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LOGISTICS MANAGEMENT PRACTICE AND CUSTOMERS' SATISFACTION OF PHARMACEUTICAL PRODUCTS IN ENUGU STATE, NIGERIA

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Abstract: In the study, we set out to measure the effect of logistics management practice on customers' satisfaction of pharmaceutical products in Enugu State, Nigeria. The specific objectives were to; determine the effect of transportation on repeat purchase of pharmaceutical products in Enugu State, Nigeria and ascertain the effect of storage on referrals of pharmaceutical products in Enugu State, Nigeria. The study adopted a survey design. The population of the study was three thousand one hundred and eight three (3,183). The sample size of 349 was selected for the study using Freund and William's statistic formula to arrive at small unit of the population. The study used stratified sampling technique and structured questionnaire was set up for selecting respondents. The findings revealed that transportation had significant positive effect on repeat purchase in pharmaceutical products ($t=87.695$, p value $0.000<0.05$) and storage had significant positive effect on referrals in pharmaceutical products ($t=79.401$, p value $0.000<0.05$). Based on findings, the researcher concluded that logistics management practice; especially transportation and storage determined customers' satisfaction in pharmaceutical products. It was therefore recommended that logistics managers in pharmaceutical products should ensure proper maintenance of vehicles in other to move drugs where the distributors need them.

Keywords: Logistics management, customer satisfaction, pharmaceutical products, transportation, storage

INTRODUCTION

Globalization is forcing firms to be more careful about customer satisfaction and profit maximization; firms are now using different tools in ensuring that customers, especially those that are sensitive to price increase to remain loyal to the firm in order to maximize profit. In achieving this, managers are now applying effective and efficient logistics management as a key tool that builds cost and service advantages to the firms (Gebresenbet & Bosona, 2022). As the business environment is uncertain nowadays, and it is very hard to be constant at success,

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so the business must respond to the uncertainty and meet the customer needs as they are changing day by day (Gerwin, 2020).

The competition nowadays is increasing day by day, companies need to look for such processes and methods to manage the firm so that the firm will be able to come up with efficiency and with much better outcomes (Stock *et al.*, 2018). Logistics is such an important factor in our business today, no marketing, manufacturing or project execution can succeed without logistics support (Chukwu, 2009). For companies, 10 to 35% of gross sales are logistics cost, depending on business, geography and weight/value ratio. It is completely a new term but not in operation (Chukwu, 2009). As the present business environment is more intense competition wise, the pressure is not only on the differentiation in the product and service but also on the factors which reduces the price as well. When it comes to the success and growth of a retail store or any business relating to the retail sector, then the role of logistics is very important as it plays a very important role.

Tracing the origin of logistics as it is known today to development occurring in military logistics during World War II. Logistics expertise and effort were undoubtedly key factors in the outcome of the world war for the allies. Logistics, particularly critical in the European theatre, also played an important role in the Pacific. The United States ability to move and store personnel and supplies efficiently contributed much to the success of the allied war effort. Again in 1991, the world witnessed a dramatic example of the importance of logistics in the military context when USA and its allies in prosecution of war against Iraq airlifted ½ a million people and about ½ of a million tons of materials and supplies over 12,000km with a further 2.3 million tons of equipment moved by sea within a matter of months. This accounted to the winning of the war by US and its allied forces. Some have, in fact, called the military effort in the Gulf area the “logistics war”. Since then, logistics has progressively found a significant place in a business (Chukwu, 2009).

Logistics has always been key to satisfying the needs of individuals and society. Lynch (2020), for example, quotes Ackerman (2020) who suggests that one of the first business logistics arrangements is described in the Bible, in Genesis Chapter 41. This is an account of the seven years of plenty during which the people in the land of Egypt accumulated crops for the predicted seven years of famine. The grains and other fruits of their labours were taken to storehouses for safekeeping the grain was placed in storehouses for later redistribution during the time of need. Lynch goes on to point out that in Europe, a number of logistics service providers can trace their origins back to the Middle Ages with the first commercial warehouse operations having been built in Venice, Italy in the 14th century. Merchants from all across Europe used these as collection and distribution points.

Satisfaction of the customer is shown from the reaction from the customer after purchasing or using the offerings of the organization which has offered to him. In his study he elaborated as well that the customer's reaction is the main factor from which his satisfaction can be known and also the customer's perception of the received value by using the product. A study conducted by Blackburn *et al.* (2022). Says that the customer of the current era wants the best product, with high quality and services, at whatever place they want it, in how much time they want it, and all these things with reasonable prices. Customer always expects something and when they are not met then, the consumer will eventually be dissatisfied and the effect goes on by multiplying itself, and when this effect increases, the consumer will switch to another retail competitor, and the former experience of dissatisfaction is abandoned by the consumer (Bouzaabia *et al.*, 2019).

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Jennet (2018) stated that customers are one of the stakeholders of the organization and they are one of the most important, as looking at their importance it is one of the main goals of the Organization to satisfy the customer and their satisfaction is among the top of the list items for the management and this area which is customer satisfaction is in light by the organizations very much due to its importance. Based on this backdrop, the study intends to investigate the effect of logistics management practice on customers' satisfaction in pharmaceutical products in Enugu State, Nigeria.

Statement of the Problem

The global business environment is so turbulent that products' life cycle shrinks easily and new ones are introduced. This makes flexibility and responsiveness to customers' satisfaction inevitable. Pharmaceutical firms keep trying different logistics management practice to remain competitive. Logistics is responsible for the planning, then implementing and then controlling the efficient and effective flow and also storage of goods and services in any supply chain, along with the goods and services the flow of information from the origin to the flow of consumption is also include managing time and cost as well. Efficient management logistics ensures smooth flow of goods and availability of products when and where the customers' needs them.

Unfortunately, in Nigeria and entire Enugu State, pharmaceutical business sector of the economy has been undergoing turbulent times. They have not been occupying their rightful place as catalysts for economic development and infrastructural provisions like their counter parts in developed economies. Logistics system in Nigeria appears to be grossly inefficient in moving goods and services to customer. Among the numerous reasons given by researchers include: the adoption of archaic and traditional approach to supply chain management, poor road network, lack of efficient transportation, poor information flow, frequent breakdown and poor maintenance of vehicles, slow order-processing and lack of good warehouses (Nebo & Aniuga, 2017). Poor logistics produce other bad consequences such as out-of-stock situation, prohibitive retail prices, tying down of capital needed for business, over-stock or under-stock situation and distributor dissatisfaction.

In spite of the contribution of management logistics in leveraging pharmaceutical performance, few studied has been done in to ascertain its effects in pharmaceutical products in Nigeria especially in the Enugu State. As a result of this, the researcher wants to ascertain the effect of logistics management practice in terms of transportation and storage in pharmaceutical products in Enugu State, Nigeria.

The broad objective of the study was to investigate the effect of logistics management practice on customers' satisfaction of pharmaceutical products in Enugu State, Nigeria. Other specific objectives are to:

- i. Determine the effect of transportation on repeat purchase of pharmaceutical products in Enugu State, Nigeria.
- ii. Ascertain the effect of storage on referrals of pharmaceutical products in Enugu State, Nigeria.

The scope of the study covered logistics management practice and customers' satisfaction of pharmaceutical products in Enugu State. Pharmaceutical firms were all located in Enugu, therefore only three (3) firms were selected for the study namely: Juhel pharmaceutical company located at 35 Nkwubor Road, Emene, Namel pharmaceutical company located at 35 Industrial Layout Road, Emene and AC pharmaceutical company located at 4 Alor Road, Edward Nnaji Loyout Abakpa Nike, Enugu State, all in South East, Nigeria. The study also covered only two independent variables which are transportation and storage against referrals and repeat

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purchase as dependent variables which is customers' satisfaction. The unit of analysis for the study included staff and customers of those selected pharmaceutical firms' products.

REVIEW OF RELATED LITERATURE

Logistics

From the point of view of management, logistics has been described by Kotler (1989) as "planning, implementing and controlling the physical flows of materials, final goods and related information from point of origin to point of consumption to meet customer requirements at a profit".

Logistics Management Practice

The Council of Logistics Management defined logistics management as the process of planning, implementing and storage of raw materials, in-process inventory, finished goods and related information from point of origin to point of consumption for the purpose of conforming to customer requirements (Kasilingam, 2021). Logistics is the management of the flow of goods between the point of origin and the point of consumption in order to meet customers' requirements (Chukwu, 2009).

Transportation

Generally, transportation is the actual physical movement of people and goods from one place to another (Ahukannah, Ndinaechi, & Arukwu, 2023). It is basically the movement of products from one location to another as it makes its way from the beginning of a supply chain to the customer's hands. Transportation not only ensures movement of people but also goods thus assisting the economy in the growth of trade and commerce (Cooper, Lambert & Pagh, 2023). Transport management is the planning, controlling and decision making on operational area of logistics that geographically moved and positioned inventory (Bowersox, Closs, & Cooper, 2020).

Storage

Pharmaceutical manufacturing sector were involved in activities such as the processing of raw materials, including food, beverages, textiles, petroleum, wood, rubber and the assembly and manufacturing of electrical and electronics appliances and components (Saleh & Ndusi, 2020). In practice warehouse is defined as a planned space for the storage and handling of goods and materials (Emmett, 2021), with large building and it plays an important part in the organization related to its business purpose (Tompkins & Smith, 2018). Lambert *et al.* (2018) described warehouse activities are more focus on the core competencies of the operational which could satisfy customers' expectation on the shorter delivery of time and more accurate services.

Customers' Satisfaction

Gundersen, Heide and Olsson, (2016), define customer satisfaction as a guest's opinion of a product or service after consumption which, in turn, can be calculated by evaluating the guest's performance assessment on particular attributes. Similarly, according to Wang and Shieh, (2021), customer satisfaction is defined as "the levels of service quality performances that meets users' expectations".

Customer Referrals

Customer referral programs are a form of stimulated WOM that provides incentives to existing customers to bring in new customers. An important requirement for such programs is that individual purchase or service histories are available so the firm can ascertain whether a referred customer is indeed a new rather than an existing or a former customer. Referral programs have three distinctive characteristics (Wang & Shieh, 2021).

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Customer Repeat Purchase

Lin and Liang (2020) defined repeat-purchase as “the degree to which customers are willing to purchase the same product or service and it is a simple, objective, and observable predictor of future buying behavior”. Consumer repeat-purchase is important to company’s profitability (Jones & Sasser, 2019).

Conceptual Framework

Based on the logistics management practice that consistently appear in related models of logistics management practice presented in diagrammatic form in section 2.2 above, the researcher was able to put together or synthesize the conceptual framework presented in figure 1 below.

Logistics Management Practice (Independent Variables)

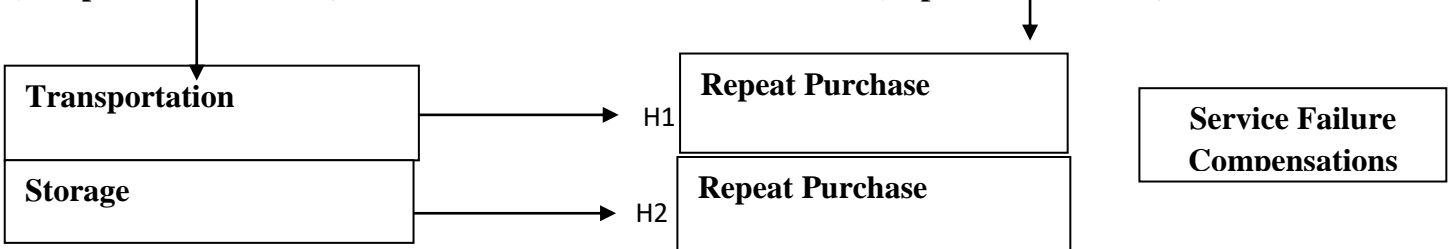


Figure 1: Model of Logistic Management Practice and Customers' Satisfaction

Source: Adapted from Marketing Logistics Models of Nwaizugbo and Nnabuko (2010)

In figure 2.7 above the logistics management practices (transportation and storage) is regarded as the independent or predictor variables while customers' satisfaction (repeat purchase and referrals) is regarded as the dependent or criterion variable.

Theoretical Framework

The study was anchored on Lean Theory. This theory was strong enough to explain the basis of this study. Lean production theory was developed by Henry Ford in 1913. Womack *et al.* (1990) show that it was to reduce inventories by eliminating buffer stock since as inventory level is reduced there will be profit making due to interest savings and a reduced storage fees, handling, and wastage. These savings have been estimated in literature to be in the range of 20 to 30 percent (Brigham, 1993). The proponents of this inventory system argue that excessive inventory will adversely affect the net cash flows of a firm. On the cost side, the costs of holding inventory, like the capital costs and the physical cost (storage, insurance, and spoilage) are reduced. In the recent years, some systems have been developed to deal with the excess inventory problem. The underlying assumption of the Lean concept is that the delivery of a product or service should give value to customers. Thus, Lean tools and methods are used to critically examine processes to reduce wasteful activities that add no value for the customer.

Empirical Review

Yanling, Jing-Ping, Chien-Chi and Gheorghita (2021) confirmed impact of transportation on logistics in China. A structured survey questionnaire was also used, and the survey questionnaire scale was set from strongly agree to disagree strongly. The findings revealed that the effect of transportation on air freight is statistically negative and significant.

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Noor (2021) empirically examined brand loyalty and customer loyalty in Malaysia. Brand loyalty in marketing has been associated with a positive perception by consumers towards the brand while Customer loyalty has been associated with the spending power of consumers induced by various loyalty programs. However research in both brand loyalty and customer loyalty uses the same multi-dimensional constructs of affective and behavioural approach.

Arturo, Milton and Wilson (2021) examined warehousing and transportation logistics of mango in Colombia. This paper evaluates the incidence of packing asymmetries, resulted from the use of heterogeneous packaging materials by different mango supply chain actors in Colombia, on performance measures of inventory, transportation, and quality. The asymmetry in the packaging, derived from the actors' individual management, creates inefficiencies that may be avoid if the packaging of the fruit is done thinking on the chain". The developed simulation model allowed us to prove the proposed dynamic hypothesis. Forrester's model includes four echelons for the supply chain: production, processing, wholesale, and retail, as well as warehousing, transportation and information.

Fellessen and Friman (2022) conducted a transnational comparison of customers' public transport perceived service satisfaction in eight cities (Stockholm, Barcelona, Copenhagen, Geneva, Helsinki, Vienna, Berlin, Manchester and Oslo) in Europe. The result showed four general factors: system such as traffic supply, reliability and information; bus and bus stop design that makes customer comfortable and enjoy the travel experience; staff skill, knowledge and attitude toward customer; and safety not only both in the bus and bus stop but also safe from traffic accident.

Darja, Kristina, and Tina (2022) carried out a study by defining transport logistics in Slovenia. There are many concepts in the transport and logistics business: transport, logistics, transportation, forwarding, etc. The results of this analysis made it possible to identify that there is no unified logistic term. Therefore, a qualitative study was also used. The purpose of this study is to identify the concept of transport/logistics companies in the Baltic States as the concept is treated in business. The results of the research have shown that the concept of transport logistics is also understood differently.

Oktiani (2023) confirmed that there is research with an aim to identify unattractive and disappointing factors in public transport. For instance, the study also confirmed depth interviews in Porto to find out dissatisfying factors. Customers reported waste time, too crowded, lack of comfort, time uncertainty, lack of control, unreliability, long waiting times, need to transfer, they cannot change route to avoid traffic congestion, lack of flexibility, and long walking time. found that driver incompetence, punctuality and information were important factors causing dissatisfaction.

Friman (2023) examined the effect of quality improvements in public transport on customer satisfaction and frequency of perceived negative critical incidents. Furthermore, the effect was directionally opposite in that respondent reported less satisfaction and higher frequencies of negative critical incidents after the quality improvements had been implemented. Thus, quality improvements do not always boost customer satisfaction. Thus, it is not the improvements per se that determine the success of public transport, but a given level of quality coupled with the perception of the service.

Felim and Sitinjak (2024) investigated the impact of marketing mix on the decision-making process to purchase PT. MGD transportation services in Indonesia. This study aims to investigate the effect of marketing mix on the

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decision process to purchase transportation services at PT. MGD. The authors expect that independent variables significantly influence the dependent variable. By using α of 5 percent, the study found that product and place significantly impacted the purchasing decision process of PT. MGD's transportation services. While α increased to 10%, all independent variables significantly impacted the dependent variable.

Aun (2020) examined challenges and features of warehousing operations with respect to logistics warehouse companies in Chennai. The current trends and pressures on provide chain and logistics-forever increasing client examine levels, inventory optimization, time solidity and cost minimization have predictably changed the structure of supply chains and the location site and working of warehouses within the supply chains network. Supply Chain Management encompasses scheduling and organization of all activities involved in sourcing, procurement, conversion, and logistics managing activities.

Au (2021) examined warehouse management system and business performance: Case Study of a Regional Distribution Centre ESH Department Hoya Electronics Malaysia. In terms of business performance, the focus is placed on various competitive cores of distribution centre. WMS was found has a positive impact on companies' performance on operations management measures. To adopt the MIS, wireless barcode embedded WMS in specific, it is necessary to have corporate culture that supports complex operational activities.

Auma (2024) examined warehouse management system and business performance: Case Study of a Regional Distribution Centre ESH Department Hoya Electronics Malaysia. This paper examines Warehouse Management System (WMS) practices and their effects on operations. This study analyses the relationship between adoption of WMS to its impacts on business performance and competitive advantage of a regional distribution centre. In terms of business performance, the focus is placed on various competitive cores of distribution centre. WMS was found has a positive impact on companies' performance on operations management measures.

Jie (2024) studied research on and implementation of the logistics warehouse management system in Malaysia. In this paper, we conduct research on the modern logistics warehouse management system. Enterprise supplies all activities were around to ensure that production and other tasks planned to finish the fundamental goal, therefore, on the one hand to accounting supplies must dosage, on the other hand to organize the material resource, including the enterprise internal resources and purchased from external resources.

Olota (2021) carried out a study on the impact of logistics management on organizational performance in Nigeria. The study adopts multiple regression and structural equation modeling to analyze the data. The obtained results support the appropriateness of the model as lead time possesses the qualities of a moderator between strategic supplier partnership, lean inventory, and information technology that are proxies of inventory management and customer satisfaction. Besides, the results record a positive and statistically significant relationship between strategic supplier partnership, lean inventory, and customer satisfaction at a 5 percent level of significance, respectively.

Yeni and Yasri (2021) conducted a study on effect of service quality and customer satisfaction toward word-of-mouth intention in Indonesia. The main purpose of the study was to examine the effect of service quality and customer satisfaction. The study used survey research as methodology under the study. Findings revealed that customer satisfaction also had a significant toward word-of-mouth intention. Word of mouth is communication carried out by recipients of services to other people related to the services they receive, both positive and negative.

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Wei and Candido (2023) examined a brief analysis of logistics customer service management in China. This paper analyzes the reasons for the low customer service satisfaction with domestic logistics enterprises in China, and then puts forward how to optimize customer service management of logistics enterprises in ecommerce based on big data in order to effectively promote the service quality of logistics enterprises. This study is contributing to the body of knowledge by developing a comprehensive framework to solve various e-logistics problems. Hence, the current study is helpful for e-logistics companies to mitigate e-logistic customer satisfaction problems.

Bugri, Lomatey and Opare (2023) examined the effects of logistics management on organizational performance in Nigeria. The findings showed that the aspects of logistics management that have a beneficial impact on organizational performance include inventory management, physical distribution, and warehouse management.

Omoush (2023) explored the impact of the practices of logistics management on operational performance using descriptive analytical approach to collect data from road transport companies in Jordan. As a result of the findings, it is suggested that industrial companies concentrate on all aspects of logistics operations such as purchasing, storage, transportation, distribution, handling, packaging, customer service and scheduling in the industrial sector.

Adelwini *et al.* (2023) investigated the effects of logistics management on organizational performance employing multiple linear regression. The findings showed that the aspects of logistics management that have a beneficial impact on organizational performance include inventory management, physical distribution and warehouse management. The study concluded that logistics plays an important role in supporting organizations as they strive for more efficient management systems.

Sabah, Sidah and Abdul (2024) examined the level of satisfaction among industrial customers in relation to logistics service provider Malaysia. To investigate the relationship between operational logistics service quality (OLSQ) and relational logistics service quality (RLSQ) towards customer satisfaction among industrial customer in Sabah. Results support the hypothesis developed in this study confirming that service perceptions lead to customer satisfaction among industrial customer in Sabah.

Umair, Zhang, Han and UIHaq (2024) conducted a study on the impact of logistics management on customer satisfaction in Rawalpindi. The main purpose of this study was to analyze the impact of logistics on the customer satisfaction of the retail stores, in the twin cities of the Islamabad and Rawalpindi. The findings of the research demonstrate that factors of logistics which are inventory, lead time, transportation and logistics do effect customer satisfaction.

Gap in Empirical Review

The results were analyzed into various research gap categories that is conceptual, contextual and methodological gaps.

Conceptual Research Gaps: While there is recognition of the importance of logistics management practice and customer satisfaction in various sectors in Nigeria, there appears to be a gap between recognition and effective implementation. Further research is needed to explore the conceptual barriers and facilitators that hinder or promote the integration of logistics management practice into transportation and stores. Identifying the variables that bridge this gap is crucial for enhancing the adoption of logistics management practices.

Contextual Research Gaps: The effect of logistics management practice on customer satisfaction in Enugu State, Nigeria is a critical area that requires further investigation. The existing research highlighted inadequate adoption of logistics management practice in delivery customer satisfaction towards goods and services. The

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research included a focus on conceptual definitions of logistics management, the logistics management tools, and theories to provide a comprehensive understanding of effective logistics efforts in this critical sector.

Geographical Research Gaps: Studies provided information primarily focused on Enugu State, Nigeria as a whole. However, Nigeria is a diverse country with regional disparities in terms of economic development, infrastructure, and risk exposure intends of executing logistics activities. Future research could explore how the other variables of logistics management practices vary across different regions of Nigeria, taking into account the unique challenges and opportunities each region presents. This gap study deemed necessary to fill.

METHODOLOGY

The study used a survey research design. This is because it deals with a situation that demands the technique of observation as the principal means of collecting the data and also concerned with the population of the study that must be carefully chosen, clearly defined and specifically delimited in order to set precise parameters for ensuring discreteness to the population. Data were collected from primary source. Primary sources are original data collected by the person who actually observed the phenomenon for the purpose of the research. It can come from observation of events, manipulation of variables including performance of experiments and responses to questionnaire (Onodugo, Ugwuonah and Ebinne, 2010). For this study, the primary data were generated through the administration of questionnaire to customers and staff of pharmaceutical firms in Enugu State. The population for this study was logistics staff comprising those in the transportation and storage and customers of the three pharmaceutical firms under study. The total number of population of logistics staff and customers of each company is listed in table 3.1 below.

Table 1 Description of Population

| Firms | State | Customers' | Logistics Staff | Total |
|---------------------------|-------|------------|-----------------|--------|
| Juhel pharmaceutical firm | Enugu | 1,200 | 345 | 1, 545 |
| Namel pharmaceutical firm | Enugu | 801 | 120 | 921 |
| Ac Pharmaceutical firm | Enugu | 650 | 67 | 717 |
| Total | | 2,651 | 532 | 3183 |

Source: Firms Internal Reports, 2025

The total population of the study was three thousand one hundred and eighty-three (3,183). To determine the sample size, the study used Freund and William's statistic formula as quoted by (Uzoagulu 2011).

$$n = \frac{Z^2 N(pq)}{N(e)^2 + Z^2(pq)}$$

Where n = Sample Size

N = The population

p = Probability of success/proportion

q = Probability of failure/proportion

Z = Standard normal deviate

e = Limit of tolerable error (or level of significance)

N = 3,183

p = .5

q = (1 - .5) = .5

Z at 95 percent = 1.96

e = 5 percent or 0.05.

$$n = \frac{(1.96)^2 \times 3,183 \times .5 \times .5}{3,183(0.05)^2 + (1.96)^2 \times .5 \times .5}$$

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$$\frac{12,477.36 \times 0.25}{7.9575 + 3.92 \times 0.25}$$

$$\frac{3,119.34}{8.9375}$$

n = 349 Sample Size

To select the sample for the study, the study used stratified sampling technique. To further distribute the sample to the three pharmaceutical firms under study, Bowley's (1976) proportional allocation formula was used.

$$nh = \frac{n(Nh)}{N}$$

Where:

Nh = Group population from each stratum

n = overall sample size

N = the overall population

nh = sample size from each stratum, in this case each state.

The sample size of 349 was first distributed to customers' and staff of the pharmaceutical firms according to their population proportion as follows: -

$$1. \quad \text{Customers' } \frac{2651}{3183} \times 349 = 291$$

$$2. \quad \text{Staff } \frac{531}{3183} \times 349 = 58$$

3183 1

Total **349**

Table 2: Proportionate Allocation of Questionnaire to Customers' and Logistics Staff Among Pharmaceutical Firms in Enugu State.

Thus:

| S/N | Pharmaceutical Firms | Customers' | Logistics Staff |
|--------------|----------------------|--------------------------------------|----------------------------------|
| 1 | Juhel Pharmaceutical | $\frac{1200}{2651} \times 291 = 132$ | $\frac{345}{532} \times 58 = 38$ |
| 2 | Namel Pharmaceutical | $\frac{801}{2651} \times 291 = 88$ | $\frac{120}{532} \times 58 = 13$ |
| 3 | AC Pharmaceutical | $\frac{650}{2651} \times 291 = 71$ | $\frac{67}{532} \times 291 = 7$ |
| Total | | 291 | 58 |

Source: Field Survey, 2025

The instrument for data collection was structured questionnaire. The questionnaire was divided in two sections, section A was designed to gather the bio-data of the respondents such as gender, educational qualification, age and work experience. While section B was designed to gather data relating to the independent and the dependent variables. The measurement constructs for the independent variables (transportation and storage) and

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dependent variables (customer referrals and customer repeat purchase) were raised from the extant literature (Nwaizugbo and Nnabuko, 2010). The questions were designed in a 5-likert scale as follows: Strongly Agree [SA] –5 points, agree [A] – 4 points, Undecided [UN] – 3 Points, disagree [D] – 2 points and strongly Disagree [SD] – 1 point. Descriptive Statistics in form of frequencies and percentages were used to present and analyses the data. T-test analytical tool was used to test the hypotheses.

Test of Hypothesis One

H₀₁: Transportation has no significant positive effect on repeat purchase in pharmaceutical products in Enugu State.

H_{a1}: Transportation has significant positive effect on repeat purchase in pharmaceutical products in Enugu State.

Table 4.3: One-Sample Test

| | Test Value = 0 | | | | | |
|---|----------------|-----|-----------------|-----------------|---|--------|
| | t | df | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference | |
| | | | | | Lower | Upper |
| 1. Drugs are delivered as requested by distributors. | 54.094 | 320 | .000 | 3.76596 | 3.6291 | 3.9029 |
| 2. Pharmaceutical companies have enough vehicles for drug distribution. | 87.695 | 320 | .000 | 4.16755 | 4.0741 | 4.2610 |

In table 3 above analyzed effect of transportation on repeat purchase in pharmaceutical products in Enugu State. Therefore, with evidence from the analysis, t statistic of 87.695 with probability value of .0000. **df:** The degrees of freedom for the test. For a one-sample *t* test, $df = n - 1$; so here, $df = 320 - 1 = 319$. **Decision Rule:** If the calculated t-value is greater than the critical t-value (i.e $t_{cal} > t_{critical}$), reject the null hypothesis and accept the alternative hypothesis accordingly. **Result:** t critical =9.925, t-value of 87.695 and on Asymp. Significance of 0.000, the responses from the respondents as display in the table is normally distributed. This affirms that the assertion confirms that there is positive effect of transportation on repeat purchase in pharmaceutical products in Enugu State.

Test of Hypothesis Two

H₀₂: Storage has no significant positive effect on referrals in pharmaceutical products in Enugu State.

H_{a2}: Storage has significant positive effect on referrals in pharmaceutical products in Enugu State.

Table 4: One-Sample Test

| | Test Value = 0 | | | | | |
|--|----------------|-----|-----------------|-----------------|---|--------|
| | t | df | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference | |
| | | | | | Lower | Upper |
| 1. Pharmaceutical companies have enough storage facilities.. | 79.401 | 320 | .000 | 4.16755 | 4.0643 | 4.2708 |
| 2. Pharmaceutical firms have depots located in strategic places. | 62.204 | 320 | .000 | 3.98936 | 3.8633 | 4.1155 |

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In table 4.4 above analyzed effect of storage on referrals in pharmaceutical products in Enugu State. Therefore, with evidence from the analysis, t statistic of 79.401 with probability value of .0000. **df:** The degrees of freedom for the test. For a one-sample t test, $df = n - 1$; so here, $df = 320 - 1 = 319$. **Decision Rule:** If the calculated t -value is greater than the critical t -value (i.e. $t_{cal} > t_{critical}$), reject the null hypothesis and accept the alternative hypothesis accordingly. **Result:** t critical =9.925, t -value of 79.401 and on Asymp. Significance of 0.000. This affirms that the assertion proves there is positive effect of storage on referrals in pharmaceutical products in Enugu State.

Discussion of Findings

Effect of Transportation on Repeat Purchase

The result of this study shows that there was a strong significant positive effect of transportation on repeat purchase in pharmaceutical products in Enugu State. In a similar study of Mkonnen (2020) to ascertain customer satisfaction in transportation service delivery in Ghana, findings indicates that buses are aged, there is high breakdown of buses, very limited supply of buses, and existing buses are not operating as per the schedule which are not in agreement with the findings of present study. Although Van Vugt *et al.* (2019) conducted an investigation to determine motivational factors underlying the decision to commute by car or public transportation, findings show that individuals prefer options yielding shorter travel time as well as an alternative with high frequency of public transport.

Effect of Storage on Referrals

Result of this study indicates that there was a strong significant positive effect of storage on referrals in pharmaceutical products in Enugu State. In the same vein, Adam, Nizamuddin and Santhirasegaran (2023) studied warehouse layout and efficiency in small and medium enterprises (SMES) in Malaysia. Findings shows that the Warehouse Efficiency (AWE) correlates significantly with the Warehousing Layout variables. This is in agreement with the findings of the present study. Similarly, Aun (2020) examined challenges and features of warehousing operations with respect to logistics warehouse companies in Chennai. Supply Chain Management has negative and insignificant influence on sourcing, procurement, conversion, and logistics managing activities. Based on this, the findings of Ann (2020) disagree with the findings of the present study.

Summary of Findings

After data analysis, the following major findings show that:

1. Transportation had significant positive effect on repeat purchase in pharmaceutical products in Enugu State ($t=87.695 > t$ critical 9.925, p value $0.000 < 0.05$).
2. Storage had significant positive effect on referrals in pharmaceutical products in Enugu State ($t=79.401 > t$ critical 9.925, p value $0.000 < 0.05$).

Conclusion

Based on the result of this study, we concluded that logistics management practice had a significant positive effect on customers' satisfaction of in pharmaceutical products in Enugu State.; also, transportation and storage had a significant positive effect against repeat purchase and customer referrals in pharmaceutical products in Enugu State.

Recommendations

The following recommendations are made based on findings of this study: -

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- i. Logistics managers in pharmaceutical products should ensure proper maintenance of vehicles in other to move drugs where the distributors need them.
- ii. Storage management unit of pharmaceutical product should be enhanced so as to ensure that the products are kept in safe place until needed by distributors.

5.4 Contributions to Knowledge

In summary, this study has made valuable contributions to knowledge in the following ways.

- i. This study included logistics indices such as transportation and storage as measure of logistics management practices. These variables are mostly absent in the studies reviewed.
- ii. The empirical findings of previous studies in this area showed a mixed bag of results. Thus, this study has added to the empirical literature available in the area of logistics management practices.
- iii. The study has also formed the body of knowledge on which future research can be based on.

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