

Capacity Planning and Performance of Brewing Firms in South-South, Nigeria

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Abstract: The broad objective of this paper is to determine the extent of relationship that exists between capacity planning and performance of brewing firms in South-South, Nigeria. Specifically, this study seeks to ascertain the type of relationship between lead strategy and product availability of brewing firms in South-South, Nigeria. The study was anchored on theory of constraint (TOC) postulated by Goldratt (1984). Survey research design was adopted for the study; a total population of three hundred and eighty-three (383) was used for the study. Census sampling method was used for the study because the population is a manageable size. The data collection tool employed by the researcher was the questionnaire, while the analysis of the data was done using the linear regression analysis. Results obtained from the test of hypothesis revealed that the relationship between lead strategy and product availability is significant and positive since ($F = 11824.65$; $R\text{-squared} = 0.872$; $P < .05$). Based on the findings, the researcher concluded that there exists a strong significant positive relationship between capacity planning and performance of brewing firms in South-South, Nigeria. Sequel to the conclusion, the researcher recommended that the focused firms should ensure the regular addition of production capacity in anticipation of demand as a result of its effect on product availability.

Key Words: Capacity Planning, lead strategy, performance and brewing firms

I. INTRODUCTION

1.1 Background of the Study

The last few decades have seen brewing firms in Nigeria change their operating models from closed to open systems as a result of the nature of the business environment. This change has necessitated the adoption of different capacity planning strategies that could ensure machine availability, raw material availability, skilled-man power availability, regular update of current technology from time to time so as to ensure product availability (Simoes, Gomes & Basin, 2011). Though the concept 'capacity planning' began to gain prominence in the 90s, its root can be traced to the 19th century where modern production planning methods were developed under the scientific management era. In 1996, the American Production and Inventory Control Society (APICS) officially came up with the concept of capacity planning (White, 2000). From the point of the official recognition of the concept in 1996, the concept began to gain prominence in Europe and other continents. However, manufacturing firms in Nigeria and other countries of Africa have not been able to fully apply this concept. The brewing firms in South-South

Nigeria has strived towards the application of various capacity planning strategies regarding productive systems or equipment trusted to meet the ever growing demand for beer, stout, malt and other of their products (Guinness Nigeria Plc, 2011). However, they have not been able to meet up with the ever growing demands of customers. This failure to adequately apply these strategies has had an impact on product availability and by extension their performance level.

Capacity planning entails a determination of the manufacturing capacity required by an enterprise so as to meet the changing or varying demand for its products (North Carolina State University, 2006). Capacity planning entails ensuring adequate production of resources (facilities, people, equipment and operating hours) are readily available to meet the production requirements of an organization. Capacity planning aids the credibility of any manufacturing facility (Stephenson, 2004). Gunther (2007) asserts that the broad strategies of capacity planning are lead strategy, lag strategy, match strategy and adjustment strategy. Lead strategy which is the focus of this study is an aggressive strategy whose objective is to lure customers away from a firm's competitors in order to impact product availability as well as the overall performance of an organization. The performance of a firm is adjudged positive when the activities of an organization yield favourable results (Nwachukwu, 2006). Wishart (2019) contends that some performance parameters or indicators for a typical manufacturing firm are product availability, sales volume, labour cost, down time, material cost, reject/scrap, quality, labour cost and turn-over. This study focuses on product availability. Wishart (2019) opines that product availability is all about ensuring that customers are not stranded when-ever they demand for the product of a manufacturing firm. It can be measured through stock-out level, demand pattern, orders delivered, delivery lag and stock level.

The foregoing shows that capacity planning could have an effect on the performance of brewing firms in South-South, Nigeria. This gives credence to carrying out this study.

1.2 Statement of the Problem

The failure of some production managers of the focused brewing firms to adopt an aggressive strategy with the objective of luring customers away from its competitors was observed by the researcher. They have failed to adopt a strategy aimed at reducing stock-out or low stock level in their

organization. They also failed to ensure machine availability, raw material availability, skilled-man power availability, regular update of current technology from time to time. This negative attitude of some of these managers could lead to regular stock-out, delay in product delivery and a complete failure to meet the ever changing demand of customers. Again, this unprofessional attitude could lead to the overtaking of a manufacturing firm by its competitors. Studies have shown that the availability or non-availability of production machine and equipment could impact product availability and by extension the competitive position of an organization. Also, the failure to forecast production level in a way that ensures the assembly of materials and equipment in the right quantity and at the right time could have an impact on the production level of a typical manufacturing firm.

The foregoing gives credence to the study of capacity planning and performance of brewing firms in South-South, Nigeria.

1.3 Objective of the Study

The broad objective of this study is:

To determine the extent of relationship that exists between capacity planning and performance of brewing firms in South-South, Nigeria.

Specifically, this study seeks to:

- Ascertain the type of relationship that exists between lead strategy and product availability of brewing firms in South-South, Nigeria.

1.4 Research Question

(i). What type of relationship exist between lead strategy and product availability of brewing firms in South-South, Nigeria?

1.5 Research Hypothesis

(i). H_0 : There is a significant relationship between lead strategy and product availability of brewing firms in South-South, Nigeria.

1.6 Significance of the Study

This study will be of immense benefit to the management of Champion Breweries Plc, Guinness Nigeria Plc and Pabod Breweries Plc as it will help them understand the effect capacity planning has on the performance of their organization. The study will also be beneficial to other production firms' residence in Nigeria and overseas as the recommendations of this study will be of great importance to them.

Again, this study will be beneficial to students of management and future researchers who intend to carry out a related study.

1.7 Scope of the Study

The geographical area of this study is South-South, Nigeria. It is one of the six geo-political zones in Nigeria. It consists of Akwa Ibom, Bayelsa, Cross River, Delta, Edo and Rivers

State. This study is centered on "Capacity Planning and Performance of brewing firms in South-South, Nigeria". The three (3) brewing firms in South-South, Nigeria; Champion Brewery Plc (Akwa Ibom State), Guinness Nigeria Plc (Edo State) and Pabod Brewery Plc (Rivers State) are the brewing firms used for this study. This study covers a period of eight (8) months; January-August 2020.

1.8 Limitation of Study

Respondent apathy posed a serious problem as some of them were uncooperative. However, the problem was resolved by convincing the respondents of the need to complete the questionnaire and the fact that the study was meant solely for academic purposes.

II. REVIEW OF RELATED LITERATURE

2.1 Conceptual Review

2.1.1 Capacity Planning

Capacity planning entails a determination of the manufacturing capacity required by an enterprise so as to meet the changing or varying demand for its products (North Carolina State University, 2006). In the context of manufacturing capacity, design capacity is the maximum number of jobs an organization is capable of completing over a given period of time. The manufacturing capacity of a firm is seen as effective when there is quality production, timely supply of products and effective material handling (Rouse, 2006).

Guinness Nigeria Plc (2011) sees capacity planning as the extent to which decisions and projections regarding productive systems or equipment are taken. Capacity planning aids the credibility of any manufacturing facility (Stephenson, 2004). A discrepancy between a firm's capacity and customer needs results in inefficiency. This could emanate from under-utilization of resources. The ultimate goal of capacity planning is the minimization of this discrepancy. Manufacturing capacity could be enhanced through the introduction of new product equipment and materials, identification of the right quality and number of employees required and the time required for the completion of production task.

Manufacturing capacity is calculated as (number of machines or workers) x (number of shifts) x (utilization) x (efficiency). Capacity planning is part of the organizational life of manufacturing firms. It occurs in a hierarchical manner in an organization from top level to middle level, down to lower level management. Ndegwa (2017) contends that some type of capacity planning practices existing in manufacturing firms are: strategic capacity planning which is the determination of the long-term capability of production systems which has a span of 3 to 10 years, aggregate capacity planning which is the operational plan or medium term plan ranging from 3 to 18 months, capacity scheduling which is a short term plan that deals with the day to day scheduling of activities and capacity

forecasting which has to do with various projection techniques used by managers.

Gunther (2007) asserts that the broad strategies of capacity planning are lead strategy, lag strategy, match strategy and adjustment strategy. This study is centered on the lead strategy.

Base on the above, capacity planning could be viewed as all activities that ensure proper functioning of productive systems in a bid to always satisfy customers.

2.1.2 Lead Strategy

Gunther (2007) opines that lead strategy entails the addition of capacity in anticipation of an increase in demand. This is an aggressive strategy whose objective is to lure customers away from a firm’s competitors. This strategy aims at reducing stock-out in an enterprise. It helps an organization to meet the ever changing demand of customers and to pre-empt competitors. After a study on some American manufacturing firms, Rouse (2006) revealed that some indicators of lead strategy are machine availability, raw material availability, man power availability, technological capability. The foregoing shows that lead strategy is a strategy that helps an organization draw customers to itself by ensuring that its productive facilities are always functional.

2.1.3 Organizational Performance

The performance of a firm is adjudged positive when the activities of an organization yield favourable results (Nwachukwu, 2006). Gregory (2015) contends that an organization is judged through several parameters. These parameters or indicators help managers determine how well

2.1.5 Conceptual Framework

an organization is performing and areas where improvement is needed.

Wishart (2019) contends that some performance parameters or indicators for a typical manufacturing firm are product availability, sales volume, labour cost, down time, material cost, reject/scrap, quality, labour cost and turn-over. Benadette (2015) asserts that performance indicators help manufacturing firms identify grey areas where improvement is needed. A detection of areas that need to be improved upon helps a manufacturing firm in the re-alignment of its productive facilities in other to ensure this improvement. Organizational performance is measured in terms of how well an organization achieves its set goal. This study is centered on product availability.

2.1.4 Product Availability

Jader (2019) sees product availability as not necessarily making products available 100%. It is all about making products readily available to customers at the right time and in the right quantity and quality. It is a matching game of timing the right time when products are needed by customers. This can be ensured by adequate capacity planning. Wishart (2019) opines that product availability is all about ensuring that customers are not stranded when- ever they demand for the product of a manufacturing firm. It could be measured through stock-out level, demand pattern, orders delivered, delivery lag and stock level.

The foregoing shows that product availability is all about ensuring that a manufacturing outfit does not go out of stock. A manufacturing firm ought to be ever ready to give customers quantity and quality demanded.

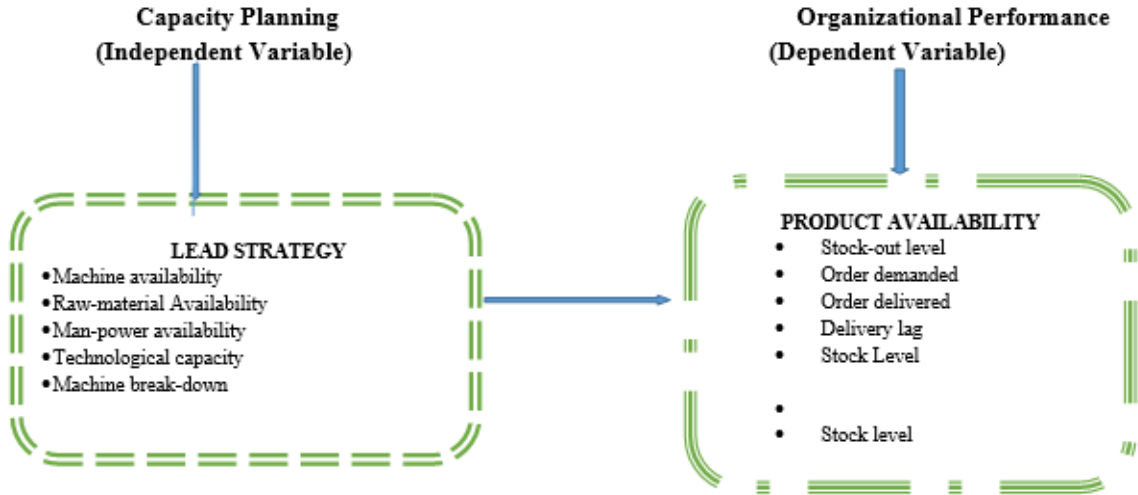


Figure 2.1: Diagram Linking Independent and Dependent Variable

Source: Researcher’s Conceptualization, 2020

The diagram above shows the linkage between the independent variable (capacity planning) and the dependent variable (organizational performance) variable. Specifically, it

shows the relationship between lead strategy and product availability. The focal point of the diagram is that when production capacity is at maximum, it could impact product

availability and by extension the overall performance level of the organization.

2.2 Theoretical Framework

This study is anchored on the theory of constraints (TOC). It is an overall management philosophy popularized by Goldratt (1984) in his book titled 'The Goal'. He is of the opinion that a specified goal by management could help everyone work towards the attainment of the stated goal (Goldratt, 2009). An earlier propagator of a similar concept was Wolfgang (1963) with his publication on Power Oriented Management Theory (Linhares, 2009). The theory is credited to Goldratt because his thoughts made the theory popular. The underlying premise of the theory is that organizational performance level can be measured by the variations of three variables: output, operational expense and inventory. Inventory is all the investment made on raw materials and input to be transformed, operational expense is all the investment made on equipment and parts used for the transformation of investment to throughput, output is the output sold to customers (Stein, 2000). Before the objective of acceptable output can be attained, the conditions to be met are safety of equipment, quality of products, legal obligations and regular assessment of throughput, operational expenses and inventory.

Linhares(2009) contends that most times, a constraint which limits a firm from the actualization of its set goals abound. However, breaking this constraint by management is possible. If the throughput (final product) capacity of a firm is elevated to a certain point, it can be said that there is a break of the existing constraint. Some of the benefits of the theory are; helps in identifying production constraints, helps the production department decide on how to exploit the system's constraint, alleviate the system's constraint (Trietsch, 2005). The theory is not free from criticisms. Some of them are being inferior to competing methodologies which makes it unlikely to yield optimal result and failure of the propounder of this theory to acknowledge that TOC borrows from over 40 years previous management science research and practice particularly PERT and CPM (Nave, 2002). Critics of the theory are also of the opinion that the theory has failed to demonstrate effectiveness in academic literature (Gupta & Synder, 2009) and there is a lack of rigour in the theory (Mukherjee & Chatterjee, 2007).

This theory is relevant to this study because an adoption of lead strategy which ensures that the right input is available for production could help the production department of the focused firms break the existing constraint. This by extension could have an effect on product availability.

2.3 Empirical Review

Ndegwa (2017) examined capacity planning and operational performance of major hydropower stations in Kenya. Survey research was used for the study, questionnaire was the data collection tool used to collect data from ten (10) hydro-electric power stations, fifty (50) respondents were used for

the study and regression analysis was used to test the formulated hypothesis. Findings of the study revealed that capacity planning practices like strategic capacity planning, aggregate capacity planning, capacity scheduling and capacity forecasting impacts the cost of operations, quality off service, flexibility in operations, speed of service delivery and dependability of supply of the focused firms.

Dekkers and Kennegi (2012) investigated capacity planning and performance of manufacturing firms in Malaysia. Survey research design was used and questionnaire was the data collection tool employed. A population of two hundred and twenty (220) was used for the study with a sample size of one hundred and fifty (150) was used for the study, pearson product moment correlation coefficient analysis was used to analyse the collected data. Findings revealed that there is a strong positive relationship between capacity scheduling and competitive advantage of the focused manufacturing firms.

Sule, Ogbadu and Olukotun (2012) examined the implications of capacity planning of infrastructural development in Kogi state higher institutions. Survey research design was used for the study and primary data collected through structured questionnaire. A population of eight hundred and eighty-seven (887) was used, a sample size of four hundred and fifty (450) was derived using Taro Yamane formular. Analysis of data was done using regression analysis. Findings of the study revealed that a very strong positive relationship exists between aggregate capacity forecasting and the level of infrastructural needs of the focused institutions.

Kifordu and Williams (2017) investigated capacity planning and performance of brewing firms in South-Eastern Nigeria. Survey research design was used, questionnaire was the data collection tool employed. A population of seven hundred and forty (740) was used, a sample size of five hundred and nine (509) was derived using Taro Yemanne sampling technique. Z-test statistics was used to analyse the collected data. Findings revealed that capacity necessities planning (match strategy) significantly impacts the resource requirements of the studied brewing firms.

Tong (2011) examined capacity planning and performance of manufacturing firms in Toronto. Survey research design was used and questionnaire was the data collection tool employed from a population of four hundred and twenty (420), a sample size of two hundred and fifteen was derived using the convenient sampling method. Heuristics algorithm was used to analyse the collected data. Findings revealed that match strategy impacts the performance of the studied firms.

Rene (2012) examined capacity planning and performance of health care centres in Rotterdam. Survey research design was used, the data collection instrument used was the questionnaire, a population of one hundred and eighty (180) was used and regression analysis was used to analyse the collected data. Findings revealed that there is a strong positive relationship between capacity scheduling, capacity forecasting and performance of the medical centres in focus.

Avninder (2015) examined capacity planning and performance of Okanagan Construction Firm, Kamloops. Survey research design was used, a sample size of one hundred and fifty (150) was used and questionnaire was the data collection tool employed. ANOVA was used to analyse the collected data. Findings revealed that lead strategy impacts the performance of the focused firms.

Esione and Okeke (2019) examined capacity planning and productivity of alcoholic beverages in Nigeria using Nigerian breweries plc and Guinness Nigeria plc, Lagos as the alcoholic beverage firms of study. Survey research design was used and questionnaire was the data collection tool employed. Systematic and stratified sampling was employed to get a sample size of three hundred and sixty (360). Regression analysis was used to analyse the collected data. Findings revealed that there is a significant effect of on the job training, off the job training, technical knowledge acquisition and organizational mentorship on productivity.

Suleyman and Wu (2018) investigated capacity planning in a U.S semi-conductor manufacturing firm. Survey research design was used and questionnaire was the data collection tool used to collect data. A sample size of two hundred (200) was used for the study. Stochastic model, bar chart and percentage were the tools for analysis of data. Findings from the study revealed that strategic capacity planning impacts the performance of the focused firm.

Rob and Kanagi (2012) studied capacity planning of selected Malaysian manufacturing firms. Survey research design was employed from a population of four hundred and fifty (450). The sample size of one hundred and seventy (170) was derived and used for the study. Questionnaire was the data collection tool employed and regression analysis was used to analyse the collected data. Findings revealed that capacity planning and capacity scheduling impact on the performance of the focused manufacturing firm.

2.4 Summary of Related Literature

A review of empirical literature shows that the capacity planning of manufacturing firms is not a new concept to researchers and scholars both in Nigeria and other parts of the world. Specifically, the works of foreign researchers like; Rob and Kanagi (2012) who studied capacity planning of selected Malaysian manufacturing firms, Suleyman and Wu (2018) who investigated capacity planning in a U.S semi-conductor manufacturing firm, Avninder (2015) who examined capacity planning and performance of Okanagan construction firm Kamloops, Rene (2012) who examined capacity planning and performance of health care centres in Rotterdam, Tong (2011) who studied capacity planning and performance of manufacturing firms in Toronto, Dekkers and Kennegi (2012) who investigated capacity planning and performance of manufacturing firms in Malaysia and Ndegwa (2017) who examined capacity planning and operational performance of major hydropower stations in Kenya were reviewed by the researchers.

The work of Nigerian scholars like; Esione and Okeke (2019) who examined capacity planning and productivity of alcoholic beverages in Nigeria using Nigerian breweries plc and Guinness Nigeria plc, Lagos as the alcoholic beverage firms of study, Kifordu and Williams (2017) who investigated capacity planning and performance of brewing firms in South-Eastern Nigeria, Sule and Ogbadu and Olukotun (2012) who examined the implications of capacity planning of infrastructural development in Kogi state higher institutions were also reviewed by the researcher.

However, none of the empirically reviewed studies identified lead strategy as it relates to the product availability of brewing firms in South-South Nigeria. This is the crack in knowledge that this study intends to fill.

III. METHODOLOGY

3.1 Research Design

Survey research design was used for the study. It was used because it aids the confidentiality of data gathered from respondents and the non-manipulation of the sample elements.

3.2 Area of Study

The three brewing companies located in South-South, Nigeria were used for this study.

Champion Brewery Plc is located at industrial layout, Aka Offot, Uyo, Akwa-Ibom state. Its products are champion lager beer and champ malt. Its beer brand has a production capacity of 650,000 hecto-litres per annum and its malt brand 10,000 hecto-litres per annum.

Guinness Nigeria Plc is located at industrial estate, Ikpobahill, Benin city, Edo state. Its products are foreign extra stout, harp lager beer, guinness extra smooth, satzenbrau, dubic extra lager, smirnoff ice, snapp, origin, malta guinness and spirit of different types. The beer and malt brand share a production capacity of 3 million hecto-litres per annum each and its spirit brand 0.1 million hecto-litres per annum.

Pabod Brewery Plc which is a subsidiary of SABMiller Plc is located at plot 186/187, Trans Amadi industrial layout, Oginigba, Port-Harcourt, Rivers state. Its products includes grand lager beer, grand malt, grand soda, bond super lager beer, castle milk stout, castle lager beer and eagle lager beer. It has a production capacity of 250,000 hecto-litres per annum.

3.3 Population of Study

Employees of the production and engineering department of the focused firms were used for this study. They were used because of the nature of the study.

Table 3. 1 Population of Employees in the Studied Firms

Company Name	Prod. Dept.	Persnl. Dept.	Mkt. Dept.	Eng. Dept.	Fin. Dept.	Pkg. Dept.	Sec. Dept.	Total
Guinness Nigeria Plc.	177	76	85	44	61	204	62	712
Paphod Brewery	71	24	19	13	21	78	20	246
Champion Brewery	63	19	12	15	18	18	35	229

Source: Human Resource Department of the Firms of Study (2020)

Table 3. 2 Study Population

Company Name	Production Total	Engineering Dept.
Guinness Nigeria Plc.	177	44
Paphod Brewery	71	13
Champion Brewery	63	15
Total		383

Source: Human Resource Department of the Firms of Study (2020)

3.4 Sample Size and Sampling Technique

Census sampling was used because the study population (383) was deemed manageable by the researcher.

3.5 Instrument of Data Collection

Questionnaire was used for this study. A five point likert scale questionnaire was used for the study. Strongly Agreed (SD), Agreed (A), Undecided (U), Strongly Disagreed (SD) and Disagreed (D).

3.6 Method of Data Collection

On the spot method of data collection was used for the study. This was ensured by the researcher and two other research assistants.

3.7 Validity of the Instrument

Face and construct validity test were applied by the researcher. Face validity was ensured by the supervisor and other lecturers in the department of Business Administration, Nnamdi Azikiwe University. In other to determine the discriminant and convergent validity (construct validity), factor analysis was employed using KMO and Bartlett's test and component matrix. A sampling adequacy benchmark of 0.40 opined by Koh and Nam (2005) was used for this study.

Table 3. 3 Validity Statistics of KMO and Bartlett's Test for Capacity Planning

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.425
Bartlett's Test of Sphericity	Approx. Chi-Square	149.941
	Df	10
	Sig.	.000

The Kaiser-Meyer-Olin measure of sampling adequacy shows a value of 0.425, while the Barlett's test of sphericity approximation chi-square shows a value of 149.941. This shows the validity of the instrument.

Table 3. 4 Validity Statistics of Component Matrix for Capacity Planning

Component Matrix ^a		
	Component	
	1	2
Q1	.808	-.530
Q2	.839	-.407
Q3	.877	.030
Q4	.452	.851
Q5	.754	.477
Extraction Method: Principal Component Analysis.		
a. 2 components extracted.		

Table 3.4 above reveals that questions 1,2,3 and 5 is loaded in component 1, while question 4 is loaded in component 2. It shows the validity of the measuring instrument.

Table 3. 5 Validity Statistics of KMO and Bartlett's Test for Performance

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.446
Bartlett's Test of Sphericity	Approx. Chi-Square	126.731
	Df	10
	Sig.	.000

The Kaiser-Meyer-Olin measure of sampling adequacy shows a value of 0.446, while the Barlett's test of sphericity approximation chi-square shows a value of 126.731. This shows the validity of the instrument.

Table 3. 6 Validity Statistics of Component Matrix for Performance

Component Matrix ^a		
	Component	
	1	2
Q1	.782	-.550
Q2	.792	-.471
Q3	.852	.057
Q4	.486	.826
Q5	.760	.465
Extraction Method: Principal Component Analysis.		
a. 2 components extracted.		

Table 3.6 above reveals that questions 1,2,3 and 5 is loaded in component 1, while question 4 is loaded in component 2. It shows the validity of the measuring instrument.

3.8 Reliability of the Instrument

Cronbach Alpha reliability test was used for the study. Suwannoppharat and Kaewsas’s (2015) assertion of a reliability coefficient of 0.696 and above as an acceptable value was used for the study.

Table 3. 7 Reliability Statistics for Capacity Planning

Reliability Statistics	
Cronbach's Alpha	N of Items
.793	5

Since the reliability value of 0.793>0.696, it shows that the instrument for capacity planning is reliable.

Table 3. 8 Reliability Statistics for Performance

Reliability Statistics	
Cronbach's Alpha	N of Items
.776	5

Since the reliability value of 0.776>0.696, it shows that the instrument for performance is reliable.

3.9 Method of Data Analysis

Regression analysis was used to analyze the data. This was aided by E-views 10. The level of significance was 5% while a 95% confidence interval reliability was adopted.

IV. DATA PRESENTATION, ANALYSIS AND DISCUSSION OF FINDINGS

4.1 Data Presentation and Analysis

Table 4. 1 Returned and Unreturned Questionnaire

Returned (Valid)	275	71.80%
Returned (Mutilated)	32	08.36%
Returned (Mutilated)	76	19.84%
Total questionnaires administered	383	100%

Source: Field Survey, 2020.

The table above reveals that out of the 383 copies of the questionnaire administered, 275 (71.80%) valid copies were returned. Base on that 275 copies of the questionnaire was used for the analysis of data.

Research Question

What type of relationship exists between lead strategy and product availability of brewing firms in South-South, Nigeria?

Table 4. 2 Descriptive Statistics for Lead Strategy

Descriptive Statistics					
	N	Mini mum	Maxi mum	Mean	Std. Deviation
Q1	275	1.00	5.00	3.7891	1.17419
Q2	275	1.00	5.00	3.7964	1.08506
Q3	275	1.00	5.00	3.2982	1.19541

Q4	275	1.00	5.00	3.7091	1.18495
Q5	275	3.00	5.00	3.9964	.77600
Valid N (listwise)	275				

The mean scores of the responses from questions relating to lead strategy are >2.5. This makes the responses acceptable.

Table 4. 3 Descriptive Statistics for Product Availability

Descriptive Statistics					
	N	Mini mum	Maxi mum	Mean	Std. Deviation
Q1	275	1.00	5.00	3.7527	1.18873
Q2	275	1.00	5.00	3.7636	1.08681
Q3	275	1.00	5.00	3.2800	1.18912
Q4	275	1.00	5.00	3.6691	1.20050
Q5	275	1.00	5.00	3.9455	.82873
Valid N (listwise)	275				

The mean scores of the responses from questions relating to product availability are >2.5 and therefore acceptable.

4.2 Test of Hypothesis

Research Hypothesis

(i). Ha: The relationship between lead strategy and product availability of brewing firms in South-South, Nigeria is significant.

Dependent Variable: PRO_AVA				
Method: Least Squares				
Date: 08/25/20 Time: 11:56				
Sample: 1 275				
Included observations: 275				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.900000	0.143351	20.23009	0.0000
LEA_STRA	0.940000	0.008644	108.7412	0.0000
R-squared	0.872434	Mean dependent var	17.00000	
Adjusted R-squared	0.872351	S.D. dependent var	6.735352	
S.E. of regression	1.013643	Akaike info criterion	2.872225	
Sum squared resid	280.5000	Schwarz criterion	2.898529	
Log likelihood	-392.9310	Hannan-Quinn criter.	2.882782	
F-statistic	11824.65	Durbin-Watson stat	1.919287	
Prob(F-statistic)	0.000000			

The results obtained revealed that lead strategy has significant effect on product availability ($\beta = 0.940$, t -statistics= 20.230, $P < .05$). Also, lead strategy is a predictor product availability (F-statistic = 11824.65; R-squared= 0.872; $P < .05$). The predictor variable singlehandedly explained 87.2% of the variance in product availability, while the remaining 12.8% could be due to the effect of the extraneous variables. The Durbin-Watson value of 1.9 shows that there is no first order serial correlation. This makes the result acceptable.

4.3 Discussion of Findings

Findings obtained from the test of the formulated hypothesis revealed that the relationship between lead strategy and product availability of brewing firms in South-South, Nigeria is significant and positive. This corroborates with the work of Kifordu and Williams (2017). They investigated capacity planning and performance of brewing firms in South-Eastern Nigeria. Findings of their study revealed that capacity planning significantly impacts the performance of the studied brewing firms. The work of Tong (2011) who examined capacity planning and performance of manufacturing firms in Toronto also aligns with the findings of this study. His findings revealed that capacity planning impacts the performance of the studied firms. The work of Avninder (2015) who examined capacity planning and performance of Okanagan construction firm, Kamloops is also in line with the findings of this study. Findings of the study revealed that lead strategy impacts the performance of the focused firms. Esione and Okeke (2019) examined capacity planning and productivity of alcoholic beverages in Nigeria using Nigerian breweries plc and Guinness Nigeria plc, Lagos as the alcoholic beverage firms of study. Their study is also in agreement with this study. Findings revealed that capacity planning impacts the performance of the focused firms. Suleyman and Wu (2018) whose study corroborates the present study investigated capacity planning in a U.S semiconductor manufacturing firm and their findings revealed that capacity planning impacts the performance of the focused firm.

V. SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary

The F-statistic value of 11824.65 and R-squared value of 0.872 confirms the fact that the relationship between lead strategy and product availability of brewing firms in South-South, Nigeria is significant and positive.

5.2 Conclusion

Based on the findings, the researcher concluded that the relationship between capacity planning and performance of brewing firms in South-South, Nigeria is significant and positive. The study shows that a regular addition of capacity in anticipation of an increase in demand could make products readily available to customers at the right time and in the right quality and quantity.

5.3 Recommendation

Base on the findings of the study, the following recommendations were made:

- The focused firms should ensure the regular addition of production capacity in anticipation of demand as a result of its effect on product availability.

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