

## **TRANSPORT OUTSOURCING AND SUPPLY CHAIN EFFICIENCY OF SOFT DRINK DISTRIBUTION COMPANIES IN RIVERS STATE**

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### **Abstract**

This study examined the relationship between transport outsourcing and supply chain efficiency of soft drink distribution companies in Rivers State. The study was anchored on Resource Based Theory. The study adopted a correlational research design. The population of the study consisted 37 Soft Drink Distribution Companies in Port Harcourt. The entire population of 37 was studied as the sample size. Primary data was collected using questionnaire. The data were analyzed using Tables, simple percentages, weighted average, standard deviation, while the hypotheses were tested using spearman's rank correlation. The study found that a strong positive relationship between transport outsourcing and measures of supply chain efficiency (waste reduction, cost minimization, order cycle time) of soft drink distribution companies in Rivers State. The study concludes that transport outsourcing has significant and positive relationship with supply chain efficiency of soft drink companies in Rivers State; and recommends that operators of soft drink distribution companies in Rivers State should embrace transport outsourcing to improve the efficiency of their supply chain. This is because transport outsourcing reduces waste and costs, and lowers order cycle time.

**Keywords:** Cost minimization, order cycle time, supply chain efficiency, transport outsourcing, waste reduction

### **Introduction**

Organization attempt to maximize profits by optimizing their supply chain processes to make them more efficient. Efficient supply chains resources and expertise in a way that minimize costs and maximize profits (Lopienski, 2023). Supply chain efficiency is regarded as internal standard of performance of an organization because it focuses on meeting demands cost-effectively; and on using resources efficiently to produce and deliver products (Rono & Musau, 2020).

Ateke and Nwiele (2017) states that firm are increasingly seeking ways of enhancing their ability to satisfy customers, improve relationships and bottom-line and achieve other results that guarantee superior performance. This is even as advances in technology and rapid globalization alter the nature of competition in all industries and economies of the world (Ateke & Didia (2017). In the circumstance, relying on internal resources and capabilities alone can no longer guarantee success.

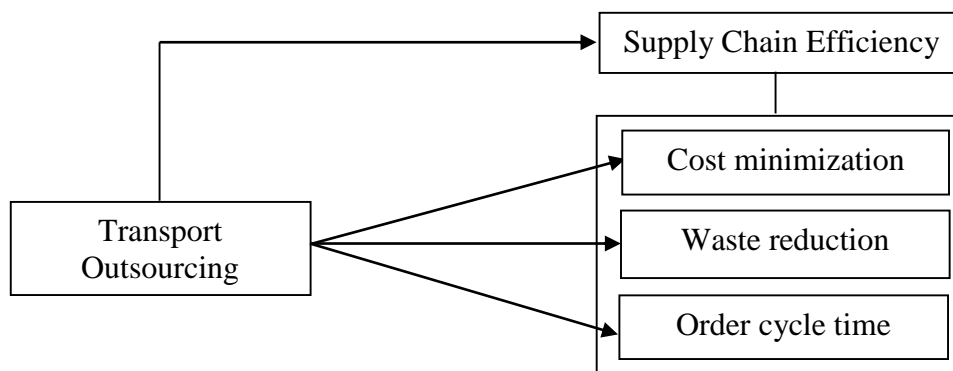
In addition, prompt response to customer demand become an important weapon, companies tend focus more on the activities and functions they have expertise and absolute advantage, and outsource other activities to external service providers like logistics service providers (LSPs), in order to create more value and obtain competitive advantage. Currently firms do not compete as

independent entities, but as components of supply chains (Mitra, 2006). One of the prominent strategies used to make supply chains more efficient is outsourcing - “the strategic use of outside resources to perform activities traditionally handled by internal staff and resources” (Handfield, 2006).

Companies outsource different aspects of business activities, including logistics, and an aspect of logistics that is mostly outsourced is transport. Transport outsourcing is an arrangement whereby an entity engages a service provider to perform transport services in its behalf (Moeen et al., 2013). The primary function of transportation is to move goods from one location to another (Rushton, 2007), and firms seek to enhance transportation efficiency through outsourcing. According to Manono (2012), transportation outsourcing is undertaken with the aim of improving a company’s focus.

Chete et al. (2021) posits that firms in Nigeria suffer from poor road network, high transportation costs and poor power supply, which escalate their operating costs and erode their competitiveness relative to foreign firms. Meixell and Norbis (2008) opine that transport outsourcing positively influence supply chain efficiency and lead to competitive advantage. Gulamhusein (2011) affirm that strategic outsourcing practices improve business performance; while Kariko (2012) confirm that logistics outsourcing enables supply chain performance.

However, none of these studies focused on transport outsourcing and supply chain efficiency in the context of soft drink companies in Rivers State. Hence this study examined the relationship between transport outsourcing and supply chain efficiency of soft drink companies in Rivers State. The study was conceptualized in Fig. 1.



**Fig. 1:** Conceptual framework of Relationship between transport outsourcing and supply chain efficiency of soft drink distribution companies in Rivers State

### **Theoretical Foundation of the Study: Resource-Based Theory**

Resource-based theory (Wernerfelt, 1984) argue that a firm has the ability to achieve and sustain competitive advantage if it possesses resources that are valuable, rare, imperfectly imitable and non-substitutable. The theory suggests that the combined efforts of different resources which are valuable and incomparable and non-substitutable, influence organizational capabilities that lead to competitiveness (Golicic & Smith, 2013).

Resource-based theory is relevant to the present study as it explains the internal resources and capabilities required to adopt and implement logistics outsourcing in order to improve the supply

chain efficiency. According to Semchi-Levi et al. (2004), resource-based theory consider internal strengths and weaknesses of firms before outsourcing certain functions. According to Luo (2002) resource-based theory, outsourcing is a strategic decision used to fill gaps in a firm's resource capabilities. In areas that an organization is weak, outsourcing enable them concentrate on their strengths.

### **Concept of Transport Outsourcing**

Transport outsourcing is a vital component of logistics outsourcing. According to Moeen et al. (2013), outsourcing transport logistics is an arrangement whereby an entity engages a service provider to perform transport services for a firm. Transportation outsourcing involves partnering with a third-party logistics provider (3PL) to manage the movement of goods from one location to another.

Transport outsourcing can include arranging shipments, selecting carriers, optimizing routes, and tracking deliveries. By outsourcing transportation, businesses can benefit from the expertise of logistics professionals who specialize in managing complex transportation networks, negotiating favorable rates, and ensuring timely and efficient delivery. This type of outsourcing is particularly valuable for companies with high shipping volumes, complex distribution networks, or international operations (Rushton, 2007).

### **Concept of Supply Chain Efficiency**

Supply chain efficiency is a business's ability to use resources, technology, and expertise in order to minimize logistics costs and maximize profits (Lopienski, 2023). Every organization focuses on maximizing profits by optimizing the processes and stages in the supply chain. One of the internal standards of an organizational performance is supply chain efficiency which has to do with the ability of an organization to reduce cost, waste and delivery time without affecting the quality of their offerings negatively (Rono & Musau, 2020).

Supply chain efficiency involves effectively delivering products to the right place at the right time and at the lowest possible cost. It also means using resources efficiently to produce and deliver products. In simple terms, an efficient supply chain focuses on maximizing the output while maintaining minimum input. Optimizing a supply chain to ensure the best possible process and still responding to consumer demand can be a real challenge (Lopienski, 2023). There are several indicators of supply chain efficiency. In this study however, waste reduction, cost minimization and order cycle time are adopted as measure of supply chain efficiency.

### **Waste reduction**

The practice of utilizing less materials and energy to minimize waste generation and save natural resources is known as waste reduction (Rono & Musau, 2020). Waste reduction is broader in scope than recycling and includes ways to prevent materials from ending up as waste before they reach the recycling stage. Waste reduction includes reusing products such as plastic and glass containers, purchasing more durable products, and using reusable products, such as dishrags instead of paper towels.

Waste reduction also means economic savings (Mills & Opoku-Akyea, 2019). Fewer materials and less energy is used when waste-reduction practices are applied. Rather than using the traditional cradle-to-grave approach, a cradle-to-cradle system is adopted. In this cradle-to-cradle

system, also called industrial ecology, products are not used for a finite length of time. Instead of disposing of materials, or the components of a product after a single use, products are passed on for further uses.

### **Cost minimization**

Cost minimization refers to the process of reducing the expenses of an organization in order to increase profit (Kinyugo, 2014). It involves identifying and removing expenditures that do not provide added value to customers while also optimizing processes to improve efficiency. Cost minimization typically focuses on generating short-term savings (Figar & Ivanoic, 2015). Cost minimization is the process used by companies to reduce their costs and increase their profits.

According to Gaurav et al. (2013), cost minimization is the way toward searching for, finding and expelling baseless costs from a business to build the benefit without negatively affecting item quality. The concept of continuously searching for new ways and avenue of reducing costs needs to be constantly promoted at all levels of an enterprise, which signifies that the enterprise has a strategic approach to this issue (Figar & Ivanoic, 2015).

### **Order cycle time**

Order cycle time is the time it takes for a company to complete the order fulfillment process, from the moment a customer places an order to the point when the product is delivered to the customer. This cycle includes a series of steps such as order processing, picking and packing, shipping, and delivery (Figar & Ivanoic, 2015). It refers to the average time taken to ship out an order from the time it was placed, excluding the actual shipping time.

Order cycle time is one of the most important metrics to measure in a business. It represents the total amount of time it takes an organization to complete an order, from the time when it is created until it is delivered to the customer. Order cycle time is an important measure of a business's efficiency (Alireza & Mahdi, 2012). It gives them a way to determine whether they are ordering goods and stocking them quickly enough so they can meet their customer's demand without holding excess inventory.

### **Transport Outsourcing and Supply Chain Efficiency**

Mills and Opoku-Akyea (2019) evaluated the impact of transport outsourcing on organizational performance. The study found that reasons for outsourcing includes improving company's focus; accessing world class capabilities; helping companies to free resources for other purposes; sharing and minimizing risk; infusing cash into organizations; and helping to reduce and control operating cost of companies; while loss of control, dissatisfied customers; leak of confidential information; staff retrenchment and; high switching cost are identified as challenges of transport outsourcing.

Mills and Opoku-Akyea (2019) also reveal that lower transport cost leads to increased profitability of selected alcoholic beverage producing companies. This means that larger firms can outsource their transportation since by outsourcing, the transport cost become lower. Bore and Peter (2020) sought to establish the influence of transport outsourcing services on supply chain performance in commercial state corporations in Kenya. The study revealed that transport outsourcing have positive significant influence on supply chain performance.

Adesunkanmi et al. (2022) examined effect of transport outsourcing on operational performance of manufacturing companies in Nigeria. Result from the study showed that transport outsourcing has significant effect on operational performance of manufacturing companies. Similarly,

Mageto et al. (2018) investigated the relationship between transport outsourcing and performance of manufacturing firms in Kenya and found that equation modelling to test the relationship between logistics outsourcing and a statistically significant indirect positive effect of transport outsourcing on performance of manufacturing firms.

The reports that transport outsourcing has positive effect on performance of manufacturing firms provides insights to the possibilities of a connection between transport outsourcing and supply chain efficiency. Thus the following alternate hypotheses were formulated:

- H<sub>A1</sub>:** There is a significant relationship between transport outsourcing and waste reduction of soft drink distribution companies in Rivers State.
- H<sub>A2</sub>:** There is a significant relationship between transport outsourcing and cost minimization of soft drink distribution companies in Rivers State.
- H<sub>A3</sub>:** There is a significant relationship between transport outsourcing and order cycle time of soft drink distribution companies in Rivers State.

### Methodologies

The study adopted a correlational research design to examine the relationship between transport outsourcing and supply chain efficiency. The population of the study consisted 37 registered and functional soft drink distribution companies in Port Harcourt as obtained from the Yellow Pages Directory, Rivers State Ministry of Commerce and Industry (2014). The entire population was studied. 4 top management staff (procurement, operations, sales and logistics managers) were drawn each of the 37 Soft drink distribution companies using purposive sampling technique. The instrument used to collect primary data was questionnaire. The instrument was subjected to scrutiny to evaluate its face, content and construct validity. Also, a pilot survey was carried out to determine the reliability of the instrument. Descriptive statistics (frequency counts, simple percentage, mean score rating and standard deviation) were used to analyze bio-data and for univariate analysis, while inferential (Spearman's Rank Correlation Coefficient) was used to test the hypotheses. All analyses were done through the application of Statistical Package for Social Science (SPSS) version 23.0.

**Table 1: Reliability Test - Cronbach's Alpha Analysis**

S/N	Variables	Number of Items	Cronbach's Alpha Coefficients
1	Transport Outsourcing	3	0.852
2	Waste Reduction	3	0.821
3	Cost Minimization	3	0.794
4	Order Cycle Time	3	0.818

Source: SPSS Output from Field Data

## Date Analyses and Results

**Table 2: Descriptive Statistics for Transport Outsourcing**

Transport Outsourcing	N	Min.	Max.	Sum	Mean	Std. Dev.
Transportation is important to the logistics quality of our firm	123	1	5	441	3.59	.991
Outsourcing transportation protects the organization from penalties.	123	1	5	480	3.90	1.036
Outsourcing transportation make sure transportation operations never fall victim to the constantly changing supply chain environment.	123	1	5	465	3.78	.954
Valid N (listwise)	123					

Source: SPSS Output, 2024

The statistics of the responses in Table 2 as it relates to items put forward to provide answers to issues bordering on transport outsourcing showed that respondents' agreed to the assertion that transportation is important to logistics quality. This is accounted for a mean score of 3.59. The second item shows that respondents agreed that outsourcing transportation protects the firm from penalties. This is accounted for by a mean score of 3.90. The last item shows that respondents agreed that outsourcing transportation make sure transportation operations never fall victim to changing supply chain condition. This is accounted for by the high mean score of 3.78. This shows that transport outsourcing is highly practiced in soft drink distribution companies in Rivers State.

**Table 3: Descriptive Statistics for Waste Reduction**

Waste Reduction	N	Min.	Max.	Sum	Mean	Std. Dev.
We use less material and energy to minimize waste generation and preserve natural resources	123	1	5	399	3.24	1.104
We often return hazardous materials to the manufacturer	123	1	5	423	3.44	1.017
The firm has reduced its solid wastes quantities	123	1	5	411	3.34	1.378
Valid N (listwise)	123					

Source: SPSS Output, 2024

The responses in Table 3 shows participants' level of agreement with the items raised to measure waste reduction as measure of supply chain efficiency. In item 1, participants' agreed to the fact that they use less material and energy to minimize waste generation and preserve natural resources. This is accounted for by the high mean score of 3.24. Item 2 shows that respondents agreed that they often return hazardous materials to the manufacturer. This is accounted for by the high mean score of 3.44. Item 3 shows that respondents agreed that the firm has reduced its solid wastes quantities. This is accounted for by the high mean score of 3.34. This means that effective waste reduction occurs in the organization under study.

**Table 4: Descriptive Statistics for Cost Minimization**

Cost Minimization	N	Min.	Max.	Sum	Mean	Std. Dev.
The use of logistics outsourcing has helped reduce the number of returned orders.	123	1	5	438	3.56	.942
Our operating costs are reduced with the use of logistics outsourcing.	123	1	5	438	3.56	1.132
Cost minimization practice gives us competitive advantage over other competitors.	123	1	5	387	3.15	1.412
Valid N (listwise)	123					

Source: SPSS Output, 2024

From the responses of participants as it relates to items put forward to provide answers to issues bordering cost minimization as a measure of supply chain efficiency. In item 1, the participants' agreed to the fact that the use of logistics outsourcing has helped reduce the number of returned orders. This is accounted for by the high mean score of 3.56. Item 2 shows that respondents agreed that the company operating costs are reduced with the use of logistics outsourcing. This is accounted for by the high mean score of 3.56. Item 3 shows that respondents agreed that cost minimization practice gives us competitive advantage over other competitors. This is accounted for by the high mean score of 3.15. This implies that the use of logistics outsourcing has helped in cost reduction in soft drink distribution companies in Rivers State.

**Table 5: Descriptive Statistics for Order Cycle Time**

Order Cycle Time	N	Min.	Max.	Sum	Mean	Std. Dev.
It takes our firm lesser time to process an order from the time it is received until it is ready	123	1	5	442	3.59	1.260
Our organization delivers products to her customers as and when due	123	1	5	477	3.88	.864
It is easy for customers to track the status of their orders throughout the order cycle in our organization	123	1	5	512	4.16	1.074
Valid N (listwise)	123					

Source: SPSS Output, 2024

Table 5 display the statistics of the responses of participants as it relates to items put forward to provide answers to issues bordering on order cycle time as measure of supply chain efficiency. In item 1, the participants' agreed to the fact that it takes their firm lesser time to process an order from the time it is received until it is ready. This is accounted for by the high mean score of 3.59. Item 2 shows that respondents agreed that our organization delivers products to her customers as and when due. This is accounted for by the high mean score of 3.88. Item 3 shows that respondents agreed that it is easy for customers to track the status of their orders throughout the order cycle in their organization. This is accounted for by the high mean score of 3.16. This shows that the managers in the organization affirm to the manifestations of order cycle time is a strong measure of supply chain efficiency of soft drink distribution companies in Rivers State.

**Table 6: Correlation between Transport Outsourcing and Waste Reduction**

			Transport Outsourcing	Waste Reduction
Spearman's rho	Transport Outsourcing	Correlation Coefficient	1.000	.883**
		Sig. (2-tailed)	.	.000
		N	123	123
	Waste Reduction	Correlation Coefficient	.883**	1.000
		Sig. (2-tailed)	.000	.
		N	123	123

\*\*. Correlation is significant at the 0.05 level (2-tailed).

Source: SPSS Output (2024)

Table 6 shows that there is a very strong positive relationship exists between transport outsourcing and waste reduction of soft drink distribution companies in Rivers State ( $\rho = 0.883^{**}$ ). The result also shows a significant relationship between transport outsourcing and waste reduction of soft drink distribution companies in Rivers State ( $\rho = 0.883$ ,  $p = 0.000$ ). This result indicates that increases transport outsourcing will lead to effective waste reduction of soft drink distribution companies in Rivers State. Hence, the null hypothesis is rejected.

**Table 7: Correlation between Transport Outsourcing and Cost Minimization**

			Transport Outsourcing	Cost Minimization
Spearman's rho	Transport Outsourcing	Correlation Coefficient	1.000	.870**
		Sig. (2-tailed)	.	.000
		N	123	123
	Cost Minimization	Correlation Coefficient	.870**	1.000
		Sig. (2-tailed)	.000	.
		N	123	123

\*\*. Correlation is significant at the 0.05 level (2-tailed).

Source: SPSS Output (2024)

Table 7 shows a very strong positive relationship between transport outsourcing and cost minimization of soft drink distribution companies in Rivers State ( $\rho = 0.870^{**}$ ). The result also suggests that a significant relationship exists between transport outsourcing and cost minimization of soft drink distribution companies in Rivers State ( $\rho = 0.870$ ,  $p = 0.000$ ). This result indicates that increase in transport outsourcing will bring about cost minimization of soft drink distribution companies in Rivers State. Hence, the null hypothesis is rejected.



**Table 8: Correlation between Transport Outsourcing and Order Cycle Time**

			Transport Outsourcing	Order Cycle Time
Spearman's rho	Transport Outsourcing	Correlation Coefficient	1.000	.912**
		Sig. (2-tailed)	.	.000
		N	123	123
	Order Cycle Time	Correlation Coefficient	.912**	1.000
		Sig. (2-tailed)	.000	.
		N	123	123

\*\* . Correlation is significant at the 0.05 level (2-tailed).

Source: SPSS Output (2024)

Table 8 shows a very strong positive relationship between transport outsourcing and order cycle time of soft drink distribution companies in Rivers State ( $\rho = 0.912^{**}$ ). The result also shows that there is significant relationship between transport outsourcing and order cycle time of soft drink distribution companies in Rivers State ( $\rho = 0.912$ ,  $p = 0.000$ ). This result indicates that if there is an increase in transport outsourcing, there will equally be an increase in order cycle time of soft drink distribution companies in Rivers State. Hence, null hypothesis three is rejected.

### Discussion of Findings

The results of the analysis showed a very strong positive and statistically significant relationship between transport outsourcing and waste reduction of soft drink distribution companies in Rivers State ( $\rho = 0.883$ ;  $PV = 0.000$ ); is a very strong positive and statistically significant relationship between transport outsourcing and cost minimization of soft drink distribution companies in Rivers State ( $\rho = 0.870$ ;  $PV = 0.000$ ); and a very strong positive and statistically significant relationship between transport outsourcing and order cycle time of soft drink distribution companies in Rivers State ( $\rho = 0.912$ ;  $PV = 0.000$ ). These findings resonates with findings of previous studies that advance logistics outsourcing in general, and transport outsourcing in particular, as determinants of supply chain efficiency in terms of waste reduction, cost minimization and order cycle time.

The findings support the report of Bore and Peter (2020) that transport outsourcing have a positive significant influence on supply chain performance; and that of Adesunkanm et al. (2022) that transport outsourcing had significant effect on operational performance of the selected manufacturing companies in Nigeria.

Similarly, the findings validate the report of Mills and Opoku-Akyea (2019) that lower transport cost leads to increased profitability of selected alcoholic beverage producing companies. This means that firms that outsource their transportation activities, suffer less cost and become more profitable.

The findings also align with Mageto et al. (2018) who investigated the relationship between transport outsourcing and performance of manufacturing firms in Kenya and found that equation modelling to test the relationship between logistics outsourcing and a statistically significant indirect positive effect of transport outsourcing on performance of manufacturing firms.

### Conclusion and Recommendations

Transportation is an integral part of logistics operations of the firm, and must be handled in the most effective and efficient manner to contribute to the success of the firm and its supply chain. The results of the analyses conducted in this study confirm that transport outsourcing play strategic roles in the efficiency of supply chains. Thus, the study concluded that transport outsourcing significantly enhance supply chain efficiency of soft drink companies in Rivers State or that outsourcing of transport activities foster supply chain efficiency in terms of waste reduction, cost minimization and order cycle time. The study therefore recommends that management of soft drink distribution companies in Rivers State should embrace transport outsourcing to improve their supply chain efficiency. This is because outsourcing transportation activities helps in waste reduction, cost minimization and order cycle time in the organization.

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