Moderating Effect of Government Policy on the Relationship between Organizational structure and Construction Waste Management

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Abstract The generation of construction and demolition waste in Nigeria is a pressing issue that needs considerable attention, where efficient construction and demolition waste management is very limited due to various constraints. This paper is an empirical assessment that aims to examine the effect of government policy on the relationship between organizational structure and construction waste management among construction organizations in Nigeria. Based on the proposed model, a quantitative method was employed to obtain data from 310 Managers in construction organizations, out of which one hundred and seventy eight (178) were returned and used for the analysis. The tool used in the data analysis for this study was Smart PLS. The Cronbach’s Alpha value of all the variables ranges from 0.616 - 0.903. The findings of the study indicate that all the hypotheses are significant at 5% significance level While government policy was found to moderate the relationship between formalization and construction waste management, it does not for centralization.

Keyword: Organizational structure, Government policy, Construction waste management

1 INTRODUCTION
Waste management includes the collection, transporting, storage, treatment, recovery and disposal of waste, as reported by Gilpin (1996). Studies have shown that the inappropriate construction waste disposal has given birth to high rates of morbidity and mortality in developing nations, whereas waste management has been a major challenge in these countries. However, the waste generation per unit per output is much greater than the developed countries due to the inefficiency in construction processes (Oluwaleye, 2012). The problem of the construction waste management has become a national issue of concern to all major stakeholders in the construction organizations. Over a decade, studies were conducted by various authors based on the problem of waste management to give a better understanding of construction and demolition waste management issues. For instance, an investigation was conducted on the practice and advantages of the on-site waste reduction as well as the construction waste technology for the reuse of construction and demolition waste during site investigation (Thomas, 2011).

Issues related to construction waste management were also put into consideration by other academic writers. For example, Wang and Yuan, (2008) made the efforts in treating the on-site complexity of waste management through the use of a system dynamics approach. Furthermore, the use of traditional construction techniques and the lack of sufficient Waste Management skills are the problems associated with waste management. In another study, Wang and Yuan, (2006) revealed that the lack of motivation executes the construction & demolition of waste on-site. In addition, there is a need of government rules on Waste Management relatively with low charges of the landfill in China (Yuan, 2008).

In addition to the modular plan, overestimation is another critical issue that can cause waste generation. Most times, large quantities of materials brought to the construction site are not often used, or are stolen (Vleck, 2001). Changes in architectural design have been established as a significant source of waste in construction (Osman et al., 2008). Therefore, it was discovered that “four significant sources of site waste out of eight are from project design based on major findings in Singapore (Ekanayake and Ofori, 2004). The government has not promoted the recycling of aggregates for concrete and paving blocks (Lam, 2011). Furthermore, Wang, (2011) stated that legislative powers are not employed by the government to compel the construction players to embrace the recycling process. Nevertheless, this resonates with the findings of (Oluwaleye, 2012), that the instrument used in compelling the contractors and developers to reduce waste is the waste landfill charges which are not effective in Nigeria.

The organizational structure of an organization is the framework for the facilitation of communications and efficient work processes. Also, unequal Workload, Poor organizational structure and the lack of teamwork lead to unequal distribution of tasks among departments or divisions, (Fredrickson, 1986). Among the
dimensions of organizational structure include the formalization, which provides proper direction to employees and reduces ambiguity (Fredrickson, 1986). A high degree of formalization actually leads to an innovativeness reduction because employees used to behave in a certain manner. A formalized structure construction waste management organizations in Nigeria are associated with reduced motivation and job satisfaction as well as a slower pace of decision making. An organization with a centralized structure, has limited authority over the staff employees to carry out tasks without prior approval. The centralized structure focuses on top-down management, whereby the top executives communicate with the middle managers, who then inform the first-level managers, who in turn instruct the staff on what and how to do it. This organizational structure is bureaucratic in nature, where the employees have little freedom. Centralized organizations are known for a decreased span of control on a limited number of employees to report to a manager, who then reports to the next management level, and so on up the ladder to the head (Orlikowski, 2000). In Nigeria, the enforcement of waste management laws (waste management policy) has been a major problem. Apart from the saying that in vacuum laws do not operate, the management and regulation of the waste, through the enforcement have been beset by a host of problems, and they have met with limited success (Nwuofo, 2010). Meanwhile, the government policy on construction via regulation has been identified as rarely being the most important factor influencing the construction waste management. Investigation has revealed that policies, regulations and legislations on construction waste management were not enforced, nor were they well understood and accepted by Nigerians (Afun, 2007). For instance, more than 80% of Nigerians do not understand what sustainable waste management is all about nor do they know the penalty of their poor waste disposal attitude (Afun, 2009).

There is no doubt, that there is a neglect and ultimate failure in waste management in Nigeria. The gloomy consequences are a source of anxiety to Nigeria’s public health, aesthetics, self-worth and human well-being. It appears that governments and regulators in Nigeria see issues of waste generation and safe disposal of wastes as intractable and unnecessary. Yet, what is obvious is that the refusal to adopt appropriate measures to address the root cause of the construction waste problem will incur severe penalties at a later time. This may be in the form of resources unnecessarily lost and the overwhelming adverse impact on the environment and on Nigeria’s public health and safety. The Nigerian government should know that the penalty for poor waste management cannot be avoided or lessened with a promise to do something at a later time (Afun, 2009).

In addressing the research gap in this study, the moderating effect of government policy on the relationship between organizational structure and construction waste management was examined in a sample of managers of construction organizations in Nigeria. The findings of this study can be of help to the management, and other stakeholders in the Nigerian construction organizations in the creation of better understanding of the type of the structure and government policies to be put in place to enhance effectiveness in the organization.

2 LITERATUREREVIEW

2.1 Organizational Structure

Organizations as indicated by Daft (2007), are viewed as “social entities that are goal - directed, designed, as deliberately structured and coordinate activities, system linked to the external environment”. “The key element of an organization is not a building or a set of policies and procedures; organizations are made up of individuals and their relationship with each other. An organization exists when individuals interact with each other to perform important functions that help attain goals” (Daft, 2007). The organizational structure is described as how an organization can be assembled. The organizational structure is described as how job tasks will be coordinated officially, grouped and divided. Thus, organizational structures are institutionalized. The way and manner of how individuals will interact with one another, the method of communication flow, method of rewards distribution, also the method of how authority relates were defined by Daft (2007). According to Anand and Daft, (2006) “organizational structure provides the basic template for the continuance of an organization’s society, norms, culture, value philosophies and informal activities. Also, according to the article “What is the Right Organization? By Duncan (1976) "organizations are undergoing change". Meanwhile, the organizational structure development is categorized into divers’ periods that moved from medium to near horizontal.

Therefore, is difficult when distinguishing between good and bad, in the organizational structures of waste management because of the limited room for conducting tests, and the difficulty in accomplishing change, yet within fairly narrow limits. Any time that the structural problems subsist, their origin is always obvious, because of their solution; however, the improving achievement is certainly hard to realize for the reason of regulatory control. On the other hand, some organizations are more successful, based on their work aside their organizational structures. The strategies, for instance empowerment and flexibility further differentiate one management approach from another. Once more, this is more or less an issue of structures. Nevertheless, by experiencing the discrepancy caused by different strategies it shows that the real benefit will be gained (Duncan, 1976).
The configurational dimensions of an organization are presented normally as an organizational chart. The structural dimensions include the extent of formalization and specialization. Centralization refers to the centrality of decision making at the top while specialization refers to the specialized skills of personnel in the entire functional areas of the organization (Subramanian & Nilakanta, 1996). The current study’s organizational structure is conceptualized as formalization and centralization in line with (Subramanian & Nilakanta, 1996), that seeks to examine the moderating effect of the government policy on the relationship between organizational structure and construction waste management among construction organizations in Nigeria.

2.1.1 Formalization
According to Martin, formalization is the degree to which rules and procedures are followed in an organization. Across various organizations the element varies greatly. For instance, the arrival and departure times to and from work are specified to the minute in any organization, with time clocks used to control and degenerate conduct. In different organizations it is comprehended that employees will spend sufficient time on the job to accomplish the work. In a few organizations rules and procedure cover most activities, while in others, people are permitted to exercise their own judgment.

Jaworski & Khili (1993) in their studies described formalization as the extent to which rules, penalty, authority, relations, roles, line of communications, norms and procedure are described within the organization. Fundamentally, it can be seen as a way of maintaining the standards and rules that are guiding the employees while accomplishing the organization’s goals (Auh and Menguc., 2007). Anderson, 2005 Pertusa Ortega, Zaragoza-Saez, and Claver-Cortes, (2010) in this study asserted that formalization is the extent to which decision and working relationships are controlled by formal rules and standard policies and procedures in construction waste management organizations. Furthermore, the organization of the construction waste management with a formal structure will require the establishment of specific rules and procedures that indicate what needs to be done by the staff members (Katsikea, Theodosiou, Perdikis, and Kehagias, 2011). In addition, the organizational setup of this nature prevents staff members in the construction waste management organization from carrying out different activities in the performance of their daily work (Aiken and, Hage., 1971).

2.1.2 Centralization
Centralization is said to be the process by which the activities of an organization, mostly those regarding planning and decision making get to be given focus, within a particular location or group (Pertusa-Ortega, et al. (2010)). Centralization is the junction of spans of control, decision making, and communication within an organization. The top executives make decisions in a centralized organization, or on the basis of preset policies. These decisions or policies are then enforced through several levels of the organization after progressively broadening the control pending when its base level will be achieved (Pertusa-Ortega, et al., 2010). Martin & John characterized “centralization as the point to which marketing planning –related activities and decision are concentrated in a few positions”. In the construction waste management organization perspective, a centralized structure confines the manager’s authority regarding decision-making and the sole decision power lies under the control of the chief executive officers (CEO) or directors. Therefore, centralization keeps the staff members and also the managers to be flexible or to take the initiative in performing their duties (Katsikea, et al., 2011). Certain operatives occupy various positions of management at various points in the process to ensure coordination (Fischer, et. al., 2012). This is in line with the study of (Katsikea, et al., 2011).

2.2 Government policy
According to Anderson (2005) the policy is the guiding principle that is used to establish organizational regulations. Furthermore, policy is a course of action that leads or influence decisions. Also, it is used as a guide for making judgment following an assigned event within the structure of goals, objectives and the management philosophies as defined by the senior management. According to Nidirect government services, (2014) the term “government policy” is described as the programme of action which aim is to change a definite state of affairs. Therefore, the government uses policies as the starting point for them to get a course of action to execute and to contribute a real life change. Hence, policies are used to tackle a wide range of issues. In fact, policies can even change the amount of taxes and individual or organization pay, parking fines, immigration laws and pension, as well as the landfill taxes. Similarly, the government can change the law, when a policy is created and made to affect the people or particular issues or everyone in the society at large.

Regulation and control are not the only types of instrument available for achieving waste management goals. Other options include economic incentives of the internalization of externalized costs, according to the “polluter pay” principle and non-economic motivations based on environmental awareness and solidarity of the population. Authorities should consider the full range of available instruments within the policy framework”. Therefore, the ‘pay as you throw’ (PAYT) waste management is referred to as the use-based pricing, variable rate pricing, or unit pricing, which has emerged as a way of reducing the waste generated. Under the PAYT
waste management system, users are charged a fee for waste collection and disposal. In general, combining the user fees ensures that those responsible for generating the waste are responsible for disposal costs (USEPA, 2009). In addition, the shifts in some of the responsibility of waste minimization to citizens and producers are a development that is very much welcome (Park, 2009).

The methods include the waste management regulation combination, economic instruments and voluntary agreements, and out of these only one has been implemented by the government to reduce the waste generated to achieve the target on ethical, social, and environmental performance for the sustainable development. The UK government is called to play the roles in attracting the stakeholders to develop the country by way of embedding the environmentally friendly concept (Osmani, 2012).

The implementation of proper waste management can be improved by client preference and enforcement of existing laws. The Professionals under the construction waste management were found inefficient, and furthermore, the adoption practice hampered by ineffective legislation and Government incentives in encouraging the teachings of sustainable construction. Euonima et al (2009) summarized a number of economic instruments for general waste management, including user charges, product charges, taxes, tradable, transferable allowances, credits, deposit-refund schemes, non-compliance fees, performance bonds, liability payments and subsidies. With respect to the construction waste management, landfill levy, tax on aggregate and incentives affecting construction waste are discussed in detail. In particular, landfill taxes in EU countries were investigated and compared to explore the potential use of landfill taxes (Fischer et al. 2012). In Nigeria, the Federal Ministry of Environment has the following instruments of intervention in place, to tackle the problem of environmental degradation, including waste management.(1)The revised policy on the environment, 1999; (2) the National Agenda 21 published in 1999, which touched on the various cross-sector areas of environmental concern and which maps out strategies on how to address them, and (3) these instruments complement what has existed in the form of guidelines and standard for the environmental pollution control in Nigeria and other regulations that deal with effluents, industrial pollution, waste management and environmental impact assessment, (FME, 2003).

Among the federal environmental protection or FEPA’s instructions in combating environmental degradation are the Waste Management Regulation S.I.9 of 1991 and Environmental Impact Assessment (EIA) Decree No. 86 of 1992. FEPA policies regulate the collection, treatment and disposal of solid and hazardous waste for municipal and industrial sources and they make the EIA mandatory for any major development project likely to have an adverse impact on the environment (FME, 2003).

There is also an environmental sanitation edit of 1997 that declared one Saturday in a month to be used for cleaning the environment for 3 hours. This edit is still in force and also still observed in most cities in Nigeria. The post - 1988 environmental laws and regulation have continued to prevail without any change (FME, 2003). The law takes away some of our personal freedom, but in return it gives us most of our protection (Bruce, 1983). Accordingly, the legislation can play an important role in achieving a high standard of cleanliness and reducing the waste management burden in Nigeria. The use of regulations and legislations is already very effective in Calabar, Minna, Lagos and Abuja metropolis among others. It is pragmatic that the following forms of regulation and legislation could make a considerable contribution to solving construction waste problems in Nigeria.

They include: (1) Dumping of waste in the following areas - rivers, roads, drains, and illegal areas. (2) Littering of waste by any person and abandoning old vehicles while offenders should pay fines to the government for environmental cleanup. (3) The management of construction materials as well as the disposal of construction and demolition debris. Offenders should be fined. (4) Traffic waste for both vehicles and commuters at motor parks and along highways. (5) The use of litter bin in every home and office and the disposal of its contents in approved sites for separation, recycling and treatment. (6) Education on waste management in schools and the grass-root level, e.g. Local governments (Afun, 2007).

The commitment of the government to construction waste management can be measured through the construction waste management policies, such as the level of resources to be committed to the construction waste management sector (Afun, 2007).

2.3 Construction waste management

Waste management is the "generation, prevention, characterization, monitoring, treatment, handling, of reuse and residual disposition of solid wastes"(Waste Management, 2013).There are various types of solid waste, including municipal construction, residential, institutional, commercial), agricultural, and special (health care, household hazardous wastes, sewage sludge). The term usually relates to materials produced by human activity, and the process is generally undertaken to reduce their effects on health, the environment or the aesthetics""(Waste Management, 2013).

Minks (1994) described waste management as a comprehensive, integrated, and rational system approach towards achievement and maintenance of acceptable environmental quality and support of sustainable development. Furthermore, he also regarded waste management as a tool for controlling disposal costs of
construction waste, and also facilitating the examination of other alternative disposal methods, for instance recycling and reusing so as to reduce waste that will finally end in landfills (Minks (1994)). In addition, construction & demolition waste can be regarded as the surplus materials emerging from any land excavation or formation, civil or building construction, road work, building, remodeling or demolition activities (EPD, 2004).

Similarly, construction and demolition waste is usually defined as waste created from construction, renovation and demolition activities that include site clearance, excavation, formation, civil and building construction, demolition, roadwork, and building renovation (Shen et al., 2004).

Construction waste management is a crucial part of sustainable building. Moreover, waste management means eliminating where possible; minimizing where achievable; and reusing materials which may not become waste (Napier, 2012). He added that the reduction, recycling, and reuse of waste has been identified in Solid waste management practices as very important for sustainable management resources.

The statistics in the United Kingdom (UK) show that, waste ranging between 335 million tons and 220 million tons are from construction and demolition waste (CISP 2007). In the UK, construction and demolition waste generated about 120 million tons per annum and 13 million tons of unused material (Osamani, 2012).

The practices followed are waste quantification, waste segregation, and the implementation of the 3Rs (reduce, recycle, and reuse). The major challenges associated with the implementation of proper waste management practices in developing countries including Nigeria are construction sites congestion, sites in greatly built-up areas which have no ability to have an alternative storage site for materials, the lack of ownership of waste due to the presence of multiple contractors on the construction site and the lack of awareness and education among the construction workforce (Ben, 2013).

Dania (2007) in a study of construction material waste management practices of construction firms in Nigeria revealed that the universal practice of Solid Construction Waste Management and site waste management is still inadequate and it necessitates serious improvement. Donia studied a waste management plan at construction sites in Nigeria, and in his studies, he identified staff training as one of the major factors among the ten identified factors in achieving effective implementation of a waste management plan. Similarly, Shen et al. (2004) evaluated the form, causes and factors incidental to construction waste management control, where they also indicated that most construction firms, aside from their failure to calculate waste indices that could assist them to determine the amount of waste that could be generated on site, also do not carry out a sorting exercise that could help them identify an economic advantage associated with the waste stream.

Environmental Waste Management (EWM) (2006) reiterated that the procedure for waste management comprises of a material reduction in the design and planning stages, dwindling scrap and waste at the building site, reusing materials on site, and recycling materials that are unusable. Routines and potential choices to conventional construction strategies, planning practices, and waste disposal alternatives fuse the ideas of advance waste management procedures and in addition their cost and benefits are used to address the plan. There are five significant steps in the structure: (1) Reduce. (2) Reuse. (3) Recycle (4) Recover. (5) Disposal (Hagger, 2007). Finally, the most vital step in reducing the construction waste management problem is decreasing the quantity of waste created. The most imperative step is to reduce, reuse, recycle and to dispose (Kibert and Languell, 2000).

Organizational structure and construction waste management.

Previous studies have revealed that decentralized and informal organizational structures can well assist in attaining the effectiveness of construction waste management. Therefore, according to Aiken & Hage (1971) the centralization of authority is established to be a significant obstacle to the effectiveness of an organization that is centralized.

Similarly, Cohn & Turyn (1980) suggested that the formalization and centralization can discourage effective implementation in the construction waste management. On the other hand, it was hypothesized that the formalization is the degree to which decision making in an organization is given attention at the top of the hierarchy.

According to Subramanian & Nilakanta, centralization is referred to as the decision-making and the training concerning a functioning department in an organization. Therefore, formalization is considered as job written descriptions, rules, and procedures that guide the employees’ actions in the organization.

It has been established by Subramanian & Nilakanta (1996) that the numerous parts of organizational structure do have an influence on effectiveness. Therefore, structure is classified into categories of: (1) the organic structure (2) mechanic structured kind of organization. Hence, the organic structure is that type of structure where there is an integrated specialization, while the employees work together, tasks force coordination; and the mechanism for the primary integration is the teams. Meanwhile, the mechanistic structured organization centers on the individual specialization, where the employees work separately and they specialize in a single function, and also with a well-defined hierarchy of authority. In addition, Duncan (1976) in his studies proposed that organization as an organic structure will, therefore, be likely to enhance the construction waste management commencement, while the mechanistic structured type of organization is the new look.
For this reason, measuring organizational structure is in the direction of the relationship with organizational effective performance (Bedeian, 1986). Therefore, in determining the effectiveness of an organization, Bedeian (1986) [28] stated that organizational efficiency in the construction waste management can be an essential subject in the study of organizations, where the organizational theory is one of the most cited and yet least understood concepts. He further continued that failing to consider the organization’s goal, constituents, and characteristics can lead to faulty assumptions of performance.

Zaltman, Duncan, and Holback (1973) disagreed with the fact that the bureaucratic and mechanistic kind of structure discourages the organizational ability to be efficient. On the contrary, the bureaucratic structure cuddles simplified tasks, hence, the centralization of authority and power would tend to encourage efficiency (Thompson, 1965) [43]. Furthermore, organizations that have a mechanistic structure can be found to be ineffective. Similarly, Aiken and Hage disagreed that the organizations that practice an organic kind of structure are, therefore, likely to be more innovative. Hence, such effective organizations will lose the structure that places less emphasis on a thin definition that has overlapping responsibilities and duties. Nevertheless, Rogers (1983) recognized that the complexity, size, and organizational slack positively correlate to the organizational level of efficiency. The formalization and centralization are related negatively to the organizational efficiency of construction waste management. Equally, the formalization and centralization therefore, influence the capability of construction organization efficiency. Hence, in this study, as far as the construction waste management organization’s capability and efficiency are concerned, the organic structure has chosen to adopt the mechanistic structure since it improves the organizational efficiency in relation to the construction waste management.

2.5 Conceptual framework.
The relationship between organizational dimensions and construction waste management with the moderating role of government policy is presented in this framework

![Organizational structure](image)

**3 HYPOTHESES**
We hypothesize that:

H1: Formalization is significantly related to the construction waste management
H2: Centralization is significantly related to the construction waste management
H3: Government policy significantly moderates the relationship between formalization and construction waste management
H4: Government policy significantly moderates the relationship between centralization and construction waste management

**4 METHODOLOGY**
Methodologically, this study adopts a cross sectional and quantitative approach, and thus, the stratified random sampling was employed. Data collection was performed using a structured survey questionnaire from the managers of construction organizations in Abuja, Nigeria. All the questions were adapted from the previous literature and the items for measuring formalization and centralization were adapted from (Kamaruddeen, 2011). A 5 point liker scale scoring format (1 = Strongly disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; and 5 = strongly agree) was employed for all the items. The statistical package used for the data analysis is Smart PLS (SEM). The questionnaires administered in this study totaled 310, out of which 178 were duly completed, returned and retained for the analysis, altogether representing 57.4% response rate.
4.1. Statistical Analysis and Result
Smart PLS 2.0 statistical software was used for the data analysis in this study, primarily in the validity and reliability testing for measures of the construct. This model consists of formalization, centralization, construction waste management and government policy.

4.2. The measurement model (Outer model)
The measurement model is mainly used to filter the data, is also used to assess and confirm the constructs’ validity and reliability prior to the establishment of goodness, and these are used to examine the reliability of indicators. The acceptable loading is 0.4 and for internal consistency 0.7 level are accepted. According to Chin (1998), the composite reliability and the Cronbach’s Alpha and Average Variance Explain (AVE) must be 0.5 and above, and for the convergent validity and factor loading discriminate validity used, the item(s) loading that is higher on the other construct than their construct should be deleted (Chin, 1988; Hair et al., 2010). Consequently, all the adapted instruments in this study are reliable, based on the fact that all the items are above 0.4. The items loaded on their individual construct range from 0.682 to 0.937; they are acceptable since they are above the cutoff mark value of 0.4 which is in line with (Chin, 1988; Hair 2011). Similarly, the values of the composite reliability range from 0.826 to 0.973 and these are greater than the Value of the benchmark 0.7 [Hair et al., 2011]. The convergent validity is determined using AVE. The AVE ranges from 0.567 to 0.849, which is above the minimum cutoff value of 0.5 (Hair, 2011). Lastly, in determining the discriminate validity, the average variance extracted (AVE) is compared to the correlation squared of the interrelated variables of the constructs concerned, where it also indicates the adequate discriminate validity. Table 1 below shows the factor loading, and table 2 shows the discriminate validity.

<table>
<thead>
<tr>
<th>Items</th>
<th>Factor Loading</th>
<th>Composite Reliability</th>
<th>Cronbach’s Alpha</th>
<th>AVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOR 02</td>
<td>0.800</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FOR 03</td>
<td>0.682</td>
<td>0.796</td>
<td>0.616</td>
<td>0.567</td>
</tr>
<tr>
<td>FOR 05</td>
<td>0.771</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEN01</td>
<td>0.937</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEN02</td>
<td>0.905</td>
<td>0.918</td>
<td>0.824</td>
<td>0.849</td>
</tr>
<tr>
<td>GP01</td>
<td>0.870</td>
<td></td>
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<tr>
<td>GP96</td>
<td>0.911</td>
<td>0.884</td>
<td>0.741</td>
<td>0.793</td>
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<tr>
<td>WREC01</td>
<td>0.790</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>WREC02</td>
<td>0.855</td>
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<td>WREC04</td>
<td>0.846</td>
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<tr>
<td>WREC05</td>
<td>0.754</td>
<td>0.924</td>
<td>0.903</td>
<td>0.635</td>
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<td>WRED01</td>
<td>0.741</td>
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<td>WRED03</td>
<td>0.719</td>
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<td>WRED05</td>
<td>0.793</td>
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</table>

<table>
<thead>
<tr>
<th>CEN</th>
<th>FOR</th>
<th>GP</th>
<th>CWM</th>
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</thead>
<tbody>
<tr>
<td>CEN</td>
<td>0.921</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FOR</td>
<td>0.584</td>
<td>0.753</td>
<td></td>
</tr>
<tr>
<td>GP</td>
<td>0.659</td>
<td>0.529</td>
<td>0.890</td>
</tr>
<tr>
<td>CWM</td>
<td>0.753</td>
<td>0.628</td>
<td>0.792</td>
</tr>
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</table>
4.3. Structural Model

Structural model: After the construct validity and the reliability have been achieved as required in the measurement model, the next step is to assess the structural model result, before the interpretation of the path coefficient. The PLS algorithms and Bootstrapping were run to test the proposed hypotheses of the study by using smart PLS 2.0. See Table 3 below which presents the hypothesis testing results.

Table 3: Hypotheses Testing Results

<table>
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</thead>
<tbody>
<tr>
<td>H1</td>
<td>FOR-&gt;CWM</td>
<td>0.288</td>
<td>0.04</td>
<td>6.10</td>
<td>0.05</td>
<td>Supported</td>
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<tr>
<td>H2</td>
<td>CEN-&gt;CMW</td>
<td>0.585</td>
<td>0.04</td>
<td>12.72</td>
<td>0.005</td>
<td>Supported</td>
</tr>
</tbody>
</table>

Figure 2 Measurement model
4.3.1. Testing the moderating effects of government policy

In investigating the moderating effects of the government policy on the relationship between formalization and centralization as dimensions of (organizational structure) and construction waste management, Smart PLS software package was used for this study to examine the direct effects among the latent variables. As can be seen in table 4, the results show that government policy (GP) has a significant moderating effect between formalization (FOR) and Construction waste management (CWM) at the significance level of 5%. Meanwhile, it does not support the moderating effect between centralization (CEN) and construction waste management (CWM).

<table>
<thead>
<tr>
<th>Hypo.</th>
<th>Relationship</th>
<th>Beta</th>
<th>Std. Error</th>
<th>T-stat.</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>H3</td>
<td>FOR*GP -&gt; CWM</td>
<td>-0.52</td>
<td>-0.23</td>
<td>2.23</td>
<td>Supported</td>
</tr>
<tr>
<td>H4</td>
<td>CEN*GP -&gt; CWM</td>
<td>0.13</td>
<td>0.24</td>
<td>0.53</td>
<td>Not supported</td>
</tr>
</tbody>
</table>

From Figure 4, the two (2) interaction terms were interpreted. The benchmark value for this particular test will be 1.645 (α = 0.05) and 2.33 (α = 0.01). As shown in Figure 4, the FOR*Government policy-> Construction Waste Management (t <2.23) so it is significant, CEN*Government policy-> Construction Waste Management (t > 0.53) so it is not significant at 0.05 level.

4.4. Predictive Relevance of the model

Cross validation redundancy is used in evaluating predictive relevance. The Smart PLS blindfolding procedures were used to generate cross validation commonality and cross validation redundancy. Therefore, the value of the cross validated relevance of this model is 0.453, which resonates with Stone (1974) and Geisser (1974), who stated that for a model to have predictive relevance, the $Q^2$ has to be above zero. Furthermore, a benchmark standard for judging the predictive relevance of a model using the value of cross validation relevance is as follows: 0.02 is small; 0.15 as medium; and 0.35 as Large. Therefore, the model has predictive relevance based on Chin (1998), Geisser (1974) and Stone (1974).
5 CONCLUSION
We have examined the moderating effect of government policy on the relationship between the organizational structure conceptualized by formalization (FOR), centralization (CEN) and construction waste management (CWM) as the objective of this study. All the hypotheses were supported based on the statistical findings. The first hypothesis, formalization and construction waste management (FOR – CWM) is significant (β = 0.288, t = 6.10, P-Value = 0.05), and this is consistent with the finding of Shehu & Mahmood (2014) which is significant and positive; however the concept of formalization was used in different contexts, their finding is in line with that of the current study. Therefore, this entails the fact that the maximum level of competency, efficiency and effectiveness of the construction waste management will be achieved with a higher level of formalization. The second hypothesis supported the finding that the CEN – CWM relationship is significant (β = 0.585, t = 12.72, P = 0.05), which is in line with the previous finding gathered by Kamaruddeen et al. (2011) that reported a positive relationship in centralization. Consequently, there is the implication that the rightness of government policy to formalization brings maximum efficiency also effectiveness in the performance of the construction waste management organization (β = -0.52, t = 2.31, P-Value = 0.05). Therefore, the argument that GP moderates the relationship between CEN and CWM, (β = -0.13, t = 0.53, P-Value = 0.05) was not supported.

The contribution made by this study is both theoretical and practical; the extension of the existing literature about FOR – CWM, CEN – CWM is the theoretical contribution of this study. Additionally, this is one of the few studies that examine the moderating effect of the government policy on the relationship between organizational structure and construction waste management in this study. Practically, the result of this study will help stakeholders in policy and decision making construction waste management practice, for instance: governmental and non-governmental organizations. The managers will understand the importance of integrated and efficient ways and the manner of implementing effective waste management practice. Lastly, for future research a larger sample and Smart PLS-SEM 3.0 should be used for the re-validation of the model based on the suggestion in this study, which is proposed to be conducted in the near future.

6 RECOMMENDATIONS
Based on this study, it is recommended that:
1. Sustainable construction in Nigeria should be part of the curriculum in the educational institutions and also it should be included in the educational activities of professionals in the building industry, where the professional bodies should employ conferences and workshops to educate practicing professionals.
2. Specific legislation governing the handling and disposal of construction wastes should be introduced by the government and followed by a strict monitoring to ensure compliance; hence, it will enhance both the efficiency and effectiveness.
3. The government should set up incentive schemes to reward organizations who embrace construction waste management with a holistic understanding of the structure.
4. The Construction Waste Management in Nigeria should be everybody’s concern in the construction industry and the government. One single governmental agency cannot cope effectively with the volume of the construction waste generated in Nigerian construction sites.
5. The decentralization of authority should be encouraged among organizations.
6. Training and re-training of staff in the construction organization must be ensured to achieve a better effective construction waste management practice.
7. There should be a division of labour to better enhance the staff performance on the job in relation to the effectiveness in the construction waste management.
8. Agencies and organizations responsible for the construction waste management must be sufficiently supported by allocating adequate funding and infrastructural improvements to enable them to perform effectively and successfully.
9. Efforts exerted towards the use of scientific techniques to develop appropriate technologies should be geared for dealing with construction waste management, such as where wastes from one activity are the input of raw materials for another activity. Landfill sites should be designed and operated in accordance with W.H.O standards.

References


