



Original Research Article

EFFECTIVENESS OF LEADERSHIP ON CONSTRUCTION WASTE MANAGEMENT IN LAGOS METROPOLIS, NIGERIA

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ABSTRACT

Leadership has drawn great attention from scholars in various fields in recent years. With respect to waste management issues, little or no research has been conducted in this area. The effectiveness of an organization depends on its quality of leadership in influencing its efficiency. This study provides an insight into the influence of effective leadership on construction waste management in Lagos metropolis, Nigeria by investigating the factors responsible for construction waste generation, materials that generate wastes on construction sites, management of construction waste etc. Data for the study was collected through a structured questionnaire administered to 127 construction site workers and 15 construction firms in Lagos metropolis in order to obtain information on leadership issues relating to construction waste management. Findings revealed that the use of inexperienced labour force on construction site is a factor responsible for waste generation on construction sites, hence the leadership styles demonstrated by both the supervisors and management of construction firms coupled with strict disciplinary measures meted to site workers could help to minimise generation of construction waste. It is therefore recommended that competent and skilled supervisors should be on site to ensure strict adherence to company policy on material wastage.

1. INTRODUCTION

In our contemporary business environment, organisations rely upon their leaders to facilitate the changes and innovations required to maintain competitive advantage. Leadership and leaders' behaviours have been linked to efficiency and effectiveness of an organisation and it is perceived to be an important factor in creating order out of chaos, navigating organisations through unthinkable environmental turbulence, bringing mightiness out of mediocrity, and thriving where lesser mortals will quickly fade away (Western, 2008). Achua and Lussier (2010) contend that organisational exceptional performance including productivity and profitability is dependent on the quality of leadership exerted. Behling and Mcfillen (1996) study in the United States established the link between high performance and leadership by developing a model where the leaders' behaviour were found to give rise to motivation, influence, inspiration and empowerment to workers, resulting in exceptionally high commitment and willingness to take risks. Ogbuigwe (2015) argues that no matter how good the laws and regulations may be, it cannot work by itself without committed leaders.

Lees and Austin (2011) reported that organisations may well have voluminous rules and regulations designed to achieve various objectives. However, on their own, these rules will not drive change. Their report further state that it is irresponsible to think that just creating and publishing a set of rules will achieve the desired goals. The desired change lies within our leaders to demonstrate commitment and involvement particularly in environmental matters. It is leader's behaviour that can drive change. Therefore, effective control and management of our environment is dependent upon the quality of leadership not by volumes of laws and regulations. In support of the argument, Ogbuigwe (2015) states that sustainability of our environment lies upon simple human values 'leadership' not on laws and regulations.

Waste management is a major challenge in many cities in Nigeria. The nature of this challenge is in effective management, ability to reduce, re-use and recycle wastes generated. Intensive efforts are made by the Government at all levels by establishing waste management agencies and private support partnership (PSP) to manage its waste. For example, in Lagos state, the waste management authority popularly known as LAWMA collaborates with private partners to manage the solid wastes generated within the state. However, studies have shown that improper disposal of waste has resulted in high rate of morbidity and mortality in a developing society such as Nigeria (Oluwaleye, 2012). Therefore, heap of waste on construction sites significantly affects the success of construction projects. It also has its effect on construction cost, time, output and the sustainability of such project.

Improper decision taken at any given project design stage is capable of increasing waste level (Wahab and Lawal, 2011). Studies have shown that, not all materials procured for construction or renovation projects are used during the construction process. The left-overs are either sold to interested buyers or left as wastes that may not be accounted for by the contractor. Much have been researched in the areas of environmental management and pollution in Nigeria (Bello and Bello, 2009; Itayavyar and Tayar, 2010; Aderogba and Afelumo, 2012; Edo, 2012; Ikemike, 2015). However, there is paucity of research efforts

geared towards exploring the impact of leadership on the management of the construction waste particularly in Nigeria. Therefore, this paper tends to fill in this gap by exploring the effectiveness of leadership in the management of construction waste in Metropolitan City of Lagos.

2. THEORETICAL AND CONCEPTUAL FRAMEWORK

The underlying assumption of this study was based on a paradigm and framework that linked leadership, environment and environmental pollution. It is only an appropriate leadership that promotes an environment free from pollution (disasters and diseases). Therefore, environmental pollution that impact negatively on the environment can only be effectively managed through committed and visible leadership. A logistic research framework proposed by New and Payne (1995) was modified in this study as presented in Figure 1 to illustrate how leadership and behaviour of the key personnel saddled with responsibility of managing and controlling the environment can influence the occurrence of environmental health hazards in Nigeria. Based on this, it is proposed that leaders play a vital role in successful management of environmental health hazards. In Figure 1, **X** (leadership) causes the **Y** (environment) which could be positive or negative, to moderate **Z** (improved construction waste).

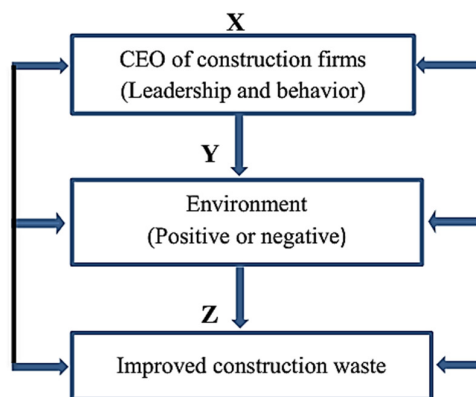


Figure 1: Leadership influence on improving construction waste management and curbing environmental hazards

3. MATERIALS AND METHODS

3.1. Study Location

Lagos metropolis, one of the most important commercial cities in Nigeria, forms the base of the study area for this research. Lagos metropolis is located in the South-Western Coast of Nigeria along the Bight of Benin approximately between latitude 6° 40' North and 4° 30' South of Equator and between longitude 2° 05' West and 4° 20' East of Greenwich Meridian. Lagos State covers an area of about 3,577 sq.km of Nigerian territorial land mass. In the economic sense, the metropolis has grown from a small fishing settlement to become the

most important center of commerce, finance and maritime activities in Nigeria, housing headquarters of several banks, industries and commercial enterprises.

3.2. Data Collection

The data employed for this study were collected through the use of a structured questionnaire administered to 127 construction site workers and 15 construction firms who are professionals and are directly involved at design and construction activities in Lagos Metropolis. The data collection was also carried out through face-to-face/personal interviews of the target population and observations were made on construction works on-going within the study area. Data for the major causes of waste on construction sites, building materials that generate wastes and factors that contribute to waste on site were derived from the survey of Bossink and Brouwers (1996), Dajadian and Koch, (2014), and Ganiyu et al. (2016) and used for the study. The responses to the items on the questionnaire were evaluated on a 5-point Likert scale as put forward by Oyetunji and Abidoeye (2016). The data analysis was done using the Weighted Mean Score (WMS) as shown in Equation 1.

$$WMS = \frac{5n_5 + 4n_4 + 3n_3 + 2n_2 + n_1}{n_5 + n_4 + n_3 + n_2 + n_1} \quad (1)$$

Where n_5 = number of responses for “Strongly agreed”, n_4 = number of responses for “Agreed”, n_3 = number of responses for “Neutral”, n_2 = number of responses for “Disagreed”, n_1 = number of responses for “Strongly disagreed”.

4. RESULTS AND DISCUSSION

Table 1 shows the materials that generate wastes on construction sites. Findings from the survey show that the respondents agreed that concrete (W.M.S = 4.88) ranked 1st as it contributes the largest wastes on sites. The findings of this study corroborate that of Chu (2004), Ameh and Itodo (2013) that concrete or mortar generates most wastes on construction sites. It was also observed that sand, stones, tiling materials and block/bricks occupied the 2nd to 4th position with a mean score of 4.59, 4.00 and 3.65 respectively. The results also show that iron/metal contributes the least waste on construction sites in Lagos metropolis as evidenced by the W.M.S value of 3.18. The findings were however contrary to that of Ganiyu et al. (2016) whose study found out that wood is the material that generates most wastes on construction sites in Akure.

Table 2 investigates the factors responsible for the generation of construction waste on site. The factors were ranked in the order which they are responsible for the generation of construction waste. The use of inexperienced labour force on construction site ranked 1st as shown in the W.M.S value of 3.94. This was followed by the use of non-professionals (W.M.S = 3.92). Poor supervision (W.M.S = 3.75) occupied the 3rd position, and was closely followed by over estimation of construction materials, poor design and the use of wrong construction methods as they jointly ranked 4th with W.M.S value of 3.72. The use of faulty

tools, poor site co-ordination and manufacturing defects occupies the 7th, 8th and 9th position with W.M.S values of 3.67, 3.61 and 3.58 respectively. The findings in the study corroborates that of Ganiyu et al. (2016) which found out that most wastes are generated on construction sites in Akure, Ondo State, Nigeria as a result of inexperienced labour handling construction works.

Table 1: Materials that generates wastes on construction sites

| Materials | SA | A | N | D | SD | W.M.S | Rank |
|-------------------|------|------|------|------|------|-------|------|
| Concrete | 88.2 | 11.8 | 0.0 | 0.0 | 0.0 | 4.88 | 1 |
| Sand | 64.7 | 29.4 | 5.9 | 0.0 | 0.0 | 4.59 | 2 |
| Stones | 17.6 | 70.6 | 5.9 | 5.9 | 0.0 | 4.00 | 3 |
| Tiling materials | 23.5 | 35.3 | 23.5 | 17.6 | 0.0 | 3.65 | 4 |
| Block/Bricks | 17.6 | 47.1 | 17.6 | 17.6 | 0.0 | 3.65 | 4 |
| Paint | 29.4 | 35.3 | 11.8 | 11.8 | 11.8 | 3.59 | 6 |
| Asbestos | 0.0 | 70.6 | 17.6 | 5.9 | 5.9 | 3.53 | 7 |
| Roofing materials | 11.8 | 35.3 | 47.1 | 5.9 | 0.0 | 3.53 | 7 |
| Glass | 17.6 | 35.3 | 29.4 | 11.8 | 5.9 | 3.47 | 9 |
| Wood work | 17.6 | 41.2 | 5.9 | 23.5 | 11.8 | 3.29 | 10 |
| PVC | 5.9 | 52.9 | 11.8 | 17.6 | 11.8 | 3.24 | 11 |
| Iron/Metal | 11.8 | 35.3 | 17.6 | 29.4 | 5.9 | 3.18 | 12 |

Table 2: Factors responsible for construction waste generation

| Factors | SA | A | D | SD | W.M.S | Rank |
|---|------|------|------|-----|-------|------|
| Use of inexperienced labour force on site | 94.4 | 5.6 | 0.0 | 0.0 | 3.94 | 1 |
| Non-professionals handling site projects | 91.7 | 8.3 | 0.0 | 0.0 | 3.92 | 2 |
| Poor supervision | 75.0 | 25.0 | 0.0 | 0.0 | 3.75 | 3 |
| Over-estimation of materials | 72.2 | 27.8 | 0.0 | 0.0 | 3.72 | 4 |
| Poor design | 80.6 | 11.1 | 8.3 | 0.0 | 3.72 | 4 |
| The use of wrong construction methods | 75.0 | 22.2 | 2.8 | 0.0 | 3.72 | 4 |
| The use of faulty tools | 75.0 | 16.7 | 8.3 | 0.0 | 3.67 | 7 |
| Poor site co-ordination | 66.7 | 27.8 | 5.6 | 0.0 | 3.61 | 8 |
| Manufacturing defects | 69.4 | 19.4 | 11.1 | 0.0 | 3.58 | 9 |

Table 3 shows the qualities and effectiveness of leadership and its application to construction waste management in Lagos Metropolis. From the studies of Behling and Mcfillen (1996), Dvir et al. (2002), Zohar (2002), Hinze (2006), Brauer (2009), Pradeep and Prabhu (2011), and Yukl (2011) and Geotsch (2014), 17 effective leadership characteristics that can influence employee performance were identified and respondents were asked to rank them in the order in which they are followed and applied in their organisation which in turn has helped to ameliorate wastage of materials, time, energy and resources.

The respondents' opinions were viewed from two (2) perspectives which are the site workers and the contractors/employers point of view. The results from the survey showed that the site workers were of the opinion that the leadership of the organisation where they are employed ensure that there is strict disciplinary measures meted to defaulters as the firms do not want to jeopardize the goodwill of the organisation. This is revealed as strict disciplinary measures (W.M.S = 4.72) ranked 1st while equipment and machinery efficiency, innovations and ideas, monitoring and evaluation, communication and attitude to work occupied the 2nd, 3rd, 4th, 5th

and 6th position with W.M.S values of 4.64, 4.47, 4.44, 4.28 and 4.06 respectively. Interviews with the workers also revealed that the organisation employs these first six factors as a precautionary measure to preserve their business. Hence, if strict disciplinary measures is not in place most of the workers will not put up a good attitude to their work which will in turn lead to wastage of materials on construction sites.

Table 3: Effectiveness of leadership on construction waste management

| S/N | Commitment | Site workers | | Contractors/employers | |
|-----|------------------------------------|--------------|------|-----------------------|------|
| | | Mean | Rank | Mean | Rank |
| 1 | Strict disciplinary measures | 4.72 | 1 | 2.06 | 16 |
| 2 | Equipment and machinery efficiency | 4.64 | 2 | 2.53 | 14 |
| 3 | Innovations and ideas | 4.47 | 3 | 3.26 | 8 |
| 4 | Monitoring and evaluation | 4.44 | 4 | 3.09 | 9 |
| 5 | Communication | 4.28 | 5 | 3.76 | 3 |
| 6 | Attitude to work | 4.06 | 6 | 4.06 | 2 |
| 7 | Motivation | 3.61 | 7 | 3.65 | 4 |
| 8 | Leadership Styles | 3.53 | 8 | 4.47 | 1 |
| 9 | Transparency and accountability | 3.42 | 9 | 1.99 | 17 |
| 10 | Funds allocation | 3.11 | 10 | 2.94 | 10 |
| 11 | Integrity | 2.89 | 11 | 2.88 | 11 |
| 12 | Reward | 2.67 | 12 | 3.32 | 6 |
| 13 | Listening | 2.44 | 13 | 3.29 | 7 |
| 14 | Law and order | 2.33 | 14 | 2.62 | 13 |
| 15 | Health and safety | 2.22 | 15 | 2.82 | 12 |
| 16 | Sense of belongings | 2.08 | 16 | 3.59 | 5 |
| 17 | Training and retraining | 1.83 | 17 | 2.47 | 15 |

From the contractors' point of view, it was observed that the leadership style adopted by the firm is a factor that has helped in controlling wastage of materials on construction site. This can be attributed to the fact that leadership qualities helps in improving the organizational performance and efficiency. It was also observed that the contractors consider very vital, the attitude of their workers in as much as the communication line about the job is well spelt out. This is evidenced as leadership style, attitude to work and communication ranked from 1st to 3rd with W.M.S values of 4.47, 4.06 and 3.76 respectively.

5. CONCLUSION

This study has shown that construction activities lead to the generation of volumes of wastes. These wastes in construction projects can either be physical or non-physical. The former are attributed to broken bricks, woods, metals, packaging waste, etc, while the latter could be in form of cost overruns and time delays in construction projects. This wastage may lead to delays that could cause costly idle time for other resources. Most of these happen as a result of the decision of site management. Since, waste management is an essential characteristic of sustainable building construction, its effective management on construction sites is an important factor in the construction industry. Based on these findings, we conclude that, there is need for effective training of site workers on proper handling of materials and equipment

on construction sites. This will help to reduce the effect of poor supervision and craftsmanship in the construction industry and also minimize wastage of site resources. This can only be achieved if effective transformational leadership in the construction sector is put in place.

6. CONFLICT OF INTEREST

There is no conflict of interest associated with this work.

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