

## The Effectiveness Procurement on Material Management in Manufacturing Industries

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### Abstract

This study investigates the effectiveness procurement on material management in manufacturing industries. The main objective of the study was to assess the effective procurement it effect on materials management in manufacturing industries. Specifically, the study intended to assess how inventory control systems and lead time affect material management. The empirical analysis of the study focused mainly on the Nigeria Breweries. The target population of the study was 56 employees of Nigeria Breweries. A sample of 49 respondents was selected from this population using the stratified random sampling technique, where 7 departments, which directly deal with materials, were selected which include: production, Purchasing, quality Control, Warehouse/store, Human Resource Development, Finance and audit and physical Distribution departments .Data was collected through a structured questionnaire, consisting mainly of closed ended and open-ended questions. The data was analyzed through descriptive statistics such as mean, standard deviation, median and percentages. Results showed that there was significant relationship between effective procurement and material management as a result of inventory control system involvement. Further, results showed that lead time was highly significant to organizational performance through acquiring and delivering the needed materials within the shortest time possible. The study advocated that a lot of emphasis need to be directed to materials management in dairy companies in order to achieve significant cost savings, reduction in wastes and production costs and to achieve increase in profitability and product quality, consequently improving the organizational performance. The study recommended that dairy companies adopt the use of Information Communication Technology (ICT), use of proper codes in all materials, and the employees be trained on the use of inventory control systems.

**Keywords:** *Materials management, Procurement, Organizational performance, Production costs, Procurement procedure, Profitability*

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## **Background to the Study**

In the earlier years, materials management was treated as a cost Centre since purchasing department was spending money on materials, while store was holding huge inventory of materials, blocking money and space (Ramakrishna, 2005). However, with the process of liberation and opening up of global economy, there has been a drastic change in the business environment, resulting in manufacturing organizations exposed to intense competition in marketplace. In Nigeria for instance, materials constitute a major cost component for any industry. Sturkhart (2007), states that the total cost of installed materials or value of materials may be 60% or more. In many cases, the cost of materials exceeds 50% of the total cost of goods produced. Such a large investment requires considerable planning and control so as to minimize wastage which invariably affects the performance of the organization (Ramakrishna, 2005).

Majority of the companies attain significant savings from effective materials management, which amounts between 50%-60% of total costs (Song *et al.*, 2006). Effective management of materials can lead to a reduction in cost, resulting in a significant saving. A potential 6% saving on total cost through effective material management is achievable (Bell & Sturkhart, 1987). The various types of materials to be managed in any organization include purchased materials, work-in-progress (WIP), materials and finished goods (Banjoko, 2009). Ogbadu (2009), identified basic price, purchasing cost, marketing cost, obsolescence and wastages as the various costs involved in these materials. Thus, the management of these materials so as to reduce the costs associated is what it is referred to as material management. Previous researches (Whyback & William, 1986; Evan, 1987; Ramakrishna, 2005; Ogbadu, 2009; Ondiek, 2009) have shown that materials account for more than 50% percent of the annual turnover in manufacturing firms. This shows clearly that priority should be given to management of materials in organizations to avoid unnecessary costs. Nigeria production and manufacturing firms, and specifically businesses in the dairy sector are facing competition in the current markets which has led to the need for coming up with better ways and strategies of managing material resources hence eliminating wastage in the value chain and thus enhancing organizational performance. Nigeria Cooperative Creameries was mismanaged until it collapsed in the 1990s.

According to a survey carried out by Mutwol (2013), on the impact of the collapse of Nigeria breweries, it was found that the sector have suffered so much over the past years due to lack of adequate commitment to timely funding of materials procurement, poor material planning, poor inventory control, purchasing problems, quality control problems; stores control problems, material movement and even surplus disposal problems. Therefore, this study became inevitable in view of the developing and changing nature of the Nigeria economy given the nature of the environment: Economic, Political, changes in technological environment, government regulations, multiple taxation, environmental degradation and reduction in quality of raw materials as a result of re-cycling and stiffer competition. Thus materials management should no longer be viewed as a drain-pipe, but as a serious stabilizing and economic growth potential factor. Unfortunately, few studies exist yet on the role of Materials Management on Organizational Performance and therefore the study attempts to fill this knowledge gap.

### **Statement of the Problem**

In recent years Nigeria Breweries Ltd, has suffered from inefficient and imprudent management of resources and product scarcity, which has resulted in invaluable economic and social losses to the society. On the surface, this scarcity has been attributed to shut downs and breakdown at the brewery due largely to a lack of smooth maintenance activities in the plant, which is brought about by the unavailability of replacement of parts, which should have been provided by the materials management department. The function of the materials management department is very important especially in view of the difficulties associated with the purchase of equipment spares, which in most cases are foreign-sourced. Frequently, the materials management department has been accused for the frequent breakdown and shut downs as a result of its inability to provide the necessary spares as at when they are need.

### **Objectives of the Study**

The general objective is to find out the effective procurement procedure, its effect on material management in manufacturing industries (A case study of Nigeria Breweries). The specific objectives were;

1. To determine the effect of proper procurement procedure on material management in Nigeria breweries
2. To evaluate the effect of material management on profitability of Nigeria breweries
3. To determine the relationship between materials management problems and the frequent breakdown and shut down of the plant.

### **Research Questions**

1. How does proper procurement procedure have an effect material management in Nigeria breweries?
2. How does material management influence profitability of Nigeria breweries?
2. How does material management problems and the frequency breakdown and show down plant?

### **Research Hypothesis**

For the study the hypotheses slated for testing are;

#### **Hypothesis One**

**H<sub>0</sub>:** There is no significant relationship between materials management problems and the frequent breakdown and shut down of the plant.

**H<sub>1</sub>:** There is a significant relationship between materials management problems and the frequent breakdown and shut down of the plant.

#### **Hypothesis Two**

**H<sub>0</sub>:** There is no significant relationship between proper procurement procedure and material management in Nigeria breweries

**H<sub>1</sub>:** There is a significant relationship between proper procurement procedure and material management in Nigeria breweries.

### **Literature Review**

Barker (1989), identified five key functional areas that materials management cuts across which include purchasing, production and inventory control, quality control, storage and

warehousing and physical distribution. Other literatures (Donald, 1975; Whybark & William, 1986; Linton *et al.*, 2007) expanded the areas to include forecasting demand and quantity materials requirements, good supplier and customer relationship, indigenous source of supply for foreign materials, developing skills of workers in material management, improved departmental efficiency and research and development (R&D) in material management. These activities are managed by the material management department. Selection of personnel for marketing, purchasing, inventory control, stores management and materials handling and their training and placement is also to be seen by the materials management department.

Materials are the lifeblood and heart of any manufacturing system and no organization can operate without them. They must be made available at the right price, at the right quantity, in the right quality in the right place and at the right time in order to co-ordinate and schedule the production activity in an integrative way for an industrial undertaking. A manufacturing firm will remain shaky if materials are under stocked, overstocked, or in any way poorly managed (Banjoko, 2000).

According to Navon & Berkovich (2006), the main logistic responsibility in any organization is to formulate master programme for the timely provision of materials, components and work-in-progress. Stevenson (2001), explained that logistics, including materials and goods flowing in and out of a production facility as well as its internal handling has become very important to an organization to acquire competitive advantages, as the company's struggle to deliver the right product at the correct place and time. The main aim is to actually promote, with low cost, a flow whose velocity allows the execution of manufacturing process with expected satisfaction level. Bowersox & Closs (2002), articulated that improvement in continuity of supplies with reduced lead times, will lead to improvement in cooperation and will also enhance cooperation's and communications with reduced duplication of efforts, reduction in material costs and improvement in quality control, which are the main benefits of materials management

### **Concept of Materials Management**

Materials Management is a tool to optimize performance in meeting customer service requirements at the same time adding to profitability by minimizing costs and making the best use of available resources. The basic objective of Materials Management as explained by Banjoko (2000) and Jacobs *et al.*, (2009), is to ensure that the right item is bought and made available to the manufacturing operations at the right time, at the right place and at the lowest possible cost. According to Wild (1995), materials management is a concept which brings together the responsibility for determining the manufacturing requirement that is scheduling the manufacturing processes and procuring, storing and dispensing materials (Wild, 1995; Ondiek, 2009). An integrated approach to material management defines it as the function responsible for the coordination of planning, sourcing, purchasing, moving, storing and controlling materials in an optimum manner so as to provide a predetermined service to the customer at a minimum cost (Ramakrishna, 2005; Gopalakrishna & Sundaresan, 2006). These definitions provide the scope of materials management which includes materials requirements planning (MRP), decision on purchasing, procurement of materials, inventory management, staffing, stores and warehouse management, production and distribution of

finished goods at minimum cost at due time (Osotimehin, 2006; Monday 2008; Ogbadu, 2009).

Chase et al.,(2009), explained the concept of materials management brings in the total systems approach to managing the entire flow of information, materials and services from raw materials suppliers through factories and warehouses to the end user/customer. The study further confirmed that a firm's success depends on how they manage their materials effectively. They indicate that it is important to monitor inventory at each stage because it ties up resources. Therefore, effective materials management is fundamental to the survival of business, industry and economy.

### **Conceptual Framework**

In a work of this nature, a conceptual analysis of relevant studies on the problem under consideration is desirable; given the universal perception and the enormity of the challenges that raw material management had posed to manufacturers (Marcello, Andrea & Montanari, 2004).

### **Empirical Review**

The potentials of procurement strategy in enhancing organizational performance have already been proven in a number of studies (Aberdeen Group, 2011). According to these studies, procurement strategy enables companies to decentralize operational procurement processes and centralize strategic procurement processes as a result of the higher supply chain transparency provided by procurement systems. A company's procurement function is subdivided into strategic and operational processes since activities and priorities in these two areas are entirely different (Kaufmann, 2009). Supplier management, the pooling of purchase requisitions and procurement-oriented product development are tasks that are typically assigned to strategic procurement. Strategic procurement often had to deal with administrative routine work as well, such as individual transactions, converting purchase requests into purchase orders or ensuring the correct allocation of invoices received. Strategic aspects are frequently neglected in the process, with the buyer having little influence over the choice of suppliers and the purchased products, (*Industrial Distribution*, 2011). Johnston (2005) argues that costs have to be managed well to achieve the firm's performance goals. There are several key success factors, related to both the competency of the service provided by an online auction intermediary and to the organizations own internal capabilities. One key success factor relating to cost management is technical capability of the system (Johnston, 2005). Johnston (2005) specified technical service quality in terms of system cost (security, reliability, easy to use, accessibility) and service quality (e.g. responsiveness of service). In addition, trust in the service provider is another major success factor for strategic procurement adoption (Rotchanakitumnuai & Speece, 2009).

Organizational record management systems also have a major influence on the organizational performance (Croom & Brandon-Jones, 2007). Organizational record management is an important driver for increasing internal process improvement, enhancing learning and innovation including the knowledge of purchasing personnel, their computer skill and resources. Record Management support is key influence organizational

performance (Rotchanakitumnuai & Speece, 2004). Positive management support for e-procurement can ensure system adoption success. Training is the best support to enable personnel to use the records more efficiently. Croom & Brandon-Jones (2007) found that record management is one key success factor of strategic procurement implementation. Record management makes the procurement process more transparent and helps organizations achieve good governance impacts (Hui, 2011).

### **Methodology**

The research was designed to cover a number of staff of Nigeria Breweries PLC, Ota, Sango, Ogun State. The company was one of the branches of Nigeria Breweries PLC. and has some branches in Abeokuta, port-Harcourt, Kano and Lagos state. This research work is tailored purposefully to determine the relevance of product costing techniques to management decision making with special reference to the case study.

### **Data Sources and Collection Method**

The data for the study generates from both primary and secondary sources. The primary data is obtained for the personally administered questionnaire aimed at eliciting first hand (original) responses on issues relating to the objectives of the study the secondary data is obtained from the publisher work from management textbook and journals.

### **The Study Population**

The population of study for the research work would be 50 in which 30 of them would be staff of Nigeria Breweries PLC. This is both management staff and subsidiary staff and the remaining 20 responded would be the customers of Nigeria Breweries PLC, Sango Otta, Ogun State and its environment.

### **Sample Size General Techniques**

For the purpose of this study, a sample of thirty was selected for the total production of Nigeria Breweries Plc Sango. The desired sample size would be selected by the use of sample random sampling techniques where every object in the population has equal chances of being selected.

### **Research Instruments and Specification**

Questionnaire is the research instrument used for this study. The 5 point likert type questionnaire scale was design and used for the study. The questionnaire is divided into two parts; the first part is classified as section A, which consists of the personal data of the respondents. The second part which is classified as section B contains and requires the question in relation to the subject matter of the study.

### **Method of Data Presentation and Analysis Techniques**

In this study, simple frequency with simple percentage descriptive technique was employed in describing the data collected. Analyses of the data collected in relation to the hypotheses tested were carried out with the aid of Pearson correlation coefficient using Statistical Package for Social Science (SPSS) version 22. The decision rule is to accept the research hypothesis, if the probability of error is between 1% to 10% and reject if otherwise.

## Data Presentation and Analysis

### Data Presentation

This section is concerned with the presentation of the data gathered from the questionnaire administered.

**Table 1: Gender**

	Frequency	Percent	Valid Percent	Cumulative Percent
MALE	29	58.0	58.0	58.0
Valid FEMALE	21	42.0	42.0	100.0
Total	50	100.0	100.0	

The table 1 above shows that 58% of the respondents are male while 42% are female.

**Table 2: Age**

	Frequency	Percent	Valid Percent	Cumulative Percent
18-27	21	42.0	42.0	42.0
Valid 28-37	15	30.0	30.0	72.0
38-47	12	24.0	24.0	96.0
48-57	2	4.0	4.0	100.0
Total	50	100.0	100.0	

The table 2 above shows that 42% of respondents' ages are between 18-27, 30% is between 28-37, 24% is 38-37, while 4% is 48-57.

**Table 3: Marital status**

	Frequency	Percent	Valid Percent	Cumulative Percent
MARRIED	7	14.0	14.9	14.9
Valid SINGLE	40	80.0	85.1	100.0
Total	47	94.0	100.0	
Missing System	3	6.0		
Total	50	100.0		

The table 3 above shows that 7% of the respondents are married, 40% are married, while 6% could not respond.

**Table 4: What category of education background are you**

	Frequency	Percent	Valid Percent	Cumulative Percent
ORDINARY LEVEL/EQUIVALENT	4	8.0	8.0	8.0
Valid DIPLOMA/EQUIVALENT	19	38.0	38.0	46.0
1ST DEGREE/EQUIVALENT	27	54.0	54.0	100.0
Total	50	100.0	100.0	

The table 4 above shows that 8% of the respondents held o'level qualification, 38% held diploma, while 54% are 1<sup>st</sup> degree holder.

**Table 5 Position held**

	Frequency	Percent	Valid Percent	Cumulative Percent
MAMAGEMENT STAFF	13	26.0	26.0	26.0
SENIOR STAFF	7	14.0	14.0	40.0
JUNIOR STAFF	14	28.0	28.0	68.0
FACTORY WORKER	16	32.0	32.0	100.0
Total	50	100.0	100.0	

The table 5 above shows that 26% of the respondents held the position of management staff, 14% are senior staffs, 28% are junior staffs, while 32% are factory workers.

**Table 6: To what extent do you agree procurement procedure affect material management**

	Frequency	Percent	Valid Percent	Cumulative Percent
AGREE	21	42	42	58
DISAGREE	29	58	58	100.0
Total	50	100.0	100.0	

The table 6 above shows that 21% of the respondents agree that procurement procedure affect material management.

**Table 7: Does material management problems has an effect on breakdown and show down plant**

	Frequency	Percent	Valid Percent	Cumulative Percent
DISAGREE	31	62	62	38
AGREE	19	38	38	100.0
Total	50	100.0	100.0	

The table 7 above shows that 62% of the respondents disagreed that material management affect breakdown and show down plant, 38% disagreed.

## Data Analysis

### Test of hypothesis

- H1:** There is a significant relationship between materials management problems and the frequent breakdown and shut down of the plant.
- H2:** There is a significant relationship between proper procurement procedure and material management in Nigeria breweries.



## Correlations

			Effective Proc.	Material Mgt.	Manuf. Indu.
Spearman's rho	Goal Att.	Correlation Coefficient	1.000	.222	.210
		Sig. (2-tailed)	.	.122	.143
		N	50	50	50
	Mgt. Succession	Correlation Coefficient	.222	1.000	.616**
		Sig. (2-tailed)	.122	.	.000
		N	50	50	50
	Effective Procurement	Correlation Coefficient	.210	.616**	1.000
		Sig. (2-tailed)	.143	.000	.
		N	50	50	50
**. Correlation is significant at the 0.01 level (2-tailed).					

In line with hypothesis one the above analysis shows the pearsonnaian correlation coefficient of 0.222 and error probability of 0.122 respectively. The outcome of this result shows that there is no significant relationship between materials management problems and the frequent breakdown and shut down of the plant. . As a result of this, the alternative hypothesis is accepted.

And for the second hypothesis, the analysis shows the pearsonnaian correlation coefficient of 0.616 and low error probability of 0.000 respectively. The outcome of this result shows that there is a significant relationship between proper procurement procedure and material management in Nigeria breweries, the alternative hypothesis is rejected.

## Conclusion

The objective of the study was geared to provide useful insight to the future prospects of the Nigeria Breweries if at all materials management is given priority as a total concept. The study established that there was a positive and significant relationship between effective procurement procedures on material management in manufacturing industries. This implies that through effect procurement and materials management, an organization can achieve the benefits of effective use of labour, providing system flexibility, increasing productivity, decreasing lead times, reduction in wastes, reduction in production costs, increased product quality are achieved. The ratings showed that effective procurement systems played a vital role in organizational performance, and as such, organizations must ensure that effective procurement system be highly involved in material management activities hence achieving higher organizational performance. The results also showed that the coefficient correlation between shows that there is no significant relationship between materials management problems and the frequent breakdown and shut down of the plant is 0.222. This meant that there is no strong positive relationship between material management problems and frequent breakdown and shut down of plant in Nigeria Breweries. Eldoret hence has contributed to the growth and performance of the company. It was also evident from the findings of the study that lead time contributes to organizational performance. Lead time showed how the organization acquires competitive advantages as it delivers the right product

at the correct place and within the shortest time possible. Further, the results showed that the correlation coefficient shows that there is a significant relationship between proper procurement procedure and material management in Nigeria breweries is 0.616. Hence it can be deduced that there was a positive relationship between proper procurement procedure and material management. More significantly was the fact that there was a strong positive correlation between procurement procedure and material management systems of 0.616, hence it can be deduced that there was a strong positive relationship between proper procurement procedure and material management in Nigeria breweries.

### **Recommendations**

Based on the findings, it is inevitable to provide recommendations to the management of Nigeria breweries. Eldoret, and other dairy companies on how to boost Materials Management in Nigerian Breweries Company. The study recommends that there is need to enormously employ proper procurement procedure especially in MRP so as to excel and guarantee its future, hence improving organizational performance. Further, the study recommends that the Nigeria breweries in Nigeria should increase their resource commitment to staff training and Research and Development in materials management so as to develop the necessary skills, update their knowledge, and enhance New Product Development.

Finally, the study recommends that there is need for organizations to adopt the use of information technology, that will not only help in information sharing, but also will help in hastening orders from suppliers hence shortening the lead time. Further, the study recommends that the organization form an expediting committee that will help in following up of orders with the suppliers hence delivering the products at the right time. Materials Management Department therefore should to support the management of an organization in the production activities. It should help in marketing, selling, promotion and even control of all types of materials for its quantity, quality and cost.

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