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Effect of Logistics on the Performance of Table Water Manufacturing Firms in Enugu State Nigeria

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Abstract
The study examined the effect of logistics on the performance of table water manufacturing firms in Enugu State Nigeria. Specifically, the study sought to; identify the effect of fleet management on reduced operational cost of table water manufacturing firms and determine the effect of transportation management on operation flows of table water manufacturing firms in Enugu State. The sample size of 400 respondents was drawn from population of 952 staffs of the selected indigenous table water manufacturing companies in Enugu State namely: Juhel Company; Aquafield water company, Nigerian Bottling Company, Aqua-Rapha Investment Nigeria LtD, Pepsi table water Company, Rancor water Company and Andex water company. The data analytical technique was single regression. The empirical results show that fleet management has significant effect on reduced operational cost of table water manufacturing firms in Enugu State (t-statistic; 7.238; P-value; 0.000 < Sig-value; 0.05) and transportation management has no significant effect on operation flows of table water manufacturing firms in Enugu State (t-statistic; 9.516; P-value; 0.000 < Sig-value; 0.05). The study recommended that management of table water manufacturing firms should engage in Logistic inbound and outbound operations so as to help ease their means of distribution on the good produced to where they are needed.

Keywords: Fleet Management, Transportation Management: Operation Flows of Manufacturing Firms

Background of the Study

The importance of global supply chain has influenced the main role of logistics service in both size and boundaries of the manufacturing industry over the last few years (Adesunkanmi, Emmanuel & Nurain, 2022) [4]. Logistic services include management logistics, management plans for delivery, stocking of goods and services in terms of warehousing, value conformance, transport, and the importation and exportation compliance. Furthermore, it gives avenue for the receiving of orders from customers and making invoices once the product have been purchased. Consequently, high-quality logistics services provide additional benefits that result in the product being available, which keeps the manufacturer ahead of its competitors (Akintokunbo & Odage, 2021) [5]. Logistics relates to the overall management of the collection, storage and transportation of resources to its end destination. Logistics management includes the identification and determination of productivity and accessibility of potential wholesalers and suppliers. Typically, in any organization, the activities are inbound and outbound. Logistics management functions at varying degrees include customer service, production planning and scheduling, packaging, sourcing and procurement, and assembly (Edim & Inyang, 2022) [6].

Table water factories were established for the purpose of making profit by the providers/owners of the enterprise. To this end, small and medium scale enterprises involved in table water production adopt several management techniques to enhance quality products, efficiency, profitability, and increase in market shares, customer's satisfaction, loyalty and repeated patronage (Ngamvichaikit, 2017) [12]. One of such management techniques employed by these firms is logistics management. The various small and medium scale enterprises in Nigeria, particularly in Enugu State, employ different production techniques and technologies to purify and package drinking water in polythene sachets and plastic bottles. These enterprises source water from springs, boreholes, and public water sources and subject it to purification processes to ensure its cleanliness and safety (Rahman & Jamiu, 2022) [17]. In Enugu State, there is a high concentration of bottled water sellers and consumers in areas such

as Garriki, Obiagu, Akwuke, Emene, Abakpa, Ogbete, Ogui, Iva-Valley, Nike, New Haven, Awkunanaw, Uwani, Achara-Layout, Maryland, Trans-Ekulu, Government Reserved Areas (GRA), and Independence Layout. These areas are known for hosting a wide range of bottled water brands that cater to the demand for safe and purified water. This competition has led to the proliferation of different brands, each with its own unique selling points and consumer base.

Statement of the Problem

Water supply in Nigeria is not reliable which is evident with the collapse of the public water system. As a result, this has adversely affected the good health of every Nigerian. In Nigeria, the two main sources of drinking water are ground water and pipe-borne or tap water. However, these sources are not considered safe due to the presence of excessive amounts of trace elements, dissolved solids and pathogens in ground water sources, which can be harmful to human health.

The inability of Nigerians to devise a better transportation system has been a detraction of the growth of the economic, social and political sectors of the economy. Prominent among the problems includes travelling, lateness to work, movement of agricultural products, goods and services from area of production to area of utilization (Abdul, Iortimbir, Oladipo & Olota, 2019) [1]. In Nigeria, the need for an effective transport system becomes more obvious if taken into consideration the analysis of the country and the need to disperse development move.

Inability to adopt adequate logistic management could result to customers' dissatisfaction. Improper handling of materials resulting in damage of goods, lack of qualified personnel, inadequate transportation system in the organization and improper maintenance of transporting system causing breakdown leading to late delivery. Furthermore, logistic management is bedeviled by many problems in Nigeria. These include many bad roads which have affected road transportation management, high cost of spare parts which makes it difficult for the management of transport companies to procure high quality spare parts and diversion of fund meant for procurement of spare parts. Moreover, the fluctuating nature of the price of petroleum products has equally affected logistic management adversely.

Objectives of the Study

The main objective of this study is to examine effect of logistics on the performance of table water manufacturing firms in Enugu State Nigeria. The specific objectives of this study are to:

1. Identify the effect of fleet management on reduced operational cost of table water manufacturing firms in Enugu State.
2. Determine the effect of transportation management on operation flows of table water manufacturing firms in Enugu State.

Research Questions

This study seeks to provide answers to the following research questions.

1. What is the effect of fleet management on reduced operational cost of table water manufacturing firms in Enugu State?
2. What is the effect of transportation management on operation flows of table water manufacturing firms in Enugu State?

Significance of the Study

The outcome of this study is beneficial and relevant to the management of table water companies, customers and scholar and researchers.

The outcome of the study provides information about the roles of manager of table water companies and it involves coordinating and integrating all activities from procurement to production, warehousing, transportation, and distribution.

The outcome of the study provides customer satisfaction with the help of logistics to ensures that products are delivered to customers promptly, meeting their availability and delivery speed expectations. Effective logistics also includes services like order tracking, return management, and customer support, which contribute to a positive customer experience.

The outcome of this study will equally be useful to scholars and researchers, it would serve as reference materials that are reserve in libraries and shelves for further academic research.

Conceptual Literature

Logistics

New Oxford American Dictionary defined logistics management as detailed coordination of a complex operation involving many people, facilities, or supplies. The Oxford Dictionary online views logistics management as the detailed organization and implementation of a complex operation. For Council of Supply Chain Management Professionals cited in Adedugba, (2021) [3], logistics management refers to part of supply chain management that plans, implements, and controls the efficient, effective, forward and reverse flow and storage of goods, services and related information, between the point of origin and the point of consumption in order to meet customers' requirements (Mao, Xing & Zhang, 2018) [9]. Logistics management is customer- oriented operations management as it includes all the functions required for distribution of goods.

Ristovska, Kozuharov and Petkovski, (2017) [18], defined logistics as the method of preparing, enforcing and managing procedures for the effective and reliable transport and keeping of goods and services that include facilities and materials that are related. The concept consists of inbound, outbound, internal and outbound movements and material returns for environmental purposes. In general, logistics is the comprehensive planning and execution of a difficult operation. In an overall business setting, logistics means the control of the movement of products between the point of production and the point of consumption to satisfy consumers or corporations' requirements. The logistics-managed resources may include physical items such as shelter and other logistics instrument. Physical item typically includes the integration of knowledge management, material processing, manufacture, packaging, distribution, transport (Ekwochi, Agbaji and Anzor, 2021) [7]. Logistics operations are basically a method of transportation that involves transporting goods from one location to another. Logistics includes a lot of things like packaging, supplies, transport, inventory, and sometimes,

protection.

Performance of table water manufacturing firms

Performance in this sense means a business parameter that defines the size, strength, activity, pro-activeness, competitive aggressiveness, autonomy and success of an organization (Oyesiku, Somuyiwa & Oduwolu, 2019) [16]. Ogbeide and Isokpan, (2022) [14] emphasize that business performance embraces a broad spectrum of activities ranging from effectiveness of firms in achieving their goals. The management literature describes business performance as the extent to which business actions have helped the company to achieve its business goals.

Takwi and Mavis, (2020) [19] consider operational performance as the critical evaluation of the business mix of an organization. From customers' perspective, operational performance measures the degree of success recorded by organizations throughout the entire distribution operations process. Success in achieving operations performance is mainly attributed to top managers in any organization.

Contextual Literature

Fleet management and reduced operational Cost

Fleet management is an administrative approach that allows companies to organize and coordinate work vehicles with the aim to improve efficiency, reduce costs, and provide compliance with government regulations (Wasike & Juma, 2020) [21]. While most commonly used for vehicle tracking, fleet management includes following and recording mechanical diagnostics and driver behavior. Fleet management is used by couriers, oil and gas delivery, utilities, repair and service industry businesses to ensure responsible vehicle use, confirm safety and enable real-time tracking. Fleet management refers to all actions that need to take place to keep a fleet running efficiently, on time, and within budget. It is the process used by fleet managers to monitor fleet activities and make decisions about proper asset management, dispatch and routing, and vehicle acquisition and disposal. Managers help to ensure that a fleet is meeting compliance requirements, continuously improving efficiencies, and reducing costs (Eshetu, 2020) [8].

Transportation management and operation Flows

Transportation is made up of Road, railways, water, air and pipelines. Mukolwe and Wanyoike, (2015) [10] showed that "transportation is the movement of raw materials, semi-finished products, or parts from the point where they are produced to the point where they are processed or assembled; and also, the movement of finished products to the point of purchase. Products arrive at their destination by one or a combination of five modes of transportation; railway, motor carriers (tracks), pipelines, water craft, and aircraft. Railroads: Rail transportation is particularly suitable for the movement of bulk goods whose value per ton is relatively low, such as grain, coal, lumber, cement, iron ore, and stone. It is a cheaper form of transportation. It is more convenient in many cases than water transport, and one train can haul many times the tonnage of a truck. Motor carriers: Our second mode of transportation is tuck. Truck can provide speedy services to an increasing number of points. The importance of trucks is that they carry a vast quantity of goods between points within major metropolitan centers (Mwangangi, 2016) [11].

Transportation is the movement of people and goods from one location to another. It is the process of conveying goods, services or materials from the manufacturing industries to customers at their various outlets in a given geographical area of a particular region or country (Ngamvichaikit, 2017) [12]. Others also defined transportation as a physical movement of goods from the point of manufacture to the point of consumption or from the place where they are made and to where they are needed. It is inventory movement from one point to another point in the supply chain.

Theoretical Literature

Resource-Based View (RBV) Theory

Barney (1991) focuses on the concept of difficult-to-imitate attributes of the firm as sources of superior performance and competitive advantage. Resources that cannot be easily transferred or purchased, require an extended learning curve or a major change in the organization climate and culture, are more likely to be unique to the organization and, therefore, more difficult to imitate by competitors (Ekwochi, Agbaji & Anzor, 2021) [7]. Accordingly, the firms' resources are always heterogeneous and immobile, tangible; physical things like, piece of land, buildings, and immobile; intangible assets, trademarks, brand equity and reputation, processes, knowledge and experience, that offers advantage to the firms in the long run since competitors cannot easily obtain them like tangible ones. They are the designed and built by the firm and possess value that are advantageous as its strength that will give competitive edge. RBV believes that, it is considerably viable to exploit exterior opportunities using interior resources in a different way to achieve sustainable competitive advantage, instead of trying to obtain novel skills for each different opportunity. Consequently, an e-business store can use its local resources of connection and sales power to negotiate with delivery firms that offers timely delivery of goods on behalf of the customers, as such having a standard, timely and fair delivery charges for all its customers or have its own delivery tools, these internal efforts and services are expected to give such e-business store a competitive advantage over others, continue increasing its sales and ultimately improve its performance.

Empirical Literature

Omoush, (2022) [15] conducted a study to determine the impact of the practices of logistic management on operational performance Jordan road transport companies. The research focuses on the impact of purchasing, storage, transportation, distribution, handling, packaging, customer service, and scheduling logistic management practices on the performance of their operations using the sector of road transport companies in Jordan. The data analytical techniques were correlation coefficient, standard deviation regression analysis, arithmetic averages, and variance. A thirty-item questionnaire was employed as the primary data-gathering tool. According to the findings of the research, logistic management practices have a considerable positive impact on its dimension (inventory management, warehousing, order process management, transportation, and packaging) on the operational performance of road transport companies in Jordan. As a result of the findings, it is suggested that Jordanian industrial companies concentrate on all aspects of logistic operations such as purchasing,

storage, transportation, distribution, handling, packaging, customer service, and scheduling in the industry sector.

Edim and Inyang, (2022) [6] conducted a study to investigate the relationship between logistics management and marketing performance of small and medium-sized manufacturing firms. It aimed to assess the influence of order processing, transportation, inventory and warehouse management on the marketing performance of small and medium-sized manufacturing firms. As a cross-sectional study, primary data were obtained from 216 operators and personnel of small and medium-sized manufacturing firms using a structured questionnaire. The hypotheses developed for the study were tested using multiple linear regression. Consequently, the study revealed that order processing management, transportation management, inventory management and warehouse management had significant positive influences on the marketing performance of small and medium-sized manufacturing firms. Therefore, the study concluded that logistics management has a significant positive influence on marketing performance in the context of small and medium-sized manufacturing firms. The study recommended that firms should ensure the availability and functionality of modernized facilities for material and/or product storage, handling and preservation.

Rahman and Jamiu, (2022) [17] examined the effect of logistics management on micro e-business performance in Ilorin metropolis. Specifically, the study aimed to: Investigate the effect of delivery charges on online shoppers' satisfaction with e-business in Ilorin metropolis and examine the effect of pick-up and delivery times on online shoppers' satisfaction with e-business in Ilorin metropolis. The data collected were analysed using frequency counts, descriptive and inferential statistics, while t-test was used to test the hypothesis. The study found a significant change in customer satisfaction through improvement in logistics management as it is responsible for more than 57% sales volume of e-business. Online shoppers mostly view delivery charges as extra burden and will not hesitate to complete orders with free or relatively low delivery charges, hence, the moment an order is completed online, customers prefer to have their goods as soon as possible, if not immediately, having to wait for a certain time has limitation on online shopping. The study recommended that e-business brands should strive to have their delivery machineries and charge such prices that will entice their customers. If they must use third party logistics (3PL) service, they should negotiate on their customers' behalf, not exposing them to possible exploitation by the 3PL firms.

Ekwochi, Agbaji and Anzor, (2021) [7] examined effect of road transportation management on customer satisfaction in Peace Mass Transit Enugu Road Nsukka. The specific objectives of the study included to: Ascertain the effect of procurement of high-quality spare parts on customers' loyalty of Peace Mass Transit, Determine the degree of relationship between availability of standard fleet and perceived value of Peace Mass Transit, the population of the study was 115 while the sample size of 94 was determined by using taro yamane's formula. The hypotheses were tested by using the chi-square statistical tool. The findings included that Procurement of high-quality spare parts has a positive effect on customers' loyalty of Peace Mass Transit, as calculated value (182.74) is > the critical value (9.49) Availability of standard fleet has a significant relationship with perceived value, as calculated value (119.40) is > the critical value (9.49). The researcher concluded that transport management has a positive relationship on customer satisfaction while it was recommended that management of transportation companies should procure high quality spare parts as it has a positive relationship on customers' loyalty, management of transportation companies should provide standard fleet as it has a significant relationship with perceived value.

Adebayo and Aworemi, (2021) [2] examined the effect of transport management practices on firms' performance in Lagos State, Nigeria. Specifically, the study sought to examine the effect of freight expenses; shipment tracking; vehicle routing and vehicle scheduling on firms' performance in Lagos State. Data obtained were analyzed using factor analysis and multiple regression. The results of the factor analysis revealed a KMO value of .546; p = 0.000. The total variance explained by the eight factors retained when rotated using Varimax = 47.071%. Consequently, the 13 factor loadings were then used as factor scores for Multiple Regression. The results of the multiple regression showed that transport management practices have a significant effect on the logistics performance of the sampled firms thereby influencing firms' performance (R2 = 0.626, F-= 34.971, p = .000). However, only the coefficients of three factors were significant with p = 0.000. These factors are freight expenses; shipment tracking; vehicle routing and scheduling with standardized coefficients of 0.737; 0.196 and 0.173 respectively. The findings suggest the need for managers of the sampled firms to develop a dynamic transportation strategy for their supply chains that must be responsive, both as to service and cost demands and also implement the Logistics 4.0 in order to further drive performance.

Muema and Achuora, (2020) analyzed the impact of logistics management on success of supply chain among Kenyan manufacturing companies. The study sought to investigate; warehousing management on success of supply chain among manufacturing companies in Kenya and management of inventory on success of supply chain among Kenyan manufacturing companies. A descriptive research design was adopted. An equation was utilized to choose 96 firms out of the complete 708 firms. The data analytical technique was Multiple Regression. The study found that warehousing management positively and significantly affects supply chain performance of manufacturing firms in Kenya. The results further showed that inventory management practices positively affect the supply chain performance of manufacturing firms. Consequently, order processing management was found to positively affects the supply chain performance of manufacturing firms in Kenya. The study finally established that transportation management positively affects the supply chain performance of manufacturing firms in Kenya. The study prescribes that the administration of assembling firms should consolidate the practices into their framework so as to improve their presentation and competitiveness.

Oyesiku, Somuyiwa and Oduwolu, (2019) [16] conducted a study to examine the relationship between transport and logistics education regulations and economic development in Nigeria. The specific objectives of the study to investigate impact of transport and logistic education trend on the economy of Nigeria. The method of data analysis was correlation analysis. The findings show that there is positive

relationship among indices of economic development, however reveal negative but significant relationship between graduates and Institutions of Logistics and Transport, indicating that training is very important to the development of the country. It further shows that most Logistics and Transport firms do not place premium on the certification and qualification of employees with transport and logistics certificate background, hence recruited more people without Logistics and Transport knowledge/skills background. The paper advocates for more efforts to sustain the trend in getting more institutions offering transport and logistics graduate programmes to address the human capacity gap in the discipline and profession in the country and its economic growth and development.

Methodology

The research design was descriptive survey method. Study Area was Enugu State Nigeria. The sample size of 400 respondents were drawn from population of 952 staffs of the selected indigenous table water manufacturing companies in Enugu State namely: Juhel Company; Aquafield water company, Nigerian Bottling Company, Aqua-Rapha Investment Nigeria LtD, Pepsi table water company, Rannco water Company and Andex water company. The choice for only staff of the organization was owing to the nature of this study and due to accessibility and availability of data. The study used structured questionnaire to obtain data. Research questions of the study were answered using mean score and standard deviation. The hypotheses stated will be tested using single regression analysis. Methods of data presentation was table. Statistical Package for Social Science (SPSS) is computer Application Software was used for the data analysis.

Data Presentation

Table 1: Comprehensive Demographic distribution of the Respondents

Title	Frequency	Percentage
Questionnaire Distributed	400	100%
Returned Questionnaire	358	90%
Not Returned Questionnaire	42	10%
Gender		
Female	213	59.5%
Male	145	40.5%
Age Bracket		
20-30 Years	153	42.7%
31-40 Years	111	31.0%
41-50 Years	66	18.4%
51Years – above	28	7.8%
Marital Status		
Married	223	62.3%
Single	125	34.9%
Widow/widower	7	1.9%
Divorce	3	0.8%
Educational Qualification		
HND/B.sc	230	64.2%
MBA/M.sc	125	34.9%
Ph.D	3	1.10%

Sources: Field Survey, 2023

Four hundred (400) copies of questionnaire were designed and distributed to the respondents. Out of the 400 Questionnaires distributed, 358 (90%) were completed and returned while 42 (10%) were not returned. Therefore, 90 percent respondents were a good representation. The table showed the respondents profile in frequency and percentage distribution of gender, age bracket, marital status and educational qualification.

Data Analysis

Question One: What is the effect of fleet management on reduced operational cost of table water manufacturing firms in Enugu State?

Table 2: Mean rating of responses from respondents on what is the effect of fleet management on reduced operational cost of table water manufacturing firms in Enugu State

S. No	Question Items	VGE (5)	GE (4)	ME (3)	LE (2)	VLE (1)	Total	Mean	SD
1	Logistics allows companies to organize and coordinate work vehicles with the aim to improve efficiency, reduce costs, and provide compliance with government regulations.	780 156 44%	496 124 34%	174 58 16%	24 12 3%	8 8 2%	1475 358 100%	4.14	0.0029
2	Logistics monitor fleet activities and make decisions about proper asset management, dispatch and routing, and vehicle acquisition and disposal.	620 124 35%	624 156 44%	144 48 13%	40 20 5%	10 10 2%	1438 358 100%	4.02	0.0027
3	Logistics provides security and help in preventing stolen vehicles and ensure quickly and accurately locate rogue vehicles.	1065 213 59%	364 91 25%	126 42 12%	18 9 2%	3 3 0.8%	1576 358 100%	4.40	0.0034
4	Fleet management practices involve the use of technology and software solutions to enforce driver safety, minimize risk and schedule preventive maintenance to reduce downtime.	985 197 55%	416 104 29%	111 37 10%	24 12 3%	8 8 2%	1544 358 100%	4.31	0.0032
	Grand Mean							4.218	0.0031

Source: Field Survey, 2023

This table showed the opinion of respondents on what is the effect of fleet management on reduced operational cost of table water manufacturing firms in Enugu State. The respondents are in agreement with all the items. The study thereby revealed that fleet management has significant effect on reduced operational cost of table water manufacturing firms in Enugu State since logistics provides security and help in preventing stolen vehicles and ensure quickly and accurately locate rogue vehicles (Grand-mean 4.218 was greater than the cutoff point 3).

Question Two: What is the effect of transportation management on operation flows of table water manufacturing firms in Enugu State?

Table 3: Mean rating of responses from respondents on what is the effect of transportation management on operation flows of table water manufacturing firmsin Enugu State

S. No	Question Items	VGE (5)	GE (4)	ME (3)	LE (2)	VLE (1)	Total	Mean	SD
1	Logistics helps manage various transportation activities such as shipping, tracking, and delivery.	780 156 44%	496 124 34%	174 58 16%	24 12 3%	8 8 2%	1475 358 100%	4.14	0.0029
2	Logistic provides cost savings, improved efficiency, and enhanced visibility into transportation operations.	620 124 35%	624 156 44%	144 48 13%	40 20 5%	10 10 2%	1438 358 100%	4.02	0.0027
3	Transportation logistics provides central platform arranging from route planning and carrier selection to shipment tracking and invoice management.	1065 213 59%	364 91 25%	126 42 12%	18 9 2%	3 3 0.8%	1576 358 100%	4.40	0.0034
4	Transportation management systems allow companies to automate and streamline their transportation processes that result to cost reduction and time savings	985 197 55%	416 104 29%	111 37 10%	24 12 3%	8 8 2%	1544 358 100%	4.31	0.0032
	Grand Mean							4.218	0.0031

Source: Field Survey, 2023

This table showed the opinion of respondents on what is the effect of transportation management on operation flows of table water manufacturing firms in Enugu State. The respondents are in agreement with all the items. The study thereby revealed that transportation management has no significant effect on operation flows of table water manufacturing firms in Enugu State since transportation logistics provides central platform arranging from route planning and carrier selection to shipment tracking and invoice management (Grand-mean 4.218 was greater than the cutoff point 3).

Test of Hypotheses

The two hypotheses were formulated for this study and will be tested and a decision taken is based on the rule below.

Decision rule: Reject Hi if P-value > 0.01

Test of Hypothesis Three

H_3 = Fleet management has no significant effect on reduced operational cost of table water manufacturing firms in Enugu State.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.826[a]	.933	.932	.30129
a. Predictors: (Constant), Fleet Management				

ANOVA[a]						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	41.911	1	41.911	13.692	.000[b]
	Residual	1103.487	357	3.091		
	Total	1145.398	358			
a. Dependent Variable: Reduced cost of table water manufacturing firms						
b. Predictors: (Constant), Fleet Management						

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.528	.109		4.846	.000
	Fleet Management	.325	.045	.966	7.238	.000
a. Dependent Variable: Reduced cost of table water manufacturing firms						

In testing this hypothesis, fleet management was regressed against reduced cost of table water manufacturing firms. The result of the single-regression analysis showed the model to identify the effect of fleet management on reduced operational cost of table water manufacturing firms in Enugu State.

Reduced operational cost of table water manufacturing firms = 0.528 + 0.325 Fleet management

The empirical result showed that the coefficient of fleet management has positive effect on reduced operational cost of table water manufacturing firms; it means that fleet management has positive and direct effect on reduced operational cost of table water manufacturing firms. The results of the t – statistics denoted that the coefficient of fleet management was statistically significance. This was because observed values of t – statistics (48.908) was greater than its P-values (0.000). The results of the F – statistical test showed that the overall regression of the

hypothesis four was statistically significance. This was because observed value of the F – statistics (13.692) was greater than its P-value (0.000). Again, our empirical result showed that the Pearson product moment correlation analysis (r) was 0.826. The strength of relationship between the two variables was high. However, we rejected the null hypothesis and concluded that fleet management has significant effect on reduced operational cost of table water manufacturing firms in Enugu State.

Test of Hypotheses

H_4 = Transportation management has no significant effect on operation flows of table water manufacturing firms in Enugu State.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.801[a]	.866	.865	.26055
a. Predictors: (Constant), Transportation management				

ANOVA[a]						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	67.881	1	67.881	9.604	.000[b]
	Residual	2523.276	357	7.068		
	Total	2591.157	358			
a. Dependent Variable: Operational flows of table water manufacturing firms						
b. Predictors: (Constant), Transportation management						

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.366	.089		4.121	.000
	Transportation Management	.780	.082	.931	9.516	.000
a. Dependent Variable: Operational flows of table water manufacturing firms						

In testing this hypothesis, transportation management was regressed against operational flows of table water manufacturing firms. The result of the single-regression analysis showed the model to determine the effect of transportation management on operation flows of table water manufacturing firms in Enugu State.

Operation flows of table water manufacturing firms= 0.366 + 0.780 Transportation management

The empirical result showed that the coefficient of transportation management has positive effect on operation flows of table water manufacturing firms; it means that transportation management has positive and direct effect on operation flows of table water manufacturing firms. The results of the t – statistics denoted that the coefficient of transportation management was statistically significance. This is because observed values of t – statistics (9.516) was greater than its P-values (0.000). The results of the F – statistical test showed that the overall regression of the hypothesis two was statistically significance. This was because observed value of the F – statistics (9.604) was great than its P-value (0.000). Again, our empirical result showed that the Pearson product moment correlation analysis (r) was 0.801. The strength of relationship between the two variables was high. However, we rejected the null hypothesis and concluded that transportation management has significant effect on operation flows of table water manufacturing firms in Enugu State.

Discussion of Findings

Effect of fleet management on reduced operational cost of table water manufacturing firms in Enugu State

The findings of the study revealed that fleet management has significant effect on reduced operational cost of table water manufacturing firms in Enugu State since logistics provides security and help in preventing stolen vehicles and ensure quickly and accurately locate rogue vehicles. The findings of the study revealed that Omoush, (2022) [15] that conducted a study to determine the impact of the practices of logistic management on operational performance Jordan road transport companies. The research focuses on the impact of purchasing, storage, transportation, distribution, handling, packaging, customer service, and scheduling logistic management practices on the performance of their operations using the sector of road transport companies in Jordan. The data analytical techniques were correlation coefficient, standard deviation regression analysis, arithmetic averages, and variance. A thirty-item questionnaire was employed as the primary data-gathering tool. According to the findings of the research, logistic management practices have a considerable positive impact on its dimension (inventory management, warehousing, order process management, transportation, and packaging) on the operational performance of road transport companies in Jordan.

Effect of transportation management on operation flows of table water manufacturing firms in Enugu State

The findings of the study revealed that transportation management has significant effect on operation flows of table water manufacturing firms in Enugu State since transportation logistics provides central platform arranging from route planning and carrier selection to shipment tracking and invoice management. The outcome of the study is in line with the study of Edim and Inyang, (2022) [6] that conducted a study to investigate the relationship between logistics management and marketing performance of small and medium-sized manufacturing firms. It aimed to assess the influence of order processing, transportation, inventory and warehouse management on the marketing performance of small and medium-sized manufacturing firms. As a cross-sectional study, primary data were obtained from 216 operators and personnel of small and medium-sized manufacturing firms using a structured questionnaire. The hypotheses developed for the study were tested using multiple linear regression. Consequently, the study revealed that order processing management, transportation management, inventory management and warehouse management had significant positive influences on the marketing performance of small and medium-sized manufacturing firms. The study recommended that firms should ensure the availability and functionality of modernized facilities for material and/or product storage, handling and preservation.

Summary of Findings

The following are the major findings of the study**:**

1. The findings of the study revealed that fleet management has significant effect on reduced

operational cost of table water manufacturing firms in Enugu State since logistics provides security and help in preventing stolen vehicles and ensure quickly and accurately locate rogue vehicles (t-statistic; 7.238; P-value; 0.000 < Sig-value; 0.05).
2. The findings of the study revealed that transportation management has no significant effect on operation flows of table water manufacturing firms in Enugu State since transportation logistics provides central platform arranging from route planning and carrier selection to shipment tracking and invoice management (t-statistic; 9.516; P-value; 0.000 < Sig-value; 0.05).

Conclusion

The study concluded that logistics has positive and significant effect on the performance of table water manufacturing firms in Enugu State Nigeria. Based on the results, it is advisable for companies to integrate information flow management into their operational procedures, such as fleet management, vehicle scheduling, route planning, and vehicle maintenance, in order to ensure the timely distribution of goods and the purchase of spare parts, as well as increase overall cost effectiveness, market share, and lead time, all of which will improve performance. It is recommended that enough measures be put in place to ensure that performance of transportation sector continue to improve. Finally, monitoring and evaluation are essential. Excellent operations management in transportation organizations depends on a thorough review of all logistics and transportation procedures.

Recommendations

Based on the findings of this study, the following recommendations were made.

1. Management of table water manufacturing firms should engage in Logistic inbound and outbound operations so as to help ease their means of distribution on the good produced to where they are needed. There is need for effective transportation system in order to ease movement of finished products and warehouse for keeping raw materials prior to when it will be needed.
2. Management of table water manufacturing firms should ensure on time delivery of their goods to customers so as not to bring unnecessary additional costs that may scare away customers. Inventory control is needed to ensure that stocks and raw materials are kept in a better place so as to guide against stock outfall or over stocking.

References

1. Abdul FA, Iortimbir AI, Oladipo GT, Olota OO. Impact of logistics management on organizational performance (A case study of Dangote Flour Mills Plc, Nigeria). Journal of Sustainable Development in Africa. 2019; 21(1):36-49.
2. Adebayo IT, Aworemi JR. Transport Management Practices and Firms' Performance in Nigeria. Proceedings of the International Conference on Industrial Engineering and Operations Management Rome, Italy. 2021; 2(3):2-5.
3. Adedugba AT. Logistics operations and sustainable performance of selected textile manufacturing firms in Lagos State, Nigeria. International Review of Management and Business Research. 2021; 3(2):7-14.
4. Adesunkanmi SO, Emmanuel OI, Nurain SA. Effect of Logistics Outsourcing on Operational Performance of the Selected Manufacturing Companies in Southwestern Nigeria. Open Journal of Business and Management. 2022; 10:3485-3499.
5. Akintokunbo OO, Odage AF. Logistics Management and Operations Performance of Oil and Gas Supply Chain: A Review of Literature. Asian Journal of Social Science and Management Technology. 2021; 3(6):12-29.
6. Edim EJ, Inyang BI. Logistics Management and Marketing Performance of Small and Medium-Sized Manufacturing Firms. International Journal of Entrepreneurship and Business Innovation. 2022; 5(1):1-15.
7. Ekwochi EA, Agbaji BC, Anzor EC. Effect of Road Transportation Management on Customer Satisfaction. A Study of Peace Mass Transit Enugu Road Nsukka. International Journal of Academic Information Systems Research. 2021; 5(6):1-11.
8. Eshetu D. The effect of logistics management on organizational performance in construction industries: The case of Elmi Olindo Contractors Plc [Master's Thesis, Addis Ababa University, Ethiopia], 2020.
9. Mao J, Xing H, Zhang X. Design of an intelligent warehouse management system. Wireless Personal Communications, International Journal of Entrepreneurship and Business Innovation. 2018; 102(2):55-67.
10. Mukolwe GA, Wanyoike DM. An assessment of the effect of logistics management practices on operational efficiency at Mumias Sugar Company Limited, Kenya. International Journal of Economics, Commerce and Management. 2015; 3(6):1134-1156.
11. Mwangangi PW. Influence of logistics management on performance of manufacturing firms in Kenya [PhD Thesis, Jomo Kenyatta University of Agriculture and Technology, Kenya], 2016.
12. Ngamvichaikit A. The competency development of multimodal transportation management for logistics professionals in Thailand. International Journal of Trade, Economics and Finance. 2017; 8(1):88-103.
13. Odunjo FO. Impact of logistic inbound and outbound operations in organizational performance at Dangote Cement Industries. International Journal of Academic Information Systems Research. 2022; 5(6):1-11.
14. Ogbeide DO, Isokpan RE. Logistics cost and financial performance of selected quoted manufacturing firms in Nigeria. International Review of Management and Business Research. 2022; 3(3):7-14.
15. Omoush MM. The impact of the practices of logistic management on operational performance: A field study of road transport companies [Special issue]. Journal of Governance & Regulation. 2022; 11(4):237-245.
16. Oyesiku O, Somuyiwa AO, Oduwolu AO. Analysis of Transport and Logistics Education Regulations and Economic Development in Nigeria. World Conference on Transport Research. 2019; 12(4):26-30.
17. Rahman M, Jamiu NA. Evaluation of Logistics Management and Performance of Micro E-Businesses in Ilorin Metropolis. 2022; Journal of Industrial and Business Management. 2022; 3(2):23-31.
18. Ristovska N, Kozuharov S, Petkovski V. The Impact of logistics management practices on company's

performance. International Journal of Academic Research in Accounting, Finance and Management Sciences. 2017; 7(1):245-252.
19. Takwi FM, Mavis AA. The effects of logistic management on enterprise performance: A case of Gas Depot Atem in Yaounde, Cameroon. American Journal of Operations Management and Information Systems. 2020; 5(3):41-48.
20. Umar AM. Logistics Management and the Performance of Manufacturing Firms in Selected States of Northern Nigeria. International Journal of Engineering and Management Research. 2019; 9(1):23-29.
21. Wasike ER, Juma D. Influence of logistics management practices on the logistic performance of humanitarian organizations in Kakamega County, Kenya. International Journal of Scientific and Research Publications. 2020; 10(9):97-109.