IOSR Journal of Business and Management (IOSR-JBM)
e-ISSN: 2278-487X, p-ISSN: 2319-7668. Volume 18, Issue 2 .Ver. I (Feb. 2016), PP 137-140
www.iosrjournals.org

Relationship Betweenstaff Training and Construction Wastereductionamong Construction Organizationin Nigeria.

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Abstract: *Construction waste is considered as non-hazardous materials or debris created as a result of construction activities, In Nigeria, construction & demolition waste is considered a real issue because of the increase in population density, therefore, the accessibility of rear space, the infrastructure and the economic development. According to[1 found that in the developing nations such as (Nigeria, Botswana, Zambia, Tanzania and Zimbabwe) it was estimated that; 40percent of the development is rework, also, 30 to 40percent work probably are utilized, hence, 8percent of the total cost of the project are accounted for accidents while, 20 – 25percent discarded as waste. The management or the waste reduction practice has received little attention that lead to infective and inefficient construction waste management practice. The main purpose of this study is to assess the relationship between staff training and construction waste reduction among construction organization in Nigeria.A quantitative method was employed for data collection from 310 Managers in construction organizations, out of which 178 we returned and used for the analysis. The statistical tool used in the data analysis was Smart PLS2.0 for this study. The Cronbach's Alpha value of the variables ranges from 0.796 - 0.852. It was found that the hypotheses are significant at 5% significance level,and staff training has a significant positive relationship with construction waste reduction among construction organizations in Nigeria.*
Keywords: *Staff training, Construction waste Reduction.*

I. Introduction

Construction site waste can be portrayed as the non-hazardous byproducts as a result of activities in new construction and renovation. It is produced by the construction process due to factors, for example, site arrangement, material use, material damage, material non-utilize, excess procurement and human lapse [2].The Reduction of constructionwaste will also lead to the reductionof both the cost of purchasing raw material and the disposing costof waste generated on site. Wastage on site due to inefficiency can be reduced e.g. the amount of waste as a result of commingle disposal can be reduced by source separation. As estimated that about 80% of the construction waste stream is recyclable. With proper planning, waste recovery for recycling and reuse tremendously it can reduce the quantity of waste destined for disposal. [3] training is considered as a powerful agent to facilitate an organization's capability, development and expansion, hence, enhancing efficiency and profitability, in the reduction of construction waste on site. This study seeks to examine the relationship between staff training and in construction waste reduction effectiveness among construction organizations in Nigeria.

II. Literature Review

2.1 Waste Reduction

Waste Reduction is referred to as the most efficient construction waste management method. It is the way of minimizing the production of Construction waste, however, slashes the waste transporting, recycle and disposing cost[4]. However, previous researchers had extensively examined the waste reduction as the highest priority for managing Construction waste.Waste Reduction is referred to as the most efficient construction waste management method. It is the way of minimizing the production of Construction waste, however, slashes the waste transporting, recycle and disposing cost[4]. However, previous researchers had extensively examined the waste reduction as the highest priority for managing Construction waste.

2.2 Staff Training

Training play an important function in the aspect of commitment established. Whereas, the workers accord greater importance on training programs and is highly appreciated by co-workers, managers, supervisors, managers, hence, greater commitment outcomes can be achieved where organizations that create an environment of training which can be approved and appreciated by employees [5].Furthermore,[6] alleged training as the ability of employee from working in any place, also the non-professional and the assemble of the abilities to attain to the level of the professional. For training perception of the workers to be efficient, an optimistic impact on job satisfaction in construction organization, commitment, and incentive. Furthermore, [7]reported that organizational performance is influenced by the significant impact of training.

2.3 Staff Training and Construction Waste Reduction

[5]States that training has a significant impact in the performance and development of the employee, and to further, increase performance of training and development activities of the construction waste organizations in relation to construction waste reduction. "The strong approach assumed the employees in the organizations as simple resources to achieve the objectives of the organization, thereby the flexible approach the employees viewed more as valued assets capable of development"[8]. That Staff training has a direct relationship with the performance of the employees in construction organization for effectiveness and efficiency in construction waste reduction, training is regarded as the systematic and formal modification of behaviour through learning that essentially occurs resulting if education, instruction development and planned experience" [9]. Hence, for increment in the construction organizations' productivity, training is recognized as a vital variable Various study as in [10], and also [11]categorized the importance of training as mentioned to: "improve work quality, increased productivity, skills improvement, knowledge, enhance the use of tools and machine, understanding and attitude, reduces waste, accidents, turnover, delay, and other overhead costs of the construction waste management organization, eliminates obsolesce in skills, technologies, methods, products, assets management, etc. It brings incumbents to that level of performance".

III. Framework

Staff training is the independent variable and construction waste reduction is dependent variable examined in this study.

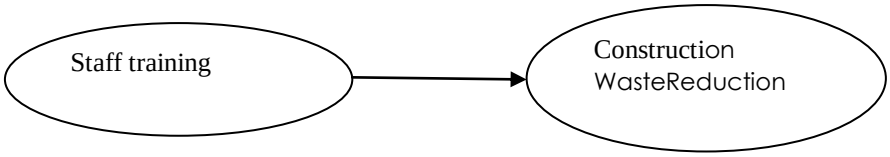

Figure1.1: framework

IV. Hypothesis

H1 Staff training is significantly related to construction waste reduction.

V. Methodology

The methodology adopted by thisstudy is a cross sectional and quantitative approach. The stratified random sampling was employed. A structured survey questionnaire was used for data collection from the managers of construction organizations in Abuja, Nigeria. Based on previous literatures the questions were adapted and the items for measuring staff training were adapted from[5] and waste reduction was adapted from [12]. For all the items A5 point liker scale scoring format (1 = Strongly disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; and 5 = strongly agree) was employed. The smart PLS structural equation model (SEM) statistical packagewas used for the data analysis. 178 out of 310 questionnaires administered in this study were duly completed, returned and retained for the analysis, representing 57.4% response rate.

5.1. 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 staff training and construction waste reduction.

5.2. The measurement model (Outer model)

The data is filtered by the measurement model, is also used for theassessment and confirmation of the constructs' validity and reliability prior to the establishment of goodness,for the examination of the reliability of indicators. The acceptable loading is 0.4 and for internal consistency 0.7 are acceptable level. According to[13], 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 [13];[14]. 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 to 0.937; they are acceptable since they are above the cutoff mark value of 0.4 which is in line with [13];[15]. Similarly, the values of the composite reliability range from 0.843 to 0.935 and these are greater than the Value of the benchmark 0.7[15]. The convergent validity is determined using AVE. The AVE ranges from 0.710 to 0.871, which is above the minimum cutoff value of 0.5 [15]. 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.

Table1: Factor Loading

Items	Factor Loading	Composite Reliability	Cronbach's Alpha	AVE
ST 02	**0.935**			
ST04	**0.931**	**0.931**	**0.852**	**0.871**
WRED01	**0.806**			
WRED03	**0.879**	**0.880**	**0.796**	**0.710**
WRED05	**0.843**			

Table2: Discriminant validity

	CWR	ST
CWR	**0.842**	
ST	0.708	**0.933**

Figure 2: Measurement model

5.3. 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 3below which presents the hypothesis testing results.

Table 3: Hypotheses Testing Results

Hypo.No.	Hypo.Path	Beta	StdError	T-Stat.	P-Value	Decision
H1	ST-> CWR	0.70	0.03	21.09	0.05	Supported

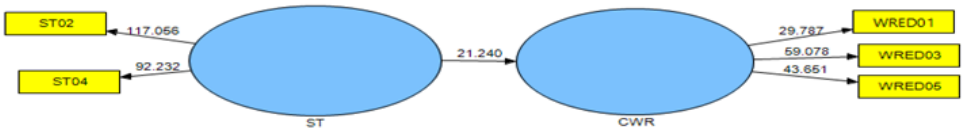

Figure 3: Structural Mode

5.4. Predictive Relevance of the model

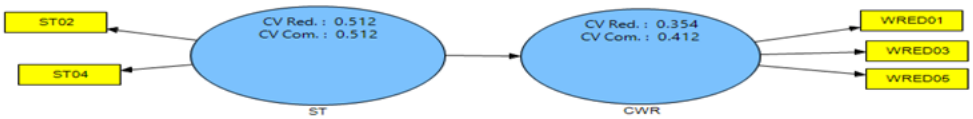

Figure 5: Predictive Relevance

VI. Conclusion

We have examined the relationship between the staff training (ST) and construction waste reduction (CWR) as the objective of this study.The hypothesis was supported based on the statistical findings. The hypothesis, staff training and construction waste Reduction (FOR – CWR) is significant (β =0.708, t=21.09, P-Value=0.05), and this is consistent with the finding of Colombo and [9]which is significant and positive; however the concept of Staff training 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 reduction will be achieved by a higher level and commitment to construction organization staff training.

The contribution made by this study is both theoretical and practical; the extension of the existing literature about ST– CWR is the theoretical contribution of this study. Additionally, this is one of the few studies that examine the relationship between staff training and construction waste reduction this study. Practically, the result of this study will help stakeholders in policy and decision making in the practice of construction waste management, for example: (governmental and non-governmental organizations). The managers will understand the importance of staff training for utmost efficient and effective ways of reducing the amount of waste created/ generated on construction sites. Lastly, for future research a waste minimization and reduction from conceptualization to design stage should be considered as one of the best construction waste management practice, 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.

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