



# Lean Procurement: A Strategic Move for Management of Environmental Waste in Wooden Furniture Industry in Nigeria

**Agbeche Aaron Oghenevwayere**

**(Dennis Osadebay University, Asaba, Delta State, Nigeria)**

<https://orcid.org/0000-0001-6435-6565>

**Omonzejele, florences**

**(Western Delta University, Oghara, Delta State)**

**OJIEH, Magnus**

**(Dennis Osadebay University, Asaba, Delta State, Nigeria)**

## ABSTRACT

*In this research, the effect of lean procurement on waste management in Nigerian wooden furniture companies is empirically investigated. The purpose of the paper was to examine poor procurement procedures in the Nigerian wooden furniture sector and identify the problems arising from subpar buying. This report's research was conducted using a cross-sectional survey methodology. The entire collection of furniture companies in Nigeria makes up the study's population. The study uses both primary and secondary data generation techniques. Field data were examined after being collected. The study found that lean procurement production alertness, communication lean procurement practises, and flexible working lean procurement processing aid in decreasing and managing waste among furniture firms in Nigeria. Based on the outcomes of the analysis of the study hypotheses and the resolution to the query posed in the report, this paper concluded that flexible processing, prompt communication, and production awareness improves the handling of waste issue in wooden furniture manufacturers in Nigeria, thus empirically addressing the study's primary research question. The paper suggests that lean procurement be implemented as a policy and regulation within Nigeria's wooden furniture industry to manage waste among furniture manufacturers.*

**Keywords:** Lean Procurement, Waste Management, Production Alertness, Flexible Processing, Swift Communication

## 1. INTRODUCTION

One of the key industries in Nigeria that has contributed to meeting the needs of the populace for domestic furniture is the wooden furniture business. The industry's skills have expanded over time, and it now serves as the foundation for creating and sustaining office and home furniture requirements. However, Oterhals and Salte (2015) emphasise that wooden furniture companies have produced a lot of waste in order to meet

the need of furniture by its customers, which has an impact on both the business's health and the health of the local populace. As a result, it as becomes imperative to handle timber waste and other associated materials on a global scale.

Organisations in several Nigerian industries, particularly the wooden industry, are calling for managing the trash produced by wooden furniture companies in response to the global clamour for environmental waste management. So, managing wooden trash will not only maintain and keep the business climate healthy but will also ensure that people's lives both within and outside of that environment are protected from the dangers associated with wooden furniture waste (Jasti and Kodali, 2015).

It is important to highlight that numerous companies in Nigeria create wood-related goods (Owoyemi, Zakariya, and Elegbede, 2016). These companies have significantly harmed the business climate and decreased both the life expectancy of the people and the businesses. Lean procurement is therefore now viewed as a problem with a ready-made solution for lowering waste produced by wood-based businesses in Nigeria (Jasti and Kodali, 2015).

Thinking lean comprises the creation of concepts, ideas, and tactics that enable a timber firm's operations to be improved (Jose Abel Carrasco-Mora, 2019). According to Womack and Jones (Jose Abel Carrasco-Mora, 2019), "lean thinking is the ability to accomplish more with fewer resources—fewer human efforts, fewer tools, fewer resources in terms of time and space—while ensuring that customers are given everything necessary to meet their needs" (p.15).

According to Babazadeh Bedoustani (2020), lean is a mindset of team-based continuous improvement that seeks out and eliminates elements or circumstances that contribute to wastefulness within a company. Any human action that uses resources but produces nothing of value is considered to be wasteful. Overproduction, overprocessing, faults, wait times, and, more recently, underutilised employee work behaviour are some examples of these wastes.

Lean procurement evolution in the wooden furniture manufacturing enterprises in Nigeria is still in its early stages, despite the many different perspectives (such as lean manufacturing and lean supply chain) that the subject of lean process has adopted over time. This is due to the ineffective way waste is currently managed within the Nigerian hardwood furniture business.

Lack of communication, excessive processing of wood goods and an overabundance of authorisation levels with the industry has interfered with the smooth manufacture of wooden furniture, leading to significant waste generation within the company. Determining the different types of waste and the obstacles that allow for such wasteful work-related behaviour among wooden firms in the industry are the specific goals of this report, which aims to use the lean procurement philosophy to help manage waste generated within the wooden furniture firms in Nigeria.

## Research Questions

- i. How have wastefulness issues among Nigerian wooden furniture companies been handled by lean procurement practises?

## Research Hypotheses

Ho1: In the wooden furniture companies in Nigeria, there is no major connection between the flexible processing of wood products and waste management.

Ho2: In Nigerian wooden furniture manufacturing companies, there is no significant correlation between alertness in creating wooden goods and waste management.

Ho3: In the wooden furniture companies in Nigeria, there is no significant correlation between the speed with which information is communicated and waste management.

## 2.0 Literature Review

### Lean Procurement

According to Gadysz, Buczacki, and Haskins (2020), just-in-time (JIT) inventory management is related to lean procurement. Yet, there are some distinctions between the two ideas in the actual sense. Whereas the primary just-in-time objective of lean procurement, for instance, is to eliminate waste from the wooden furniture business through the use of a pull system, minimum stock, and effective supplier combinations, the main purpose of just-in-time procurement is to match demand and supply (Omwoyo, Wanyoike and Mbeche, 2019).

According to Agus and Hajinoor (2012), lean procurement is an active activity and way of thinking that aims to eliminate surplus and continuous improvement plans by utilising lean beliefs, methods, and procedures to exploit value. Inferentially, the lean procurement strategy is only focused on lowering production costs, enhancing the nature of newly created items, and enhancing the efficiency of manufacturing wooden furniture products. According to Ugochukwu, Engström, and Langstrand (2012), lean procurement benefits include low cost, improved superiority, speedy delivery, and flexibility.

Lean procurement is expected to ensure that the supply chain for the goods produced by wooden firms responds quickly and with the same momentum as unexpected increases in customer demand for products (Handfield et al., 2009). This is because lean procurement can only be seen to be effective when there is a quick communication link between the supplier and the management of raw materials for wooden furniture.

### Flexible Wooden Furniture Processing

The linchpin of flexibility in the manufacture of wooden furniture is the propensity of Nigerian wooden furniture companies to respond to the supply chain with the same vigour as the markets for the products change. While the market and its forces are dynamic daily, this tendency allows for or helps to handle the unforeseen difficulties that a wooden furniture company will experience if its processing pattern is strictly structured (Ninlawan, et al., 2010).

## Swift Procurement Communication

According to Chan, et al. (2008), swiftness is the "ability to expedite and communicate the procurement procedures on a key route that begins with identifying organisational need and concludes with the delivery of a customised product to the client. Most wooden furniture manufacturers in Nigeria think that prompt communication of procurement procedures is the best approach to ensure that raw materials are made available for constant production. Also, how easily supply networks may be modified to meet changing customer demands must be considered during management and design.

## Alertness in Production

The Nigerian wooden furniture industry's production procedures are difficult to spot changes fast. The absence of a team charged with the responsibility for carrying out lean procurement in the company is one of the problems associated with lean procurement. So, wooden furniture companies must demonstrate high level of attentiveness to concerns within the industries if it is to remain competitive for a long time (José Abel Carrasco-Mora, 2019).

## Wooden Waste Management

According to Moeuf et al. (2018), wooden waste includes wood offcuts, sawdust, and shavings. The management of this wood waste comes with some cost of disposal. Aside from the cost increase brought on by improper disposal of wooden debris, other environmental issues continue to pose risks to the health and safety of those who reside within the area where the companies are located (Commission of the European Communities, 2006; European Forest Based Sector, 2006). These difficulties manifest as high death rates among residents in such settings, frequent illness brought on by the waste's toxic odour, and improper management of the forest's log-growing process.

## 3. METHODS

The cross-sectional research design was used for the investigation. A questionnaire was used to gather information for the study from a population of 171 employees from 10 chosen furniture manufacturing enterprises in Nigeria. The accessible section of the study population was determined using the straightforward random sampling method. The Pearson Product Movement Correlation Coefficient and the Statistical Package for Social Science (SPSS) version 23 were used to analyse the data collected from the study participants.



#### 4. FINDINGS, OUTCOMES, AND FREQUENCY ANALYSIS

Table 1 shows how attentive the wooden furniture companies are to waste management and manufacturing in Nigeria

		Alertness in production	Waste management
<b>Alertness in production</b>	Pearson Correlation	1.00	.905**
	Sig. (2-tailed)	-	.000
	N	171	171
	Pearson Correlation	.905**	1.00
<b>Waste management</b>	Sig. (2-tailed)	.000	-
	N	171	171

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Source:** Research Data 2023 (SPSS output version 23)

The investigation on the relationship between waste management and product awareness among Nigerian wooden furniture makers' findings is shown in Table 1. With a P-value of 0.000 (P0.001), the strength of direction at  $r=0.905$  suggests a significant association. This kind of association claims that if wooden companies' exhibit alertness in their production process, lean procurement practice will enable them to always respond appropriately to their customers' demands because the company will be able to locate suppliers who always make raw materials available for them for continuous production needs.

**Table 2: Quick communication and waste management at Nigerian wooden furniture companies**

		Swift communication	Waste management
<b>Swift communication</b>	Pearson Correlation	1.00	.891**
	Sig. (2-tailed)	-	.000
	N	171	171
	Pearson Correlation	.891**	1.00
<b>Waste management</b>	Sig. (2-tailed)	.000	-
	N	171	171

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Source:** Research Data 2023 (SPSS output version 23)

Table 2 above shows a correlation between effective waste management and communication among wooden furniture manufacturers in Nigeria, where  $r=0.891$  represent the strength of the direction in terms of the variable association and  $p=000$  (P0.001) represent the values of rejection. A good communication channel encourages lean procurement practises in wooden furniture firms in Nigeria. A company that ensures quick response in communication will have minimal waste within its organization, and the cost and effectiveness of such wooden furniture manufacturing firm will consequently rise.

#### Determine the Impact of Flexible Processing on waste management in wooden furniture firms in Nigeria.

The hypothetical assumption above shows the association between the study variables (flexible processing and waste management).

**Table 3: Flexible processing and waste management in the wooden furniture firms in Nigeria**

		Flexible processing	Waste management
<b>Flexible processing</b>	Pearson Correlation	1	.948**
	Sig. (2-tailed)	-	.000
	N	171	171
	Pearson Correlation	.948**	1.00
<b>Waste management</b>	Sig. (2-tailed)	.000	-
	N	171	171

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Source:** Research Data 2023 (SPSS output version 23)

With a P-value of .000 ( $P < 0.001$ ) and  $r = .948^{**}$ , Table 3 shows a significant correlation. It indicates a strong and significant correlation between the two variables at a 95% confidence level. Flexible work processing enables the efficient elimination of waste from wooden furniture manufacturers and the correct monitoring of production costs and stocks due to the  $r$  and  $p$  values above.

#### 4.1 Findings

The analysis of the study shows that among Nigerian wooden furniture makers, lean procurement production awareness methods, rapid communication lean procurement practises, and flexible work lean procurement practises all help to manage and decrease waste. It backs up the assertion stated by Ugochukwu, Engström, and Langstrand (2012) that lean procurement improves the nature of newly manufactured products while reducing manufacturing costs and speeding up the creation of wooden furniture goods.

#### 4.2 Conclusion and Recommendation

Based on the conclusions reached after examining the research hypotheses and the answer to the study question. This paper concluded that flexible processing, fast communication, and production alertness are indicators for lean procurement practices that help handle the waste issue in Nigerian wooden furniture producers, empirically addressing the study's main research question.

Lean procurement should be adopted by wooden furniture manufacturers in Nigeria as a waste management approach and incorporated into sector-specific policies and laws. It will help with analysing the moderate waste management technique employed by Nigerian wooden furniture makers, as shown in figure 1.2.3 above. The tightening of laws and regulations will further limit employee behaviour and excessive work in the wooden furniture industry in terms of how it runs and performs daily.

#### REFERENCES

- Agus, A., & Hajinoor, M. S. (2012). Lean production supply chain management as a driver towards enhancing product quality and business performance: A case study of manufacturing companies in Malaysia. *International Journal of Quality & Reliability Management*, 29(1), 92-121.
- Babazadeh Bedoustani, F. (2020). How does a successful secondary school woman principal in the greater Montreal area describe how she carries out her responsibilities as a leader?

- Carrasco-Mora, J. A. (2019). *Lean Procurement Strategy at Cotecmar* (Doctoral dissertation, Monterey, CA; Naval Postgraduate School).
- Chan, F. T., Kumar, N., Tiwari, M. K., Lau, H. C., & Choy, K. (2008). Global supplier selection: a fuzzy-AHP approach. *International Journal of Production Research*, 46(14), 3825–3857.
- Gładysz, B., Buczacki, A., & Haskins, C. (2020). Lean management approach to reduce waste in HoReCa food services. *Resources*, 9(12), 144.
- Handfield, B., Monczka, M., Giunipero, C., & Patterson, L. (2009). *Sourcing and supply chain management Canada*. UK: South-western publishers.
- Jasti, N. V. K., & Kodali, R. (2015). Lean production: Literature review and trends. *International Journal of Production Research*, 53(3), 867–885.
- Ninlawan, C., Seksan, P., Tossapol, K., & Pilada, W. (2010). The implementation of green supply chain management practices in the electronics industry. In *World Congress on Engineering 2012. July 4-6, 2012. London, UK*. (Vol. 2182, pp. 1563-1568). International Association of Engineers.
- Omwoyo, J., Wanyoike, D., & Mbeche, W. (2019). Influence of lean procurement initiatives on supply chain agility in Nakuru county, Kenya manufacturing firms. *The International Journal of Business Management and Technology*, 3(4), 150-157.
- Oterhals, G., & Salte, T. (2015). *Lean procurement in global shipbuilding of high-end specialised vessels: A case study of Vard Group's global value chain with building location in Vung Tau (Master's thesis)*. Molde, Norway: Molde University College.
- Owoyemi, J. M., Zakariya, H. O., & Elegbede, I. O. (2016). Sustainable wood waste management in Nigeria. *Environmental & Socio-Economic Studies*, 4(3), 1-9.
- Ugochukwu, P., Engström, J., & Langstrand, J. (2012). Lean in the supply chain: A literature review. *Management and Production Engineering Review*, 3, 87-96.

