

MATERIALS MANAGEMENT PRACTICES AND OPERATIONAL PERFORMANCE OF SELECTED QUOTED FOOD, BEVERAGES AND BREWERIES FIRMS IN SOUTHWESTERN NIGERIA

¹AGORZIE, CLAUDIUS JAMIKE, ²EKPUDU, JONATHAN EHIMEN, ³ADEWUMI, TOLULOPE OLAJUMOKE

¹Department of Management and Accounting,
Obafemi Awolowo University, Ile-Ife, Nigeria.
E-mail: jamikkeclaudius2014@gmail.com

²Department of Business Administration,
Faculty of Management Sciences,
University of Lagos, Nigeria.
E-mail: jonathanekpudu@gmail.com

³Department of Management and Accounting,
Obafemi Awolowo University, Ile-Ife, Nigeria.
E-mail tolureal2004@gmail.com

Abstract

During and immediately after the industrial revolution, organisations regarded Materials Management (MM) activity as a cost centre and drainpipe (Ramakrishna, 2005). On the contrary, Song et al. (2006) stated that majority of firms attain savings amounting to between 50% - 60% of total costs from MM. Ondiek (2009) reported that MM has become a critical competitive tool for firms. This study therefore examined Materials Management Practices (MMP) adopted by selected quoted Food, Beverages and Breweries (FBB) firms in Southwestern Nigeria (SWN); it also evaluated the effect on firms' operational performance and identified challenges they face in the adoption. These were with a view to providing information on MMP that enhances operational performance of firm. Primary data were generated through structured thematic questionnaire responded to by 234 management and executive employees of 13 out of the 33 FBB in South Western Nigeria (SWN). The respondents were purposively selected from production, purchasing, quality control, warehouse/store, and finance departments because of their direct involvement in handling of materials. Data collected were analysed using frequency tables, weighted mean, standard deviation and multiple regression statistical tools. The study revealed that MMP adopted by FBB in SWN include materials handling (84%), materials cost control (82.8%), procurement (80%), materials planning (78.8%), and inventory management (75.2%). The study results showed that the model was statistically significant ($F=38.52$, $p=0.000$) and that MMP has significant effect on operational

performance of firm. The coefficient of explanatory variables from the regression that indicated significant effects are material handling ($t=7.156$, $p=0.000$), procurement ($t=2.146$, $p=0.000$), and material planning ($t=2.118$, $p=0.000$). Challenges of the adoption of MMP include inadequate power supply (88%), poor transportation system (86%), lack of trained personnel (84%), poor relationship with vendors (78%), poor information technology (76%) and use of ineffective codes (70%). The study concluded that $R^2 = 0.541$ value is an indication that as the challenges to MMP adoption are overcome, the FBB firms will exhibit better operational performance.

Key words: *Materials, Management, Practices, Operational Performance, Southwestern Nigeria.*

1.0 Introduction

Materials Management (MM) is the aspect of business that deals with preparation for procuring, receiving, handling, storing, and releasing of materials for manufacturing with resourceful control actions (Ibegbulem & Okorie, 2015). Manufacturing materials raw materials from agriculture and a variety of extractive industries' products, such as mineral resources, fruits, and vegetables sold to processors; semi-finished goods and treated materials to which some work have been applied or value added, such as rods, wires, paper, chemicals, etc; and parts and assemblies that are finished goods of a course, that can be useful as part of more complex produce by other processes (Rumelt, 2002).

On the other hand, The Institute of Charter Accountants of Nigeria (ICAN) (2006) considered materials as five groups thus: Raw material for producing complete products; Work-In-Progress (WIP); parts for assembly into completed products; completed products to be accessible for sale to the consumer; and indirect materials such as stationery, lubricants, cleaning materials, etc, for use by cost centre(s) in an organisation.

Every organisation uses one form of material or the other in its operations. It is a fact every scholar and practitioner know that materials hold a chunk of every enterprise's capital. Scholars opine that materials are responsible for over fifty percent of the yearly earnings in the organisations (Whybark & William, 1996; Ramakrishna, 2005; Ogbadu, 2009; Ondiek, 2009; Taiwo, Agorzie & Monday, 2012; Inyang, 2013; Ibegbulem & Okorie, 2015).

In the past decades, organisations were passive about materials management. In fact, they treated it as a cost centre because purchasing department pays money for materials purchases, and store keeps large sums of money in inventory of materials and space (Ramakrishna, 2005). In those years, many saw MM as a drainpipe on the firm, a function of very much limited importance.

Looking back at history, it is not difficult to understand why managers in those years disregarded MM. Back through the years, preferences of industries were the five Ms, namely: Men, Machines, Money, Materials, and Methods. From time to time, these Ms have shifted their positions in their relative importance to industrial organisations. During 1930 through 1950, management scholars became aware of the importance of human factors to the success of any organisation (Agorzie, 2005). The focus was therefore on men as they were the source of productive power then. With time, emphasis shifted in favour of machines that have then become undisputable source of industrial power. In the course of time, methods of production become more complex. This signaled the need for a more efficient management system. Attention was then shifted to scientific management. Following the unprecedented oil crisis of the 1970s, the priorities of industrialists all over the world changed to bringing money to a position of prime importance. The famous industrial revolution skewed the relationship structure among the 5Ms in favour of materials. As input into the production system, materials have received attention that is steadily growing in prominence now and will continue into the future.

The consequence of ineffective materials management could be seen in the case of old Kenya Cooperative Creameries (KCC). The firm was known to be the major dairy firm in Africa and the earliest in East and Central Africa. European Farmers established it in 1925, but got liquidated in 1990 due to materials mismanagement (Pauline, Wanyuike, & Richu, 2014).

Today, attitude of firms is progressively changing in favour of materials management practices. The introduction of decision-support systems, numerically controlled machines and computer systems into materials management has boosted operations management. For some, it is a means for maximising performance to achieve customer service specification and at the same time add value to profitability through cost reduction (Ibegbulem & Okorie, 2015). Pauline *et al.*, (2014) stated that materials are the lifeblood of organisations. They stress further that effective materials management can be seen as the healthy heart that pumps life-blood through arteries, veins and sinews of a firm to sustain its vitality. Song, Haas and Caldas (2006) opine that most firms achieve savings that amount to between 50% and 60% of costs from efficient materials management. This is a welcome development now that firms are not only striving to exploit opportunities created by globalisation and trade liberalisation, but also to meet the ever-present operational challenges and marketplace competitions. Ondiek (2009) stated that rivalry has changed from marketplace to production floor where manufacturing costs can be minimised and profitability maximised for firms to have edge over rivals. In effect, materials management has become

competitive tool for organisation's survival and not a cost centre or waste-pipe as previously perceived.

The study provides answers to the questions stated below:

- i) What are the materials management practices adopted by the FBB in SWN?
- ii) How do materials management practices affect operational performance of firm?
- ii) What are the challenges of FBB in the adoption of materials management practices?

2.0 Literature Review

2.1 Concept of Materials Management

Materials management is a method that put together the stream of supplies into, through and out of an organisation to accomplish a height of service that guarantee that accurate materials are on hand at the right place, at the right time, in the right quantity and quality and at the right cost (Rahman, 2014). He stressed that it comprises the function of procurement, materials treatment and storage, production and inventory management, packaging, transportation and associated information systems and their use during supply, manufacturing, service and distribution.

Materials management gets together tasks for shaping manufacturing necessities which include; scheduling of manufacturing procedure, procurement, storage and administration of materials (Wild, 1995; Ondiek, 2009). Viewing from an all-inclusive perspective to materials management, Gopalakrishnan and Sundaresan (2006) see materials management as a process that include the coordination of planning, sourcing, purchasing, moving, storing, and controlling of materials in the most advantageous manner, in order to offer quality service to customer at the lowest cost. Although the objectives and scope of materials management have been clearly highlighted in the above definitions, Osotimehin (2006), Monday (2008), Ogbadu (2009), Paulin et al. (2014) included the extent of materials management in their works; Materials Requirement Planning (MRP), decisions on purchasing, procurement of materials, inventory management, staffing, stores and warehouse management, production and distribution of finished goods at lowest cost and at planned time.

Banjoko (2000); Jacobs, Chase, and Aquilano (2009) opined that the fundamental goals of materials management are to make sure that the exact items are purchased and are on hand for the manufacturing operations at the exact time, exact place, and at the cheapest cost. In addition to these, adequate plans for continuous availability of material resources must be made to ensure that the overall performance of an organisation is not undermined. Pauline *et*

al. (2014) conclusion that effective material management is essential to the continued existence of a business, industry and economy lent credence to the above view.

2.3 Concept of Operational Performance

Performance is the end result of actions of an organisation over a given period of time (Samir & Subrata, 2006). Business organisations are today confronted with increased global competition, highly knowledgeable consumers, and advocate shareholders. The environment has transformed from rivalry based on capacity to spend and handle physical assets to rivalry on information and capability to make use of hard to pin-down and flexible assets. In the novel business pattern, depending on only the monetary dealings which are considered as pointer of short-run indicator of firm's performance may possibly be misleading (Samir & Subrata, 2006). Operational performance measurement dimensions add additional perspectives which exhibit not only the current position of the organisation but also on how it progresses towards the realisation of its strategic goals.

Firms' performances are measured against bench mark such as; cycle time, productivity, waste reduction, and regulatory conformity's ability. In this perspective, operational performance measures are used to providing indices, indicators, dimensions or metrics that measure how close the organisation is from goals established by an organisation.

Bahjat (2012) sees operational performance as a vital facet of assessing the output of plant flexibility and an excellent quality appraisal of how healthy inputs are transformed to outputs in terms of quality, speed, dependability of processes, flexibility and cost.

Slack (1991) and Small (1999) posit that organisations should note that customer needs and desires have changed over times, and that operational performance indicators should reveal and measure them accordingly; low price, high quality, high variety of products as well as fast and on-time delivery. Rajaet *al.*, (2015) state that a number of organisations adopt quality, prompt delivery, cost and flexibility as basic dimensions for measuring their operational performance. Some studies adopted different operational performance dimensions such as boosting of employee work moral, reduction of delivery lead time, reduction in production cost or cost leadership ability, reduction in machine down time, reduction in resource wastages, and enhanced continuous production' (Nsikan *et al.*, 2015). Operational performance of firm determines to a large extent the ability to achieve strategic goals/objectives and accomplishment of firms' vision and mission.

2.4 Empirical Review

Empirical research studies in material management are relatively few in Nigeria. However, some of the few previous empirical studies and results are as reviewed-Ogbadu (2009) studied the effect of MM on profitability of Benue Breweries Limited. Survey research design was used, and random sampling technique was employed to administered copies of questionnaire on respondents, and data were tested using Chi-square. The study reported a significant positive relationship between MM and profitability. Adeyemi and Salami (2010) on a study of inventory, a dimension of MM as a tool for optimising resources in Ilorin Plant of Coca-Cola Bottling Company, analysed data obtained using Economic Order Quantity model, variance and Chi-square. They reported a positive relationship between inventory management and the survival of manufacturing firm. Egberi and Egberi (2011) investigated the link between inventory management and firm profitability in Eternit Limited. Data were sourced with structured questionnaire. The study reported significant positive relationship between inventory management and firm's profitability. Asaolu, Agorzie and Monday (2012) examined MM and profitability in the manufacturing industry in Nigeria. Structured questionnaire responded to by 100 employees was the source of data. The study reported a positive and significant increase in profitability of the studied firms due to efficient MM. Nwosu (2014) studied the effect of MM on profitability of Nigerian Breweries and Guinness Nigeria PLC. Data were sourced through oral interview and questionnaire responded to by a sample of 368 employees from the two firms. The study concluded that MM makes a significant contribution to firms' profitability. Ibegbulam and Okorie (2015) carried out an assessment of MM and profitability of an organisation. The study reported that MM contributes to firms' profitability and thus recommended its adoption by firms. Most of the studies conducted in Nigeria, as could be seen from the above reviewed studies used profitability as proxy for measuring organisational performance. This study deviated from this practice by using operational performance parameters such as product quality, customer service, product delivery time; and waste reduction as dimensions for measuring organisational performance.

Hypothesis of the Study

Ho: Materials management practices has no effect on operational performance of firm

3.0 Methodology

3.1 Research Design

Cross sectional survey design was adopted in the study. Questionnaire was used generated the required primary data. The population of the study was 33 FBB firms listed on the Nigeria Stock Exchange (NSE Factbook, 2019). Thirteen FBB firms whose headquarters are in Lagos, Oyo and Osun states

were purposively selected and used for the study. The companies' head office is where policies on MM are made and some selected branches were used as source of data collection. Due to their direct involvement in material handling, six departments; production, purchasing, quality control, warehousing/store, finance and transportation were purposively selected and used for data collection. 234 managers, assistant managers, and supervisors were purposively selected as sample size for the study.

Questionnaire was used to collect required data from the companies' purposively selected staff that constituted the respondents of the study. The questionnaire was categorised into two parts. The independent variables' questions of the study were based on a 5-Point Ordinal Scale of 1 to 5: Not Adopted (NA) = 1, Little Adoption (LA) = 2, Moderate Adoption (MA) = 3, Regular Adoption (4), and Extensive Adoption (EA) = 5;

On the other hand, questions on the dependent variable were measured on a 5-Point Likert interval scale with Strongly Disagree (SD) =1, Disagree (D) =2, Undecided (U) = 3, Agree (A) =4, and Strongly Agree (SA) =5. Cronbach's alpha for the instrument of the study was calculated for each of the constructs and those items with coefficients less than 0.5 were removed. The results indicated that the values of Cronbach's alpha for the constructs were in the range of 0.605 to 0.957.

3.2 Data Analytical Tools

Data collected were tested with both descriptive (percentage, mean and standard deviation) and inferential (multiple regression test) statistical tools. The objective was to make inference about the studied population through statistical test of hypothesis at 5% significant level.

The multiple linear regression function and model of the effect of Materials Management Practices (MMP) on Operational Performance (OP) of the study are as stated:

$$OP=f(MMP).....(i)$$

$$MMP = PRC_1, IM_2, MP_3, MS_4, MH_5, MCC_6.....(ii)$$

$$OP= \beta_0 + \beta_1 PRC + \beta_2 IM + \beta_3 MP + \beta_4 MS + \beta_5 MH + \beta_6 MCC + \epsilon$$

where:

OP = Operational Performance

β_0 = Constant,

$\beta_1 \dots \beta_6$ = Co-efficient of the independent variables (PRC, IM, MP, MS, MH, MCC)

PRC = Procurement

IM = Inventory management

MP =Materials planning

MS = Materials storage method

MH= Materials handling

MCC = Materials cost control

ε = Error term.

4.0 Results and Discussion of Findings

4.1 Response Rate, Respondents' Characteristics and Classification

Two hundred and thirty-four (234)copies of the questionnaire were distributed, but two hundred and four (204)copies were properly completed and returned in useable form. This made it a response rate of 88.7%.

4.2 Materials Management Practices Adoption

Table 1 shows that 80% of the respondents hold the opinion that those FBB firms regularly adopt procurement ($\bar{x} = 4.0$ on a scale of 1 = *not adapted* to 5 = *extensively adopted*, $s = 0.67$).According to 78.8% of the respondents, material planning ($\bar{x} = 3.94$, $s = 0.58$) is also regularly adopted by the firms. Materials' planning has the least standard deviation among the six MMP considered by this study. This means that it has the highest level of agreement in the respondents' opinions among the six MMP. Materials cost control ($\bar{x} = 4.14$; $s = 0.72$) was rated by the respondents as being regularly adopted by the FBB and its measure of dispersion is $s = 0.72$. It is evident from Table 1 that the other three MMP were regularly adopted by the FBB. Ninety-one percent(91%) of the respondents reported that material storage($\bar{x} = 4.55$; $s = 0.88$) is regularly adopted; eighty-four percent of the respondents indicated that material handling ($\bar{x} = 4.20$; $s = 0.94$) is regularly adopted by FBB, so also Inventory management ($\bar{x} = 3.84$; $s = 0.89$). Regular adoption is the overall rating ($\bar{x} = 4.01$, $s = 0.90$) given by the respondents to materials management practices by quoted food, beverages and breweries firms in Southwestern Nigeria.

MMP	Materials Management Constructs	Frequency (Percent)					$\bar{x}(\%)$	S
		NA	LA	MA	RA	EA		
Procurement	Extent of adoption to achieve on time delivery of materials	0 (0.0)	0(0.0)	24 (11.8)	120 (58.8)	60 (29.4)	4.00 (80)	0.67
	Extent of adoption to fulfill customers order.	0 (0.0)	12 (5.9)	13 (6.4)	143 (70.1)	36 (17.6)		
	Prompt handling of customers Complaints	0 (0.0)	1 (0.5)	36 (17.6)	143 (70.1)	24 (11.8)		
	Adoption of due process for materials procurement	1 (0.5)	24 (11.8)	12 (5.9)	131 (64.2)	36 (17.6)		
Materials Planning	Availability of products/materials	1 (0.5)	12 (5.9)	24 (11.8)	24 (11.8)	143(70.1)	3.94(78.8)	0.58
	Availability of materials/products	0 (0.0)	12 (5.9)	24 (11.8)	144(70.6)	24 (11.8)		
	Availability of products/ materials	12(5.9)	24 (11.8)	1 (0.5)	143 (70.1)	24 (11.8)		
Materials Cost Control	Extent of adoption to produce	1 (0.5)	12 (5.9)	11 (5.4)	132(64.7)	48 (23.5)	4.14(82.8)	0.72
	Extent of adoption to produce	0(0.0)	1 (0.5)	11 (5.4)	120 (58.8)	72 (35.3)		
	Extent of adoption to produce	1 (0.5)	12 (5.9)	35 (17.2)	84 (41.2)	72 (35.3)		
Materials Storage	Adoption of automatic storage	1 (0.5)	12(5.9)	12 (5.9)	132 (64.7)	47 (23.0)	4.55(91)	0.88
	Location	1 (0.5)	12(5.9)	12 (5.9)	132 (64.7)	47 (23.0)		
	Knowledge of quantities to be acquired	0 (0.0)	36(17.6)	1 (0.5)	108 (52.9)	59 (28.9)		
	Extent of adoption to protect materials	12(5.9)	0 (0.0)	0 (0.0)	85 (41.7)	107(52.5)		
Materials Handling	Timely response to customers' order	0(0.0)	1(0.5)	24(11.8)	84 (41.2)	95 (46.6)	4.20(84)	0.94
	Quality improvement of goods	12 (5.9)	1 (0.5)	12 (5.9)	72 (35.3)	107(52.5)		
	Ability and interest to address special orders	13(6.4)	11 (5.4)	12 (5.9)	120 (58.8)	48 (23.5)		
Inventory Management	Just in Time (JIT)	1(0.5)	48(23.5)	12(5.9)	143 (70.1)	0 (0.0)	4.20(84)	0.89
	Economic Order Quantity	1 (0.5)	47 (23)	0 (0.0)	132 (64.7)	24 (11.8)		
	ABC Analysis	24(11.8)	12 (5.9)	1 (0.5)	48 (23.5)	119(58.3)		

Materials Requirement Planning (MRP)	0 (0.0)	24 (11.8)	24(11.8)	155 (76.0)	1(0.5)		
Adoption of material coding	12 (5.9)	1 (0.5)	0 (0.0)	143 (70.1)	48 (23.5)		3.84(75.2)
Method							
Use of materials to permit	1 (0.5)	12 (5.9)	12(5.9)	108 (52.9)	71 (34.8)		
TOTAL(PERCENTAGE)	93(2.1)	315(7.2)	301(6.7)	2514(56.0)	1265(28.0)	4.01(100)	0.90

Table 1 Materials Management Practices Adoption by the Quoted

Manufacturing Firms (N = 204)

Key: NA= Not Adopted; LA= Little Adoption; MA = Moderate Adoption; RA= Regular Adoption; EA = Extensive Adoption., \bar{x} = Arithmetic Mean, s = Standard Deviation, Coding: NA=1; LA=2; MA=3; RA=4; EA=5.

4.3 Effect of Material Management Practices on Operational Performance of the Firms

In Table 2, respondents responses showed that materials management practices have significant effect on products’ quality ($\bar{x} = 4.41, s = 0.60$). This position of the respondents was confirmed with a high mean value of 4.41 on a scale of 1to 5 (SD = 1; D = 2; U = 3; A = 4; SA = 5)by over 90% of the respondents. The effect of MMP on timely delivery of products ($\bar{x}= 4.53, s = 0.50$), according to over 99% of the respondents is positive. Majority (99.5%) of the respondents confirmed this with a high mean value of 4.53and low dissension or disagreement (s = 0.5). MMP had effect on reduction of wastages ($\bar{x} = 4.47, s = 0.5$), according to the opinion of 89.4% of respondents. Over 93% of respondents responses gave indication that materials management practices had significant effect on production cost reduction ($\bar{x} = 4.3, s = 0.57$) of the quoted manufacturing firms in southwestern Nigeria. Furthermore, 47.6% of respondents agreed that through materials management practices, there was protection against seasonal fluctuation ($\bar{x}= 3.13, s = 1.23$). This position was confirmed with a high mean value of 3.13and standard deviation s = 1.23, indicating that materials management practices had significant effect on protection against seasonal fluctuation of manufacturing firms’ products in Southwestern Nigeria. From Table 2, it is obvious that the respondents’ opinion put together ($\bar{x} = 4.16, s = 1.17$), suggest agreement with the opinion that MMP has significant effect on the operational performance of listed FBB firms in Southwestern Nigeria.

Table 2 Operational Performance of Selected Quoted FBB in SWN(N = 204)

Operational Performance Dimension	Frequency (Percentage)					\bar{x}	s
	SD	D	U	A	SA		

Increased product quality	0(0)	1(0.5)	12(5.9)	96(47.1)	95(46.6)	4.41	0.60
Timely delivery of products	0(0)	0(0)	1(0.5)	95(46.6)	108(52.9)	4.53	0.50
Reduction in wastages	1(0.5)	0(0)	0(0)	107(52.5)	96(47.1)	4.47	0.50
Reduction in production time	0(0)	1(0.5)	12(5.9)	119(58.3)	72(35.3)	4.30	0.57
Protection against seasonal fluctuation	23(11.3)	48(23.5)	36(17.6)	72(35.3)	25(12.3)	3.13	1.23
TOTALS(Percentage)	24(2.35)	50(4.9)	61(5.98)	489(47.9)	396(38.8)	4.16	1.17

Key: SD = Strongly Disagree, D=Disagree, U=Undecided, A=Agree, SA= Strongly Agree.

Coding: SD = 1; D = 2; U = 3; A = 4; SA = 5.

FBB = Food, Beverages and Breweries ;SWN = Southwestern Nigeria

4.4 Multiple Regression Analysis Test of Hypothesis

Apart from the descriptive analysis performed in Tables 1 and 2, an inferential analysis (multiple regression) was used to test hypothesis of the study. The analysis in Table 3 indicates the effect of materials management on operational performance of FBB in Southwestern Nigeria. The results revealed that the predictor variables (*Procurement* ($t=2.146$, $p =000$), *Material Planning* ($t =2.118$, $p = 000$) and *Materials Handling* ($t =7.156$, $p=000$)) were individually statistically significant to operational performance of quoted FBB in Southwestern Nigeria. Procurement explained 22.0% of the variance in the operational performance of the selected FBB in SWN, Material Planning explained 19.9%, while Materials handling explained 50.1%. However, materials cost control, materials storage and inventory management were not statistically significant to operational performance of FBBs in SWN. Statistically, multiple regression simply measures the natural occurring scores on a number of predictor variables and tries to establish which set of the observed variables gives rise to the best prediction of the dependent variables. Rvalue of 0.736 in Table 3 indicates a strong degree of correlation, while $R^2 = 0.541$ shows that using the model, materials management practices accounted for 54.1% of variation in the operational performance of the firms studied in Southwestern Nigeria. However, 46.9% in their operational performance variation were due to other variable(s) not included in the study. Furthermore, Table 5 shows that the model was fit. ($F= 38.520$, $p<0.05$). The regression assumptions were checked by autocorrelation and multi-collinearity tests. The results of the Durbin Watson (DW) was satisfactory at 2.461, implying that in the model the residuals were not auto-correlated as the value of DW was greater than 2. The multi-collinearity of the variables in the model was verified by the Tolerance (Tol.) and the values were satisfactory. The Tolerance values were high (ranging from 0.222 to 0.599) and were above 0.1. Also, the Variance Inflation Factor (VIF) values range from 1.670

to 4.496, and were lower than the worrying level of 10 and above, indicating that there was no multi-collinearity problem among the independent variables in the data.

Table 3 Materials Management Practices Effect on Operational Performance of the Firms

Model	Unstandardized coefficients		Standardized coefficients	T	Sign	Collinearity statistics	
	B	Std Error	Beta			Tolerance	VIF
Constant	8.751	817		10.716	.000		
PRC			.220	2.146	.000	.222	4.496
MP	.226	.105	.199	2.118	.000	.266	3.755
MCC			-.075	-.868	.386	.310	3.225
MS	.317	.150	.028	.380	.704	.421	2.374
MH	-.094	.108	.501	7.156	.000	.478	2.092
IM			-.068	-1.088	.278	.599	1.670
	.028	.074					
	.517	.072					
	-.036	.033					

Model Statistics

R = 0.736; R² = 0.541; Adjusted R² = 0.527; S. E of estimate = 1.21205
 F- stat = 38.520; Sig (F stat) = 0.000 ; DW stat = 2.461

*Key: Dependent variable: OP = Operational Performance
 Predictors: (Constant, PRC, MP, MCC, MS, MH, IM)
 PRC = Procurement, MP= Materials Planning, MCC= Materials Cost Control,
 MS= Materials storage, MH= Materials Handling, IM= Inventory Management*

4.6 Challenges Facing the Adoption of MMP by FBB in SWN

Table 4 presents in descending order of commonalities the challenges encountered in the adoption of MMP by the quoted FBB in Southwestern Nigeria. The challenges were: *inadequate power supply* (\bar{x} =4.4), *poor transportation system* (\bar{x} =4.3), *lack of trained personnel* (\bar{x} =4.2), *poor relationship with vendors in the sector* (\bar{x} =3.9), others were; *use of improper coding system* (\bar{x} =3.5), *poor ICT facilities*, and *professionalism* (\bar{x} = 3.4). The opinions expressed by 9.5%, 3.6%, 0.5%, 61.8%, and 25%, of the respondents were SD, D, N, A, and SA respectively. Over 86% of the respondents agreed

that those listed factors were some of the challenges experienced by the FBB firms in SWN that adopt MMP. The mean values which fall in the range of 3.4 to 4.4, validated the respondents' opinion. The mean of their responses taken together is $\bar{x} = 3.9 (\approx 4)$, confirms the level of their agreement.

Table 4 Challenges faced in the adoption of MMP by quoted FBB Firms in Nigeria (N = 204)

Challenges	Frequencies (%)					\bar{x}
	SD	D	N	A	SA	
Inadequate power supply	0(0.0)	2(1.0)	0(0.0)	110(53.9)	92(45.1)	4.4
Poor transportation system	1(0.5)	11(5.4)	0(0.0)	144(70.6)	54(26.5)	4.3
Lack of trained personnel	12(5.9)	0(0.0)	2(1.0)	102(50)	88(43.1)	4.2
Poor relationship with	12(5.9)	6(2.9)	0(0.0)	160(78.4)	26(12.7)	3.9
Poor ICT facilities	12(5.9)	5(2.5)	0(0.0)	167(81.9)	20(9.8)	3.8
Use of improper coding	56(48.0)	12(5.9)	0(0.0)	98(27.5)	37(18.1)	3.5
Professionalism	42(20.5)	15(7.4)	5(2.5)	102(50)	40(19.6)	3.4
TOTAL(PERCENTAGE)	135(9.5)	51(3.6)	7(0.5)	883(61.8)	357(25.0)	3.9

Key: SD=Strongly Disagree; D =Disagree; N=Neutral; A=Agree; SA=Strongly Agree

5.0 Summary of Findings, Conclusions and Recommendations

The study investigated the effect of MMP on Operational Performance of selected quoted FBB firms in SWN. The six MMP covered by the study were: *procurement* ($\bar{x}=4.0, s= 0.67$), *materials planning* ($\bar{x}=3.94, s=0.58$), *materials cost control* ($\bar{x}=4.14, s=0.72$), *materials storage* ($\bar{x}=4.55, s=0.88$), *materials handling* ($\bar{x}=4.20, s=0.94$) and *inventory management* ($\bar{x}=3.84, s=0.80$). The responses of respondents suggest that the listed practices were adopted by the firms that participated. Multiple regression test by the study showed that only three of the practices have significant effect on operational performance. The three practices were *materials handling* ($t=7.156, p=0.000$), *procurement* ($t=2.146, p=0.000$), and *materials planning* ($t=2.118, p=0.000$). The R^2 value 0.541 indicates that the MMP model for the study explained 54.1% of the variation in operational performance of the firms studied. The firms were faced with a number of challenges in their efforts to adopt MMP. The five most serious according to respondents were: *inadequate power supply* ($\bar{x} = 4.4, 99\%$), *poor transportation system* ($\bar{x}= 4.0, 97.1\%$), *lack of trained personnel* ($\bar{x} = 4.2, 93.1\%$), *poor relationship with vendors in the sector* ($\bar{x} = 3.9, 91.1\%$), and *poor ICT facilities* ($\bar{x} = 3.8, 91.7\%$).

Based on the findings as summarised above, the study concludes that materials management practices have significant effect on firm operational performance.

Following the studies' summary of findings and subsequent conclusion, the study recommends that Federal and State Governments of Nigeria should step up efforts at providing adequate power supply and solve the problem of poor transportation network through mass investment on rail transportation; That the FBB firms should pay more attention on research and development, as well as step up staff training and development to overcome staff obsolescence problem and compete favourably.

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