

# Transportation Management and Economic Performance of Selected Textile Firms in Lagos State

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*Abstract:* The study aims to examine the effect of transportation management on economic performance in selected textile firms. The reason for this is the sustenance bottleneck such as low-profit margin which is due to poor transportation management and optimization in the textile firms. The study population consisted of fifteen(15) textile firms in Lagos State. Given this, the study utilized the purposive technique and total enumeration model to infer specific information from a selected population. The study was conducted in 2021 targeting transportation and logistics employees. The study questionnaires were distributed to the transportation and logistics managers working in these companies. Consequently, 550(five hundred and fifty) questionnaires were administered however, four hundred and ninety(490) were valid for analysis. The study utilized partial least square(PLS) statistical model to examine the information harvested. The findings show that transportation management has an appreciable effect on economic performance. Furthermore, a synergy exists between transportation management and economic performance at 0.58 which shows a strong connection. Therefore, textile firms with an optimal mix of transportation proficiency can lead to maximum economic performance such as profitability.

*Keywords:* Transportation Management; Logistics; Economic Performance; Textile firms

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## 1 Introduction

Transportation is a strategic function in any production network that furnish 40–60% of logistics operational costs. Decisions in the context of transportation management are firmly examined by managers searching for the most economical conveyance alternatives. This decision considers minimizing the cost of production network and the cost of completed items. The implication of this is maximum returns and incentives for entrepreneurs i.e investors. This demonstrates the criticality of the economic optimality approach to transportation and the adherence of different echelons in a production chain. Transportation is not just a channel of movement but a mechanism for industry and economic advancement. Transportation management assumes an essential part in the optimization of production in any business [18]. Given this, present-day transportation mode decisions, for example, land transportation, air transportation, and high-velocity rail routes have an interchanging course, consequently adding accessibility that will boost economic opportunities for textile firms in Lagos State, Nigeria. Transportation is therefore a

significant supporting echelon for production, local, metropolitan, economic, and social development [15]. Subsequently, it is critical to address the accessibility of transportation operations, making it a vital component of economic outcomes. Transportation can effectively optimize the progression of multiple variables of production and profitability in the textile industry. This helps to determine the layout and improvement of various businesses[1]. Nations in various phases of development have different requests for transportation on land. Nations in the later and center phases of industrialization have increased populace agglomeration and economic outcomes[34]. In contrast, for under-developing nations like Nigeria in the beginning phase of industrialization and development, the fundamental supply mode of transportation is land. Therefore, transportation operations are characterized by phased demand, this implies that the request and the sort of product at various formative stages are essentially unique [23] ; [2]. The satisfaction of requests enhances economic performance, industrialization, and other variables[29]. Thus, numerous textile firms have

different transportation models to address the challenges of economic performance such as profitability. According to [22] transportation management entails the following indicators such as fleet management system, fuel management system, vehicle scheduling, tracking system, disposal policy, and route planning. Studies have shown that effective transportation management enhances economic performance [10]; [26]. The complexity of the textile logistics chain is informed by the fact that it is a sector that is fragmented and heterogeneous. Extant studies stated that textile firms have not incorporated vehicle scheduling, universal positioning satellite tracking framework, route planning, and optimization as a mechanism of sustainability in the textile industry in Lagos State, Nigeria. Moreover, it is argued that the key to the development of the textile industry is sustainability. Industry analysis further revealed that poor transportation efficiency and management was one of the factors that led to the collapse of textile firms in Nigeria such as the Kaduna textile industry [25]. As a result of this lacuna one major sustenance problem that the textile industry is facing is economic performance such as lean profits and sometimes loss due to poor operational efficiency. According to [21] the textile industry is faced with the challenge of poor fleet/vehicle management systems such as tyre maintenance which needs constant replacement and other engine parts that are poorly maintained. It is on this premise that the study seeks to examine the effect of transportation management on economic performance and its relationship. In the context of demand for transportation routes, economic growth was measured in different works of literature. However, the connection between the variable of transportation management and economic performance has been given little consideration? The satisfactory approach to examine the effect and connection between transportation management and economic performance? Therefore, this research adds to the understanding of the connection between transportation management and economic performance by deciding the variables that mirror the consequences of transportation on economic outcomes utilizing empirical paradigms.

## 2 Literature Review

In this segment transportation management is explained; fleet management system, fuel management system, route planning, tracking system, disposal policy, and vehicle scheduling.

### 2.1. Fleet Management System and Tracking System

[8] elucidated that fleet management allows organizations that rely on transportation in business to minimize the risks associated with vehicle venture, proficiency, efficiency, and transportation cost. These capacities can be managed by an in-house fleet department or an external firm. The fleet handling strategy aims at reducing fuel consumption and improving fuel-efficient operations and in doing so the vehicle minimizes fuel utilization, cost and improves security [4]. Fleet frameworks according to [24] regulate, organize, and work with different vehicle-related procedures that cover vehicles associated with the progression of products. [32] reaffirmed the concept of fleet management as a key to the development of an organization. For some organizations, fleet coordination is a fundamental activity in the transportation chain. [7] asserted that a tracking framework incorporates an automated gadget and programming at an operational base to find the position, timing, and versatility of a vehicle. It utilizes a universal positioning satellite alongside a global system for mobile communication to determine the vehicle status in terms of time. [12] stated that a vehicle tracking system is utilized by fleet management for tracking vehicles. [5] also posited that the vehicle tracking framework entails tracking and security. Therefore, vehicle management and metropolitan vehicle business utilize a fleet framework for various purposes such as schedule of transport and locations.

### 2.2 Fuel Management System and Routing Planning

A fuel management framework is fundamental within any organization in other to reduce theft. [19] further explicated that fuel consumption reduction is a strategy in fuel management systems because of long operational periods. The reason behind control frameworks in vehicle allocation and fuel utilization makes it a successful methodology for minimizing energy utilization. [27] described fuel management system as a monitoring framework that takes data on real-time bases through a sensor, wherein the information is accessed from any place utilizing a web application. Subsequently, a programmed or dynamic fuel estimating framework at a retail cost is amended daily in line with changes in global costs. Programmed fuel estimation makes the fixation of costs more straightforward and coherent since fuel value assumes an essential part in economic performance. The study by [14] researched the effect of cost smoothing on purchasers' behaviour and attempted to figure out the effect of

programmed fuel estimation on purchasers' behaviour. The outcome indicated that purchasers were positive towards a daily update of costs and accepted that daily cost correction was transparent in fuel cost and scaled-down fuel cost. Route planning is utilized to decide the course to take at the beginning of a trip. The yield of route planning estimation is the path to take, which selects every road and intersection to take from an optimal point to the demand location. [28] described the complexity of route planning, customer expectations, and budget planning to be crucial in decision making and business income. There are several benefits of route planning according to [3] and this includes cost optimality and control.

### 2.3 Disposal Policy and Vehicle Scheduling

[16] highlighted the aim of disposal and renewing policy to the end that they are sold as soon as possible at a maximal cost. An arrangement for removal and redesign of vehicles should involve the re-establishment, picking of channels, picking of providers, and identifying the opportunity to sell the vehicles at an optimal price. [6] described the replacement of an asset as an enormous investment therefore, this necessitates the drive to extend the lifetime of assets through repair and maintenance. Another variable of transportation management is vehicle schedule which deals with the allotment of vehicles from the beginning to the arrival time in other to minimize operational costs [11]. [17] described vehicle scheduling as a planned schedule to shift, as opposed to a fixed plan. The fleet depends on timetable trips that minimize operational costs by planning the vehicles to cover each excursion at a corresponding origin. [9] also explicated that vehicle scheduling is linked to profitability in that it deals with the allocation of vehicles utilizing timetabled trips daily. The study also formulated a model  $V = \{V_1, V_2, \dots, V_m\}$  and  $T = \{t_1, t_2, \dots, t_n\}$  respectively.

### 2.4. Empirical Review

#### 2.4.1 Transportation Management and Economic Performance

[13] stated that a given inventory of items is accessible at various origins, with predefined interest for the product at various locations, and the transportation cost between each source-location is identified. In an unpredictable case, the unit transportation cost is consistent. Therefore, the bottleneck is to decide on an optimal movement for the delivery of items from different sources to the location of request at a transportation cost. Two

techniques were utilized the are; MODI'S Method and the Proposed new Vogel estimation technique. The primary objective of the model is cost minimization. This will impact profit in the long run and increase market share. [33] examined the fixed charge transportation issue which is a traditional transportation issue in which a fixed expense is incurred, autonomous of the sum moved, alongside a variable cost that is relative to the sum delivered. [20] stated that transportation is identified with time and location utility where time utility is alluding to the progression of the items conveyed from the sender to the recipient. This makes transportation the fulcrum of logistics that influence delivery by diminishing idealness within the framework. The study by [31] explained the development of mobile technology and its adoption. The discoveries of the review showed that mobile technology represents a combination of mobile frameworks, infrastructure and processing innovation, and cell phone gadgets. The growth and impact have influenced the economic activities and outcomes. [30] stated that socio-economic variables on monetary inclusion were evident from several constructs. Out of 18 factors, 12 were critical at 5% significance, and three others were ok at 10%. It clearly shows that development and innovation are enthusiastic instruments to accomplish economic inclusion by including monetary variables.

## 3 Methodology

The review utilized the purposive technique and total enumeration model to assemble explicit details. Consequently, information was assembled using a closed-ended questionnaire. Furthermore, the study populace entails 15 textile firms operating in Lagos State, Nigeria as of 2021 with high trade volumes. Therefore, five hundred and fifty (550) surveys were dispersed to the staff of the transportation and logistics division. In any case, four hundred and ninety (490) responses were recovered and completed for analysis. Partial least square (PLS) was used to examine the information accumulated. It was on the bases of explicating the impact and association between the dependent and unconstrained variables objectively.

### 3.1 Common Method Bias

Collinearity estimation (variance factor) was utilized to measure for common model bias. The study noted that if a variance factor occurs more than 3.3 times, the formulation is probably going to be impacted by common model bias. Given this, the

element-level variance factor from a total collinearity test is equivalent to or under 3.3 therefore, the formulation does not experience any form of common model bias. Subsequently, the variance factor values for each estimation variable and construct for transportation management and economic performance are under 3.3. This infers that the hypothesis H<sub>01</sub> formulation introduced is free from common model bias.

#### 4 Results

Table 1. Descriptive Analysis of Transportation Management

Transportation Management Practice	Yes	No
Fleet management system	196	294
Fuel management system	221	269
Vehicle Scheduling	247	243
Tracking system	291	232
Disposal policy	278	212
Route planning	305	185

Sources: Researcher, 2021

The study was interested in knowing which of the following transportation management practices was adopted in the selected textile firms. The result is depicted in Table 1. The analysis of transportation practice was estimated utilizing six variables. The goal is to examine if the respondents adopted a fleet management system. 196 were of the view that textile firms adopted fleet management systems and 294 had a contrary opinion. The researcher also wanted to find out if textile firms adopted fuel management systems. 221 believed that they used a fuel management system, while 269 had a conflicting opinion. Furthermore, the researcher examined the utilization rate of vehicle scheduling by textile firms. 247 believed that they used vehicle scheduling, while 243 had an opposing view. Based on the findings 291 utilized a tracking system, while 232 had a contrary view. 278 opined that they utilized disposal policy and 212 had opposing views. Table 2 further shows that 305

participants utilized route planning while 185 had an opposing view.

Table 2. Analysis of Transportation Management Practices

Transportation management practice	VG E	GE	ME	SE	NA
Fleet Management System	120	120	124	85	54
Fuel management system	30	130	121	177	12
Vehicle Scheduling	100	54	131	159	46
Tracking system	31	101	120	180	18
Disposal policy	215	83	67	102	23
Route planning	10	240	145	79	16

Source: Researcher, 2021

VGE: Very Great Extent ; GE: Great Extent ; ME: Moderate Extent ; SE: Small Extent ; NA: Not at All

Table 3. Analysis of Economic Performance

Economic performance	VG E	GE	ME	SE	NA
We have expanded the market stake and development rate.	6	114	171	189	10
Increased growth in profit margin	130	170	103	77	10
Increased level of productivity	101	107	195	47	40
Increased growth in sales	99	50	101	205	35

Lessen the expense of production and production per unit	100	190	167	31	2
Expanded market stake and development rate	10	167	228	78	7

Source: Researcher, 2021

The analysis of transportation management practice was estimated utilizing six (6) variables as portrayed. The factors utilized in the course of this estimation were to figure out the degree to which textile firms utilized transportation management practices. Table 2 and 3 also shows variables utilized to estimate the extent to which textile firms utilized transportation management frameworks. It was explained in the descriptive analysis of the respondents that opined on the utilization of transportation operational variables and its extent on economic performance dynamics in textile firms.

**H<sub>01</sub>: Transportation management has no significant effect on the economic performance of selected textile manufacturing firms in Lagos State, Nigeria.**

The researcher inquired into the effect of transportation management on the economic outcome of selected textile firms in Lagos State. R-square, underlying path integer ( $\beta$ -value), t-measurement value, and p-values were utilized to obtain credible information about the formulated hypothesis. The algorithm assists in determining the path co-efficient, and the direct relationship between transportation management and economic performance. Also, the bootstrapping P-values help in determining the coefficient's significance level. At the same time, the t-statistic value represents the measured variations in standard error units.

Table 4. Path Coefficients for Transportation Management and Economic Performance

	Path Coefficient	R <sup>2</sup>	Std. Dev	T-value	P-value
Transport Mgt Economic Performance	0.58	0.313	0.048	11.718	0.000

Source: Researcher, 2021

Table 4 depicts the statistical results. It shows that transportation management has a significant effect on economic performance at ( $\beta = 0.58$ ,  $R^2 = 0.313$ , t-value = 11.718 > 1.96). The Path coefficient of 0.58 indicates that transportation management and economic performance have a significant relationship.  $R^2$  outcome of 0.313 portrays that a 31.3% shift in economic performance can be explicated by transportation management.

**5 Discussion**

The findings show that transportation management has an appreciable relationship with economic performance. The considerable effect of transportation management on economic performance is estimated at 0.58. However, it was discovered that route planning has a more prescient outcome, followed by tracking systems, disposal policy, vehicle scheduling, fuel management system, and fleet management system in that order. This implies that the echelon of transportation management within the production chain of the textile firms has a considerable effect on the operational cost and profit margin. This also implies that the textile firms should prioritize transportation operations to optimize sales and production transportation costs. This also validates the submission of [8]. Furthermore, the efficiency and effectiveness of the paradigm of transportation management reduces movement and improves operations which in turn minimizes transportation costs. At the same time, it helps the organizations to oversee, coordinate and facilitate various transport-related activities which cover vehicles involved in the movement of goods through an effective management system. The present transportation framework is not solely based on shipping items to demand locations but it includes the integration of all component in the design of production operations. This will impact the overall performance as it influences the progression of items in the

production network. Transportation management is also connected to timeliness where it alludes to the progression of items conveyed from the producer to beneficiary at an optimum time. Therefore, the adaptability of conveyance and timeliness can be linked to profitability. Then again, in guaranteeing viable transportation mechanism textile firms should optimize distribution practices by utilizing models to minimize transportation costs and optimize transportation routes.

## 6 Conclusion

The overriding objective behind this study was to examine the effect of transportation management on economic performance in selected textile firms. The discoveries of the study indicate the validity that explained the effect of transportation operational mechanisms on economic performance such as profitability and increased market segment. This implies that fuel management system, route planning, fleet management system, tracking system, disposal policy, and vehicle scheduling considerably influence increased market stakes and growth in profit margin, level of productivity, and increased sales, among others. The findings also imply that if textile firms give the required attention to transportation management, it will help in enhancing market stakes, profit margin, sales growth, and minimize production vacillations. Therefore, the ability of the textile firms to continuously optimize transportation will in turn increase productivity. Therefore, if textile firms give the required attention to transportation management, it will help in enhancing market stakes, and profit margins. This study adds to the extant literature on transportation management and economic performance respectively. First, the contribution provided oddity explaining the indicators in transportation management and its interconnecting dynamics. The study also examined inner transportation mechanisms through endogenous variables from an internal perspective. Similarly, these endogenous variables impacted economic performance. The discoveries from this study can be utilized to achieve transportation optimality that will lead to profitability maximization. Therefore, transportation management as an echelon within the framework of logistics and production should be operationalized to achieve profit and market optimization. Furthermore, the discoveries demonstrated that transportation management is a significant variable. Subsequently, the administrators of the textile firms need to build a

balanced transportation framework that meets demand. In addition, the management should likewise invest resources in transportation usability in-order to limit cost and optimize routes. As a supplement, the administrators of the textile firms should furnish clients with reasonable, detailed, and organized conveyance in an appropriate way thus, clients will have less hesitation which will lead to expanded satisfaction and client reliability.

### 6.1. Limitation of the Study and Scope for Future Research

Regardless of the study contribution, the study recognizes a few constraints and limitations in the study. To begin with, all respondents came from the transportation and logistics segment. Thus, this sample may be unable to capture the entire manufacturing designated populace. Future investigations need to grow the population size to arrive at the entire manufacturing populace that will include other segments. Finally, this study did not quantify the effect of transportation mode. Therefore, future studies should capture the mode of transportation to provide a more robust outlook.

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### **Contribution of Individual Authors to the Creation of a Scientific Article (Ghostwriting Policy)**

Adedugba Adebayo Tolulope carried out the conceptualization, analysis, interpretation, and composition. Asikhia Olalekan and Inegbedion Daniel carried out information overview, analysis check and draft arrangement. Ogunnaike Olaleke reviewed and corrected.

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