DOI: https://doi.org/10.68128/jocrebe.2018.pl0wdi68

Journal of Contemporary Research in the Built Environment ISSN: 2636-4468
Volume 2, Numbers 1&2, 2018 © Department of Building, University of Uyo

FACTORS INFLUENCING THE ADOPTION OF SUSTAINABILITY PRACTICES AMONG SMALL, MEDIUM AND LARGE CONSTRUCTION FIRMS IN NIGER - DELTA, NIGERIA

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ABSTRACT

Purpose: The need to improve the adoption of sustainability practices among construction firms cannot be over- emphasized. This study assessed the factors influencing the adoption of sustainability practices among small, medium and large construction firms in Niger- Delta, Nigeria.

Design/methodology/approach: Survey design approach was adopted in this study. Data were obtained using 1179 copies of structured questionnaire, administered by the researcher and research assistants. The research data were collected on a five-point scale of 1, 2, 3, 4 and 5 and were assigned to the options of very low influence, low influence, moderate influence, high influence and very influence respectively. Methods of data analysis were simple percentage, and mean score and Kruskal Wallis test.

Findings: The finding from the study indicated that there is no significant variation in the perception of small, medium and large construction firms on factors influencing the adoption of sustainability practices in Niger-Delta, Nigeria. In line with this result, the study affirmed that the first three drivers that have high influence on the adoption of sustainability practices among small, medium and large construction firms in Niger-Delta are organisation's cultural values, amount of resources allocated to sustainability and organisation's structure and system. The study also assessed the enablers of adoption of sustainability among the firms and concludes that capacity building and development has very high influence on the adoption of sustainability practices among small, medium and large firms while lack of education and lack of training are the barriers that have very high influence on the adoption of sustainability practices among small, medium and large firms. The study concluded that lack of top management support highly influenced the adoption of sustainability practices among small, medium and large construction firms in Niger-Delta, Nigeria.

Originality/value: The outcome of this article will help construction firms and construction stakeholders at large to know the drivers, enablers and barriers influencing the adoption of

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sustainability practices among small, medium and large construction firms in Niger Delta, Nigeria.

Keywords: Construction firms; factors; Niger-Delta; small, medium and large; sustainability practices.

1. INTRODUCTION

There is great concern all over the world about the negative impacts of the operations of construction firms on the natural environment. Suliman and Abdelnaser (2009) stated that construction is responsible for an estimated forty percent of all resources consumption and produces about forty percent of all wastes including greenhouse gas emissions. Similarly, Saroop and Allopi (2014) opined that, the construction industry globally, is one of the main contributors to the depletion of natural resources and a major cause of unwanted side effects such as air and water pollution, solid waste, deforestation, health hazards, global warming, and other negative consequences.

The Nigerian construction industry comprised of construction firms ranging from the small and medium enterprises, to the big, technically competent multinational construction firms. Abdullah *et al*. (2012) and Thwala, Ajagbe, Enegbuma, Bilau and Long, (2012) posited that firms in the Nigerian construction industry have been grouped such that small and medium firms (SMFs) are found to be the majority.

Niger-Delta region of Nigeria is severely affected by environmental degeneration as a result of economic activities and oil exploration over the years. According to Kadafa (2012), oil exploration and exploitation which has been on- going for several decades in the Niger- Delta, has had disastrous impacts on the environment in the region and has adversely affected people inhabiting that region. The study noted that the region has been rendered one of the five most severely petroleum damaged ecosystems in the world. Similarly, Ite, Ibok, Ite, and Petters (2013) observed that the bulk proven oil reserves of the region have encouraged the influx of visitors and multinational oil corporations whose operations have created serious threats to the livelihood of the coast communities in the Niger- Delta region. Destruction of habitats, loss of biodiversity, ecosystem destruction, destruction of farmland to access onshore sites and marine resource areas, and water pollution all have extensive implications on the people's livelihood in the region.

Apart from the environmental degeneration suffered due to oil exploration, the fact that several construction activities which have been on to accommodate the activities and growing population, also add to the degeneration of the environment. Asad and Khalfan (2007) reported that construction has a significant effect on people's quality of life; construction outputs affect the nature, function and appearance of the towns and countryside in which people live and work.

The rising global campaign for sustainable construction demands that the challenges be addressed to promote environmentally friendly, social responsibility and economic support. The poor attention being paid to sustainable development agenda in the developing countries poses great danger to present and future generations. According to Oni (2015), the plan of actions or the direction of the stakeholders in the construction industries of developing countries regarding sustainable construction is not known.

Dania, Larsen, and Yao, (2013) stated that Nigeria is lagging behind world developments associated with sustainability within the construction sector and beyond.

Waziri, Yusof and Osmadi (2015) stated that the level of sustainability practices' adoption in Nigeria falls below international standard. This assertion was supported by Ekung, Ujene and Ebong (2014), and Ijaiya (2014). Low adoption of sustainability practices in Niger Delta could lead to violent agitations and restiveness that could also impede oil exploration and cause negative impacts on the socio - economic activities of the Nigerian state. This therefore poses a serious concern to the developmental stakeholders in the Niger-Delta region (Sunjka and Jacob, 2013). The big question is that what are the factors influencing the adoption of sustainability practices among small, medium and large construction firms? Another question is what is the level of influence of these factors on the adoption of sustainability practices? There is also the need to know if the influence of these factors varies according to the size of the firms.

1.1. Objective of the study

The objective of the study is to assess the factors influencing the adoption of sustainability practices among small, medium and large construction firms in Niger-Delta.

1.2. Research hypothesis

In order to achieve the objective of the study, this study tested the hypothesis which states that there is no significant variation in the perception of small, medium and large construction firms on factors influencing the adoption of sustainability practices in Niger Delta, Nigeria.

2. REVIEW OF RELATED LITERATURE

This section comprises of the drivers, enablers of adoption of sustainability practices in construction firms and barriers to adoption of sustainability practices among small, medium and large construction.

2.1. Drivers of adoption of sustainability practices in construction firms

Bansal and Roth (2000) identified four main drivers of sustainability adoption in organisations: legislation, stakeholder pressures, economic opportunities, and ethical motives. Linnenluecke and Griffiths (2010) and Epstein (2008) grouped these factors into internal drivers and external drivers. External drivers of sustainability adoption include factors such as environmental regulation and standards set by governments, or pressures resulting from customer groups and the community. Internal organisational drivers include factors such as top management support, human resource management, environmental training, employee empowerment and the amount of financial resources allocated to sustainability. Majority of the researches that were carried out focused on the drivers of adoption or implementation of sustainability practices among construction firms in developed countries where context are different from developing countries. *(*Chowdhury *et al*., 2015). Also many of these studies did not consider the drivers of sustainability practices based on the size of the firms. These necessitated the need to assess the drivers of

sustainability practices among small, medium and large construction firms in Niger- Delta region of Nigeria.

2.2. Enablers of adoption of sustainability practices in construction firms

Lee and Klassen (2008) distinguished between drivers and enablers. Drivers are factors that initiate a process while enablers help in implementing the process. Drivers help develop commitment towards sustainability among firms while enablers help implement sustainability practices. There are a variety of activities that may enable sustainability practices adoption by construction firms. For example, incentives by different agencies such as the government, focal firm, and NGOs can enable sustainability adoption by construction firms (Seuring and Muller, 2008; Matos and Hall, 2007). Other enablers can be categorised as: External - support from focal firm, top management and government, Mutual - collaboration, integration of resources, sharing of knowledge, joint development activities to enhance mutual trust and commitment (Rocha, Searcy, and Karapetrovic, 2007; Zhu and Sarkis, 2004). Controlling and monitoring the practices of firms to prevent deviations from sustainability standards can be achieved by developing new auditing standards. In addition, disseminating knowledge about sustainability, providing training, and developing technological knowledge will facilitate the implementation of sustainability. Many of the studies predominantly focussed on the drivers and barriers to the implementation of sustainability practices among construction firms without giving adequate attention to the enablers of sustainability practices in literature. This study filled this gap in literature by assessing the drivers and enablers of sustainability practices separately. This will help the firms to take decisive actions when and where application in the course of implementing sustainability practices.

2.3. Barriers to adoption of sustainability practices

A lack of knowledge and expertise within the organisation is the main barrier to adoption of sustainability practices (Elkington, 1994; Zutshi and Sohal, 2004). Vachon (2007) found that the lack of knowledge transfer and cooperation, and organisational resistance towards the adoption of environmental technologies for green practices are barriers to sustainability. Florida (1996) and Zutshi and Sohal (2004) studied resistance from employees and firms towards the development of an environment friendly firms. Hall (2000) highlighted lack of interest on the part of firms as a barrier. Besides, cost related issues also affect greening of the supply chain (Rao, 2002). Cai *et al*. (2008) reported higher investment and uncertainty of return as significant barriers to going green. Majority of companies assume that sustainability will increase cost and negatively affect overall profit (Fortes, 2009; Salloum, Azoury, and Azzi, 2011). Vermeulen and Ras (2006) identified lack of expertise in the firms and pressure of lowering cost as major challenges. Lack of government support is also one of the causes for slower adoption of sustainability (Zutshi and Sohal, 2004).

Other barriers to sustainability adoption in the building industry include the lack of knowledge of professionals in the building industry and the lack of awareness and understanding by the general public. Goddard and Knott (2007) suggested that awareness is minimal among the public. Few people understand the term sustainable development and this is due to the broad subject area and the complexity of the issue. Despite the fact that some studies have identified some barriers to the adoption of sustainability practices, the empirical evaluation and prioritization of these factors so as to mitigate them is limited in

literature in the developing countries and in Niger-Delta region of Nigeria in particular. The evaluation and prioritization of barriers to e adoption of sustainability practices become imperative because firms' capability and resources differ based on their size. By prioritizing the most significant barriers, organisations can select appropriate mitigation approaches based on their capability. This study filled this gap in literature by evaluating the barriers to the adoption of sustainability practices among small, medium and large construction firms in Niger- Delta region of Nigeria.

3. METHODOLOGY

Survey design approach was adopted in this study. Data were obtained using 1179 copies of structured questionnaire, administered by the researcher and research assistants. The data were collected on a five-point scale of 1, 2, 3, 4 and 5 and were assigned to the options of very low influence, low influence, moderate influence, high influence and very influence respectively. The decision rule is that any factor whose mean falls between 1.0 – 1.8 is of very low influence, 1.8 – 2.6 is of low influence, 2.6 – 3.4 is of moderate influence, 3.4 – 4.2 is having high influence and 4.2 – 5.0 is regarded as having very high influence. Methods of data analysis were simple percentage, mean score and Kruskal Wallis test.

3.1. Sample frame and sample size

Table 1 shows the sample frame and sample size of this study. The Sample size was determined using the Yamane (1967) equation as shown below

$$n = \frac{N}{1 + N(e)^2}$$

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

This study adopted Yamane (1967) equation for determining sample size because of its simplicity, reliability and validity. These have encouraged its wider acceptance and usage among researchers over a long period of time.

Table 1: Sample frame and sample size of construction firms in Niger Delta

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**

4. DATA PRESENTATION AND DISCUSSION OF RESULTS

This section contains results of the analysis of data collected for the study. It contains the descriptive results of the response rate of questionnaire, and firm characteristics. This section also contains the result of evaluation of level of adoption of sustainability practices among small, medium and large construction firms in the Niger- Delta, region of Nigeria and the result of the hypothesis.

4.1. Questionnaire distribution and response in the study

One of the research instruments used in this study was structured questionnaire. The questionnaire was administered among the construction firms operating in Niger- Delta, region of Nigeria. The results of analyses are presented in Table 2.

Table 2 shows that the number of questionnaire administered to the construction firms in the Niger – Delta, region of Nigeria are 117, 139, 97, 143, 133, 149, 105, 142, and 154 in Abia, Akwa Ibom, Bayelsa, Cross River, Delta, Edo, Imo, and Rivers state respectively. From the questionnaire distributed, the response rate ranges between 76.1% and 94.7%. Delta state received the highest response rate of 94.7% while Abia State got the least rate of 76.1 %. In all, an overall response rate of 83.2**%** was achieved. Groves (2006) noted that a response rate of at least 50 percent is considered adequate for analysis and reporting, a response of 60 percent is good and a response rate of 70 percent is very good. As a guide, researchers typically seek response rates of at least 70% to feel confident that their sample is representative of the sample frame. Hence, the overall response rate of 83.2% in this study is considered very good and adequate.

Table 4.2: Questionnaire distribution and response rate

S/N	States	Number of questionnaire administered on construction firms (NO)	Number of questionnaire returned (NO)	Percentage of questionnaire returned (%)	Average of the Response Rate (%)
1	Abia	117	89	76.1	
2	Akwa Ibom	139	113	81.3	
3	Bayelsa	97	85	87.6	
4	Cross River	143	112	78.3	
5	Delta	133	126	94.7	
6	Edo	149	114	76.5	
7	Imo	105	92	87.6	
8	Ondo	142	109	76.8	
9	Rivers	154	140	90.1	
10	TOTAL	1179	980		83.2

4.2. Firm characteristics

Firms' characteristics comprised of location of construction firms and size of construction firms.

4.2.1. Location of construction firms

Table 3 shows the distribution of construction firms in each state in the Niger- Delta, region of Nigeria. The percentages of firms in Abia, Akwa Ibom, Bayelsa and Cross river states are 9.1%, 11.5%, 8.7% and 11.4%. Others are Delta, Edo, Imo, Ondo and Rivers with percentages of 12.9%, 11.6%, 9.4%, 11.1% and 14.3% respectively. Table 3 shows a good distribution of the construction firms among the states in the Niger –Delta, region of Nigeria. This implies that the results from this study represents the situation in Niger-Delta, region of Nigeria and can be relied on.

Table 3: Location of construction firms

States	**Frequency**	**Valid Percent**	**Cumulative Percent**
Abia state	89	9.1	9.1
Akwa Ibom state	113	11.5	20.6
Bayelsa state	85	8.7	29.3
Crossriver state	112	11.4	40.7
Delta state	126	12.9	53.6
Edo state	114	11.6	65.2
Imo state	92	9.4	74.6
Ondo state	109	11.1	85.7
Rivers state	140	14.3	100.0
Total	980	100.0	

4.2.2. Size of construction firms under study in Niger – Delta region of Nigeria between 2007- 2016

Analysis on Table 4 shows the average percentage distribution of construction firms in Niger Delta according to their sizes over a period of ten years (2007-2016). The analysis shows that small firms account for 84.7%, medium firms account for 11.61 and large construction firms account for 3.73%. This reveals that small and medium construction firms are of the majority. This result is in consonance with the findings of Abdullah etal, (2012) and Thwala etal, (2012) in the construction industry Small and Medium Firms (SMFs) were found to be in the majority.

Table 4: Size of construction firms under study in Niger - Delta between 2007- 2016

S/N	YEAR	1-50		50-250		250 AND ABOVE	
		FREQ	PER	FREQ	PER	FREQ	PER
1	2007	857	87.4	88	9.0	35	3.6
2	2008	790	80.6	155	15.8	35	3.6
3	2009	842	85.9	103	10.5	35	3.6
4	2010	821	83.8	120	12.2	39	4.0
5	2011	813	83.0	129	13.2	38	3.9
6	2012	754	76.9	188	19.2	38	3.9
7	2013	811	82.8	131	13.4	38	3.9
8	2014	870	88.8	75	7.7	35	3.6
9	2015	868	88.6	77	7.9	35	3.6
10	2016	874	89.2	71	7.2	35	3.6
AVERAGE			84.7		11.61		3.73

4.3. Factors influencing the adoption of sustainability practices among small, medium and large construction firms in Niger Delta, Nigeria

Table 5 shows the factors affecting the adoption of sustainability practices based on the size of firms. The decision rule is that any factor whose mean falls between 1.0 – 1.8 is of very low influence, 1.8 – 2.6 is of low influence, 2.6 – 3.4 is of moderate influence, 3.4 – 4.2 is having high influence and 4.2 – 5.0 is regarded as having very high influence. Three external drivers that have high influence on the level of adoption of sustainability practices among small firms are society/ community, competitors' pressures and consumer groups. Competitors' pressure, trade association and consumer groups are revealed to have moderate influence on the adoption of sustainability practices among medium construction firms. In the same vein, focal company influence, competitive pressure, consumer groups, civil society, media and NGO are the external driver that have high influence on the adoption of sustainability practices among large construction firms in the Niger- Delta region of Nigeria.

Internal drivers that have high influence on the adoption of sustainability among small, medium and large construction firms in Niger Delta include organisations' cultural values, amount of resources allocated to sustainability, environmental training, and organisations' structure and system. Others include employee empowerment, human resource management and top management support.

Table 5 also shows the enablers that have high influence on the adoption of sustainability practices among small, medium and large constructions firms in Niger- Delta. These include sharing of resources, capacity building and development, joint effort and planning, monitoring and auditing of supply chain partners, competitive and marketing advantage. Others are information sharing, trust and commitment among partners, cost reduction and long- term partnership, external pressure, incentives and support by various agencies, demand of customer and other stakeholders, awareness and top management commitment and support. However, it was also revealed that external pressure, incentives and support by various agencies, level of awareness of sustainability practices and top management commitment and support have very high influence on the adoption of sustainability practices among large construction firms in the Niger- Delta region of Nigeria.

Barriers to adoption of sustainability practices among the construction firms were evaluated across the three sizes of construction firms. The result shows that lack of awareness of sustainability practices among the construction firms, increased cost of production, focus on short term profitability, perception of low economic return, lack of money, lack of integration and no support from government are the barriers that highly influenced the adoption of sustainability practices among small and medium construction firms. Other barriers that have high influence on the adoption of sustainability practices among small and medium construction are resistance from suppliers, poor supplier commitment, lack of trust, cultural difference, lack of human resources capability, lack of knowledge, lack of resources, no capability and no technology sharing. Also, medium construction firms revealed that lack of top management commitment to the adoption of sustainability practices and lack of education have very high influence on the adoption of sustainability practices.

Having evaluated the perceptions of small, and medium construction firms on the barriers to adoption of sustainability practices at firm level, the perceptions of large construction firms were also evaluated. The results show that lack of awareness of sustainability practices, increased cost of product, perception of low economic return and lack of money are barriers that have very high influence on the adoption of sustainability

practices. Other barriers that also have very high influence include lack of partners' trust, lack of top management commitment, no capability, lack of training and lack of education. Large construction firms also revealed another set of barriers that have high influence on the adoption of sustainability practices. These include focus on short- term profitability, lack of integration, no support from government, resistance from suppliers, and poor suppliers' commitment. Others are cultural differences, and lack of human resources capability.

Table 5: Factors influencing the adoption of sustainability practices based on size of firms

Factors Influencing the Adoption of Sustainability in Construction Firms	Small Firms 1-50 N=874				Medium Firms 50-250 N=71				Large Firms 250 And Above N=35				COMBINED N=980			
	Sum	Mean	Rank	Remark	Sum	Mean	Rank	Remark	Sum	Mean	Rank	Remark	Sum	Mean	Rank	Remark
External Drivers of Sustainability Adoption																
Trade union	2399.00	2.74	12	M.I	194.00	2.73	12	M.I	100.00	2.86	12	M.I	2693.00	2.75	12	M.I
Media	2691.00	3.08	10	M.I	198.00	2.79	11	M.I	122.00	3.49	4	H.I	3011.00	3.07	10	M.I
Industry norms	2655.00	3.04	11	M.I	202.00	2.85	10	M.I	115.00	3.29	10	M.I	2972.00	3.03	11	M.I
Regulatory bodies(Law and Regulation)	2958.00	3.38	4	M.I	222.00	3.13	6	M.I	116.00	3.31	9	M.I	3296.00	3.36	4	M.I
Employee unions	2727.00	3.12	9	M.I	210.00	2.96	8	M.I	107.00	3.06	11	M.I	3044.00	3.11	9	M.I
NGO	2779.00	3.18	8	M.I	212.00	2.99	7	M.I	119.00	3.40	6	H.I	3110.00	3.17	8	M.I
Society/ Community	3219.00	3.68	1	H.I	204.00	2.87	9	M.I	117.00	3.34	8	M.I	3540.00	3.61	1	H.I
Focal company influence	2847.00	3.26	5	M.I	223.00	3.14	5	M.I	130.00	3.71	1	H.I	3200.00	3.27	5	M.I
Civil society	2814.00	3.22	7	M.I	230.00	3.24	4	M.I	122.00	3.49	4	H.I	3166.00	3.23	7	M.I
Trade association	2831.00	3.24	6	M.I	236.00	3.32	1	M.I	118.00	3.37	7	M.I	3185.00	3.25	6	M.I
Consumer groups	2972.00	3.40	3	H.I	231.00	3.25	3	M.I	124.00	3.54	3	H.I	3327.00	3.40	3	H.I
Competitor's pressure	3029.00	3.47	2	H.I	236.00	3.32	1	M.I	129.00	3.69	2	H.I	3394.00	3.46	2	H.I
Internal Drivers of Sustainability Adoption																
Top management support	3280.00	3.75	7	H.I	273.00	3.85	5	H.I	139.00	3.97	6	H.I	3692.00	3.77	7	H.I
Human resource management	3419.00	3.91	6	H.I	266.00	3.75	7	H.I	142.00	4.06	4	H.I	3827.00	3.91	6	H.I
Environmental training	3509.00	4.01	3	H.I	269.00	3.79	6	H.I	147.00	3.94	7	V.H.I	3925.00	4.01	4	H.I
Employee empowerment	3450.00	3.95	5	H.I	280.00	3.94	3	H.I	144.00	4.11	3	H.I	3874.00	3.95	5	H.I
Amount of resources allocated to sustainability	3525.00	4.03	2	H.I	293.00	4.13	2	H.I	138.00	4.17	2	H.I	3956.00	4.04	2	H.I
Organisations' cultural values	3598.00	4.12	1	H.I	278.00	3.92	4	H.I	142.00	4.06	4	H.I	4018.00	4.10	1	H.I
Organisations' structure and systems	3487.00	3.99	4	H.I	296.00	4.17	1	H.I	146.00	4.20	1	H.I	3929.00	4.01	3	H.I
Enablers of Sustainability Adoption																
External pressure	3581.00	4.10	3	H.I	294.00	4.14	3	H.I	150.00	4.29	2	V.H.I	4025.00	4.11	3	H.I
Incentives and support by various agencies	3456.00	3.95	11	H.I	287.00	4.04	8	H.I	149.00	4.26	3	V.H.I	3925.00	4.01	7	H.I
Demand of customer and other stakeholders	3427.00	3.92	14	H.I	286.00	4.03	10	H.I	142.00	4.06	7	H.I	3855.00	3.93	14	H.I
Awareness	3528.00	4.04	4	H.I	291.00	4.10	4	H.I	148.00	4.23	4	V.H.I	3967.00	4.05	4	H.I
Top management commitment and support	3655.00	4.18	2	H.I	297.00	4.18	1	H.I	151.00	4.31	1	V.H.I	4095.00	4.18	2	H.I
Sharing resources	3504.00	4.01	5	H.I	290.00	4.08	6	H.I	142.00	4.06	7	H.I	3936.00	4.02	5	H.I
Capacity building and development	4086.00	4.68	1	V.H.I	290.00	4.08	6	H.I	146.00	4.17	5	H.I	4522.00	4.61	1	V.H.I
Joint effort and planning	3500.00	4.00	6	H.I	285.00	4.01	12	H.I	137.00	3.91	12	H.I	3922.00	4.00	8	H.I
Monitoring and auditing supply chain partners	3455.00	3.95	12	H.I	291.00	4.10	4	H.I	135.00	3.86	13	H.I	3887.00	3.97	10	H.I
Competitive and marketing advantage	3467.00	3.97	9	H.I	286.00	4.03	10	H.I	134.00	3.83	14	H.I	3887.00	3.97	10	H.I
Information sharing	3492.00	4.00	8	H.I	286.00	4.03	10	H.I	143.00	4.09	6	H.I	3921.00	4.00	9	H.I
Trust and commitment among partners	3463.00	3.96	10	H.I	278.00	3.92	14	H.I	142.00	4.06	7	H.I	3883.00	3.96	12	H.I
Cost reduction	3436.00	3.93	13	H.I	283.00	3.99	13	H.I	138.00	3.94	11	H.I	3857.00	3.94	13	H.I
Long term partnership	3498.00	4.00	7	H.I	295.00	4.15	2	H.I	139.00	3.97	10	H.I	3932.00	4.01	6	H.I
Barriers to Sustainability Adoption																
Lack of awareness	3608.00	4.13	6	H.I	286.00	4.03	14	H.I	150.00	4.29	7	V.H.I	4044.00	4.13	6	H.I
Increased cost of adoption	3621.00	4.14	5	H.I	297.00	4.18	7	H.I	153.00	4.37	2	V.H.I	4071.00	4.15	4	H.I

Table 5: (*Contd.*)

Factors Influencing the Adoption of Sustainability in Construction Firms	Small Firms 1-50 N=874				Medium Firms 50-250 N=71				Large Firms 250 And Above N=35				COMBINED N=980			
	Sum	Mean	Rank	Remark	Sum	Mean	Rank	Remark	Sum	Mean	Rank	Remark	Sum	Mean	Rank	Remark
Focus on short term profitability	3602.00	4.12	7	H.I	296.00	4.17	9	H.I	146.00	4.17	11	H.I	4044.00	4.13	6	H.I
Perception of low economic return	3565.00	4.08	10	H.I	288.00	4.06	13	H.I	149.00	4.26	8	V.H.I	4002.00	4.08	11	H.I
Lack of money	3580.00	4.10	9	H.I	294.00	4.14	10	H.I	152.00	4.34	4	V.H.I	4026.00	4.11	9	H.I
Lack of integration	3559.00	4.07	12	H.I	298.00	4.20	5	H.I	145.00	4.14	14	H.I	4002.00	4.08	11	H.I
No support from government	3537.00	4.05	15	H.I	284.00	4.00	15	H.I	142.00	4.06	17	H.I	3963.00	4.04	16	H.I
Resistance from suppliers	3552.00	4.06	14	H.I	303.00	4.27	2	V.H.I	153.00	4.37	2	H.I	4008.00	4.09	10	H.I
Poor supplier commitment	3460.00	3.96	17	H.I	277.00	3.90	19	H.I	145.00	4.14	14	H.I	3882.00	3.96	17	H.I
Lack of partner trust	3559.00	4.07	12	H.I	284.00	4.00	15	H.I	147.00	4.20	10	V.H.I	3990.00	4.07	14	H.I
Lack of top management commitment	3625.00	4.15	4	H.I	303.00	4.27	2	V.H.I	156.00	4.46	1	V.H.I	4084.00	4.17	3	H.I
Cultural difference	3122.00	3.57	19	H.I	279.00	3.93	18	H.I	130.00	3.71	18	H.I	3531.00	3.60	19	H.I
Lack of training	3672.00	4.20	2	H.I	299.00	4.21	4	V.H.I	149.00	4.26	8	V.H.I	4120.00	4.20	2	V.H.I
Lack of education	3705.00	4.24	1	V.H.I	309.00	4.35	1	V.H.I	151.00	4.31	5	V.H.I	4165.00	4.25	1	V.H.I
Lack of human resources capability	3559.00	4.07	12	H.I	297.00	4.18	7	H.I	146.00	4.17	11	H.I	4002.00	4.08	11	H.I
Lack of knowledge	3627.00	4.15	3	H.I	282.00	3.97	17	H.I	146.00	4.17	11	H.I	4055.00	4.14	5	H.I
Lack of resources	3599.00	4.12	8	H.I	292.00	4.11	11	H.I	143.00	4.09	16	H.I	4034.00	4.12	8	H.I
No capability	3530.00	4.04	16	H.I	298.00	4.20	5	H.I	151.00	4.31	5	V.H.I	3979.00	4.06	15	H.I
Outdated auditing standards	2668.00	3.05	21	M.I	243.00	3.42	21	H.I	110.00	3.14	22	M.I	3021.00	3.08	21	M.I
Poor demand forecasting	2491.00	2.85	22	M.I	235.00	3.31	22	M.I	111.00	3.17	21	M.I	2837.00	2.89	22	M.I
No information sharing	2760.00	3.16	20	M.I	262.00	3.69	20	H.I	117.00	3.34	20	M.I	3139.00	3.20	20	M.I
No technology sharing	3359.00	3.84	18	H.I	290.00	4.08	12	H.I	126.00	3.60	19	H.I	3775.00	3.85	18	H.I
Valid N (listwise)																

4.4. Kruskal Wallis test for comparing the perception of small, medium and large construction firms on factors influencing the adoption of sustainability practices in the study area

Table 6 shows the result of Kruskal Wallis test that was conducted to test the hypothesis which states that there is no significant variation in the perception of small, medium and large construction firms on factors influencing the adoption of sustainability practices in the Niger- Delta region of Nigeria. The P-value of 0.142 is greater than 0.05 significance level, hence the hypothesis was accepted. This implies that there is no significant variation in the perception of small, medium and large construction firms on factors influencing the adoption of sustainability practices in Niger Delta, Nigeria. It also implies that the firms have common opinion about the factors influencing the adoption of sustainability practices.

Table 6: Kruskal Wallis test for comparing the perception of small, medium and large construction firms on factors influencing the adoption of sustainability practices in the study area

Perception of Small, Medium and Large Construction Firms on Factors Influencing the Adoption of Sustainability Practices in the Niger - Delta, Nigeria	Mean Rank	Decision @ 0.05 Sig lev.
SMALL FIRMS	79.66	
MEDIUM FIRMS	85.17	
LARGE FIRMS	97.67	
Chi-Square	3.898	
D.F	2	
P- Value	.142	Accept

4.5. Discussion of findings

The external drivers that have high influence on the level of adoption of sustainability

practices among small, medium and large construction firms in Niger Delta, Nigeria are society/ community, competitors' pressures and consumer groups, focal company influence, media and non- governmental organisations (NGO). This shows that the people living in the society or community where the construction firms operate can be a driving force that makes the firms to implement sustainable construction practices in the immediate environment. This is not unconnected with the various agitations in Niger Delta by the people, demanding that the construction firms should implement sustainability practices in the course of their operation in the Niger- Delta region of Nigeria. The media and various non- governmental organisations also play crucial roles in ensuring that the environment and the people are not over exploited by the firms in the course of carrying out their construction activities. This study is in agreement with Linnenluecke and Griffiths (2010), and Epstein (2008) who stated that external drivers of sustainability adoption include factors such as regulations and standards set by government or pressures resulting from consumer groups and the community.

Internal drivers that have high influence on the adoption of sustainability among small, medium and large construction firms in the Niger –Delta region of Nigeria include organisations' cultural values, amount of resources allocated to sustainability, environmental training, and organisations' structure and system. Others include employee empowerment, human resource management and top management support. Organisation cultural values play key roles in the way different organisations carry out their operations. The act of doing the right things is dependent on the cultural values of the firms. The amount of resources allocated to sustainability is another driver that has high influence. Implementation of sustainability practices requires adequate allocation of resources to sustainability by the firms. The willingness of the top management to support adoption of sustainability is also very important because this will drive the construction firms to incorporate sustainability into the plans and activities of the firms. This study agrees with Bansal and Roth (2000) that stressed the role of organisations top management. According to them, top management team members are instrumental in encouraging firms to evaluate their role in society, since they are the principal determinants of ethical sustainability decisions, the values they espouse will impact the organisations' sustainability orientation. This study aligns with Epstein (2008), who noted that the resources of an organisation is an important driver that enhances the adoption of sustainability practices because organisations need financial resources to implement the various sustainability programmes, pay and train sustainability staff. Also, the amount of financial and human resources allocated to sustainability, significantly impacts the ability to adopt sustainability practices among the construction firms.

This study also shows the enablers that have high influence on the adoption of sustainability practices among small, medium and large constructions firms in Niger Delta. These include sharing of resources, capacity building and development, joint effort and planning, monitoring and auditing of supply chain partners, competitive and marketing advantage. Others are information sharing, trust and commitment among partners, cost reduction and long- term partnership, external pressure, incentives and support by various agencies, demand of customer and other stakeholders, awareness and top management commitment and support. However, it was also revealed that external pressure, incentives and support by various agencies, level of awareness of sustainability practices and top management commitment and support have very high influence on the adoption of sustainability practices among large construction firms in Niger Delta, Nigeria. This study agrees with Bansal and Roth (2000) who stressed the role of organisations top management. According to them, top management team members are help to encourage firms to evaluate

their role in their societies, since they are the principal determinants of ethical sustainability decisions, the values they espouse will impact the organisations' sustainability orientation. This study also concurs with Seuring and Muller (2008); and Matos and Hall (2007) that posited that incentives by different agencies such as the government, focal firm influence, enable the adoption of sustainability practices among the construction firms. This study also agrees with another group of scholars such as Rocha, Searcy, and Karapetrovic (2007); Zhu and Sarkis (2004) who opined that external support from focal firm, top management and government, mutual collaboration, integration of resources, sharing of knowledge, and joint development activities to enhance mutual trust and commitment enable the adoption of sustainability practices among construction firms. Furthermore, this study agrees with Markley and Davis (2007); and Ageron *et al.* (2011) who revealed that capacity building and development is an important factor that enhances the adoption of sustainability practices among construction firms.

This study also evaluated the barriers inhibiting the adoption of sustainability practices among small, medium and large construction firms operating in Niger-Delta region of Nigeria. The study reveals that Lack of awareness of sustainability practices among the construction firms is one of the inhibitors that have very high influence on the adoption of sustainability practices. Other barriers that have very high influence on the adoption of sustainability practices among small, medium and large construction firms in Niger-Delta region of Nigeria are increased cost of production, focus on short term profitability, perception of low economic return, lack of money, lack of integration and no support from government. This shows that more awareness on sustainable development and sustainable construction in particular has to be created among the firms. The results in this study indicate that the fear of incurring extra production cost discourages the construction firms from implementing sustainable construction practices. Another concern is the extreme concentration on short term profitability by the firms. Majority of the firms want to make profit within the shortest possible time without considering the long term benefits of implementing sustainability practices. Some of the firms also have the notion that they will have low economic return when they implement sustainable construction practices. It is also of great importance that government shows support by creating an enabling environment for implementation of sustainable construction practices.

Furthermore, this study reveals that lack of top management commitment to the adoption of sustainability practices and lack of education also have very high influence on the adoption of sustainability practices among small, medium and large construction firms. Lack of top management commitment to the adoption of sustainability practices is a critical issue because the level of adoption of sustainability practices is greatly influenced by the discretion, willingness and commitment of the top management of the construction firms to sustainable construction practices. This study shows that resistance from suppliers, poor supplier commitment, lack of trust, cultural difference, lack of human resources capability, and no technology sharing have high influence on the level of adoption of sustainability practices among small, medium and large construction firms operating in Niger- Delta region of Nigeria. This study is in agreement with Pennell, Suresh, and Chinyio (2013) who identified problems of supply chain management, problems of adaptation to innovation, lack of top management commitment, lack of knowledge of sustainability among stakeholders and undue focus on cost as barometer of success as factors inhibiting the adoption of sustainability practices.

5. CONCLUSION

This study concludes that there is no significant difference in the perception of small, medium and large construction firms on factors influencing the adoption of sustainability practices in the Niger- Delta region of Nigeria. This implies that the firms have common opinion about the factors influencing the adoption of sustainability practices. In line with this result, this study concludes that the first three drivers that have high influence on the adoption of sustainability practices among small, medium and large construction firms in the Niger- Delta region of Nigeria are organisation's cultural values, amount of resources allocated to sustainability and organisation's structure and system. This study also assessed the enablers of adoption of sustainability practices among the firms and concludes that capacity building and development is a critical factor that has very high influence on the adoption of sustainability practices among small, medium and large firms. Furthermore, it concludes that top management support and external pressure have high influence on the implementation of sustainability practices among small, medium and large firms include. This study also concludes that lack of education and lack of training have very high influence on the adoption of sustainability practices among small, medium and large firms. It is concluded by this study that lack of top management support for sustainable construction practices and no technology sharing with regards to sustainable construction practices among firms highly inhibit the adoption of sustainability practices among small, medium and large construction firms in the Niger- Delta region of Nigeria.

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