

Just –In- Time Delivery Practice and Customer Satisfaction of Brewing Plants in South East, Nigeria

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ABSTRACT

The study focused on Just –in- time delivery Practice and customer satisfaction of Brewing plants in South East, Nigeria. The study sought to identify the influence of Just-In-Time delivery practice on Customer Satisfaction of Brewing plants in South-East, Nigeria. The study had a population of 1528, out of which a sample size of 431 was obtained using Cochran's formula at 5% error tolerance and 95% level of confidence. Primary data were collected with structured questionnaire and observation and secondary data were obtained through textbook, and journal materials. Out of 431 copies of the questionnaire that were distributed, 401 copies were returned while 30 copies were not returned. The hypothesis was tested using Simple Linear Regression. Finding revealed that Just –in- time delivery Practice has a significance influence on customer satisfaction of Brewing plants in South East, Nigeria. ($r = 0.861$; $t = 33.777$; $p < 0.05$). The study concluded that Just- in -time improved firm performance and competitiveness through an even production flow of small lot sizes integrating schedule stability, product quality, short setup times, preventive maintenance, and efficient process layout which at long run promote customer satisfaction. The Study recommended that Just –in- time delivery is an inventory management strategy that helps facilitate speedier order fulfillment with particular applications in raw materials orders and manufacturing, therefore, brewing plants in South East, Nigeria should faster turnaround of stock to prevent goods becoming damaged or obsolete while sitting in storage, thus reducing waste. The policy implication is that it saves money by preventing investment in unnecessary stock, and reducing the need to replace old stock.

KEYWORDS: Just–In-Time Delivery Practice; Customer Satisfaction; Brewing plants; South-East, Nigeria

1. INTRODUCTION:

In an intensive global competitive pressure, most firms around the world have applied innovative thinking to management and began to examine technology that can lead to improved manufacturing flexibility, product quality and production cost (Brox and Fader, 2002 and Chu & Shih, 1992). In competitive world markets most manufacturing firms have learned that survival rests on a commitment to continual process, and product improvement compete with high quality of product and low price (Salehi & Valizadeh, 2007). In today's rapidly changing marketplace, a company must deliver low cost

together with high quality and reliable product to ensure retaining an adequate market share and at same time satisfying its customers

Management tries as much as possible to lower their production costs while improving on their product quality. This is achieved by adopting new manufacturing strategies like Just in Time (JIT), International Standards Organization (ISO), Total Quality Management (TQM) etc that have emerged at the last quarter of 20th century which have helped operations at reduced costs (Dreyfus et al., 2004). The

How to cite this paper: Ndubuisi-Okolo Purity Uzoamaka | Nwatu Chukwuemeka "Just –In- Time Delivery Practice and Customer Satisfaction of Brewing Plants in South East, Nigeria" Published in International Journal of Trend in Scientific Research and Development (ijtsrd), ISSN: 2456-6470, Volume-5 | Issue-5, August 2021, pp.2048-2057, URL: www.ijtsrd.com/papers/ijtsrd45063.pdf



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most important strategy which has been so effective and efficient in manufacturing operations in reducing product costs, improved product quality, increased productivity, and reducing wastage to the barest minimum is Just in Time (JIT) (Mazanai, 2012)

JIT involves a series of operating concepts and techniques that identifies operational problems systematically, finds solutions and corrects problems so that defects are never sent to the next process. The main objective of JIT is to supply the right materials at the right time in the right amount at each step of the production process in the most economical manner. It covers all activities of the production system, from the design of the product through production to delivery to the customer (White & Ruch, 1990). In the words of Gonzalez and Gonzalez (2010), just in time management technique is an act of supplying customers with stocks at the right time with the exact quantity required by the customer. It leads to reduction in the inventory carrying cost and leads to profit maximization. The economic benefits of these techniques must be real and long lasting to warrant their application, given the costs and challenges in their implementation. Lower production costs, higher and faster throughput, better product quality, and on-time delivery of finished goods are benefits from successful implementation of a JIT system that are documented in the literature (Goyal & Deshmukh, 1992)

In JIT waste and unnecessary costs must be minimized. That is why Griinwald and Zortuin (1992) pointed out that “in order to achieve this production as far as possible need to strive toward: zero stock, rejection rate, set-up time, machine breakdown, transport and waiting time”. The implementation of JIT can provide many advantages to a company by improving profits, and return on investment through cost reductions, inventory reductions, and quality improvements (Singh & Garg, 2011).

1.1. Statement of the Problem

The JIT system is based on a philosophy of eliminating waste and utilizing the full capability of each worker to gain maximum benefit traditionally, purchasing departments have been given the task of negotiating for the lowest prices possible in an effort to reduce costs and increase company profits. These conventional relationships with suppliers were adversarial. Today's competitive marketplace calls for an updated strategy for the function. JIT (Just-in-Time) is one such approach to become a world-class competitor for world-class manufacturing. During the last two decades, the purchasing environment has become one of the most crucial elements in establishing the value added contents for the products

and services and hence has become the vital organization in the dynamic international market (Kinney and Wempe, 2002).

Shortages of raw material, shorter lead time, high quality, increasing the variety of products with smaller runs, inflation, productivity and introduction of a JIT purchasing system. has prompted the realization of the importance of purchasing. As a result JIT purchasing helps to reduce inventory and increased productivity, benefiting both the buyer and supplier (Fullerton & McWatters, 2002).

1.2. Objective of the Study

The objective of this study is to:-

1. Determine the influence of Just-In-Time delivery practice on Customer Satisfaction of Brewing plants in South-East, Nigeria.

1.3. Research Question

The research question for this study is:

To what extent does Just-In-Time delivery practice influence Customer Satisfaction of Brewing plants in South-East, Nigeria?

1.4. Research Hypothesis

The hypothesis formulated for this study

A just-In-Time delivery practice does not have significance is influence on Customer Satisfaction of Brewing Plants in South-East, Nigeria

2. Review of related Literature

2.1. Conceptual Review: Just –in- Time and Customer Satisfaction

Stevenson (1996) defines the term JIT manufacturing as ‘a repetitive production system in which processing and movement of material and goods occurs just as they are needed, usually in small batches’. JIT implementing firms have to produce and deliver finished goods JIT to be sold, sub assemblies JIT to be assembled into finished goods, fabricated parts JIT to go into the subassemblies and purchased materials JIT to be transformed into fabricated parts (Schonberger, 1982a). JIT philosophy is based on the concept of delivering raw materials when needed; producing products when there is a need, improve quality of product. The fundamental objective of JIT is to eliminate all waste from the entire supply chain and to improve product continuously (Frazier et al., 1988)

Customer satisfaction as a major determinant of business performance is highly relevant to the long term success of an efficient inventory management system. Customer satisfaction is therefore, very significant to marketing concept with strong reasons of strategic linkages between overall quality and customer satisfaction (Truch, 2006). The customer perspective involves looking beyond the traditional

logistics function and fitting the Just-In-Time distribution into a broader system which starts with a customer service. Integrated problem-solving initiatives of a JIT distribution concentrate on improving customer service and facilitating timing in product distribution to customers result in greater customer satisfaction

Claycomb, Dröge and Germain (1999) define JIT with customers as a use of integrated problem-solving initiatives of a JIT philosophy concentrating on improving quality and facilitating timing in supply and distribution to external customers. Juran and Dershin (1999) use the term timing as a customer metrics in terms of supply chain delivering orders at the time needed for customers. Delivery timing is a key in order to meet customer demands. Clinton and Vecchio (2002) related timing to delivery, schedule changes, design changes, customer needs, and requirements for simultaneous efforts. It involves specialized technologies and expertise, and facilitates simultaneous achievement of objectives within a limited timescale. Thus, timing appeared to be a critical component of customer service. To capture the timing dimension, Holcomb et al. (2004) suggest that timely supply chain data should be available for making decisions to achieve two significant objectives: improve customer service and improve operating efficiencies.

2.1.1. Customer Satisfaction

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changes, design changes, customer needs, and requirements for simultaneous efforts. It involves specialized technologies and expertise, and facilitates simultaneous achievement of objectives within a limited timescale. Thus, timing appeared to be a critical component of customer service. To capture the timing dimension, Holcomb et al. (2004) suggest that timely supply chain data should be available for making decisions to achieve two significant objectives: improve customer service and improve operating efficiencies.

Heizer and Render (2004) states JIT as a ‘‘philosophy of continuous and forced problem solving that supports lean production driven by the ‘pull’ of the customer’s order’’. Ahmad, Schroeder and Sinha (2003) highlight that JIT links the customer with the production system with the ability to respond to changes in customer need. Thus, the main objective of JIT with customers is to satisfy the customer by delivering the right goods or services in the right quantities at the right times while minimizing total process costs by eliminating of all kind of waste from the whole supply chain (Claycomb, Dröge & Germain, 1999). The ‘‘right product’’ means that a customer gets a product not only that confronts specifications but also on the associated value-added services as well as the processes that produce these services. This could be translated into an integration of the all organizational structure in the process of producing value-added services for a customer.’’ In the right quantities at the right times’’ means that customers get exactly what they want or need at the exact time they want or need it. Right-time is based not when the transactions are entered but when they go through the final process to produce right-time decision support (Connor, 2009).

2.2. Theoretical Review

Theory of Constraints (TOC)

Theory of Constraints (TOC) is a management philosophy which is focused on the weakest ring(s) in the chain to improve the performance of systems. Companies, whether they are in the production or service sector should be more focused on understanding their own structure in terms of processes to survive in a global competition. The Theory of Constraints is an instinctive framework used in identifying the most important limiting factor that stands in the way of achieving a set objective and then systematically improving that constraint until it is no longer limiting (Goldratt, 1990). Umble and Spoede (1991) argue that if any other factor other than the weakest link is strengthened, the strength of the whole chain is not increased. Improvements in the processes should focus on the weakest areas in the

organization. The main constraints include the policies or the procedures put in place. Lack of clear goals to be followed often leads to conflicts among the different functions on the organization slowing improvement (Weston, Blackstone & Gardiner, 2007).

The TOC can be effective where a well laid out standardized process is established which can divulge and describe clearly problematic areas which are well known to members of the organization (Jaideep, 1996). Throughput, operating expense and inventory comprise the TOC set of measurements. This theory is based on the presumption that resources tend to be a limiting factor in many organizations thus should only be utilized towards well defined objectives. This will in turn enable the organization to improve its financial position and attract more customers (Weston, 1991). This in effect means that only the limiting factors should be improved. TOC integrates the varied management processes as viewed in the whole organization context.

It highlights the different and interdependent nature of the processes of the organization as an interconnection of different departments, processes and functions where the materials are transformed into the final product. TOC enumerates the processes used in operations into a simple structure of throughput, inventory, and operating expenses (Fawcett & Pearson, 1991). TOC relates to lean thinking in that both emphasize on organizational performance with the aim of attaining high results and returns.

2.3. Empirical Review

Abdul and Anny (2005) conducted a study on Just in time approach in inventory management in Malaysia. The main purpose of this research was to find out whether the implementation of JIT would reduce the inventories at Electronics component industry especially at the parts producing stamping of FCM. This research is done by case study. Therefore the data collection used secondary data which is the documentation from FCM itself and also via observation. The data were analyzed by doing the comparison before and after the implementation of JIT using Microsoft words excel. From the analysis that had been done, the implementation of JIT had increased the inventories management at the stamping parts production. As the conclusion, the implementation of JIT in the inventory management at the parts production stamping at Electronics component industry had successfully reduce the inventories level while improving the inventory level.

Musara (2012) did a study on impact of just-in-time (JIT) inventory system on efficiency, quality and

flexibility among manufacturing sector, small and medium enterprise (SMEs) in South Africa. The impact of application of Just-In-Time (JIT) inventory management system in the manufacturing sector SMEs in Africa. Copies of self-administered questionnaire were distributed to a sample of manufacturing sector SMEs in the food, wood and furniture, metals, non-metals and other industries. The study revealed that the majority of SMEs in the manufacturing sector were not applying the JIT inventory management principles. It was furthermore revealed that there are challenges impeding the implementation of JIT principles in the manufacturing sector SMEs. These challenges include lack of reliable supplier networks, lack of capital and lack of knowledge of immediate financial gains among others. Furthermore, statistically significant positive correlations between the application of JIT inventory management principles and cost efficiency, quality and flexibility were found. It is therefore deduced that manufacturing sector SME scan benefit significantly in terms of improved quality of products, increased operational cost cuts and increased flexibility by applying the JIT inventory management principles

Yazan (2017) carried out a study on the impact of just in time system on operational excellence in the (14) manufacturing companies operating at Al –Hussein bin Abdullah II qualified industrial zone (QIZ) in Al-Karak Governorate in Jordan. The sampling unit and analysis (respondents) included (168) manager and head of divisions at the production and logistic departments, and selected purposely according to their work especially in the just in time system area within the target companies. Thus, the researcher designed a questionnaire including of (25) items to gather the desired data from study sample. This study also used the multiple regression analysis to test the hypotheses. The result of the current study found that the just in time system have a positive impact on the operational excellence in Jordan industrial companies. According to these results the study recommended that the Jordanian industrial companies must emphasis essentially and mainly on their just in time system consisted of (equipment layout, supplier's quality, Setup time reduction; Pull production) in order to enhance and attain the operational excellence and gain competitive advantage. One of the most limitations is that the current study and its finding applied on the Jordanian industrial companies especially at Al-Karak governorate.

Cindy, Cornelia and Richard (1999) conducted a study on the effect of Just-in-Time with Customers on Organizational Design and Performance in Dubai-Mumbai-Singapore-Sydney. This research examined

just-in-time (JIT) as one such logistics strategy. While prior research has focused on internal and upstream JIT (i.e., production and purchasing), the present research examines the extent to which exchange with downstream customers is just-in-time oriented. The results of the research show that JIT with customers is associated with organizational designs that are more decentralized, integrated, and formalized and with better performance in terms of less finished goods inventory and higher overall financial performance. The analysis controls for firm size, production technology, and tenure of the senior logistics executive and shows that the effects of JIT with customers on organizational structure and performance are, with a limited number of exceptions, relatively robust

Mahdi, Mehrdad and Morteza (2010) conducted a study on the impact of JIT on firms' financial performance some Iranian evidence. The objective of this article was to help establish the extent to which just-in-time may affect the Iranian companies' financial performance. The result of the study showed that the implementation of just-in-time will cause more strength not only in non-financial aspect but in financial aspect too. Further the result reveals that there is a hug gap between the actual levels of implementing just-in-time as well the expected level.

Ayman and Yoshiki (2007) The relationship between JIT production and Manufacturing strategy and their impact on JIT performance in USA .This study constructed multi-item scales to measure key components of JIT production and manufacturing strategy and examined the relationship between them, and the impact of manufacturing strategy on JIT performance for machinery, electrical & electronics and automobile industries in Japan, USA, and Italy. JIT production scales include JIT schedule, JIT layout, JIT delivery by suppliers, JIT link with customers, pull system, and setup time reduction. Manufacturing strategy scales are measured in terms of achievement and leadership of functional integration, anticipation of new technologies, communication of manufacturing strategy, formal strategic planning, manufacturing-business strategy linkage, and proprietary equipment. The results from regression analysis show that after controlling for the industry and country effects, manufacturing strategy scales have positive and significant impact on JIT production. The results also show that manufacturing strategy scales have positive and significant impact on JIT performance.

Patrick and Osazee (2017) did a study on the Just in Time Strategy and Financial Performance of Small Scale Industry in Ogun State: A Study Ofado –Odo/

Ota Local Government. The study examined how Just-In-Time techniques have assisted in reducing inventory cost management, and improves the firm profit level. The specific objective was to ascertain the influence of purchases and sales on return on equity of small scale manufacturing industry. Survey design was used for the study. Sample frame was purposively selected for convenience sake. Data was collected though secondary source. Regression analysis was employed to analyze the data. The study found positive relationship between just in time implementation and profit level of small scale business industry. It was recommended that small scale businesses that have not started implementing just in time strategy to start the strategy. It encouraged future researcher to examine the efficiency of just in time strategy among petty small scale trader in our urban centers.

John (2009) explored the relationship between just-in-time technique and manufacturing performance of some selected Nigerian companies. Just-in time was considered to be an overall organizational phenomenon. Data were obtained through a structured questionnaire from a sample size of 300 knowledgeable employees to test the developed model and formulated hypotheses that cover both just-in time and the supporting infrastructures. Bivariate correlation analysis was used to test the three hypotheses. The results showed that: (1) there was a significant relationship between total quality management (supporting infrastructure) and just-in-time practices; (2) Human resources management (supporting infrastructure) was positively related to just-in-time practices; (3) there was a positive significant relationship between Just-in-time practices and manufacturing performance. These results demonstrate that just in-time practices can be successfully implemented if certain supporting infrastructures are provided, and also support the notion that just-in-time should be practiced at all levels and departments of the organization, rather than viewing it strictly for shop floor workers

Thomas, Pamela and Pietro (2011) did a study on the Just in Time - performance link: The moderating role of demand variability. This paper aimed at investigating the role of demand variability in the impact of JIT on efficiency and responsiveness performance. A questionnaire-based international survey was used to investigate the research questions. Data from a sample of 244 companies were analyzed using a Structural Equation Modeling (SEM) procedure and following the "Ping 2-step approach" [1]. The analyses demonstrate that demand variability does not significantly moderate the relationship

between JIT and efficiency, whereas it negatively moderates the relationship between JIT and responsiveness. Thus, if demand variability is very high, JIT could be counterproductive in terms of responsiveness performance.

3. Methodology

The study adopted survey research design. It was considered useful because data was primary in nature. The population of the study consists of all the employees of Brewing Plants in South East Nigeria (1528). A Sample size of 431 was determined using Cochran (1963) formular. Out of 431 copies of

questionnaire distributed, 401 copies of questionnaire were returned while 30 copies were not returned. The instrument was validated using face to face content validity by giving the tool to academicians to make necessary corrections so that the device can measure what it ought to measure. The tool used for test of hypothesis was simple linear regression. The reliability of the instrument was obtained using Spearman Reliability and Validity of Instrument. Ranking Order Correlation Co-Efficient which amounted to a coefficient of 0.871 indicated a High Internal Consistency of the Instrument.

4. Data Analysis and Discussion of Result

Descriptive Statistics Just in time delivery practice on customer satisfaction of Brewing plants in South East, Nigeria

s/n	Questionnaire items	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	Mean	Remarks
26	Just -in -time delivery practice We try get our supplier to deliver goods to us just when we need them in the right amounts	254 (63.34%)	133 (33.16%)	5 (1.25%)	4 (1.00%)	5 (1.25%)	4.56	Agreed
27	We get goods from suppliers just when we want to use them	202 (50.37%)	170 (42.39%)	21 (5.24%)	5 (1.25%)	3 (0.75%)	4.40	Agreed
28	The policy of getting our supplies just when we need them means we do not have to store the goods	150 (37.40%)	230 (57.35%)	8 (2.00%)	10 (2.50%)	3 (0.75%)	4.28	Agreed
29	We ensure that appropriate amounts of inventory are on hand when needed	220 (54.86%)	170 (42.39)	4 (1.00)	5 (1.25)	2 (0.50)	4.50	Agreed
	Mean	4.44						
	Cronbach Alpha	0.893						
	Valid N(listwise)	401						
30	Customer Satisfaction This organisation attempt to meet and even surpass customer expectation	219 (54.61%)	162 (40.40%)	9 (2.24%)	8 (2.00%)	3 (0.75%)	4.46	Agreed
31	Our sales revenue has been constantly on the increase from year to year	300 (.62%)	80 (41.14%)	5 (2.24%)	11 (1.75%)	5 (1.25%)	4.64	Agreed

32	We conduct a customer feedback survey to find our those who love our product	170 (42.39%)	217 (54.12%)	7 (1.75%)	5 (1.25%)	2 (0.49%)	4.37	Agreed
33	We keep track and monitor the satisfaction of our customer on social media	108 (26.93%)	271 (67.58%)	8 (2.00%)	9 (2.24%)	5 (0.75%)	4.17	Agreed
34	We try to get our customers to return to us again and again	240 (59.85%)	149 (37.15%)	4 (1.00%)	6 (1.50%)	2 (0.50%)	4.54	Agreed
	Mean	4.44						
	Cronbach Alpha	0.937						
	Valid N (Listwise)	401						
	Overall Mean	4.54						

Source: Fieldwork, 2020

Decision Rule:

If mean < (Less than) 3.5 the respondents Disagree

If mean > (Greater than) 3.5 the respondents Agree

Table above shows the responses to the likert scale statement and this sample mean (\bar{x}) respect of the Just in time on customer satisfaction in the Brewing plants of South East, Nigeria. For the statement on whether they try to get their supplier to deliver goods to them just when they need them in the right amounts, 254 (63.34%) of the respondents strongly agreed that they try to get their supplier to deliver goods to them just when they need them in the right amounts, 133 (33.16%) of the respondents agreed, 5 (1.25%) of the respondents were undecided, 4 (1.00%) and 5 (1.25%) of the respondents disagreed and strongly disagreed respectively that they try to get their supplier to deliver goods to them just when they need them in the right amounts., giving a sample mean of 4.56. This shows that they try to get their supplier to deliver goods to them just when they need them in the right amounts, since the mean is > 3.5

For the statement on whether they get goods from suppliers just when they want to use them, 202 (50.37%) of the respondents strongly agreed that they get goods from suppliers just when they want to use them, 170 (42.39%) of the respondents agreed, 21 (5.24%) of the respondents were undecided, 5 (1.25%) and 3 (0.75%) of the respondents disagreed and strongly disagreed respectively that they get goods from suppliers just when they want to use them, giving the mean of 4.40. This shows that they get goods from suppliers just when they want to use them, since the mean is > 3.5 .

For the statement on whether the policy of getting their supplies just when they need them means they do not have to store the goods, 150 (37.40%) of the respondents strongly agreed that the policy of getting their supplies just when they need them means they do not have to store the goods, 230 (57.35%) of the respondents agreed, 8 (2.00%) of the respondents were undecided, 10 (2.50%) and 3 (0.75%) of the respondents disagreed and strongly disagreed respectively that the policy of getting their supplies just when they need them means they do not have to store the goods, giving the mean of 4.28. This shows that the policy of getting their supplies just when they need them means they do not have to store the goods, since the mean is > 3.5

For the statement on whether they ensure that appropriate amounts of inventory are on hand when needed, 220(54.86%) of the respondents strongly agreed that they ensure that appropriate amounts of inventory are on hand when needed, 170 (42.39%) of the respondents agreed, 4 (1.00%) of the respondents were undecided, 5 (1.25%) and 2(0.50%) of the respondents disagreed and strongly disagreed respectively that they ensure that appropriate amounts of inventory are on hand when needed, giving the mean 4.50. This shows that they ensure that appropriate amounts of inventory are on hand when needed, since the mean is > 3.5

For the statement on whether the organisation attempt to meet and even surpass customer expectation, 219 (54.61%) of the respondents strongly agreed that the organisation attempt to meet and even surpass customer

expectation, 162 (40.40%) of the respondents agreed, 9 (2.24%) the respondents were undecided, 8(2.00%) and 3 (0.75%) of the respondents disagreed and strongly disagreed respectively that the organisation attempt to meet and even surpass customer expectation, giving the mean 4.46. This shows that the organisation attempt to meet and even surpass customer expectation, since the mean is > 3.5

For the statement on whether their sales revenue has been constantly on the increase from year to year, 300(.62%) of the respondents strongly agreed that their sales revenue has been constantly on the increase from year to year, 80 (41.14%) of the respondents agreed, 5(2.24%) of the respondents were undecided, 11 (1.75%) and 5 (1.25%) of the respondents disagreed and strongly disagreed respectively that their sales revenue has been constantly on the increase from year to year, giving the mean of 4.64. This shows that their sales revenue has been constantly on the increase from year to year, since the mean is > 3.5

For the statement on whether they conduct a customer feedback survey to find out those who love their product, 170 (42.39%) of the respondents strongly agreed that they conduct a customer feedback survey to find out those who love their product, 217 (54.12%) of the respondents agreed, 7(1.75%) of the respondents were undecided, 5 (1.25%) and 2 (0.49%) of the respondents disagreed and strongly disagreed respectively that they conduct a customer feedback survey to find out those who love their product, giving the mean of 4.37. This shows that they conduct a customer feedback survey to find out those who love their product, since the mean is > 3.5

For the statement on whether they keep track and monitor the satisfaction of their customer on social media, 108(26.93%) of the respondents strongly agreed that they keep track and monitor the satisfaction of their customer on social media, 271 (67.58%) of the respondents agreed, 8 (2.00%) of the respondents were undecided, 9 (2.24%) and 3 (0.75%) of the respondents disagreed and strongly disagreed respectively that they keep track and monitor the satisfaction of their customer on social media, giving the mean of 4.17. This shows that they keep track and monitor the satisfaction of their customer on social media, since the mean is > 3.5

For the statement on whether they try to get their customers to return to them again and again, 240 (59.85%) of the respondents strongly agreed that they try to get their customers to return to them again and again, 149(37.15%) of the respondents agreed, 4 (1.00%) of the respondents were undecided, 6 (1.50%) and 2(0.50%) of the respondents disagreed and strongly disagreed respectively that they try to get their customers to return to them again and again, giving the mean of 4.54. This shows that they try to get their customers to return to them again and again, since the mean is > 3.5.

On the average, the respondents agreed that a just –in- time delivery significantly promote customer satisfaction in the Brewing plants of South East, Nigeria; since overall mean (4.54) is > 3.5

Test of Hypothesis

H₃: Just – in- Time delivery practice do not have significance influence customer satisfaction of the Brewing plants in South East Nigeria

Table 4.8a Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.861 ^a	.741	.740	.37293	.099
a. Predictors: (Constant), Just - in- Time					
b. Dependent Variable: Customer Satisfaction					

Table 4.8b ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	158.668	1	158.668	1140.862	.000 ^b
	Residual	55.492	399	.139		
	Total	214.160	400			
a. Dependent Variable: Customer Satisfaction						
b. Predictors: (Constant), Just - in- Time						

Table 4.8c Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
1	(Constant)	.297	.043		6.938	.000
	Just - in- Time	.908	.027	.861	33.777	.000
a. Dependent Variable: Customer Satisfaction						

$$r = .861$$

$$r^2 = .741$$

$$F = 1140.862$$

$$T = 33.777$$

$$DW = .099$$

The regression sum of squares (158.668) is greater than the residual sum of squares (55.492) and this indicates that more of the variation in the dependent variable is explained by the model. The significance value of the F statistics (0.000) is less than 0.05, which means that the variation explained by the model is not due to chance. The significance of the F value indicates that the model statistically significantly predicts the outcome variable.

The correlation coefficient r has a value of 0.861 and this indicates that there is positive relationship between just-in-time delivery and customer satisfaction. r square, the coefficient of determination, shows that 69.8% of the variation in customer satisfaction is explained by the model.

In the linear regression model, a low error of estimate with a value of 0.44641 is indicated. A value of .099 for the Durbin Watson statistics which is less than 2 indicates that there is no auto correlation.

The just-in-time delivery coefficient of 0.861 indicates a positive significance just-in-time delivery and customer satisfaction, which is statistically significant ($t = 33.777$). Therefore, the null hypothesis should be rejected and the alternative hypothesis accordingly accepted thus just in time delivery practice significantly promotes customer satisfaction of the Brewing plants in south-East, Nigeria.

5. Summary of Finding, Conclusion and Recommendation

Summary of Finding

Just-in-time delivery Practice has a significant influence on customer satisfaction of the brewing plants in South East, Nigeria. ($r = 0.861$; $t = 33.777$; $p < 0.05$).

5.1. Conclusion

The study concluded that Just in Time improve firm performance and competitiveness through an even production flow of small lot sizes integrating schedule stability, product quality, short setup times, preventive maintenance, and efficient process layout which at long run promote customer satisfaction

5.2. Recommendation

Based on the finding of this study, the research recommends:

1. Brewing plants in South East Nigeria need to faster turnaround of stock to prevent goods becoming damaged or obsolete while sitting in storage, thus reducing waste. This again saves money by preventing investment in unnecessary stock, and reducing the need to replace old stock.

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