Material Management, Information Technology, and Marketing Performance: Implications for Sustainable Business Development in Africa

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Abstract

One of the primary purposes of every organization is to satisfy the needs of customers. Satisfaction of need based on the premise that sustainable business performance is not in view unless the needs of the customers are satisfied. As a result of economic metamorphosis from pre-industrial era to experience economy, the human factor is considered as the most crucial tool for competitiveness. However, management seems to be placing too much emphasis on human resources at the expense of nonhuman input in production. How do managed efficiently materials affect marketing performance? Does IT facilitate the contributions of material management to business development in Africa? The study adopts the input-throughput-output model to ascertain the effect of material management on marketing performance. The moderating impact of information technology was also explored. A mixture of descriptive and survey research method was adopted. The sample of 400 respondents was drawn from purchasing and supply, store, production, marketing as well as distribution and logistics sections of four different manufacturing firms. Three different hypotheses were developed, and appropriate statistical techniques were employed for the analyses. Most of the functional areas of material management are likely to have positive effects on marketing Performance. There is the tendency that IT will moderate the relationship between material management and business development in Africa. Effective material management facilitated by IT applications plays significant roles in promoting marketing performance and business development in general.

Keywords: Information Technology, Marketing Performance, Material management, Sustainable business

1. Introduction

The relationship between marketing and development can be described as being bi-directional. In other words, marketing is affected by its environment and environment is also affected by marketing activities. This vital nexus between marketing and development have been captioned as macro marketing (Ellinger, 2000). The concept of evolution connotes merely an expansion of economic opportunities and outcomes. However, the belief is that the functional and structural elements of the marketing system, i.e., the method of distribution, channel structure and of course material management have a significant impact on development (Monczka, et al, 1998),

The output of any business can only be measured regarding customer satisfaction achieved at a profit. Meanwhile, these productions can just be made by cross-functional coordination and cooperation across the organization. These cross-functional connections follow the information and material flow that links the customer with the business and its suppliers (Bailey et al 1998),

It is pertinent at this point to submit that studies have shown that effectiveness of marketing performance is a function of the quality product while the quality product is at the mercy of quality material management (Grønholdt, & Martensen (2006).; Adegbuyi, Akinyele and Akinyele (2015). In other words, customer satisfaction, as well as steady growth and profitability, could easily be attained through the production of quality products. Meanwhile, the input-throughput-output model suggests that keen attention must be given to every stage of the material management thereby resulting in a quality product (Covin & Slevin, 1991).

However, this study proposed that information technology has the significant influence on how material management affects marketing performance which in turn becomes very relevant for sustainable development. In this against this background that the study examined;

- the effect of Material Supply Management on marketing performance
- the impact of Material Inspection and technical tests on marketing performance and
- Whether Information Technology has moderating effect on the relationship between marketing performance and material management

2. Literature Review

2.1 The Concept of Materials Management

Materials management is all about taking good care of non-human production inputs to ensure that they contribute meaningfully to the achievement of the output goal of a manufacturing and marketing organization. The non-human production inputs referred to here include raw materials, component materials, fabricated parts, accessory equipment, supplies (consumables), and semi-finished products (Hardt, et al, 2007). These items have to be sourced and procured by the desired specifications, and quantity, and at the right time, and place that is secured and released in such a way as to minimize the total costs of carrying out these and other related activities. The failure to ensure right materials performance may seriously jeopardize any manufacturer's desire to provide the goods and services needed by the society (Everett et al., 2002).

As a discipline, materials management is not an exact science. Like other management sciences, it is a quasi-science (Melnyk, et al, 2009). However, it employs the necessary tools or principles of the scientific method in its investigations and decision making. It is also multi-disciplinary. It draws contributions from law, management, statistics, mathematics, industrial economics, accounting, purchasing, and supply management, basic engineering, and natural sciences (among others) to solve problems and make decisions that would yield good results (Dewan, and Kraemer, 2000). This means that materials management officials need to be very versatile for them to be able to perform their jobs efficiently.

In 2004, there was a complaint that there was a fault in the very popular fast food Indomie which sold all over the country. This led to the near total abandonment of the product in the market, as some claimed that its consumption led to

the death of some consumers. The National Agency for Food and Drug Administration and Control (NAFDAC) waded into the matter and traced the problem to the contamination of some materials during a production process, even though the agency claimed that this could not be linked to the alleged deaths. The producers of the product lost millions of naira in the mandatory withdrawal of the batches concerned. It also had to spend millions of naira in the spirited campaign to regain the confidence of consumers. Better materials management practice would have saved such a company and its customer's such pains (Nelson et al. 2005).

When materials management is carried out as an integrated function in an organization engaged in manufacturing and marketing, according to Adegbuyi and Odularu, (2013), the efforts of all the involved departments and personnel would be geared towards materials availability, cost reduction, waste elimination, and the attainment of the super-ordinate goal of satisfying the needs of customers. This would lead to the achievement of the objectives and goals of materials management.

The benefits of improved efficiency in the performance of materials management activities are inexhaustible. They constitute an essential part of the means through which manufacturing and marketing institutions can achieve their desired market impact at reduced costs.

2.2 Information Technology and the economy

The study carried out by World Bank showed that the utilization of current technology by developing countries has increased beyond measures (Durgamohan, 2014). In the span of 10 year span between the 1990s and 2000s, according to Akubue, (2000) the index was summarized as follows: import of high-technology and capital goods, patents, and scientific papers published, computers and mobile phones per capital and number of hours of electricity per day, etc., showed an increase of 160% in poor countries with less than $900 per capita income to 100% in middle – income countries with $900 – $11,000 per capita income and 77% in industrialised countries with $11,000 above of per capita income. This shows that poor and middle-income countries are fast bridging the technology gap between them and the industrialized nations (Ashworth, 2012). However, it was noted that the adoption of technologies is slow in middle-income and developing countries. The bank is of the opinion that out of sixty-seven samples of adoption of technology solely were able to capture five-hundredths of the national market, against all techniques adopted in industrialized countries reaching five hundredth market share (Gunasekaran, et al, 2004). Emerging economies can access technology, but are slow in putting this technology to use. The capacity to absorb techniques depends on education; R&D; financial system; the quality of Government. (Economist, 2008).

3. Research Approach

A mixture of descriptive and survey research method was adopted. The sample of 400 respondents was drawn from purchasing and supply, store, production, marketing as well as distribution and logistics sections of four different manufacturing firms. Three different hypotheses were developed, and appropriate statistical techniques were employed for the analyses.

4. Data Analysis and Discussion of Findings

4.1 Testing of Hypotheses

H1: Material Supply Management does not have significant effect on marketing performance

H2: Material Inspection and technical tests have no significant effect on marketing performance

H3: Information Technology has no significant moderating effect on the relationship between material management and marketing performance

Table 1: Regression effects of material supply management, material inspection and technical tests on marketing performance.

	Material Supply Management						Material Inspection and technical tests				
	Unstd. coefficient		Std. coeff.				Unstd coefficient		Std. coeff.		
	B	Std Error	B	T	Sig.		B	Std. Error	B	T	Sig.
Constants	1.135	.298		3.814	.000	Constants	2.109	.253		8.339 8.339*	.000
evaluation of supply procedures	-.064	.088	.080	-.939	.350	material inspection during the production process	. 587	.077	.684	7.646*	.000
quality ad long term relationship with her suppliers	.347	.105	.338	3.317	.001	document material rejection and acceptance criteria	. .144	. 087	176	1.656	.100
suppliers service level measurement procedures	. .399 .399	.092	.419	4.354	.000	maintain procedure for the management	. - .277	.080	-.346 -.3.448	.3.446	.001
organization are very strategic	-.002	.012	-.012	-.012	.859						
R	654[a]						. .855				
R2	.427						731				
Adj. R2	. .413						. .719				
F	28.868						62.035				
Overall Sig.	.000						.000				

The table 1 above summarizes the effect of material supply management as well as material inspection and technical tests on marketing performance. Two major dimensions: material supply management and material inspection and technical tests significantly affect marketing performance at 0.01 and 0.05 levels of significance respectively. This reveals that material supply management has a main impact on marketing performance (R2 =.427, $p < 0.0001$) while material inspection and technical tests significantly affect marketing performance (R2 = 0.791, $p \geq 0.0001$).. It implies that material supply management, material inspection and technical tests contribute significantly to marketing performance.

Table 2 below revealed information technology has a significant moderating effect on the relationship between material management and marketing performance. Information technology explains 71.6% variation in marketing performance based on material management practices.

Table 2: Information Technology

	Information Technology				
	Unstd. coefficient		Std. coeff.		
	B	Std Error	B	T	Sig.
(Constant)	.340	.214		1.588	.115
INFOTEC	.562	.067	.601	8.406	.000
MATMGT	.345	.081	.303	4.240	.000
R	.846[a]				
R2	.716				
Adj. R2	.711				
F change	147.529				
Sig. of F change	.000				

5. Conclusions and Implications for Research

The value of IT regarding business continues to generate debate and stimulate interest among both practitioners and. Academics. In this paper, we assess IT importance in the context of digitally enabled of material management on marketing performance which has emerged as one of the significant areas for companies to leverage IT to improve firm performance in global operations. The moderating effect of information technology was also explored. Factors that impact on material

management and marketing performance were reviewed. The result shows that effective material management facilitated by IT applications plays significant roles in promoting marketing performance and business development in general.

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