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Research Paper

Market Size Effects and Locational Decision Of Selected Foreign Manufacturing Firms In South West, Nigeria

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Abstract
Locational decisions are important strategic decision challenges faced by domestic and international firms. The study was conducted to ascertain the effect of market size on locational decision of selected foreign manufacturing firms in South West Nigeria. The study is guided by three research questions and hypotheses. A sample size of 229 from a population of 352 made up of the top management staff of the study multinational firms determined using the Taro Yammeh's formula was used in the study. The study applied both descriptive statistics and Somer's delta (Somer's d) and gamma statistic with the aid of SPSS version25.0 at 0.0005 significance level for data analysis to ascertain the effect of market size on foreign firm's location decision. Reliability statistics was conducted to determine the level of reliability of the test instrument. The result showed a Cronbach alpha of 0.736. Findings showed that market share (d = .612, p < .0005), market penetration (d = .577, p < .0005) and market segmentation (d = .254, p < .0005), were all statistically significant. It was recommended among others that Multinational Enterprises should increasingly seek locations which offer best economic and institutional facilities and locate where market size core competencies are adequate. The study concludes that market size and share, market penetration and market segmentation are of great importance in location decision of the firm.

Keywords: *Location, Firm, Market, Decision, Segmentation, Proximity.*

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I. Introduction

Locational decisions are important strategic decision challenges faced by domestic and international firms. International firms face further locational decisions in choosing market in host countries because of its direct link with the demand and supply of goods and services. Market size and growth potential tend to be important location variables, thus, the larger the size of the market of the host country, the more important it is in attracting higher levels of investments (Alugbuo 2017).

Market share is one of the measures used to determine the growth, success or failure of any business. Market share according to Haug & Dahnan (2014) represents the percentage of an industry or market's total sales that is earned by a particular company over a specified time period. Innovation is one method by which a company may increase market share. Garg (2020) maintain that companies increase market share through innovation, strengthening customer relationships, smart hiring practices and acquiring competitors. While considering the market, the location selection team will not only assess the existing segment and the region but also the potential growth, newer regions and the location of competitors.

Johansson (2011) cited in Sinha, (2020) posits that market penetration is a measure of how much a product or service is being used by customers compared to the total estimated market for that product or service. Market penetration can also be used in developing strategies employed to increase the market share of a particular product or service. Similarly, market penetration focuses on increasing sales of existing products to an existing market.

Market segmentation is a process of dividing a heterogeneous market into relatively more homogenous segments. Tarver (2020) maintains that market segmentation refers to aggregating prospective buyers into groups or segments with common needs and who respond similarly to a marketing action.

1.2 Statement of the Problem

It is possible that market size influences location decision of both foreign manufacturing and service firms. It is for this reason that it has become necessary to conduct a study in this area within the Nigerian environment in order to determine precisely the sort of market size effect that underlie location decisions by the Dutch multinational company - Unilever PLC and Cadbury PLC as they venture into the foreign market, Nigeria.

Specifically, available studies assessed was mostly on regional location factors and made used of some regression tools like logit or nested models without conducting some diagnostic test in this area. For example, Sinha (2018, 2020), Towhidur (2020), and especially the work done by Garg (2020) on the factors affecting industrial location in Chandigarh in 2017, the researcher examined location factors such as access to market, access to raw materials, access to labour supply, access to sources of energy, access to transportation and communication facilities, government policy, access to agglomeration economies/ links between countries, and other miscellaneous factors like water, using a mixed logit model for data analysis. Results shows that location of most modern industries were not guided by a single factor due to its complex nature and, that the validity or importance of a factor also changes with time and space.

None of these studies assessed compared results obtained with another statistical tool for comparison to assure quality of their results. This may still not fit into Nigeria's industrial location decisions. Thus, this study is challenged with the attempt to ascertain the specific effect that the size of the market has on the decision of a firm location.

1.3 Objectives of the Study

The major objective of the study is to examine the effects of market size on foreign firms' location decision.
The specific objectives include to:

1. ascertain how market share affects location decision of a firm.
2. determine the influence of market penetration rate on location decision of a firm.
3. examine the influence of market segmentation on location decision of a firm.

1.4 Research Questions

Based on the objectives of the study, the following research questions were developed.

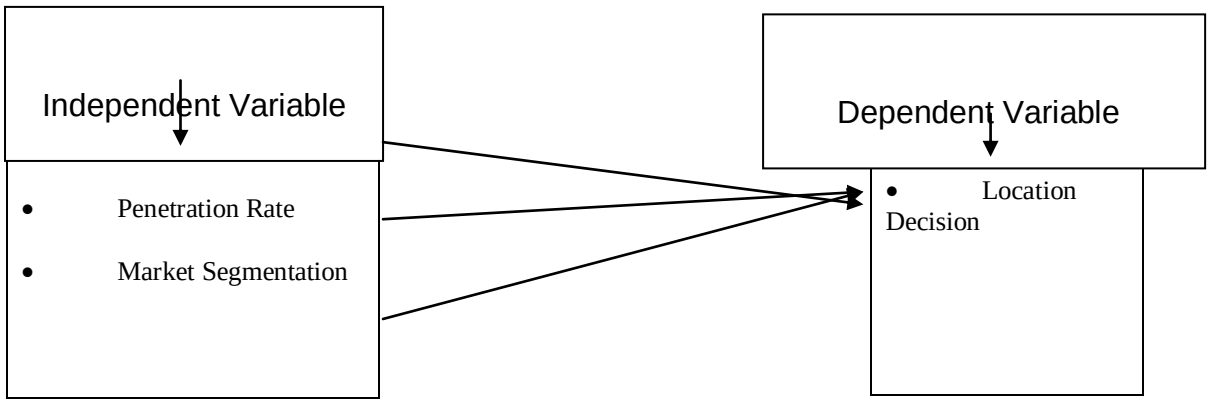
1. What is the relationship between market share and location decision of a firm?
2. To what extent does market penetration rate influence location decision of a firm?
3. What is the influence of market segmentation on location decision of a firm?

1.5 Hypotheses

Ho_1: There is no significant relationship between market share and location decision of a firm.
Ho_2: Market penetration rate does not significantly influence location decision of a firm.
Ho_3: Market segmentation does not significantly influence location decision of a firm.

II. Review of Related Literature

Fig. 2.1 Operational Framework



Source: Researchers' Desk 2021.

2.1 Market Size

Location, according to Towhidur (2020), is crucial among many other factors that influence success of industries. Generally, location of multinational firms is influenced by some strategic considerations such as market size.

Tocar (2018) suggests that firms operating in small markets with specialized segments generally favour a diversification strategy while organizations operating in large markets serving high volume segments are likely to utilize a concentration strategy. The reason for this is the difference in sales volume in each market as a result of the size of the market and the targeted segment. If a company is operating in large markets targeting a high volume segment, the company's products will be demanded by a large number of customers. This will result in a high sales volume in each market.

A company facing this situation can therefore focus its resources on penetrating only a few markets to gain high market shares in those countries. On the other hand, to reach adequate sales and to be profitable, firms operating in small markets targeting specialized or niche segments need to spread sales in numerous markets (Hollensen, 1998) cited in Sinha (2020).

Market size is the total number of likely buyers of the product or service within a given market. Similarly, to estimate market size define the target customer, estimate the number of target customers, determine the penetration rate, calculate the potential market size, and apply the market size data. (Sinha, 2018).

2.1.1 Market Share

Market share is one of the measures used to determine the growth, success or failure of any business. Haug & Dahnan (2014) believe that market share represents the percentage of an industry or market's total sales that is earned by a particular company over a specified time period. It is calculated by taking the company's sales over the period and dividing it by the total sales of the industry over the same period. Market share is a percentage of total sales volume in a market captured by a brand, product or company. This metric is used to give a general idea of the size of a company in relation to its competitors. To capture market share, requires being relevant through innovation, respond to customers' ideas, snap up competitors, be more flexible among others.

Haug & Dahnan (2014) maintain that companies increase market share through innovation, strengthening customer relationships, smart hiring practices and acquiring competitors. When a firm brings to market a new technology that its competitors are yet to offer, consumers wishing to own the technology buy it from that company, even if they previously did business with a competitor. Many of those consumers become loyal customers, which adds to the company's market share and decreases market share for the company from which they switched (Ramirez-Hurtado, Puebla, & Berbel- Pineda, 2018). One of the surest methods to increase market share is acquiring a competitor, thus, one of the greatest measures of market share is customer retention (Haug & Dahnan, 2014).

As a result of its market penetration, Unilever PLC and Cadbury PLC have a larger market share than all of its competitors combined. However, the companies still have opportunities to add to their customer base by targeting their competitors' clients and wooing them over to the study multinational enterprises products and services (Guardian, 2020).

2.1.2 Market Penetration Rate

Production has no value without consumption. Consumption involves market that is selling goods and products to the consumers. Thus, an industry cannot be thought of without market. Market penetration is the percentage of the target market sold in a period of time. Similarly, Market penetration also refers to the successful selling of a product or service in a specific market. It is measured by the amount of sales volume of an existing good or service compared to the total target market for that product or service (Garg, 2020).

Similarly, Sinha, (2020) maintains that market penetration can also be used to assess the multinational study firms as a whole to determine the potential for these companies within the industry to gain market share or grow their revenue through sales. Market penetration requires strong execution in pricing, promotion, and distribution in order to grow market share. Market penetration can lead to direct sales and adoption of product or service in the market if it's priced correctly. It leads to direct brand awareness and can create customer referrals. It can discourage other competitors from coming into the same market because of increased competition among others (Sinha, 2018).

2.1.3 Market Segmentation

Tarver (2020) opines that a firm is targeting a high volume segment when its products are demanded by a large part of the market. To evaluate potential demand, a company can analyze factors such as; the number of people in a market, purchasing power, consumption patterns and the level of development. The number of

people in a market is one of the most basic indicators of market size. However, this factor is most valuable as an indicator for demand for certain staple items that are generally affordable.

Market segmentation enables companies to target different categories of consumers who perceive the full value of certain products and services differently from one another. Companies can generally use three criteria to identify different market segments: homogeneity, or common needs within a segment, distinction, or being unique from other groups, and reaction, or a similar response to the market (Tarver (2020).

Tarver (2020) posits that market segmentation is an extension of market research that seeks to identify targeted groups of consumers and tailor products and branding in a way that is attractive to the group. The objective of market segmentation is to minimize risk by determining which products have the best chances for gaining a share of a target market and determining the best way to deliver the products to the market. This allows the company to increase its overall efficiency by focusing limited resources on efforts that produce the best return on investment (ROI).

2.1.4 Market Size and Location Choice Decision

Making location decisions for the production of products is a key aspect of strategies and logistical decision-making for manufacturing firms. The optimum locations may offer competitive advantage and may contribute to the success of an enterprise. Market size is the number of individuals in a certain market segment who are potential buyers. Market size is measured in terms of potential buyers by counting up all the potential customers that would be a good fit for the business and multiply that number by the average annual revenue of these types of customers in the study market (Tocar, 2018).

Foreign firms generally invest in countries with large market sizes with the expectation to gain valuable skills and large economies of scale by acquiring intangible assets like market knowledge and expertise. Therefore, the larger the size of the market of the host country, the more important the factor is in attracting higher levels of investments (Lin & Ho, 2019).

2.2 Theoretical Review

2.2.1 Theory of Comparative Advantages- (Factor Endowment Theory)

The traditional basis for analysis of international economic activity is the neoclassical theory of international trade. The theory, known as the factor endowment theory of international trade, is developed by Heckscher and Ohlin from Ricardo's theory of Comparative advantages. It explains international trade in terms of comparative advantages of participating countries based on the assumption of perfect competition in which certain resources or factors are immobile, production functions and consumer preference are identical and specialization is incomplete.

The basic premise is that countries should specialize in producing and exporting products that utilize their abundant and cheap factors of production and import products that utilize the countries scarce factors. The trade theory suggests that location of international production is based on comparative advantages of factor costs. If firms use FDI to minimize costs, they will move to the location where production cost are lowest. In terms of developing countries, motives for investments in these economies are mainly determined by large market-size, low labour costs, high return in natural resources and favourable policies towards FDI (Sinha, 2020).

2.2.2 Localization Theory

Industry localization is defined as the geographical concentration of firms in the same industries, and also one of the mechanisms motivating these externalities that stem from the geographic clustering of industries. The issue on industry localization attracted the attention of economists in the late nineteenth century. The work of Marshall (1920) is considered as an early and influential economic analysis on this phenomenon. Marshall identifies three externalities that stem from industry localization:

i. Localization enables firms to benefit from technological spillovers

ii. Localization provides a pool market for workers with specialized skills that benefits both workers and firms, and

iii. Localization creates a pool of specialized intermediate inputs for an industry in greater variety and at lower cost. These positive externalities have the potentials to enhance the performance by firms that agglomerate.

Unilever Nigeria PLC, and Cadbury PLC are multinational cooperation's that employed localization and Internalization theories within the country and region to efficiently produce and distribute their products nationwide, having regional branches and distribution channels all over the country.

As anticipated by Marshall (1920), localized industry allows a pooled market for workers with specialized skills to benefit both workers and firms. This also benefits firms by increasing the supply of specialized employees and reducing the risk of high wage requirements from labour.

III. Methodology

This section covers the design procedure and methodology of the work. It presents the steps that were taken by the researcher to arrive at the results of the study. These steps include the survey research design which involves the use of such tools as personal interviews, questionnaires and observations. A sample size of 229 was determined from a population of 352 top management staff of the study multinational enterprises using the Taro Yammeh's formula. The questionnaire was subjected to supervisor's corrections and used a pilot study to determine the validity by selecting a few respondents from the study organizations. In measuring **a** pilot study was conducted to enable determine the level of reliability for the instrument. The data gotten from the pilot survey was subjected to test of reliability using Cronbach alpha technique. The result reports a Cronbach alpha of 0.736 for structure questionnaire designed for the study therefore confirming the instrument reliability.
The researcher applied both descriptive statistics, and Somers' delta (Somer's d) and gamma statistic for analysis of data, comparing the findings of Somer's d and gamma statistics to that of spearman correlation statistic obtained to assure quality result.

Somers' d Formula

$$D = \frac{P - Q}{P + Q + T}$$

Where P is the count of concordant instances, Q is the count of discordant instances and T is the count of tied instances

Gamma statistic

Gamma is a measure of association for ordinal variables. Gamma ranges from -1.00 to 1.00. Again, a Gamma of 0.00 reflects no association; a Gamma of 1.00 reflects a positive perfect relationship between variables; a Gamma of -1.00 reflects a negative perfect relationship between those variables.

Gamma Formula

$$\gamma = \frac{P - Q}{P + Q}$$

Where P is the count of concordant instances and Q is the count of discordant instances
Decision Rule: The decision rule of the test statistic will be to accept the null hypothesis, when p-value is greater than or equal to significance level at 0.0005. Alternatively, accept the alternative hypothesis when p-value is less than or equal to significance level at 0.0005.

Data Analysis & Presentation

In this chapter, the presentation is organized based on the research questions, then the hypotheses. Illustrations with tables and charts were used to enhance the presentation while decisions were taken based on the results. Data were analyzed using computer aided package such as IBM SPSS version 25.0 statistical package. The significant level was set at 0.0005. Somers' delta (Somers' d) and gamma statistic then compared to spearman correlation statistic obtained, and descriptive statistics was applied in testing of the hypotheses and answering the research questions.
This study investigated market size effects on foreign firms' location decision. More specifically, this study was primarily conducted to address the following research questions:

a. What is the relationship between market share and location decision of a firm?
b. To what extent does market penetration rate influence location decision of a firm?
c. What is the influence of market segmentation on location decision of a firm?

IV. Data Analysis and Presentation

4.1 Presentation of Data

4.1.1 Questionnaire Distribution Outcome

The researcher with the aid of proportionate random sampling method was able to collate the exact sample size from the population studied that were properly filled and returned. With the aid of simple random sampling technique, the researcher was able to gather sufficient information from the population. The study further had to use the two hundred and ninety-nine (299) questionnaire properly filled and returned for study. This serves to give the data substance and credibility.

Table 4.1.1: Respondents responses and ranking as regards to market share

S/N	Market Share	5	4	3	2	1	N	Mean	Stand. Dev.	Ranking
1.	Quality of products	**122**	**107**	**0**	**2**	**1**	**229**	4.53	5.500	2nd
2.	Delivery of products	**101**	**95**	**20**	**0**	**0**	**229**	4.22	0.893	4th
3.	Credit availability	**101**	**108**	**17**	**9**	**4**	**229**	4.33	0.710	3rd
4.	Income of consumers	**73**	**106**	**13**	**1**	**2**	**229**	3.86	1.175	5th
5.	Customer retention	**127**	**102**	**16**	**20**	**17**	**229**	4.55	0.498	1st
	Grand Mean			4.30		0.382		of great importance		

Source: Researcher's Fieldwork, 2021

Table 4.1.1 presents the respondents responses and ranking with respect market share. The result presents a grand mean of 4.30 and a standard deviation of 0.382 which indicates that the respondents highly viewed market share as of great importance. The result shows that customer retention (mean of 4.55 and a standard deviation of 0.498) ranks 1st; quality of products (mean of 4.53 and a standard deviation of 0.500 respectively) ranks 2nd; credit availability (mean of 4.33 and a standard deviation of 0.710) ranks 3rd; delivery of products (mean of 3.86 and a standard deviation of 1.175) ranks 4th and finally income of consumers (mean of 4.22 and a standard deviation of 0.893) ranks 5th are all of great importance in location decision.
This result indicates that firms consider customer retention, quality of products, credit availability, delivery of products and income of consumers as of great importance.

Table 4.1.2: Respondents responses and ranking as regards to market penetration rate

S/N	Market Penetration Rate	5	4	3	2	1	N	Mean	Stand. Dev.	Ranking
6.	Product improvements	**73**	**101**	**14**	**20**	**21**	**229**	3.81	1.235	4th
7.	Geographic proximity	**8**	**44**	**60**	**84**	**33**	**229**	2.61	1.061	5th
8.	Price competition	**101**	**108**	**18**	**1**	**1**	**229**	4.34	0.680	2nd
9.	Special promotion	**109**	**104**	**16**	**0**	**0**	**229**	4.41	0.619	1st
10.	Consumption pattern	**103**	**107**	**16**	**1**	**2**	**229**	4.34	0.706	2nd
	Grand Mean							3.90	0.390	of great importance

Source: Researcher's Fieldwork, 2021

Table 4.1.3 presents the respondents responses and ranking as regards to the variable market penetration rate. The result presents a grand mean of 3.90 and a standard deviation of 0.390 which indicates that the respondents highly viewed market penetration rate as of great importance. The result shows that special promotion (mean of 4.41 and a standard deviation of 0.619) ranked 1st; price competition (mean of 4.34 and a standard deviation of 0.680 respectively) and consumption pattern (mean of 4.34 and a standard deviation of 0.706 respectively) ranked 2nd respectively; product improvements (mean of 3.81 and a standard deviation of 1.235) ranked 4th; and finally geographic proximity (mean of 2.61 and a standard deviation of 1.061) ranked 5th are all of great importance in deciding firms location decision.
This result indicates that firms consider special promotion, price competition, consumption pattern, product improvements and geographic proximity as of great importance in location decision.

Table 4.1.4: Respondents responses and ranking as regards to market segmentation

S/N	Market Segmentation	5	4	3	2	1	N	Mean	Stand. Dev.	Ranking
11.	Distribution costs	**125**	**96**	**8**	**0**	**0**	**229**	4.51	0.567	1st
12.	Distribution channels	**25**	**98**	**42**	**33**	**28**	**226**	3.26	1.207	4th
13.	Technology and holding costs	**57**	**84**	**28**	**52**	**8**	**229**	3.57	1.189	3rd
14.	Supply chain problems	**27**	**43**	**32**	**81**	**46**	**229**	2.67	1.309	5th
15.	Physical distribution	**74**	**110**	**9**	**20**	**16**	**229**	3.90	1.156	2nd
	Grand Mean							3.58	0.629	of great importance

Source: Researcher's Fieldwork, 2021

Table 4.1.4 presents the respondents responses and ranking as regards to the variable market penetration rate. The result presents a grand mean of 3.58 and a standard deviation of 0.629 which indicates that the respondents highly viewed market penetration rate as of great importance in firms' location decision as regards market size effects. The result shows that distribution cost (mean of 4.51 and a standard deviation of 0.567) ranked 1st; physical distribution (mean of 3.90 and a standard deviation of 1.156 respectively) ranked 2nd; and technology and holding costs (mean of 3.57 and a standard deviation of 1.189) ranked 3rd are all of great importance; while distribution channels (mean of 3.26 and a standard deviation of 1.207) ranked 4th; and supply chain problems (mean of 2.67 and a standard deviation of 1.309) ranked 5th were regarded as of moderate importance in location decision as regards market size effects on firms' location decision.

This result indicates that firms consider distribution cost, physical distribution, and technology and holding costs were of great importance in location decision as regards market size effects on firms' location choice while distribution channels and supply chain problems were regarded as of moderate importance in location decision as regards market size effects on firms' location decision.

Table 4.1.5: Respondents responses and ranking as regards to firm's location decision

S/N	Location Decisions	5	4	3	2	1	Total	Mean	Stand. Dev.	Ranking
31	Market size association with location decision	99	112	18	0	0	229	4.35	0.622	2nd
32	Market share effects on location decision	127	102	0	0	0	229	4.55	0.498	1st
33	Market penetration rate influence on location decision	101	103	21	1	3	229	4.30	0.761	3rd
34	Market segmentation influence on location decision	73	101	14	20	21	229	3.81	1.235	4th
	Grand Mean							4.25	0.3251	of great importance

Source: Researcher's Fieldwork, 2021

The result in table 4.1.5 presents the respondents' responses and ranking with regard to the variable firm's location decision. The result presents a grand mean of 4.25 and a standard deviation of 0.3251 which indicates that the respondents highly viewed location decision as of great importance. The result shows that the respondents viewed market share (mean of 4.55 and a standard deviation of 0.498) ranked 1st; market size association with location choice (mean of 4.35 and a standard deviation of 0.622 respectively) ranked 2nd; market penetration rate influence on location decision (mean of 4.30 and a standard deviation of 0.761) ranked 3rd; then market segmentation influence on location decision (mean of 3.81 and a standard deviation of 1.235) ranked 4th, indicating great importance among factors affecting location.

This result shows that firms consider market share, market size, market penetration rate and market segmentation influence location decision.

4.2 Analysis of Data

The data collected with the aid of the questionnaire are presented below according to the various study research questions and hypotheses. In presenting and analyzing the data, the decision rules stated below are used.

Decision Rule:

Coefficient Range	Strength of Association
+/-.91 - +/-1.00	Very High
+/-.71 - +/-.90	High
+/-.51 - +/-.70	Moderate
+/-.21 - +/-.50	Low
+/-.00 - +/-.20	Very Low

Reject the null hypothesis if p-value ≤ 0.0005 significance level

4.2.1 Answering Research Questions and Hypotheses

Research Question 1: What is the relationship between market share and location decision of a firm?

Table 4.3.1: SPSS descriptive statistics for market share and location decision of a firm

Descriptive Statistics

	Mean	Std. Deviation	N
Market Share	4.30	.3823	229

Location Decision	4.25	.3251	229

Source: SPSS 25 Descriptive Statistic Output

The result in table 4.2.1 presents the descriptive statistics for market share and location decision of the firm. The result has shown that the choice of location by the firm has a mean of 4.25 and a standard deviation of 0.3251 while the result for market share has a mean of 4.30 and a standard deviation of 0.3823. This result shows that the majority of the respondents were of the opinion that the share of the market is of great importance in location decision of firms.

Table 4.2.2: SPSS Asymmetric/Directional Measures Result for market share and firm's of location

Directional Measures

			Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Ordinal by Ordinal	Somers' d	Symmetric	.621	.033	17.571	.000
		Market Share Dependent	.630	.033	17.571	.000
		Location Decision Dependent	.612	.034	17.571	.000

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Source: SPSS 25 Asymmetric/Directional Measures Analysis Output

As seen above in table 4.2.2 (i.e.: Directional Measures), Somer's d is primarily an asymmetric measure of association, meaning that whichever variable is treated as the dependent variable matters (though it can also be conceptualized as symmetric). Somer's d is a Proportional Reduction in Error (PRE) measure, so it is interpreted as the improvement in predicting the dependent variable that can be attributed to knowing a case's value on the independent variable. A value of .630 for the crosstabulation above (treating the firm's decision on location decision as dependent) shows the firm's decision of location improvement by 63% by knowing the market share.

Table 4.2.3: SPSS Symmetric Measures result for market share and location decision

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Ordinal by Ordinal	Gamma	.723	.036	17.571	.000
	Spearman Correlation	.738	.034	16.465	.000[c]
Interval by Interval	Pearson's R	.720	.034	15.626	.000[c]
N of Valid Cases		229			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Source: SPSS 25 Symmetric Measures Analysis Output

Table 4.2.3 presents the symmetric measures output result showing SPSS providing three common symmetric measures of association which can be used to compare the results as produced by SPSS for the analysis while considering their various assumptions. Since both dependent and independent variables are in ordinal form, thus considering the result as produced by "ordinal by ordinal". The spearman correlation analysis result is compared to that of gamma statistical analysis. The result as shown in table 4.2.3 shows that the results from spearman correlation which is 0.738 and that of gamma statistic which accounts for 0.723, both agree that there is a high level of relationship between market share and firm's decision on location. The gamma statistic and spearman correlation statistic result indicate that knowing the state of the market share has a high relationship/contributory factor over our prediction of firm's decision on location by 72.3% and 73.8% respectively. This shows a high level of relationship between market share and firms' decision on location decision.

Hypothesis 1: There is no significant relationship between market share and location decision of a firm.

The result in table 4.2.2 shows the Somers' *d* result presented in the "Location decision Dependent" row of the "Value" column and is 0**.**612. This indicates that the market share of the firm is associated with increased location decision of the firm. Furthermore, the "Approx. Sig." column shows that the statistical significance value (i.e., *p*-value) is **.**000, which means $p < .0005$. Therefore, the association between the ordinal dependent variable, "location decision", and ordinal independent variable, "market share", is statistically significant.

Therefore, having run Somers' d statistic to determine the relationship between market share and location choice of firms amongst 229 participants, there was a strong, positive relationship between market share and location decision of firms, which was statistically significant (d = .612, p < .0005).

Research Question 2: To what extent does market penetration rate influence location decision of a firm?

Table 4.2.4: SPSS descriptive statistics for market penetration rate and location decision of a firm

Descriptive Statistics

	Mean	Std. Deviation	N
Market Penetration Rate	3.90	.3900	229
Location Decision	4.26	.3251	229

Source: SPSS 25 Regression Analysis Output

The result in table 4.2.4 presents the descriptive statistics for market penetration rate and location decision of the firm. The result has shown that the choice of location by the firm accounted for a mean of 4.25 and a standard deviation of 0.3251 while the result for market penetration rate accounted for a mean of 3.90 and a standard deviation of 0.3900. This result indicates that the majority of the respondents were of the opinion that market penetration rate is of great importance in the location decision of the firm.

Table 4.2.5: SPSS Asymmetric/Directional Measures Result for market penetration rate and firm's decision of location

Directional Measures

			Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Ordinal by Ordinal	Somers' d	Symmetric	.585	.031	17.134	.000
		Market Penetration Rate Dependent	.592	.032	17.134	.000
		Location Decision Dependent	.577	.031	17.134	.000

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Source: SPSS 25 Asymmetric/Driectional Measures Analysis Output

As seen above in table 4.2.5 (i.e.: Directional Measures), Somer's d is primarily an asymmetric measure of association, meaning that whichever variable is treated as the dependent variables matters (though it can also be conceptualized as symmetric). Somer's d is a Proportional Reduction in Error (PRE) measure. So it is interpreted as good in predicting the dependent variable that can be attributed to knowing a case's value on the independent variable. A value of .592 for the crosstabulation above (treating the firm's decision on location decision as dependent) indicates that firm's location improved by 59.2% by knowing the market penetration rate.

Table 4.2.6: SPSS Symmetric Measures result for market penetration rate and location decision

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Ordinal by Ordinal	Gamma	.688	.033	17.134	.000
	Spearman Correlation	.706	.032	15.004	.000[c]
Interval by Interval	Pearson's R	.724	.034	15.833	.000[c]
N of Valid Cases		229			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on normal approximation.

Source: SPSS 25 Symmetric Measures Output

The result in table 4.2.6 presents the symmetric measures output showing SPSS providing three common symmetric measures of association which can be used to compare the results as produced by SPSS for the analysis while considering their various assumptions. Since both dependent and independent variables are in

ordinal form, we shall consider the result as produced by "ordinal by ordinal". The spearman correlation analysis result is compared to that of gamma statistical analysis. Table 4.3.6 shows that the results from spearman correlation which is 0.706 and that of gamma statistic which accounts for 0.688 both indicated that there is a moderate relationship between market penetration rate and firm's decision of location. The gamma statistic and spearman correlation statistic result indicate that the influence of market penetration rate has a moderate relationship and thus, a contributory factor over the prediction of firm's decision on location by 70.6% and 68.8% respectively, which shows a moderate level of relationship between market penetration rate and firm's decision on location.

Hypothesis 2: Market penetration rate does not significantly influence location decision of a firm.

The result in table 4.2.5 presents the Somers' *d* result which is presented in the "Location Decision Dependent" row of the "Value" column and is 0**.**577. This indicates that market penetration rate is associated with increased location decision of the firm. Furthermore, the "Approx. Sig." column shows that the statistical significance value (i.e., *p*-value) is **.**000, indicating that $p < .0005$. Therefore, the association between the ordinal dependent variable, "location choice", and ordinal independent variable, "market penetration rate", is statistically significant.

Therefore, having run Somers' d statistic to determine the relationship between market size effects and location decision of firms amongst 229 participants, there was a moderate, positive relationship between raw materials and location decision of firms, which was statistically significant ($d = .577$, $p < .0005$).

Research Question 3: What is the influence of market segmentation on the location decision of a firm?

Table 4.2.7: SPSS descriptive statistics for market segmentation and location decision of a firm

Descriptive Statistics

	Mean	Std. Deviation	N
Market Segmentation	3.58	.6291	229
Location Choice	4.26	.3251	229

Source: SPSS 25 Descriptive Statistics Output

The result in table 4.2.7 presents the descriptive statistics for market segmentation and location decision of the firm. The result shows that the decision of location by the firm accounted for a mean of 4.25 and a standard deviation of 0.3251 while the result for market segmentation accounted for a mean of 3.58 and a standard deviation of 0.6291. This result indicates that the majority of the respondents were of the opinion that market segmentation is of great relevance in the location decision of the firm.

Table 4.2.8: SPSS Asymmetric/Directional Measures Result for market segmentation and firm's decision of location

Directional Measures

			Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Ordinal by Ordinal	Somers' d	Symmetric	.267	.040	6.604	.000
		Market Segmentation Dependent	.280	.042	6.604	.000
		Location Decision Dependent	.254	.038	6.604	.000

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Source: SPSS 25 Asymmetric/Directional Measures Analysis Output

As seen above in table 4.2.8 (i.e.: Directional Measures), Somer's d is primarily an asymmetric measure of association, meaning that whichever variable is treated as the dependent variables matters (though it can also be conceptualized as symmetric). Somer's d is a Proportional Reduction in Error (PRE) measure. So it is interpreted as an improvement in predicting the dependent variable that can be attributed to knowing a case's impact on the independent variable. A value of .280 for the crosstabulation above (treating the firm's decision on location decision as dependent) indicates that the firm's decision of location is enhanced by 28% influence of market segmentation on location decision.

Table 4.2.9: SPSS Symmetric Measures result for market segmentation and location decision

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Ordinal by Ordinal	Gamma	.308	.045	6.604	.000
	Spearman Correlation	.356	.053	5.731	.000[c]
Interval by Interval	Pearson's R	.366	.049	5.924	.000[c]
N of Valid Cases		229			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Source: SPSS 25 Symmetric Measures Analysis Output

Table 4.2.9 presents the symmetric measures output result showing SPSS providing three common symmetric measures of association which can be used to compare the results as produced by SPSS for the analysis while considering their various assumptions. Since both dependent and independent variables are in ordinal form, the result can be produced "ordinal by ordinal". The spearman correlation analysis result is compared to that of gamma statistical analysis. The result as shown in table 4.2.9 presents that the results from spearman correlation which is 0.356 and that of gamma statistic which is 0.308. Both showed that there is a low level of relationship between market segmentation and firm's decision on location. The gamma statistic and spearman correlation statistic result indicate that knowing that there is market segmentation influence in the area has a low relationship/contributory factor over the prediction of firm's decision on location by 35.6% and 30.8% respectively. This is a low level of relationship between the influence of market segmentation and firms' decision on location.

Hypothesis 3: Market segmentation does not significantly influence location decision of a firm.

The result in table 4.2.8 presents the Somers' *d* result which presented in the "Location decision Dependent**"** row of the "Value" column and is 0**.**254. This indicates the influence of market segmentation in the targeted area increases the firm's decision in making the area location decision for the firm. Furthermore, the "Approx. Sig." column shows that the statistical significance value (i.e., *p*-value) is **.**000, which means $p <$ .0005. Therefore, the association between the ordinal dependent variable, "location decision", and ordinal independent variable, "market segmentation", is statistically significant.

Thus, having run Somers' d statistic to determine the relationship between market segmentation and location decision of firms amongst 229 participants. There was a low level of association though indicating a positive relationship between market segmentation and location decision of firms, which was statistically significant (d = .254, p < .0005).

4.3 Discussion of Results

The researcher made several findings in this study. The findings can be discussed as follows:

1. Market share greatly influences the location decision of the firm. The firms' decision of location is improved by 63% by knowing the market share. A high level of relationship existed between market share and firms' decision on location. There was a strong, positive relationship between market share and location decision of firms, which was statistically significant (d = .612, p < .0005). This study is in an agreement with the study conducted by Garg (2020) which shows that location of industry at a particular place is the result of a number of decisions taken at various levels.
2. Market penetration rate greatly influences the location decision of the firm. The firm's decision of location is improved by 59.2% by knowing the penetration rate influence. A moderate level of relationship between market penetration rate and firms' decision on location. There was a moderate, positive relationship between market penetration and location decision of firms, which was statistically significant (d = .577, p < .0005). The study conclusion is in an agreement with the work of Lin and Ho (2019) which shows that for a firm to operate in a global environment, knowledge of both primary and secondary location factors are very important.
3. The influence of market segmentation is of great importance and so is the location decision of the firm. The firm's choice of location is improved by 28% by knowing the market segmentation influence. A low level of relationship between market segmentation and firm's decision of location is noted, thus statistically significant (d = .254, p < .0005). This is also in agreement with the work of Ettoumi, Maaninou and Chidmi (2015) that shows that market segmentation as a variable of market size along other location factors have significant effect on location decision of a firm.

4.4 Recommendations

1. Companies should increase its market share through innovation, strengthen customer relationships, engage in smart hiring practices and acquire more competitors
2. Multinational Enterprises should increasingly seek locations which offer best economic and institutional facilities and locate where core competencies can be efficiently utilized.
3. Manufacturing firms should improve its local sourcing of raw materials by partnering with farmers and intermediary companies to reduce the importation of raw materials.
4. Manufacturing firms should stay relevant through innovation, respond to customer's ideas, snap up competitions and be more flexible.

4.5 Conclusion

Locational decisions are important strategic decision challenges faced by domestic and international firms. Manufacturing a product successfully is not sufficient. It is also necessary that the output should find ready market. Foreign firms generally invest in countries with large market sizes to capitalize on ownership-specific assets. The study also concludes that the larger the size of the market of the host country, the more important the factor is in attracting higher levels of investments.

The study reviewed literatures in the areas of market size, market share and market segmentation supported by two theories: factor endowment and localization theories. The study applied both descriptive statistics and Somer's delta (Somer's d) and gamma statistic with the aid of SPSS version 25.0 at 0.0005 significance level for data analysis to examine the effect of market size on locational decision of selected foreign manufacturing firms in South West Nigeria.

Results of data analysis conducted shows that market share ($d = .612$, $p < .0005$) and market penetration ($d = .577$, $p < .0005$) was statistically significant which reports a positive and moderate relationships. Similarly, market segmentation ($d = .254$, $p < .0005$) presented a low level relationship, thus, was statistically significant.

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