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Article

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MANAGEMENT | RESEARCH ARTICLE

Producers' make or buy decision and business shutdown: An evaluation of choice in textile industry

Kenneth Enoch Okpala¹, Sunday Mlanga^{2*}, Anulika Odochi Nwajiuba², Chimsunum Osanebi³ and Chuks Marcel Ezemoyih⁴

Abstract: The problem of textile industry started with the economic recession of the 1980s and was aggravated by globalization coupled with poor infrastructure and Nigerians perception of made in Nigeria goods. This helped the foreign multi-national textile manufacturing giants to dominate Nigeria textile market leading to the collapse of many viable local textile mills with chains of effects such as expanded unemployment level, increased poverty rates with its associated social vices, reduction in government tax revenue and loss of investors' funds in Nigeria. This study evaluated the producers' make or buy decision and organizational shutdown in the textile industry as a means of resolving the issues. Descriptive survey research design used and the population consisted of 12 active textile companies with 714 management staff. 6 textile mills with 403 staff representing 50% of the population were used as sample size. The validity and reliability of the instrument



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PUBLIC INTEREST STATEMENT

The basic objective of this research paper is to determine how management accounting through Make-or-Buy decision influenced the shutdown of various textile companies in Nigeria. This was accomplished through a research model where the cost of production, manufacturing capacity and product quality control as a make-or-buy decision proxy were regressed on business shutdown in the textile industry. The study sample size consisted of 6 textile mills with 403 management staff. The textile mills shutdown had some negative consequences on both the textile industry and the economy in general. The effect includes an increase in unemployment and poverty level, reduction in government tax revenue and loss of investors' funds among others. The study concluded that the problem of a shutdown would have been averted if the management of those organizations resorted to buying from outside suppliers to meet the demands of their customers.

were established. Primary data collected were analyzed using descriptive and regression analysis method at 5% level of significance. The result obtained concluded that the sub-variables of the independent—cost, capacity and quality control have significant impacts on Nigerian textile mills closure ($R = .776$, $R^2 = .721$, $p < .05$; $R = .702$, $R^2 = .683$, $p < .05$; $R = .658$, $R^2 = .635$, $p < .05$). The study recommended that instead of the complete shutdown of the textile mills, management of such organizations should have resort to buying from outside suppliers to meet customers demand and survive, maintain their staff, save investors' fund and contribute their quota to the economy.

Subjects: finance; business, management and accounting; industry & industrial studies

Keywords: management accounting; make or buy decision; multi-fiber arrangement; company; shutdown; textile industry

1. Introduction

The decision-making process is a step-by-step procedure which permits professional managers to elucidate or resolve problems by weighing available evidence, examining alternatives, and choosing a viable path from various substitutes. The management accountants use their professional knowledge and skill to prepare accounting information that assists the managers at all levels in making informed decision thereby facilitating the decision process (Adeniji, 2017). The accountant identifies meaningful opportunities, gather relevant information relating to the opportunities, and analyze the situation to identify optimal alternatives. He would further evaluate them to facilitate choice and selection of the preferred options as well as put plans in place for the implementation. Business decisions making bothers on planning, implementation, and control of resources and these might be more critical where constraints are involved (Linhares, 2009). Various Nigerian textile mills were established from 1957 and by the year 2001 the country had over 250 textile companies within the industry that engaged in processing cotton, spinning, weaving, bleaching, dyeing, printing, and finishing (Akewushola, 2015). Initially, the textile industry performed excellently well and withstood the force of competition from imported fabrics (Diogu, Nwigwe, & Diogu, 2014). The problem of the industry started with the economic recession of the 1980s and was aggravated by globalization which helped the foreign multi-national textile manufacturing firms to dominate Nigerian textile market (Afigbo & Okeke, 1985).

The competition between the local and foreign textile manufacturers initiated various problems of different degree in the Nigerian textile industry. The local firms experienced low product demand due to high price and low quality of their products when compared with foreign made fabrics (Diogu et al., 2014). The foreign firms used advanced integrated manufacturing technologies and methods under the proper enabling industrial environment created by the government. This enabled foreign manufacturers to achieve economies of scale and produced large quantities with excellent quality at a low marginal cost per unit. Nigerians high taste and eyes for quality resulted in preferring foreign-made goods to local which worsen the indigenous mills' situation. The initial gradual shut down of some textile mills introduced labour panic and job insecurity in the industry which also led to an exodus of some key textile personnel to other manufacturing sub-sector where there was employment stability. This further deepens the quality issue of the local products and through the multiplier effect, the textile mills in Nigeria suffered a serious setback (Folorunso, 2013).

Nigeria was part of the multi-fiber arrangement (MFA) made between 1974 and 2004. This arrangement did not favour most developing countries due to cotton and textile fabric export restrictions (Frederick, 2018). However, the developed countries manufacturers kept dumping quality and cheaper fabrics in developing nations' market (Njoku, 2004). The competition became cutthroat between the local textile products and imported fabrics. Nigerians perception of made-in-Nigeria goods and the high

cost of production due poor facilities debilitated the strength of the local companies which led to the collapse of many textile mills (Folorunso, 2013; Ogunnaike, 2010). The federal government adopted various measures such as increased exchange rates, introduction of foreign exchange quota and the high tariffs imposition to regulate the imports of foreign textile products but all to no avail (Onas, 2010). In recent times, only few textile manufacturing companies are operating on a full scale in Nigeria. This scenario has left the country with chains of effects ranging from staff retrenchment, high poverty rates, erosion of investments to poor tax revenue generation. The other factors responsible for inhibiting the growth of textile industry and documented in the literature include smuggling of foreign restricted textiles materials into Nigeria, shortage of electric power supply, devaluation of Naira and foreign exchange issues, and lack of spare parts for industrial plant and machinery maintenance (Diogu et al., 2014; Salisu, 2010; Yusuf, 2011). The issue of the poor power supply and lowly maintenance of production facilities translated into the high cost of production and reduction in the manufacturing plant capacity.

Based on the objective of this study, the following valuable questions were raised to enable the researchers to address the identified issues. (i) What relationship exists between the cost of production and textile mills closedown in Nigeria? (ii) How does manufacturing capacity relate to producers' business shutdown in Nigerian textile mills? (iii) What is the influence of product quality control on textile companies' shutdown in Nigeria? These questions were the foundation upon which this research was based.

The twist from manufacturing to trading could only be explained by the principle of make-or-buy decision in management accounting. It was perceived that the major drivers of making or buy decision among other factors in the textile industry include the cost of manufacture, production capacity and product quality control which might have influenced the firms to shut down. These sub-variables have not been fully tested with concrete results in the textile industry hence this current research. The general objective of this study was to evaluate the impact of producers' choice to make products in-house or buy from an outside supplier to satisfy customers' demands and its effects on organization shut down in the textile industry. The specific objectives to be pursued in order to achieve the main objective were the evaluation of the effect of the cost of manufacture on organization shut-down, the impact of production capacity on organization shut-down, and the influence of product quality control on organization shut-down. The scope of the study only covered production cost, manufacturing capacity and product quality control in the textile industry in Nigeria. All other variables that might affect make or buy decision were excluded. The study would be of significant value to the investors and management of textile mills and government policymakers. The empirical evidence obtained would serve as a decision template for policymakers in the industry.

The remaining part of the study was organized as follows: Literature review in Section 2. Section 3 covers data and methodology. Analysis results and discussions of findings in Section 4, and Section 5 was the conclusion, with policy implications, recommendation, limitation and suggestion for further studies.

2. Literature review

2.1. Textile industry in Nigeria

Textile manufacturing businesses were initially established by the colonial master in the pre-independence era. The industrial boom continued after independence in 1960 which motivated the Nigerian regional governments to promote industrial development and established integrated composite textile mills in the North, East, and West with Kaduna Textile Limited as the first large mill in 1957 (Diogu et al., 2014). Shortly after the independence, more textile mills were established at different locations in Nigeria. Some of the major textile companies established include the Nigerian Textile Mills Limited in 1962 in Lagos, followed by Aba Textile Mills in 1963 and Bendel Textile Mills Ltd, Asaba between 1975. Nigeria textile industry grew and was voted as the third largest in Africa after Egypt and South Africa (Okeke, 2002). According to Okeke (2002), the number

of textile mills in Nigeria was estimated at 134, half of which are significantly large and made up of integrated spinning, weaving, bleaching, and dyeing, printing and finishing mills. In 2001, the number of textile companies established in Nigeria was over 250. The growth and stability of the Nigerian textile industry encouraged the establishment of other allied companies such as chemical industry for provision of synthetic fibers, bleaching salts and dyestuffs (Akpan, 2013).

The textile industry contributed significantly to the stability of the economy by providing employment, export product and foreign exchange generation, and increased the national GDP. Most of the textiles materials produced locally were sold in both in the Nigerian market and in other African countries especially the western parts. In order to protect the local infant industries, the federal government at several times restricted the importation of textiles products into the country through an outright ban and high import tariffs. However, between 1985 and 2005 most of the large textile mills were shut-down. According to Afigbo and Okeke (1985), some of the factors responsible were classified into external and internal. The external influences range from poor infrastructure such as inadequate electric power supply; the impact of globalization that made Nigeria a dumping ground; poor citizens' made-in-Nigeria perception about local textile fabrics; lack of modernized equipment; to economic recession (Abernathy, John, Janice, & David, 2004; Ogunnaike, 2010). While the internal issues include inadequacy or improper use of management accounting information for accurate decision making, inadequate shareholders fund and poor liquidity, and poor corporate governance mechanism.

These issues limited the textile companies' progress as follows: (i) High cost of manufacture: consistent electric power outage or poor voltage generation and transmission have negative consequences of varying degrees on the operations of the textile mills (Abu & Abdullah, 2010). This has imposed a high cost of operation, which includes: ideal worker salary payment, spoiled materials, damaged equipment, and restart cost, lost output, lost sales and consequential loss of profit. In deciding whether to produce a textile material or outsource, the management needs to consider the costs of in-house production in relation to the costs buying from the outside supplier. Where the cost of producing is less than the cost of buying, the decision criteria is to buy and vice versa (Adeniji, 2017). (ii) Manufacturing capacity: inadequate electric power supply, lack of spare parts for plants maintenance or modernized equipment affected the Nigerian textile companies' production capacity. This was obvious when Nigeria textile industry is compared to that of other countries in Africa such as Egypt, Ghana, Botswana and South Africa (Salisu, 2010). Capacities to produce at the required level to meet customers' demand and make the desired profit were lacking. (iii) Product quality control: constant retrenchment and job insecurity forced much skilled technical staff in the textile industry to move to another manufacturing subsector where there is employment security. This created a product quality control problem (Makinde, Fajuyigbe, & Ajiboye, 2015). Consequently, the locally made textile fabrics quality became poor in comparison to the imported and suffered rejection.

The multi-fiber arrangement (MFA) was an international trade agreement on textiles and clothing put in place from 1974 till 2004. It imposed a quota on the amount of clothing and textile exports from developing countries to developed countries. The agreement expired on 1 January 2005. This agreement was prompted by the emergence of developing countries as a source of cotton for textile production during the industrial revolution (Frederick, 2018). The MFA was introduced as a short-term measure intended to allow developed countries to adjust to imports from the developing world who have a comparative advantage in textile production (Makinde et al., 2015). The comparative advantage originated from labor-intensive nature and low cost and a commercial quantity of cotton production. According to the World Bank/IMF (2003), MFA cost the developing world about 27 million jobs and \$40 billion a year was lost through exports quota. The arrangement was a negative move against textile mills in developing nations including Nigeria (Haider, 2007).

A make-or-buy decision is an act of choosing between two alternatives of either manufacturing a product in-house or purchasing the same from an external supplier to meet customers' demand. The buy decision is also referred to as the "outsourcing" (Bajec & Igor, 2010). In a make-or-buy decision, the most important quantitative factors to be considered are: (i) The associated costs of production: in a make or buy decision, the manager compares the costs and benefits relating to producing in-house to the costs and benefits involved in outsourcing. All in-house production costs such as cost of materials, manufacturing equipment maintenance, labour and overhead costs required to produce the textile items are aggregated (Gado, 2012). The outsourcing cost such as the product's purchase cost, import and shipment costs, value-added taxes and labour costs relating to loading and off-loading are also aggregated. These costs are compared to enable managers to take decision subject to some other quantitative and qualitative factors. (ii) Production capacity to produce: A firm may decide to make an item in-house if there is idle production capacity (Jaydeep & Chun, 2005). This would afford them a better in house quality control, protect proprietary technology and trade secret. The reliability of the supplier and continuity is also considered if the product is vital to company regular business operations. Other factors that may influence management make or buy include technical expertise, business volume, a desire to expand the firm's supply chain for outsourcing and the critical nature of the product. The model of make or buy decision is shown in Figure 1.

(iii) Product quality control: In some circumstances, a manufacturing textile company may have an integrated process running from spinning to finishing while in other situations, a mill would buy some components needed such as raw materials to produce finished goods. Finished goods might be purchased to meet demand, in which case, quality factors to be considered include materials, expertise, top management support, and market emphasis. If strong control is needed, it is advisable for an organization has to make in-house. Where moderate control is needed, partnership arrangement may be appropriate and if weak control exists, outright hire of an outside specialized supplier to produce the required components or product would be the option. Figure 2 explain the make or buy decision where product quality control is involved.

Figure 1. Cost and capacity induced make or buy decision model.

Source: Adapted from Katikar (2013).

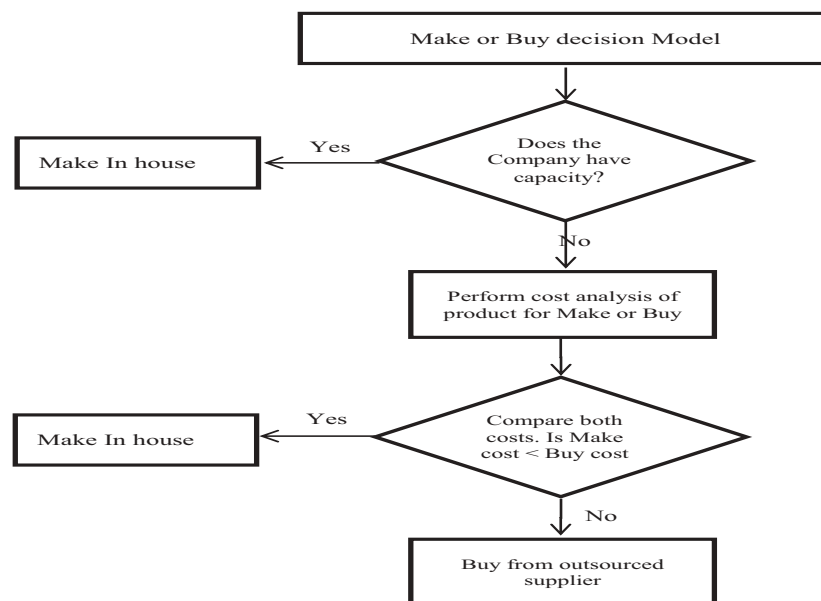
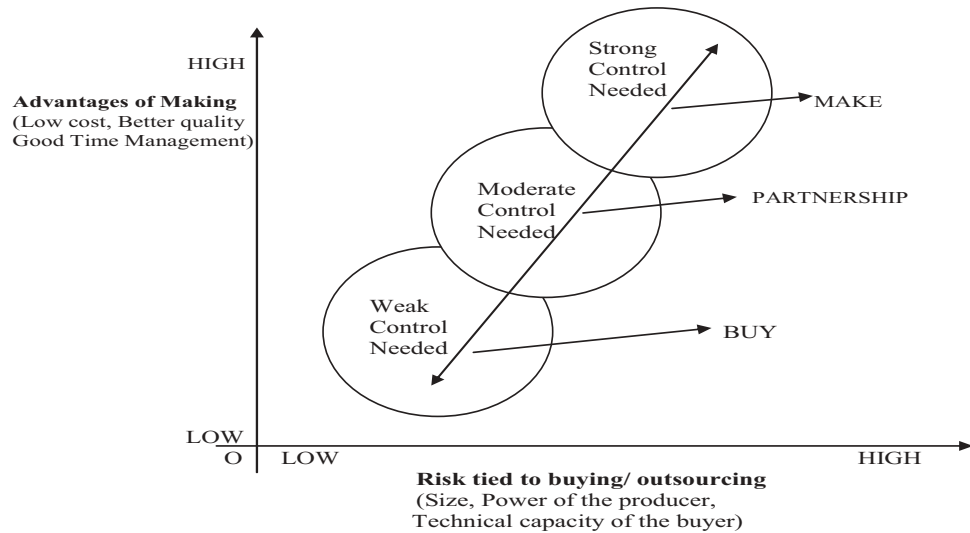


Figure 2. Quality control induced make or buy decision model.

Source: Adapted from Katikar (2013)



2.2. The theoretical framework

The theoretical framework adopted in this study to explain the relationship between the producers' make or buy decision and business shutdown in textile manufacturing mills in Nigeria was the theory of choice and the theory of constraints.

2.2.1. Theory of choice

The theory of choice also known as decision theory is the study of reasoning underlying management or agent's choices (Steele & Stefansson, 2015). Decision theory is a multidisciplinary approach employed to determine how decisions are made in the face of unknown variables and uncertainty decision environmental framework. The theory began to evolve from the middle of the 20th century due to its importance and contributions from a number of academic disciplines (Hansson, 2005). Recently, decision theory has earned an academic focus and has been pursued by scholars in a different discipline such as economics, philosophy, statistics, psychology, politics, management and social sciences (Tversky & Daniel, 1986). Decision theory was classified into three following areas of decision making. (i) Descriptive decision theory examines how unreasonable beings make decisions. Prescriptive decision theory attempts to offer guidelines for managers to make the best possible decisions under an uncertain decision-making framework. The practical application of prescriptive approach is known as decision analysis which aimed at discovering the optimal decision methodologies to assist managers to take superior decisions (Slovic, Fischhoff, & Lichtenstein, 1977). Normative decision theory provides guidance for making decisions given a set of values (Hansson, 2005). The theory of choice has been used by various scholars to address various decision issues (Hansson, 2005; Sobel, 1990; Steele & Stefansson, 2015; Tversky & Daniel, 1986; Weirich, 1985)

2.2.2. Theory of constraints

The theory of constraints is associated with the notion that where quantitative or qualitative constraints exist, organization management should attempt to take optimal decision to allocate the key factors appropriately to the organization's best advantage. This would increase performance and avoid operational cessation (Goldratt, 2009). According to Goldratt (2009), the theory of constraints is an overall management philosophy which sees any manageable system (an organization) as being limited in achieving one or more of its goals by a number of constraints. In every business outfit, there is usually at least one constraint binding the organization activities at the lowest level. This theory uses a focus process to identify the constraint and restructure the rest of the organization actives around it to achieve its objective. The theory was propounded by Eliyahu M. Goldratt in 1984 in his book titled "The goal" and the idea was modified in his project

management book titled “Critical Chain” published in 1997. Though, an earlier propagator of a similar concept was Wolfgang Mewes in Germany with publications on power- oriented.

However, Wolfgang version was not as appropriate as the model philosophy of constraints advanced by Goldratt. The theory was adopted by various researchers (Bajec & Igor, 2010; Jaydeep & Chun, 2005; Katikar & Pawar, 2013; Mohammad, Baguley, & Tiwari, 2013). The theory of constraint noted that an organization can be measured and controlled by variations on three actions namely throughput, operational expense, and inventory. The argument is that if nothing limits a firm’s goal, its achievement would be endless which is unrealistic in a real-life situation. The objective of any textile mill is to produce and sell, survive and beat competitors in the industry, make a profit now and in the future to continuously reward investors and other stakeholders. Decision theory and the theory of constraints were relevant to the current study on the ground that Managers faces an alternative course of action and decision making on a daily basis. Based on this premise, the study was underpinned by the theory of constraints on the ground that the rate of objective achievement by a goal-oriented system is limited by at least one constant. The underlying principle of this theory was relevant to Nigerian textiles mills facing a make or buy decision and business shutdown (Gupta & Doug, 2009; Hegji, 2004).

2.3. Previous studies

Some previous researchers have provided empirical evidence on the relationship between the make or buy decision and business performance. In this section, the researchers reviewed some of the existing empirical studies which are in line with the underpinning theories as follows: Mohammad et al. (2013) analyzed make or buy decision process in a research and development SME. Findings revealed that the decision affects current and future costs, capability, and competences in the company. The study concluded that make or buy decision is motivated by costs savings. Katikar and Pawar (2013) studied the relation between make or buy decisions and capacity for profitability in textile industries. The results were useful ratios of make parts to a total number of parts (in percentage) and its relation with capacity utilization for profitability. Diogu et al. (2014) investigated the problems and prospects of the Nigerian textile industry. The study concluded that Nigeria has great potentials in textile manufacture based on her large consuming population and labour force and it identified allied textile industry as new areas of investment that would reward local investors. Akewushola (2015) evaluated outsourcing strategy and organizational performance evidence from Nigeria manufacturing sector. The findings revealed that firms that outsource experiences reduced average cost, increased sales turnover and profitability, enhance expertise, improve service quality, reduce staff strength, streamline the production process, reduced administrative burden and save time for core activities (Makinde et al., 2015). Nigerian textile industry: A tool for actualizing economic stability and national development. The study submits that a well-developed and effectively managed textile industry will impact positively on the nation’s economy and ensure the sustainability of the Nigerian textile industry and would reduce unemployment in Nigeria.

2.4. Gaps and development of research hypotheses

Insufficient studies conducted on the relationship between make or buy decision and business shutdown in textile manufacturing organizations in Nigeria coupled with lack of the existing studies that addressed specifically the relationship between the independent sub-variables and the dependent variable has prevented conclusion and created gaps in the body of knowledge. Therefore this study was conducted to generate empirical evidence to bridge the identified gaps. Based on the objective of the study, the following null hypotheses were developed to enable the researchers to evaluate the strength of the relationship between make or buy decision and organization shut-down.

H01: Cost of production does not have a significant impact on organization shut-down in the textile manufacturing industry in Nigeria.

H02: Production capacity has no significant impact on organization shut-down in the textile manufacturing industry in Nigeria.

H03: Product quality control does not influence organization shutdown significantly in the textile manufacturing industry in Nigeria.

H04: Make or buy decision has no significant effect on organization shut-down in the textile manufacturing industry in Nigeria.

3. Research method

3.1. Research design

A descriptive survey research design was employed in an attempt to empirically assess the impact of make or buy decision on textile organizations shut-down. This design was used due to its ability to capture research questions raised in the study and deals with complex relationships between variables which are not subject to manipulation (Baridam, 2000; Okpala, 2017; Saunders, Lewis, & Thornhill, 2010)

3.2. Population and sample

The population of the study consisted of 12 textile manufacturing companies in Nigeria (5 quoted and 7 private limited liabilities) with 714 management staff. The criteria are that participants must have at least 5 years of experience in the textile industry. The sample comprised of a total of 6 companies representing 50% of the total population (three firms in each category) randomly selected with 403 staff. The respondents include Management Directors, General Managers, Management Accountants, Marketing Managers, and Production Managers. The 6 textile mills on the source list as shown in Table 7 were located in Lagos for accessibility and proximity.

3.3. Instrument

A 12 items, 5 points Likert scale response instrument was self-generated and structured into section A for demographic and B to E for inferential data. Answers to the questions in the quantity of relationships between variables in each section were coded as: 1 = very weak, 2 = weak, 3 = average, 4 = strong, and 5 = very strong. The perceptions and opinions of the respondents were captured and appropriately rated to achieve meaningful analysis and conclusion. The pilot study exercise was carried out to test the degree of understanding of the questions. It also checked the relevance of the questions to ascertain the level of interest of the respondents (Panneerselvan, 2009). Forty-two (42) respondents from the six organizations with the same characteristics of the population of the study were randomly selected and copies of the questionnaires administered to them. A total of Twenty seven (27) valid responses representing 64.3% were received and analyzed. The pilot study assisted the researcher to determine the appropriateness of the research instrument, assessed the feasibility of a full-scale study, and enabled revision and adjustment (re-word or re-scale) of any questions that were not answered as expected.

The face validity was confirmed by experts in management accounting. Construct validity was tested whether the instrument measures all areas of the subject being researched adequately (Cozby, 2003). To establish construct validity, the research instrument used exploratory factor analysis to assess whether the proposed variable indicators had significant factor loadings and to ensure that the most appropriate model was selected for the analysis. The average variance extracted showed values between .671 and .692 > .05 which indicated that the variables were valid and could be used for further analysis. Cronbach's Alpha coefficient was used to test the reliability of the instrument for the constructs. The result indicated R_c between .684 and .702 > .05 which confirmed the internal consistency and reliability of the instrument for data collection. The result of a co-linearity test

Table 1. Results of construct validity and of reliability test for the variables

S/n	Variables	No. of Items	Construct Validity		Reliability
			Average Variance Extracted	Composite Reliability	Cronbach's Alpha
1	Cost of production	4	0.671	0.671	0.684
2	Manufacturing capacity	3	0.692	0.682	0.696
3	Product quality control	3	0.680	0.685	0.689
4	Shutdown	2	0.674	0.681	0.702

Source: Researchers Fieldwork (2018).

conducted indicates that the relationships between the predictor and the outcome variable met the assumptions of linear regression. The results of the reliability test were as presented in Table 1

3.4. Analysis method

The primary data collected were analyzed using descriptive statistics and regression analysis method at 5% level of significance. One-way ANOVA was used for the descriptive statistics to define the average respondents' perception and the mean score on each of the three constructs. A simple regression analysis was employed for the data analysis to confirm the impact of independent sub-variables and the aggregate (make or buy decision) on the dependent (organization shutdown) in textile manufacturing industry in Nigeria. The rule was that the probability value of the independent variable is compared with the critical value of 5%.

3.5. Description of research variables

The independent variable is make or buy decision and was subdivided into three proxies namely: the cost of production, manufacturing capacity, and product quality control. The dependent variable is the organization shut-down. Table 2 showed the description of the variables used in the research.

3.6. Econometric specification

Data collected were analyzed using a descriptive and regression method at 5% level of significance. The model specification in functional form is $OSD = f(MBD)$. Where OSD represents organizational shutdown covering osd_1 to osd_3 and as a function of make or buy decision (MBD). The MBD represented by sub-variables: COP, MCA, and PQC.

The linear regression equation used was specified as follows:

3.6.1. Impact of cost of production on organization shutdown

$$osd_1 = \beta_0 + \beta_1(COP) + \varepsilon_1 \quad (1)$$

3.6.2. Impact of manufacturing capacity on organization shutdown

$$osd_2 = \beta_0 + \beta_2(MCA) + \varepsilon_2 \quad (2)$$

3.6.3. Impact of product quality control on organization shutdown

$$osd_3 = \beta_0 + \beta_3(PQC) + \varepsilon_3 \quad (3)$$

The general model for the study was specified as follow:

Table 2. Description of variables used in the research

Variables	Abbre-vation	Description	Respondents	Scale	Scale Value
Independent					
Make or buy decision	MBD	A make-or-buy decision is an act of choosing between two alternatives of either manufacturing a product in-house or purchasing it from an external supplier to meet customers demand	Management staff	Interval	1–5
Cost of production (Sub variable)	COP	Production cost refers to the costs incurred in the process of production or service rendition such as material costs, labour cost, and factory expenses.	Management staff	Interval	1–5
Manufacturing capacity (Sub variable)	MCA	Production capacity means the volume of products that can be generated by a production plant in a given period by using current resources	Management staff	Interval	1–5
Product quality control (Sub variable)	PQC	Product quality control (PQC) is a method of a set of procedures intended to ensure that a manufactured product adheres to a defined set of quality criteria. PQC process ensures that product quality is maintained or improved with either reduced or zero errors	Management staff	Interval	1–5
Dependent					
Organization Shutdown	OSD	A shutdown is an operational level where a company experiences no benefit for continuing operations and decides to close down temporarily or permanently	Management staff	Interval	1–5

Source: Researchers' Initiative (2018)

3.6.4. Impact of make or buy decision on organization shutdown

$$OSD = \beta_0 + \beta_1(MBD) + \varepsilon$$

$$\text{Where : } MBD = (COP) + (MCA) + (PQO)$$

$$OSD = \beta_0 + \beta_1(COP) + \beta_2(MCA) + \beta_3(PQO)(MBD) + \varepsilon$$

(4)

A prior expectation $COP > 0$, $MCA > 0$, $PQC > 0$

Where:

COP = Cost of production;

MCA = Manufacturing capacity;

PQC = Product quality control;

β_0 = Intercept;

β_1 = coefficient of equation;

ε = error terms.

4. Data analysis, results, and discussion of findings

403 copies of the questionnaire were distributed to the targeted respondents, 322 copies were received representing a response rate of 79% (Table 7). The data were collected and analyzed to test the formulated hypotheses the effect of make or buy decision (MBD-independent) and organization shutdown (OSD-dependent) using both descriptive and regression analyses.

4.1. Descriptive statistics

The descriptive statistics were carried out using one-way ANOVA to describe the average respondents' perception of each of the make or buy sub-variables—a cost of production, cost of production, and product quality control.

Table 3. Descriptive statistics for the cost of production

Participants	Cost		
	N	Mean	SD
Afprint Nigeria Plc.	35	3.642	0.522
Aswani Industries Plc.	58	3.284	0.731
United Nigeria Textiles Plc.	55	4.866	0.765
Atlantic Textile Mfg. Coy. Ltd	64	2.998	0.602
Dangote Gen. Textile Ltd	53	4.226	0.417
Sun flag Group Nig. Limited	57	3.412	0.804
Total	322	3.738	0.640
F- statistics	8.176		
P-value	0.000		

SPSS output (2018)

Hypothesis 1: Cost of production does not have a significant impact on organization shut-down in the textile manufacturing industry in Nigeria. The average opinion of each population strata indicated a high but mixed perception in each category on the impact of the cost of production on textile manufacturing organization shutdown (osd_1) as shown in Table 3. The overall average perception of all categories obtained when collapsed all the items gave a total mean score of 3.738 with the F- statistics of 8.176. The differences in means perception of the six firms were statistically significant with P-value = .000 < .05. Therefore, the cost of production is perceived to be strongly related to textile manufacturing organization shut-down on the ground that the overall mean score of respondents' opinion between the osd_1 and COP is 3.738. This falls on the "strong" option on the scale of 1 to 5 on the research instrument.

Hypothesis 2: Production capacity has no significant impact on organization shut-down in the textile manufacturing industry in Nigeria. The average population of each participating group showed a high but mixed view in each class on the effect of manufacturing capacity on textile manufacturing organization shutdown (osd_2) as shown in Table 4. The overall average perception of all groups obtained when collapsed all the items gave a mean score of about 4.146 with the F- statistics of 10.234. The differences in means perception of the six firms were statistically significant with P-value = .001 < .05. Therefore, production capacity is perceived to have a strong effect on textile manufacturing organization shut-down on the ground that the overall mean score of respondents' opinion between the osd_2 and MCA is 4.146. This falls between "strong and very strong" option on the scale of 1 to 5 on the research instrument.

Hypothesis 3: Product quality control does not impact significantly on organization shut-down in the textile manufacturing industry in Nigeria. The average decision of each respondent group indicated an average perception of the impact product quality control on textile manufacturing organization shutdown (osd_3) as shown in Table 5. The overall average perception of all groups obtained when collapsed all the items gave a total mean score of 3.142 with the F- statistics of 9.254. The differences in the means perception of the six organizations were statistically significant with P-value = .004 < .05. Therefore, product quality control is perceived to have an averagely impact on textile manufacturing organization shut-down in Nigeria on the ground that the overall mean score of respondents' opinion between the osd_2 and PQC is 3.142. This falls between "average and strong" option on the scale of 1 to 5 on the research instrument.

4.2. Test of hypotheses

The analysis results of the four hypotheses using regression technique.

Table 4. Descriptive statistics for manufacturing capacity

Participants	Capacity		
	N	Mean	SD
Afprint Nigeria Plc.	35	4.145	0.544
Aswani Industries Plc.	58	4.216	0.967
United Nigeria Textiles Plc.	55	3.888	1.004
Atlantic Textile Mfg. Coy. Ltd	64	4.466	0.680
Dangote Gen. Textile Ltd	53	3.897	0.698
Sun flag Group Nig. Limited	57	4.268	1.138
Total	322	4.146	0.839
F- statistics	10.234		
P-value	0.001		

SPSS output (2018)

Table 5. Descriptive statistics for product quality control

Participants	Product quality control		
	N	Mean	SD
Afprint Nigeria Plc.	35	3.456	0.940
Aswani Industries Plc.	58	2.416	0.765
United Nigeria Textiles Plc.	55	3.864	1.061
Atlantic Textile Mfg. Coy. Ltd	64	2.843	0.811
Dangote Gen. Textile Ltd	53	2.846	0.200
Sun flag Group Nig. Limited	57	3.429	0.822
Total*	322	3.142	0.767
F- statistics	9.254		
P-value	0.004		

SPSS output (2018)

Table 6. Summary of regression results of the impact of make or buy decision on the business shut down

	N	Model 1	Model 2	Model 3	Model 4 (General)
Model Summary					
R	322	.776	.702	.658	.811
R ²		.721	.683	.644	.783
Adj. R ²		.717	.660	.635	.766
ANOVA^a					
Sig.		.000	.000	.000	.000
F. Statistics	322	5.687	6.610	5.765	7.234
Coefficients^a					
t- statistics		2.181	2.782	1.999	2.876
(Constant)		3.211	3.484	2.990	3.228
COP, MCA, PQC	322	.260	.254	.227	.454
Std. Error		.065	.077	.080	.082
DW		1.463	1.601	1.499	1.544

Source: SPSS output (2018)

Model 1 = Cost of Production; Model 2 = Manufacturing capacity; Model 3 = Product quality control;

Model 4 = Make or buy decision.

4.2.1. Result of model 1

The results of the bivariate analysis conducted in Table 6 concerning hypothesis 1 indicated that R-value = .776 for the construct confirmed the positive effect of the cost of production on the shut-down of textile mills in Nigeria. This is supported by the F- statistics of 5.687. The R² = .721 implied that COP was responsible for 72% variation in the shutdown of textile mills in Nigeria. The COP percentage of 28% that is not explained may be due to other factors not included in this model. The COP on osd_1 was statistically significant ($P = .000 < .05$). This was confirmed by the t-statistics of 2.181. The linear simple equation can be expressed as $osd_1 = 3.211 + .260(COP)$ which implied that a percentage change in COP will drive an increase of 26% in osd_1 . The adjusted R² (.717) in the model 1 equation results can be taken as valid and confirmed a high degree of the model specification. Based on available evidence, the null hypotheses 1 was rejected and the alternate was not rejected.

Table 7. Population make up definition

S/N	NAME OF COMPANY	Location	Total population					Source List (50%)	Valid Copied Returned
			Md/Gm	Ma	Mm	Pm	Total		
	Public Companies								
1	Aba Textile Mills Plc	Aba	4	4	11	36	55	-	
2	Afprint Nigeria Plc	Lagos.	3	5	9	29	46	46	35
3	Aswani Industries Plc	Lagos	4	4	13	30	51		
4	Nigerian Bag Mfg. Co. Plc	Lagos	6	7	15	47	75	75	58
5	United Nigeria Textiles Plc	Lagos	5	6	17	39	67	67	55
	Private Companies							-	
6	African Textile Mfg. Limited	Kano	4	5	10	32	51	-	
7	Arcee Textile Industry Limited	Lagos	3	4	12	26	45	-	
8	Atlantic Textile Mfg. Coy. Ltd	Lagos	3	4	16	32	55		
9	Dangote Gen. Textile Limited	Lagos	6	5	18	54	83	83	64
10	Qualitex Textile Limited	Lagos	4	3	21	41	69	69	53
11	Sunflag Group Nigeria Limited	Lagos	5	5	16	37	63	63	57
12	Woollen & Synthetic Text. Ltd	Lagos	4	4	14	32	54	-	
	TOTAL		51	56	172	435	714	403	322

Source: Researcher Fieldwork (2018)

Md = Managing Director; Gm = General manager; Ma = Managing Accountant; Mm = Marketing Manager; Pm = Production manager.

4.2.2. Result of model 2

The results of the bivariate analysis of hypothesis 2 conducted in Table 6 indicated that $R\text{-value} = .702$ confirmed the positive effect of the manufacturing capacity on organization shut-down in the Nigerian textile industry. This is supported by the $F\text{-statistics}$ of 6.610. The $R^2 = .683$ implied that MCA was responsible for 68% variation in the shutdown of textile mills in Nigeria. The 32% of MCA not explained may be due to other factors not included in the model. The impact MCA on textile mills shutdown was statistically significant ($P = .000 < .05$). This was confirmed by the $t\text{-statistics}$ of 2.782. The linear simple equation can be expressed as $osd_2 = 3.484 + .254(MCA)$ which implied that a percentage change in MCA will drive an increase of 25% in osd_2 . Therefore, the null hypotheses 2 was rejected and the alternate was not rejected on the basis on the available evidence.

4.2.3. Result of model 3

Hypothesis 3; bivariate analysis results of conducted in Table 6 showed that $R\text{-value} = .658$ for the construct revealed that product quality control has a positive effect on Nigerian textile mill shutdown. This is supported by the $F\text{-statistics}$ of 5.765. The $R^2 = .644$ implied that PQC was responsible for 64% variation in the shutdown of textile mills in Nigeria. The 36% of PQC not explained may be due to other factors not included in the model. The impact of PQC on osd_3 was statistically significant ($P = .000 < .05$). This was confirmed by the $t\text{-statistics}$ of 1.999. The linear simple equation can be expressed as $osd_3 = 3.228 + .227(PQC)$ which implied that a percentage change in PQC will drive an increase of 23% in osd_3 . The null hypotheses 3 was rejected and the alternate was not rejected on the basis on the available evidence.

4.2.4. Result of model 4 (Multi variance analysis)

The results of the multivariate analysis conducted in Table 6 concerning hypothesis 4 showed that an overall $R\text{-value} = .811$ which means that MBD has a positive impact on OSD. The $R^2 = .783$ which inferred that MBD was responsible for 78% variation in the shutdown of textile mills in Nigeria. This is supported by the $F\text{-statistics}$ of 7.234. The impact MBD on textile mills shutdown was statistically significant ($P = .000 < .05$). This was established by the $t\text{-statistics}$ of 2.876. The linear simple equation can be expressed as $OSD = 3.228 + .454 (MBD)$ which implied that a percentage change in MBD will drive an increase of 45% in OSD. Therefore null hypothesis 4 was rejected and alternate not rejected.

4.3. Discussion of finding

The hypotheses tested agreed with finding Mohammad et al. (2013) who reported that make or buy decision was motivated by costs savings. This is also in line with Katikar and Pawar (2013). Finding of the current study also agreed with the conclusion of Akewushola (2015) that reveal that firms that outsource experience reduce average cost, increased sales turnover and profitability, enhance expertise, improve service quality, reduce staff strength, streamline the production process, reduced administrative burden and save time for core activities thereby preventing shut-down. To the best of the researchers' knowledge, only a few extant studies have been conducted in this direction, therefore, conclusions on the impact of the independent variable on the dependent variable was in doubt. Table 6 also showed the values of Durbin-Watson Statistics for the four hypotheses tested (1.463, 1.601, 1.499 and 1.544). The residuals lie between "0 – 2". This suggests the existence of positive autocorrelation and since they are greater than the adjusted R^2 (.721, .683, .644, and .783) in the four equations and the results confirmed the validity and high degree of the model specifications. The result of hypotheses one to three are in line with the a priori expectation: $COP > 0$, $MCA > 0$, $PQC > 0$. The standard deviation of .065, .077, and .080, .082 < 1.0 in Table 6 indicated consistency in response to the rate of cost of production, manufacturing capacity, and economic and product quality control.

5. Summary, conclusion and recommendations

5.1. Summary

This study was carried out in order to determine the effect of make or buy decision on textile mill shutdown. Four hypotheses were analyzed based on the questions raised and the objective of the study as follows:

- (i) What relationship exists between the cost of production and textile mills closedown in Nigeria? The study intended to determine what would have been the case if instead of close down the textile mills due high cost of production, the management resorted to trading since the object clause in the memorandum of association of every manufacturer also includes trading. The analysis result showed that the impact cost of production on shutdown was significant. This means that the textile mills shutdown was properly explained by the cost of production. Cost of manufacture is a major factor on the ground that the textile mills due to external and internal factors were producing at a high cost, therefore, was not able to breakeven. The consistent loss made over the years forced these organization to wind up. The fold up would have been avoided if the organizations' management had decided to outsource from specialized companies usually from multinationals textile manufacturers with cheaper and more quality imported textile fabrics to sales to customers. It is also likely that more profit would have been made and some the objective attained given Nigerians perception of foreign-made goods.
- (ii) How does manufacturing capacity relate to producers' business shutdown in Nigerian textile mills? This question would help the researchers to assess the effect of textile firms' production capacity on the make or buy decision and textile organizations shutdown in Nigeria. The analysis result indicated that the influence manufacturing capacity on shutdown was significant. Most Nigerian textile mills were operating on less than half of its install capacity which means that it had the capacity to produce in house. The extra capacity was induced by lack of infrastructure, poor electric power supply, a high cost of diesel or PMS to energize the power plant, lack of maintenance spare parts and inability to obtain low-interest finance to aid production. Therefore, it would have been a proper decision to buy and sell instead of shutdown.
- (iii) What is the influence of product quality control on textile companies' shutdown in Nigeria? The study proposed to determine if the level of product quality control moderates make or buy in textile companies and its implications on production shutdown? Product quality control has a significant effect on textile companies operations. This is because quality determines to a large extent customers test which further determines the level of sales and consequential profit. Where a textile mill has a strong ability to control product quality, it is advisable for them to produce in a house but other the management should buy and sell.
- (iv) The general objective was to evaluate the influence of make or buy decision on organization shut-down in the textile manufacturing industry in Nigeria. The objective was accomplished through the regression analysis result conducted. The result showed that organization shut-down in the textile manufacturing industry in Nigeria was properly explained by make or buy decision. Where a textile mill has qualified management accountants with strong experience on make or buy decision, organization shutdown would be greatly minimized.

5.2. Policy implications

Relevant literature reviewed showed that the challenge of local textile mills closure becomes a threat to the manufacturing sector and the economy in general. The shutdown to a large extent negatively affected the Nigerian economy through increased in the unemployment rate and poverty level, decline in government tax revenue generation and loss of investors' funds among others. The findings from the theoretical and empirical results of this study formed a decision template for both the management and the government. So various policy implication drawn from the outcomes of this paper are as follows:

5.2.1. For local textile mills

Local textile mills in Nigeria can reduce the rate of business shut down by:

Employing and retaining experienced management accountants as a matter of policy who are conversant with make or buy decision techniques. This would enable adequate information to be provided to assist textile firms' management in making an effective decision on the issue at stake.

Technical staff with excellent knowledge of quality control methodology should also be employed and retained. This is important giving the taste of Nigerians in terms of quality

Management should embrace proper plant maintenance culture to increase its plant efficiency and capacity where possible. This would aid the in house production, otherwise, they should resort to buying from the outside supplier.

The three constructs—COP; MCA; and PQC indicated a variation of 72%, 68%, and 64%. This means that the effect of production cost is higher among the three. Therefore, the management of textile companies should pay more attention to the sub variable.

5.2.2. For the policymakers

The government should put effective policies in place to facilitate the operations of the textile mills in Nigeria as follows:

Create agencies to formulate policies that would facilitate the operations of the textile mills in Nigeria to realize their objectives. Also, loan funds should also be available to firms in the textile industry at a cheaper rate.

Tariff on textile mills plant and machinery, spare parts should be reduced and export quota in the industry should be flexible to enable them to recruit technical experts.

5.3. Conclusion and contribution to knowledge

The result of the regression analyses showed that each of the make or buy sub-variables and the aggregate have significant relationships with textile mills shut-down in Nigeria. Therefore if textile organizations' management had decided to outsource from specialized foreign companies business shutdown would have been avoided. This paper contributed to the body of knowledge by examining make or buy decision as it relates to textile organizational shutdown. The research result indicated that the cost of production, manufacturing capacity and product quality control as sub-variables of make or buy decision have an effect on the decision to close down textile companies.

5.4. Limitations and recommendation for future research

The limitation of this study emanates from the sample of 6 textile mills and the number of copies of the questionnaire (403) administered. Other sub and dummy variables such as the experience of the respondents, qualification of the management accountants, industrial regulations and government policy were excluded. Future researchers should conduct a more comprehensive study in terms of the population and questionnaire distribution.

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