

## Preliminary Studies On The Relationship Between Organizational Resources And Construction Waste Management Among Construction Organizations.

Yusuf Nasidi<sup>1</sup>, Ahmed Mohammed Kamaruddeen<sup>2</sup>, Ahmad Yusni Bahaudin<sup>3</sup>.

<sup>1</sup>(School of Technology Management and Logistics, Universiti Utara Malaysia, 06010 Sintok, Kedah Darul Aman, Malaysia)

<sup>2</sup> (School of Technology Management and Logistics, Universiti Utara Malaysia, 06010 Sintok, Kedah Darul Aman, Malaysia)

<sup>3</sup>(School of Technology Management and Logistics, Universiti Utara Malaysia, 06010 Sintok, Kedah Darul Aman, Malaysia)

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**Abstract:** *The construction organization contributes to the generation of large quantities of waste and therefore, causes a lot of environmental problems in Nigerian cities. Across Nigeria, appropriate procedures for managing construction waste are not given much attention, developers and their contractors are left to the collection and disposal of construction waste management, Therefore lead to ineffective construction waste management. The main purpose of this study is to assess the relationship between organizational resources and construction waste management among construction organization in Nigeria. (ii) For the process of validation instrument developed for the ongoing research, and the identified constructs of the study. Data were collected from forty respondents using a sixty one item instrument. Data analysis was conducted using SPSS software for the data collected.. The Cronbach's Alpha test result ranges from 0.885 to 0.972 which reveal a strong internal reliability of the construct and the overall instrument. This indicates that the research is significant since it explores the implementation of efficient and effective construction waste management practices in Nigeria and validates the instrument where most of the constructs still need further exploration.*

**Keyword:** *Organizational resources, construction waste management*

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### I. Introduction

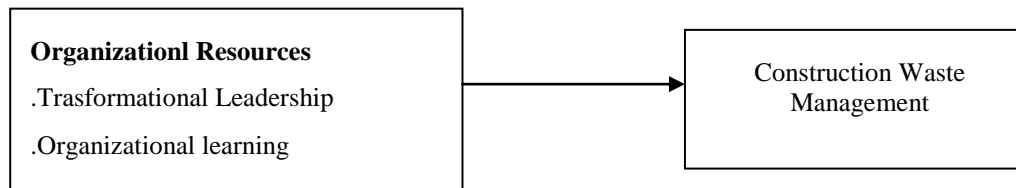
Construction waste resulting from construction activities are as a result of high demands of infrastructure, new housing, commercial buildings and social amenities[1];[2];[3]. Researchers and practitioners indicated that waste are generated at each stage of construction, for instance, during pre-construction, rough construction and post construction [4];[5];[6]. According to [7], a considerable amount of construction waste generated on site relates to factors in design works, materials handling, and procurement process. Increased amount of waste generated will take more space in the gazetted landfills. Waste management, involves a wide range of stakeholders or organizations that perform various functions to help maintain a clean, safe and pleasant physical environment in human settlements in order to protect the health and well-being of the population and the environment.

Effective construction waste management is, however, a growing challenge to the governments, especially in developing countries. In Nigeria, It is unfortunate to note that the waste collection system is either nonexistent in many areas (up to 90 percent in some cases) or most towns and cities not serviced or are under-serviced. Much of the time, where the collection system exists, waste gathered is dumped along streets, drainages, by the facilities or any accessible space [8]. According to, [8] found that in Nigeria, recycling activities are not common and nonexistent. The treatment of waste in Nigeria is not often carried out. Incineration of waste or use of approved sanitary landfill is non-existent in most cities. The most widely recognized obsession is open burning of waste at illegal dump sites [8]. Furthermore, [9] reported that there is a lack of human resources with the technical expertise necessary for construction waste management planning and operation in most developing countries and Nigeria inclusive. Similarly, organizational resources such as research and development activities in construction waste management are mostly given low priority in Nigeria and other developing countries. These necessitate for the present study.

### II. Framework

In this study, organizational resources is the independent variable and is been conceptualized by twodimensions; Transformational leadership and organizational learning, while the construction waste management is the dependent variable as the factors that drive the implementation of efficient and effective construction waste management practices, where the organization have identified that the organizations can

have a successful implementation of sustainable, efficient and effective waste management practices. Figure 1 below is the proposed framework for this study.



**figure1: Framework**

## **2.1. Organizational Resources**

Both the technical and non-technical day by day operations are required for managerial by the human resources of an organization. Furthermore, human resources refer to the physical, organizational resources in referring to the staff members. Alternately, is also viewed as the intangible in reference to knowledge accumulation of management staff, [10] states that the human resources comprise of mostly the aspect of the organization with the purpose of contributing to the everyday procedure of the construction waste management organizations. Equally the skilled and unskilled labour, financial, administrative, clerical, management and staff were considered by Penrose. The organization's intangible human resources are developed over a period of time. Hence, skills, expertise, knowledge, capacity and behaviour, skills and decision-making of the organization are developed over a period of time [11].

### **2.1.1 Transformational leadership**

Transformational leadership is regarded as numerous patterns of actions thus as follows: Transformational leadership utilizes the personality of the leaders to get the trust of the stakeholders and respect and inspire pride in the latter. As well as also, "charisma underlines the condition of a common vision and sense of mission required for the transformation. Secondly, the attribute is inspiration through which leaders employ symbols to redirect followers' effort; that is expressed in a simplistic manner the primary purpose of the transformation process, and clearly communicate the accompanying higher expectations. Thirdly, characteristic is intellectual stimulation[12]. Transformational leadership is the type that seeks optimistic transformations among the followers and of the changes that are required through the achievement of the organizations "strategy and structure"[13].

### **2.1.2. Organizational learning**

According to [14] he described organizational learning as motive of integrity among policies of the organization, the learning of an individual and behaviours, social standards between the employees and the organization. "Organizational learning occurs when individuals within an organization experience a problematic situation and inquire into it on the organizational behalf"[15].

Organisational learning is the process whereby organizations understand and manage their experiences [16] "A learning organization should be viewed as a metaphor rather than a distinct type of structure, whose employees learn conscious communal processes for continuously generating, retaining and leveraging individual and collective learning to improve performance of the organizational system in ways important to all stakeholders and by monitoring and improving performance"[17].

## **2.2. Construction waste management**

[18] regarded waste management as a tool for controlling disposal costs of construction waste, and also to assist examination of the other option of disposal methods, for instance, reusing and recycling such that waste that will finally end in landfills are reduced to the barest minimums.(2007) [19] developed the waste management hierarchy;the waste hierarchy serves as valuable frames that guard adequately in the development ofthe waste management plans. Hence, an attempt has been made by different researchers by making an effort on the waste reduction [20] developed a model using simulation to enhance waste management. The model include factors, for example, the series of construction activity, the types and the quantity of rate of construction materials, the material waste rate created, the resource availability and capability of waste collection bins, costs and incomes. The key objective of this model is for the provision of engineer's tool for, planners and contractors focus on the best waste management plan situation for construction sites. They closed by proposing a further development of the model to foresee and develop an efficient waste management. Their work focuses on the effect of waste management reduction.

### **2.3 Organizational resources and construction waste management**

The greatest effect of efficiency is produced by transformational leadership in an organization than transactional leadership [21]. The result and outcomes go beyond what is expected in transformational leadership of the construction waste management organization. (1996) [22]. In 39 studies in a Meta analysis of the transformational leadership literature, found that individuals that are perceived to be more efficient and effective leaders with work outcomes are the transformational leaders in the construction waste management organization. Both the lower and higher level leaders, and also for leaders in both private and public organizations these findings were true. Followers are being moved to perform more than expected by transformational leadership. Thereby they make them to be motivated to rise above their own self-interests for the betterment of the construction waste management organizations [23].

For the construction waste management organization to achieve long-term success, there should be continuous learning, to influence the knowledge and to apply it to reality and for the increase of innovative knowledge [24]. The process of organizational learning effectiveness, by way of information and knowledge sharing among members of the organization of construction waste management, enables the organizations and individual to reflect on their behaviours, actions and the consequences for them to know and understand better the environment where they operate, and therefore, to react and interpret the meaning in more precise approaches [25].

## **III. Methodology**

Considering the fact that this study is a pilot test of an on-going research, samples of the Nigerian construction organizations were selected randomly. A range of few respondents (15-30) are required in a pilot study, nevertheless there may be a considerable increase in the sample size for a pilot study [26]. For this reason, a total of fifty questionnaires was personally administered. Forty five questionnaires were returned out of which 40 are retained for the analysis.

### **3.1. Instrument Design**

[27] states that the questionnaire are regarded as one of the most suitable instruments for survey research. To make sure that all the variables in this study are measured fully, items for this study were drawn from several sources in order to establish an item pool and content validity, including previous research findings on the constructs of this study (Transformational leadership, organizational learning, and construction waste management). These items were adapted and modified from previous literatures [28]; [29] for the purpose of establishing the validity of the construct consist of: (a) establishing contact prior to the main study between the researcher and the organizations (b) determine the reliability of the constructs and (c) predict the possible challenges that may arise prior to the main data collection of the study. The present study adopted the use of a five-point Likert scale rating to measure the responses to the questions. [30] disagree that a scale of 5 to 7 points reliably and validly measure items better than a shorter or a longer scale point. Nevertheless, [31] and [32] were of the opinion that the decision of the measurement scale depends largely on the researcher's preference as there is no better single method for scale construction.. Therefore, this study adopts the following as the key variables contained in this study: Transformational leadership, Organizational learning, Staff training (2) Construction waste management. Organisational resources constructs/variables in this study is multi dimensional, construction waste management one-dimensional.

### **3.2. Validation of Instrument Measures**

In this study the pilot test of the instrument was conducted in Nigeria. The Participants in this study are the Managers of the respondent organizations. This is done to get appropriate feedback to improve the techniques for data collection and the instrument used in the main study. In ensuring that the questionnaire was adapted properly, a content and construct tests was conducted for the validation of the measuring instrument used in this study. The need for this validity is to know whether an important presumption can be drawn from the measure of the instrument of this study by conducting a face validity test on the wordings and the sequence of the items to determine which best suites the respondents among the alternative formats, to determine whether the items of this study will effectively measure the hypothetical conception of the study [33]; [34]. The final research instrument used in collecting data for the main study, comments received from these expert were implemented.

### **3.3. Reliability Test Analysis**

To determine the internal consistency of the instrument of reliability test of the construct was conducted. [35] emphasizes that in conducting pilot testing thirty (30) or more respondents are adequate. For that reason, 40 respondents were used for the purpose of the pilot study. Cronbach's Alpha value was used to interpret the result of the pilot study as summarized in Table one below:

**Table-1. Summary of the pilot test reliability analysis of constructs.**

Constructs	Number of items	Cronbach's Alpha
Transformational Leadership	6	0.885
Organizational learning	6	0.896
Construction waste management	24	0.972

#### IV. Discussion

The framework is presented in this study with organizational resources as predicting variable which is conceptualized by three dimensions; transformational leadership and organizational learning, while construction waste management as criterion variable. Based on a meticulous review of the literature and in depth understanding to practitioners and academicians on the relationship between organizational resources and efficient, effective and sustainable construction waste management the proposed framework was developed. Table 1 presents the Cronbach's alpha coefficient for all the constructs used in this study. In this study the result of the pilot test analysis presents the Cronbach's alpha coefficient for all the constructs used. The Cronbach's Alpha of the variables ranges from 0.885 to 0.972., the Cronbach's Alpha value that is greater than 0.7 is accepted [36]; [37]. Therefore, any value greater than 0.8 is acceptable. The result of the internal consistency in this study shows that the values of the Cronbach's Alpha for all the constructs are greater than 0.8, which shows a very good reliability of the research instrument. Hence, no item was deleted on this basis. All items included in the instrument sufficiently proved to reflect on the reality those adequate levels of internal consistency following their respective measure. The reliability result in this study reveals that all the variables are appropriate to be used in the main survey. However, in the main study after the determination of the factor analysis, further reliability analysis will be performed on the main data collected.

#### V. Conclusion

This study is limited to the organizational resources aspect of construction waste management practices, therefore, future researchers are charged to investigate the organizational culture and organizational effectiveness aspects of construction waste management practices and the proposed framework in this study should be empirically validated.

#### References

- [1] Osmani, O M. W. M. S. W. Mohamad, A. Reside, and T. K. Kooi. (2012). Modelling of Construction Firms Sustainability. Universiti Sains Malaysia. Pace, R. W. (2002). The organizational learning audit. *Management Communication Quarterly*, 15(3), 458-465.
- [2] Yuan, H., Shen, L., & Wang, J. (2011). Major obstacles to improving the performance of waste management in China's construction industry. *Facilities*, 29(5/6), 224-242.
- [3] Nagapan, S. Rahman, I. A., & Asmi, A. (2012). Factors Contributing to Physical and Nonphysical Waste Generation in Construction Industry. *International Journal of Advances in Applied Sciences*, 1(1), 1-10.
- [4] Poon, C. (2007). Management of construction and demolition waste. *Waste Management*, 27 (2), 159-160.
- [5] Kofoworola, O.F. and Gheewala, S.H., 2009. Estimation of construction waste generation and management in Thailand. *Waste management*, 17(1), 731-738.
- [6] Wahab, A., & Lawal, A. (2011). An evaluation of waste control measures in construction industry in Nigeria. *African Journal of Environmental Science and Technology*, 5(3), 246-254.
- [7] Ekanayake, L. L., & Ofori, G. (2000). Construction material waste source evaluation. *Proceedings of Strategies for a Sustainable Built Environment*, Pretoria (August), 23-25.
- [8] Afun, S. (2009). Government Regulations and Legislations Will Ensure Sustainable Waste Management in Nigeria. *Solid Waste Management Services Limited*. Retrieved on November 23, 2014 from [http://www.iswa.org/uploads/tx\\_iswaknowledgebase/le\\_2009\\_2-357.pdf](http://www.iswa.org/uploads/tx_iswaknowledgebase/le_2009_2-357.pdf)
- [9] Schübeler, P., Christen, J., Wehrle, K., & für Technologie, F. d. S. E. (1996). Conceptual framework for municipal solid waste management in low-income countries (Vol. 9): SKAT (Swiss Center for Development Cooperation).
- [10] Penrose, E.T. (1959). *The Theory of Growth of the Firm*. Basil Blackwell, London.
- [11] Grant, P. R., & Grant, B. R. (2002). Unpredictable evolution in a 30-year study of Darwin's finches. *Science*, 296(5568), 707-711.
- [12] Bass, B.M. and Avolio, B.J. (1990), "The implications of transactional and transformational leadership for individual, team, and organizational development", *Research in Organizational Change and Development*, Vol. 4 No. 1, p. 231.
- [13] Gizir, S. (2008). Organizational culture and organizational learning in the process of organizational change. *Mersin University Journal of Faculty of Education*, v. 4, n. 2:182-196.
- [14] Argyris, C. and Schon, D. (1996), *Organisational Learning II: Theory, Method and Practice*, Addison-Wesley, Reading, MA.
- [15] Glynn, M., Milliken, F. and Lant, T. (1992), "Learning about organisational learning theory: an umbrella of organising processes", paper presented at the
- [16] Drew, S.A.W. and Smith, P.A.C. (1995), "The learning organisation: 'change proofing' and strategy", *The Learning Organisation*, Vol. 2 No. 1. pp. 4-14.
- [17] Minks, W. (1994). The construction contractor's waste management plan: optimizing control and cost. Paper presented at the Proceedings of the 1st International Conference of CIB-TG16 Sustainable Construction, Tampa, FL, November.
- [18] Hagger, S. E. (2007). Sustainable Industrial Design and Waste Management: Cradle-to-Cradle for Sustainable Development. Maryland Heights.
- [19] Keys, A., Baldwin, A., & Austin, S. "Designing to encourage waste minimization in the construction industry."

- [20] Motete, L., Mbachu, J., & Nkado, R. (2003) "Investigations into material wastages on building sites", CIDB 1<sup>st</sup> post graduate conference, Port Elizabeth, South Africa.
- [21] Dvir, T., Eden, D., Avolio, B.J. and Shamir, B. (2002), "Impact of transformational leadership on follower development and performance: a field experiment", *Academy of Management Journal*, Vol. 45 No. 4, pp. 735-44
- [22] Lowe, K.B., Kroeck, K. and Sivasubramaniam, N. (1996), "Effectiveness correlates of transformational and transactional leadership: a meta-analytic review of the MLQ literature", *Leadership Quarterly*, Vol. 7 No. 3, pp. 385-426.
- [23] Northouse, P.G. (2001), *Leadership Theory and Practice*, 2nd ed., Sage Publications, Thousand Oaks, CA
- [24] Liedtka, J. (1999), "Linking competitive advantage with communities of practice", *Journal of Management Inquiry*, Vol. 8 No. 1, pp. 5-16
- [25] Jones, N.B., Herschel, R.T. and Moesel, D.D. (2003), "Using 'knowledge champions' to facilitate knowledge management", *Journal of Knowledge Management*, Vol. 7 No. 1, pp. 49-63.
- [26] Malhotra, N.K., (2008). *Essentials of marketing: An applied orientation*. 2nd Edn., Australian: Pearson Education.
- [27] Asika, N., 1991. *Research methodology in the behavioral science*. Lagos: Longman Nigeria Plc, Nigeria. Bajracharya, B. and L. Too, 2009. *Building a sustainable campus: A case study of Bond University*. Paper Presented at the State of Australian Cities (SOAC) National Conference 2009, Nov 24-27, Perth, Australia.
- [28] Kamaruddeen, A. M., Yusof, N. A., Said, I., & Pakir, A. H. K. (2012). Organizational factors and innovativeness of housing developer S. *American Journal of Applied Sciences*, 9(12).
- [29] Yuan, H. (2011). A dynamic model for assessing the effectiveness of construction and demolition waste management. The Hong Kong Polytechnic University
- [30] Krosnick, J.A. and L.R. Fabrigar, 1991. Designing rating scales for effective measurement in surveys. In B. Lyberg, P. Collins, M. De Leeuw, E. Dippo, C. Schwarz, N. (Ed.), *Survey measurement and process quality*. (Trewin ed.). New York: John Wiley & Sons, Inc.
- [31] Garland, R., 1991. The midpoint on a rating scale: Is it desirable? *Marketing Bulletin*, 2(May): 66-70.
- [32] Dawis, R.V., 1987. Scale construction. *Journal of Counseling Psychology*, 34(4): 481-489.
- [33] Creswell, J.W., 2009. *Research design: Qualitative, quantitative and mixed methods approaches*. 3rd Edn., Los Angeles: Sage Publications Ltd. Darnall, N., I. Henriques and P. Sadorsky, 2008. Do environmental management systems improve business performance in an international setting? *Journal of International Management*, 14(4): 364-376.
- [34] Sekaran, U., & Bougie, R. (2013). *Research Methods for Business: A Skill Building Approach*: John Wiley & Sons.
- [35] Pallant, J., 2001. *SPSS survival manual: A step by step guide to data analysis using SPSS for windows*. 3rd Edn., England: McGraw Hill Open University Press.
- [36] Pallant, J., 2011. *SPSS survival manual: A step by step guide to data analysis using SPSS program*. England: McGraw Hill Open University Press.
- [37] Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate Data Analysis: A Global Perspective (Seventh Edition ed.)*. Upper Saddle River, New Jersey: Person Education Inc.