

Determinants of Make or Buy Decision of Firms in Nigeria

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Abstract

Make or buy decision is solely the responsibility of strategic managers for the aim of achieving some level of profitability. This study examined the determinants of make or buy decision of firms in Nigeria. The study adopted a survey research design. 100 respondents comprising, management staff of Guinness Nigeria Plc, Edo State of Nigeria, formed the sample size of the study. The study employed multivariate regression technique for the empirical analysis. The regression analysis revealed that manufacturing cost has a positive insignificant relationship with make or decision of firms in Nigeria, logistic management cost has a positive significant relationship with make or decision of firms in Nigeria and quality management has a positive insignificant relationship with make or decision of firms in Nigeria. The study concludes that logistic management cost is a determinant of make or buy decision, since it has a significant relationship with make or buy. Manufacturing cost and quality management are not determinants of make or buy since they have insignificant relationships with make or buy, even though they are positively associated with make or buy. The study recommended that production and operation managers should carefully appraise logistic management cost since it's a determinant of make or buy decision of firms in Nigeria. Furthermore, management of manufacturing firms in Nigeria should consider the cost of making or buying at minimal cost advantage so as to achieve better profit margin.

Keywords: Logistic Management Cost, Manufacturing Cost, Make or Buy Decision, Quality Management.

1.Introduction

Manufacturing firms are often faced with the burden of taking decisions as regards make or buy. This is premised on the fact that, while it may be beneficial for such firms to buy in the short run, it may have an adverse effect on the firm in the long run. Therefore, decisions regarding make or buy are often treated with utmost importance in manufacturing firms. Make or buy (MoB) is a strategic management matter that has been debated by scholars, business practitioners and captains of industries during the pre and post industrial revolution (Arora & Kumar, 2022; Drury, 2018). MoB is a strategic choice of the manager to adopt in-house or out-sourcing a part in the product for enhancing the performance of the firm (Katikar, & Pawar, 2014). Manufacturing firms in Nigeria were faced with the problem of meeting customer's expectation given the economic reality. In relation to the scenario, Katikar and Pawar (2014) argued that manufacturing firm made

decisions based on higher efficiency, greater flexibility, better product quality and lower cost in the face of management practice.

Make or buy is a strategic decision made by top level management. Therefore, the essence of strategic management is to make decision on how to improve the quality of decisions making in order to meet the set objectives. Strategies are the basis for conducting process benchmarking through which firm tries to improve the efficiency of its processes for implementing the set strategies. Omarli (2017) posited that decision making process of MoB is a sole responsibility of management that are active in all the business firm's plans of activities and results. Moschuris (2007) argued the decision on MoB strategy among manufacturing firms arises from poor quality product, introduction of a new product, modification of an existing product, cost considerations, lack of capacity, unsatisfactory supplier performance, and sales fluctuations. Drury (2018) added that the decision of a manufacturing firm is to acquire services or goods from outside suppliers rather than manufacturing them which are the basis of outsourcing or MoB decision. Therefore, the operation manager sometimes strategize on the best option of policy to embark based on certain indicators that might contribute to profit level or negatively influence sales level. Collaborating the view of Abdullah and Mejbil (2023), the management decision on how to prevent future difficulties and excessive expenses may influence a firm's choice to purchase a product or service or make the produce.

Studies on make or buy decisions in both developed and developing economies are relatively few (Abdullah & Mejbil, 2023; Okoye-Chime, 2021; Shang & McEwan, 2021; Rosyidi, 2021; Rosyidi, 2020). However, studies in Nigeria, to the best of the researchers' knowledge in this subject area are relatively few. Therefore, the identified research gaps were the lack of emphasis on the MoB parameters in Nigerian empirical studies and insufficient exploration of variables as determinants of MoB in the Nigerian context constitute the identified research problem that necessitate the rationale and motivation of this study. Manufacturing cost, logistic management cost and quality management were the three (3) determinants of make or buy decision examined in this study. Therefore, in order to achieve the objectives of the study, the following null hypotheses were formulated;

H₀₁: There is no significant relationship between manufacturing cost and make or buy decision of firms in Nigeria.

H₀₂: There is no significant relationship between logistic management cost and make or buy decision of firms in Nigeria.

H₀₃: There is no significant relationship between quality management and make or buy decision of firms in Nigeria.

2. Literature Review

2.1 Make/Buy Decision

Make or buy (MoB) decision of a firm is both an internal cost strategy and external cost strategy. The production or operation managers of firms are often faced with rigorous actions and difficult decision to decide upon (Arora & Kumar, 2022). MoB decision is based on strategic level decision, operational level decision, firm-level decision, and performance management decision. Decision making process is a cognitive process that involves selecting a specific rational behaviour which is based on making choices that result in the optimal level of benefit for an individual with the preference of satisfying a need and to curtail level of market competition within the organisations.

Manufacturing firms were additive in nature if they decide whether they commit resources such as assets and competencies, to make (in-house sourcing) or if they buy (out-sourcing) through a manufacturing process to specialized suppliers (Hedenstierna et al. 2019).

2.2 Determinants of Make/Buy Decision

Reviewing the rationale for the determinants of MoB decision, manufacturing firms look at the in-sourcing (make) decisions like quality, cost, design, lead times, warehousing expenses, transportation, political, environmental, and social reasons, labor expenses, operational expenses, managerial expenses, purchasing expenses, capital expenses and material expenses while the out-sourcing (buy) decision such as suppliers, lack of expertise of suppliers and cost aspects (Mudambi & Tallman, 2010). Arora and Kumar (2022) posited that decision making process of manufacturing choices is normally based in-house resources that may include quality, design, lead times, warehousing costs, transportation, politics, the environment, and society while the outsourcing is the existence of the suppliers' knowledge, the prices, the suppliers' brands, the firms they serve, the suppliers' inventories and the suppliers' procurement practices.

2.2.1 Manufacturing Cost

The manufacturing cost (MC) strategy of a firm is driven by the principle of transaction cost economics (Odia & Ogbaisi, 2022). The study asserted that manufacturing firms will make the outsourcing decision based on production and transaction costs reduction. Sillanpää (2015) defined MC as a production costs that serve as a direct cost channeled for producing product or service. The MC may include other costs like labour and infrastructure. The MC that is incurred in making the product available are labour expenses, operating expenses, administrative expenses, buying expenses, capital charges and expenses of material (Mudambi & Tallman, 2010). Basically, there are some factors that should in the cost of manufacturing a product prior taking decision of outsourcing it. The outsourcing decisions of firm is targeted at the profit level and cost involve in relation to strategic issues like risk dimensions and efficiency relating to lead time, supplier quality and delivery performance. Arya et al. (2008) added that coordination cost is part of the manufacturing cost considered by strategy managers for making decision relating to in-house sourcing of the product or service.

2.2.2 Logistic Management Cost

Logistics management cost (LMC) has been paid great attention to by scholars and researchers due to the role it plays within organizations in the area of raw material procurement and delivery of final product to the final consumers (Bonassina, et al., 2018). Logistics management deals with the quality of information sharing in the distribution system for the creation of final goods and services for the immediate consumers (customers) or buyers of the products produced (Schniederjans, et al., 2010). The central issue of logistic management cost (LMC) is built on operational cost of the firm for outsourcing the product or service. LMC is hinge on operational level, operational matters for outsourcing such as buying operations, organizational structure, planning and scheduling. Abdullah and Mejbel (2023) stressed that LMC is an operational matters that involves control methods, logistic activities, and production process. It indicates the embodiment of sharing resources logistics which is the synergy between transportation, storage and distribution resources to improve efficiency of logistics operations of the productive process for meeting demand. Logistics management provides business organizations with reasonable operations costs with high level of operational efficiency of business activities. Ahmed, et al.

(2019) opined that elements of LMC is made up of operational communication, performance related communication, operational planning and control, collaborative improvements, sharing logistics resources, new product development, general knowledge generalization, financial and technological support and strategic partnership. Kimaiyo and Ochiri (2014) document that lack of integrated logistics management impact on the profit margin of manufacturing firms negatively. This indicates that increasing operational costs is a signal for firm motivation in order to maintain effective stock management control (Aro-Gordon & Gupte, 2016).

2.2.3 Quality Management

The concept of quality management is driven by quality service delivery by employees of organisations. The attainment of meaningful action plans is the function of quality goals and quality policies formulated by management (Sweis, et al., 2019). Gharakhani et al. (2013) asserted that quality management is largely accepted at different sectors as a managerial strategy aimed at enhancing level of firm profitability. Imran et al. (2017) emphasized that market orientation serves as a platform for creating a clear understanding of total quality management and organisational performance relationship. In response to increasing demands by customers for superior quality of products and services, the global marketplace has become highly competitive, and many firms have adopted practices of make or buy decision based on quality management and benchmarking for survival.

2.3 Empirical Review

Abdullah and Mejbil (2023) conducted a study on the trade-off between make or buy strategy and their relationship with firm performance in Iraq. The aim of the study is to determine whether it is more cost effective to develop and manufacture components or services in-house or to purchase them from outside vendors. Primary data were gathered for the year 2022 through visits and meetings with the managers by exploring economic analysis and break-even analysis approach to assist managers evaluate sourcing decisions. They found out that if manufacturing costs are more than the purchase costs or otherwise, the out-sourcing or in-house sourcing decision is implemented. This indicates that the economic analysis result the manufacturing decision is the best option based on the three models because manufacturing costs are lower than purchasing cost. Arora and Kumar (2022) carried out an empirical analysis on make or buy decision making in India. The aim of the study is to examine the relationship between make the decision based on profitability, cost, flexibility and responsiveness of work. It was established that current trends and make or buy decision of the components and its relationship in taking decisions.

In Canada, Shang and McEwan (2021) explored a cause-effect analysis to identify the requirement of corn based on the make-or-buy decision of feed on livestock production. The findings support the theoretical model that in-house corn production expands due to not only higher price but also higher price volatility. Okoye-Chime (2021) used a quantitative research design to examine the effect of outsourcing strategies of MoB decision on the performance of firm in Nigeria. Data were collected from 300 employees from a population of 1200 employees of 10 fast foods industries in Anambra, State Nigeria with aid of structured questionnaire and analysis of variance (ANOVA), correlation coefficient and regression analysis in the analysis of data. The results showed that quality management practice and MoB decision of outsourcing for product/service quality is positively and significantly related. Rosyidi (2021) studied the framework of integrated sustainable make or

buy decision model and found out that on manufacturing cost and quality loss is the determinants of make or buy decision.

Rosyidi (2020) conducted a study on the determinants of make or buy decision of the firm. From the review of relevant literature, it would be documented that material purchasing cost, manufacturing cost and quality loss is the determinants of make or buy decision. It was also revealed that the price and quality determined the optimal model. Katikar and Pawar (2014) carried out a study on the relationship between make or buy decisions and capacity for profitability and technology in batch type of manufacturing industries in India. They made use of survey research design in the collection of data and found out that useful ratios of make parts to total number of parts (in percentage) has a significant relationship with capacity utilization for profitability and technology based classified batch manufacturing industries. Hsiao, et al (2009) conducted a study on the make-or-buy decisions and levels of logistics outsourcing: an empirical analysis in the food manufacturing industry in Netherland. The aim of the study is to determinants of outsourcing of different levels of logistics activities in the food manufacturing industry. Primary data was collected through the distribution of questionnaires via mailed to 114 logistics managers in the Netherlands and Taiwan. The results revealed that transaction cost theory, resource-based view, supply chain management has a significant influence on outsourcing decision.

2.4 Theoretical Framework

The theoretical framework of this study is anchored on McIvor's outsourcing framework on make or buy decision-making model. According to McIvor (2008), decision-making process on the issue of MoB is based on value chain analysis, core competency thinking and supply base influences. The value chain analysis is based on the perception of customers' value added principle which is driven by satisfaction. MoB decision process of core management is carried out by top management along with inputs from teams from lower level management. Outsourcing is a critical strategic decision that can allow organisations to develop and leverage the capabilities required to compete in today's global business environment. The framework is relevant to this study because it is based on defining the core activities of the firm, evaluating relevant value chain activities, total cost analysis of core activities and relationship analysis. Therefore, all non-core activities can be outsourced while core activities can be strategically outsourced. This is with a view to free top management in making strategic decisions that will impact in organisations in the long run, including decisions involving make or buy.

3. Methodology

The study made use of descriptive survey research design. The population of the research comprised of the 133 management staff of Guinness Nigeria Plc. Guinness Nigeria Plc is a production firm in Benin City, Edo State, Nigeria. The sample size was ascertained by the use of Taro Yamane formula as cited in Enofe, Ogbaisi and Mboto (2015).

$$n = \frac{N}{1 + Ne^2}$$

Where n is the sample size, N is the population size, and e is the chance allowed for error or the level of significance.

$$\begin{aligned} n &= \frac{N}{1 + Ne^2} \\ &= \frac{133}{1 + 133(0.05)^2} \end{aligned}$$

$$= \frac{133}{1+0.3325} = \frac{133}{1.3325}$$

$$n = 100$$

Consequently, a sample size of 100 was used.

3.1 Model Specification

A multivariate regression is used to test the formulated hypothesis. The model assumes that the dependent variable is a linear function of the independent variables. The study adapted the model of Okoye-Chima (2021). The multivariate regression model with an error term (ε_t) is specified in econometric form in the model as represented below:

$$MBD_i = \beta_0 + \beta_1 MC_i + \beta_2 LMC_i + \beta_3 QM_i + \varepsilon_{it} \dots \dots \dots (1)$$

Where;

MBD = Make or buy decision (Dependent variable)

MC = Manufacturing cost (Independent variable)

LMC = Logistic management cost (Independent variable)

QM= Quality management (Independent variable)

β_0 = constant

β_1 - β_3 = coefficient of the explanatory variables

ε_{it} = error terms.

The presumptive signs of the parameters in the specifications are:

$$\beta_1, \beta_2, \beta_3, > 0$$

3.2 Reliability of the Research Instrument

Reliability is the extent to which the research methods can reproduce the same results multiple times. Reliability also connotes the extent to which the research instrument (questionnaire) measures consistently what it intends to measure. The reliability of the instrument is tested by Cronbach's Alpha. The reliability test was utilized to evaluate the validity of the comparison of the structured questions. In other words, the acceptable level of coefficient in maintaining internal consistency of a research instrument is 0.70 (Nunally, 1978). The pilot and pre-test of the reliability test revealed make or buy decision has internal consistency of 0.738, manufacturing cost has internal consistency of 0.708, logistic management cost has internal consistency of 0.712 and quality management has internal consistency of 0.701. This implies that the variable meet the 0.70 benchmark. The questionnaire was designed based on a 5-point Likert scale ranging from 5 = strongly agree; 4 = agree; 3 = undecided; 2= disagree; 1 = strongly disagree.

3.3 Method of Analysis

The responses from the questionnaire administered were analyzed using tables and descriptive statistics. The descriptive method described the demography of respondents using frequency and

percentage. The ordinary least square (OLS) regression technique via SPSS version 23.0 was adopted to test the formulated hypotheses.

4.Results and Discussions

The study adopted a quantitative research instrument through administered questionnaire to 100 respondents and 92 were duly returned and subsequently analyzed for the empirical evidence. The response rate of 92% was established. The high response rate was attributed to the fact that the researcher had contacts in the study area that facilitated the data collection process. The responses from the questionnaire administered were analyzed using descriptive statistics and single regression for the stated hypothesis. The descriptive statistics focused on the demographic characteristics of respondent using frequency, percentages and tables.

Table 1: Gender of respondents

Gender	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Male	56	60.9	60.9	60.9
Female	36	39.1	39.1	100.0
Total	92	100.0	100.0	

Source: Field Survey, 2024/SPSS

It was observed from Table 1 that majority of the sampled respondents, 56 representing 60.9% were male while the remaining 36 respondents representing 39.1% were female. This implies that there was more of the sampled respondents were male.

Table 2: Age Bracket of the respondents

Age	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 21-30 years	7	7.6	7.6	7.6
31-40 years	42	45.7	45.7	53.3
41 years & above	43	46.7	46.7	100.0
Total	92	100.0	100.0	

Source: Field Survey, 2024/SPSS

The table indicates that majority of the respondents, 43 representing 46.7% were within the age bracket of 41 years and above, 42 respondents representing 45.7% were within the age bracket of 31 to 40 years while the remaining 7 respondents representing 7.6% within the age bracket of 21-30 years. This indicates that majority of the respondents were within the age bracket of 41 years and above.

Table 3: Marital status of the respondents

Marital Status	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Single	29	31.5	31.5	31.5
Married	51	55.4	55.4	87.0
Separated	7	7.6	7.6	94.6
Others	5	5.4	5.4	100.0
Total	92	100.0	100.0	

Source: Field Survey, 2024/SPSS

Table 3 above showed that a higher proportion of the respondents, 51 respondents representing 55.4% were married, 29 respondents representing 31.5% were single, 7 respondents representing 7.6% were separated while the remaining 5 respondents representing 5.4% were others.

Table 4: Level of Education of the respondents

Education Level		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	BSc/HND	3	3.3	3.3	3.3
	MSc/MBA	42	45.7	46.7	50.0
	PhD	43	46.7	47.8	97.8
	OTHERS	2	2.2	2.2	100.0
	Total	90	97.8	100.0	
Missing	System	2	2.2		
Total		92	100.0		

Source: Field Survey, 2024/SPSS

It was observed from the table that 43 respondents representing 47.8% had PhD as their qualifications, 42 respondents representing 45.7% had either MSc or MBA as their qualifications, 3 respondents representing 3.3% had either BSc or HND as their qualification and 2 respondent representing 2.2% had other certificates as their qualification.

Table 5: Working experience of the respondents

Working Experience		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-5 years	11	12.0	12.0	12.0
	6-10 years	25	27.2	27.2	39.1
	11-15 years	40	43.5	43.5	82.6
	20 years & above	16	17.4	17.4	100.0
	Total	92	100.0	100.0	

Source: Field Survey, 2024/SPSS

Table 5 above showed the working experience of the sampled respondents. The table indicates that majority of the respondents, 40 representing 43.5% has a working experience of 11-15 years, 25 respondents representing 27.2% has a working experience of 6-10 years, 16 respondents representing 17.4% has a working experience of over 20 years while the remaining 11 respondents representing 12.0% has a working experience of 1-5 years.

The descriptive statistics of the data above, focused on the demographic characteristics of respondents in terms of the gender, age bracket, marital status, level of education and the working experience of the respondents. It can be deduced that the demographic characteristics especially the characteristics of the level of education and the working experience of the respondents to a large extent influence the make or buy decisions of firms.

4.1 Multivariate Regression Analysis

The regression technique is employed to test the effect of independent variables on the dependent variable. The result of the multiple regression analysis is presented in the table below.

Table 6: Summary of the Regression Result

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.256 ^a	.065	.034	.68954	1.510

a. Predictors: (Constant), QM, MC, LMC

b. Dependent Variable: MBD

It was observed from table 6 above that R^2 which measures the strength of the effect of independent variables on the dependent variable has the value of 0.065. This implies that 7% of the variation in make or buy decision is jointly explained by the explanatory variables. This is supported by the adjusted R^2 of 0.034 which implies the systematic variation explained by the independent variables. The R value of 0.256 accounted for about 26% of the predictive power of the model.

Test of Hypotheses

In this study, three hypotheses were formulated in this study which is tested using t-statistics and significant value of the individual variables in the regression result. The essence of this is to investigate how significant are the effect of independent variables on the dependent variable. The summary of the result is presented in the table below.

Table 7: Test of Hypothesis 1

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.804	.582		4.821	.000
MC	.250	.145	.180	1.731	.087

a. Dependent Variable: MBD

In testing this hypothesis, the t-statistics and probability value in table 7 is used. Manufacturing cost (MC) had a t-statistics value of 1.731 and a probability value of 0.087 which is statistically insignificant at $p\text{-value} > 0.05$. This indicates that manufacturing cost has a positive insignificant relationship with make or buy decision of firms. Therefore, the null hypothesis is accepted that there is no significant relationship between manufacturing cost and make or decision of firm in Nigeria.

Table 8: Test of Hypothesis 2

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.574	.566		4.550	.000
LMC	.305	.139	.225	2.191	.031

a. Dependent Variable: MBD

It would be revealed from table 8 that logistic management cost (LMC) had a t-statistics value of 2.191 and a probability value of 0.031 which is statistically significant at $p\text{-value} < 0.05$. This indicates that logistic management cost has a positive significant relationship make or buy decision of firms. Therefore, the null hypothesis is rejected that there is no significant relationship between logistic management cost and make or decision of firm in Nigeria.

Table 9: Test of Hypothesis 3

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	3.452	.444		7.769	.000
QM	.083	.104	.084	.802	.425

a. Dependent Variable: MBD

In testing this hypothesis, the t-statistics and probability value in table 9 is used. Quality management (QM) had a t-statistics value of 0.802 and a probability value of 0.425 which is statistically insignificant at $p\text{-value} > 0.05$. This indicates that quality management has a positive insignificant relationship with make or buy decision of firms. Therefore, the null hypothesis is accepted that there is no significant relationship between quality management and make or decision of firms in Nigeria.

4.2 Discussion of Findings

The result showed that manufacturing cost has a positive insignificant relationship with make or decision of firms in Nigeria. This implies that manufacturing cost is not a determinant of make or buy decision, since it has an insignificant relationship with make or buy. The result is in disagreement with the findings of Abdullah and Mejbil (2023), which revealed that manufacturing costs determine the make or buy decision of firm. The findings of Arora and Kumar (2022) also disagreed with the results that there is relationship between make or buy decision and manufacturing cost. Logistic management cost has a positive significant relationship with make or decision of firm in Nigeria. This implies that logistic manufacturing cost is a determinant of make or buy decision, since it has a significant relationship with make or buy. The result is in agreement with the findings of Hsiao et al. (2009) that logistic activity strongly determine make or decision of firm in Nigeria. The results showed quality management has a positive insignificant relationship with make or decision of firm in Nigeria. This implies that quality management is not a determinant of make or buy decision, since it has an insignificant relationship with make or buy. The result is in disagreement with the findings of Okoye-Chime (2021) that quality management practice and MoB decision of outsourcing for product/service quality is positively and significantly related.

5. Conclusion and Recommendations

The study examined the determinants of make or buy decision of firms in Nigeria. Make or buy decision is solely the responsibility of strategic managers for the aim of achieving some level of profitability. Manufacturing firms are often faced with the burden of taking decisions as regards make or buy. This is premised on the fact that, while it may be beneficial for such firms to buy in the short run, it may have an adverse effect on the firm in the long run. Therefore, decisions regarding make or buy are often treated with utmost importance in manufacturing firms. The study

concludes that logistic management cost is a determinant of make or buy decision, since it has a significant relationship with make or buy. Manufacturing cost and quality management are not determinants of make or buy since they have insignificant relationships with make or buy, even though they are positively associated with make or buy.

Based on the conclusion of the study, it was recommended that production and operation managers should carefully appraise logistic management cost since it's a determinant of make or buy decision of firms in Nigeria. Furthermore, management of manufacturing firms in Nigeria should consider the cost of making or buying at minimal cost advantage so as to achieve better profit margin.

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