchant, K. (2011). Environmental Management in SMEs in the *Business Ethics Quarterly, 21*(2), 309–334.

Cox, A., Higgins, T., & Speckesser, S. (2009). *Management Practices and Sustainable organisational performance.* Dublin, Ireland: European Company Survey.

Darnall, N., Henriques, I., & Sadorsky, P. (2010). Adopting Proactive Environmental Strategy: the Influence of Stakeholders and Firm Size. *Journal of Management Studies, 47*(6), 1072–1094. https://doi.org/10.1111/j.1467-6486.2009.00873.x

Frambach, R. T., & Schillewaert, N. (2002). Organizational innovation adoption: A multi-level framework of determinants and opportunities for future research. *Journal of Business Research, 55*(2), 163–217. https://doi.org/10.1016/S0148-2963(00)00152-1

Groves, R. M. (2006). Nonresponse Rates and Nonresponse Bias in Household Surveys. *Public Opinion Quarterly*, *70*(5), 646–675. https://doi.org/10.1093/poq/nfl033

Kadafa, A. A. (2012). Environmental Impacts of Oil Exploration and Exploitation in the Niger Delta of Nigeria. *Global Journal of Science Frontier Research Environment and Earth Sciences*, *12*(3), 19–28.

Kazaz, A., Manisali E., & Ulubeyli S. (2008). Effect of Basic Motivational Factors on Construction Workforce Productivity in Turkey. *Journal of Civil Engineering and Management,14*(2), 95–106. https://doi.org/10.3846/1392-3730.2008.14.4

Lundvall, B.-A. (1992). User-Producer Relationships, National Systems of Innovation and Internationalisation. *National Systems of Innovation: Towards a Theory of Innovation and Interactive Learning*, 45–67.

Messersmith, J. G., &Guthrie, J. P. (2010). High performance work systems in Emergent Organizations: Implications for Firm Performance. *Human Resource Management*, *49*(2), 241–264. https://doi.org/10.1002/hrm.20342

Moohammad, A. Y., YusofNor'Aini, Y. N., Ernawati, M., &Kamal, E. M. (2014). Influences of Firm Size, Age and Sector on Innovation Behaviour of Construction Consultancy Services Organizations in Developing Countries. *Business Management Dynamics,4*(4),1–9.

Porter, T. B. (2008). Managerial Applications of Corporate Social Responsibility and Systems-Thinking for Achieving Sustainability Outcomes. *Systems Research and Behavioural Science*, *25*(3), 397–411. https://doi.org/10.1002/sres.902

Roxas, B., Battisti, M., and Deakins, D. (2013). Learning, Innovation and Firm Performance: Knowledge Management in Small Firms. *Knowledge Management Research & Practice*, *12*(4), 443–453. https://doi.org/10.1057/kmrp.2012.66

Thwala, D. W., Ajagbe, A. M., Enegbuma, W. I., Bilau, A. A., & Long, C. L. (2012). Sudanese Small and Medium Sized Construction Firms: An Empirical Survey of Job Turnover. *Journal of Basic and Applied Scientific Research*, *2*(8), 7414–7420.

Yamane, T. (1967). *Statistics: An Introductory Analysis*, 2nd Ed. New York: Harper and Row.

Yusof, N., and Mohd, S. M. W. (2011). Factors Affecting Housing Developers' Readiness to Adopt Innovative Systems. *Housing Studies*, *26*(3), 369–384. https://doi.org/10.1080/02673037.2011.542097

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