Transport Management Practices and Firms' Performance in Nigeria

Adebayo, I. T. and Aworemi, J. R.
Department of Transport Management
Ladoke Akintola University of Technology
P.M.B. 4000, Ogbomoso, Oyo State, Nigeria
itadebayo33@lautech.edu.ng, jraworemi@lautech.edu.ng

Abstract

This study examined the effect of transport management practices on firms' performance in Lagos State, Nigeria. Purposive sampling was used to select ten food and beverages companies listed on the Nigerian Stock Exchange (NSE). 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 (R^2 = 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.

Keywords: Transport practices, transport cost, service delivery, logistics, performance.

1. Introduction

According to Thomas *et al.*, (2014) transportation is a major contributor to the economy and a competitive force in business. Hence, Laird (2012) asserted that transportation is a major part of the supply chain due to its power to add value to goods by moving them from their current location to a more advantageous location. Transportation occupied one-third to two thirds of the amount in the logistics costs as transportation in manufacturing firms (Bowersox *et al.,* 2010). Hence, the need for effective and efficient management of the transportation activities becomes inevitable due to cost pressures and customer service requirements thereby making firms embrace Transport Management Practices (TMP) in order to attain better logistics efficiency, reduce operation cost, and promote service quality of firms.

An inefficient transportation system may lead to firm incurring high cost to deliver product to customer, and this may lead to loss for the firm; and the transport system must be able to address the major issues of the mode selection, route selection and fleet size because it is the vital force for competition for the firm (Goldsby et al., 2014). Towards this end, TMP has been thought of to help in improving logistics performance, thereby influencing the overall firm performance as observed by Mukolwe and Wanyoike (2015); Mwangangi (2016); Nuahn (2017).

Nevertheless, manufacturing firms nowadays operate in an increasingly dynamic business environment (Abdullahi, 2016) due to increasing complexities of logistics operations driven by customer demand for individualization, high-cost pressures and improved customer service level.

Nevertheless, the food and beverages subsector of the consumer industry in Nigeria has been a major contributor to the Gross Domestic Product (GDP) of the country over the years and is highly competitive, with the subsector competing on the basis that they can distribute to customers a finished, desirable and quality product than the competitors as at when needed. However, Logistics managers are now faced with transportation related problems while trying to meet cost and service requirements.

While previous studies such as Tseng *et al*., (2005); Mukolwe & Wanyoike, (2015); Mwangangi, (2016); Musau *et al*., (2017); and Nuahn (2017) have revealed the potentials of TMP on firms' performance and mostly focused on all sub-sectors of the manufacturing industry both in developed and developing countries., there is a dearth of empirical studies linking TMP with firm performance in Nigeria. Against this backdrop, the study intends to assess the effect of TMP on the performance of food and beverages companies in Lagos State, Nigeria.

1.1 Objective of the Study

To evaluate the effect of transport management practices on the performance of food and beverages companies in Lagos state, Nigeria.

2. Literature Review

2.1 Transport management practices (Tmp)

TMP, according to Stock and Lambert (2001) refers to those methods found to be the most effective and practical means in achieving transportation objectives such as low costs, timely delivery of transportation related information to the rest of the enterprise and to customers, increase transportation velocity while making optimum use of the firm's resources. Younkin (2006) as cited by Liviu and Emil (2008) advanced the following transport management best practices which include carrier management practices, load planning and optimization practices, preparing and executing shipments practices, shipment monitoring practices, freight payment and audit practices, and performance monitoring practices.

2.1.1 Carrier management practices

The process of selecting an appropriate transport carrier is important to the firm's success. Carrier selection has been structured as a two-step process, first the choice of the mode followed by the selection of the carrier within that mode. These decisions today are often made simultaneously, along with the alternative of outsourcing to third-party logistics organizations. Logistics managers in manufacturing organizations often face several challenges that influence transportation choice: capacity shortages, international growth, economies of scale and scope, security concerns, and environmental and energy use concerns.

Meixell & Norbis (2008) observed that there is a capacity shortage in all transportation modes. In the motor carrier industry, Byrne (2004) stated that as fuel prices have risen, carriers have had to increase prices, leaving shippers with an increment in freight without a concomitant increase in service. Other factors that compound the motor carrier shortage problem are tighter hours-of-service regulations, driver shortages, and higher tolls that strain truck capacity. La Londe (2004) stated that rail capacity issues are attributable to limited investments done over the years and which translates to a reduction in service reliability. These capacity limitations tend to affect all carriers within a particular mode more or less equally, rather than differentiating among carriers, therefore the ability of individual carriers to overcome these limitations will help to differentiate them from the competition.

2.1.2 Load planning and optimization practices

Load planning and optimization is the creation of efficient transportation plans that allow shippers to reduce costs and improve service. Companies here look for opportunities to balance costs, expected transit times and the methods of shipment available. A good example is where a company consolidates shipments that are less than container load (LCL) into full container loads (FCL). Others may include use of pallets instead of loading loose cartons as they offer stability and safety during transit. For airfreight, the use of unit load devices assists in loading planning and safety consideration during the entire flight. Several authors consider packaging to be one of the most important activities in supply chain and distribution networks (Jahre & Hatteland, (2004); Gustaffson *et al.,* (2006). It is the packaging that enables a product to be unitized, protected and transported securely.

Consequently, the packaging's shape, volume and weight, which may differ to that of the product inside has a significant impact on logistics activities (Ballou, 1987). Primary packaging characteristics are often taken for granted by designers, marketers and handlers, when slight modifications could impact positively on transport efficiency. For instance, the familiar round tin can is not ideally suited to maximize transport capacity, but metal square cans have proven difficult and expensive to construct (Jahre & Hatteland, 2004).

Where transport costs represent a significant portion of the total distribution costs, then one aspect which determines the efficiency of all others is the vehicle routing and scheduling activity which could jointly be known as load planning

(Slater, 1979). The Logistics Managers concern would be to move shipments in optimal quantities to take advantage of any economies of scale. Load planning and optimization appeal is that it helps companies achieve agility and efficiency in highly demanding and dynamic planning environments.

2.1.3 Preparing and executing shipments practices

Optimal plans must be supported by effective operations in the warehouse/distribution center. Getting the right shipment on the right carrier's truck at the right time takes flawless planning. To be successful, a strategic transportation plan must be in place to guarantee lower costs and higher customer service levels. A good example can be found in companies that use electronic data interface (EDI) and other communications to tender shipments, set and confirm pick up appointments and submit shipping documentation to their carriers. Shipping lines have online platforms where shippers can make bookings and process shipping instructions. Vessel schedules are available online and shippers choose suitable vessels depending on their loading requirements. This is one of the win-win areas as carriers will recognize the efficiency in making pickups and deliveries at a well scheduled dock (Younkin, 2006).

2.1.4 Shipment monitoring practices

Shipment visibility throughout the organization, not just in the shipping department, is critical to a responsive customer-centric firm. Leading companies have incorporated real-time updates from their carriers into their own systems, giving visibility throughout their organizations. Key benefits include improved efficiency and reduced spending by the shipping department as they spend less time tracking and chasing proof of delivery information from carriers. Proactive notifications are provided by leading carriers routinely whenever shipment delivery or pickup is in jeopardy for any reasons for instances stoppage by customs for inspection (Younkin, 2006).

2.1.5 Freight payment and audit practices

Best practice leaders forge closer relationships with sales and customer service officers to help them better understand the cost of serving the customer and in the process identify opportunities for reducing costs. The existence of large shipper's scale and technological advances are now driving efficiencies in freight payment processes. A case in point is the use of real time gross settlement system (RTGS) in paying for services rendered. Rates are managed at a central location and invoices received are compared with contract terms. This ensures effective cost management and also supports the ability to generate revenue from transportation operations.

The process looks at the key functions of invoice processing. These include invoice receipt, validation, dispute resolution, approval, payment and audit. The audit results provide a prioritized list of cost savings opportunities. They highlight opportunities to strengthen the transportation organization. The audit also provides a road map for improving processes and customer satisfaction (Younkin, 2006).

2.1.6 Performance monitoring practices

Performance measurement requires combining internal data from your company with data from carriers to create a suitable scorecard. The scorecard includes internal process measures such as percentage of requested shipping dates attained, percentage of shipments that arrived at their destination on time or how often expedited transportation was required, and transportation costs as a percentage of sales. Measures of carrier performance include on time performance, sticking to advised transit times, claims as a percentage of shipments or as a percentage of transportation costs. Best in practice enterprises have regular review meetings with carriers that performance trends and provide the carriers opportunities to bring up the challenges they face. The review meetings provide excellent time to discuss upcoming needs and for carriers to update clients on emerging issues in the industry that may affect operations and or performance. To deal with today's increasingly turbulent and complex environments, collaboration has been extensively examined as a process designed to create competitive advantage through mutual respect, trust, information sharing, joint ownership of decisions, and collective responsibility for outcomes between buyers and sellers (Ellinger *et al.,* 2000).

Performance measurement is very important as a strategic tool and also provides means to achieve the objectives required, fulfilling a firm's mission or strategy statement. Many firms have been observed to evaluate performance, mainly on the basis of cost and efficiency (Skinner, 1971). Besides the financial measures, we now have the non-financial measures which include time, quality and flexibility. Time element has strategic importance in business and hence time has to be used as a strategic metric in performance measurement (Stock *et al,* 1990).

These authors argued that measuring, controlling and compressing time shall improve quality, reduce costs, improve responsiveness to customer orders, enhance delivery, increase productivity, increase market share and increase profits. Flexibility (to measure the ability to deal with the dynamic nature of the business) is a performance apart, since it is an ability to change something (for example, the production volume or mix) in relation to all the three performances of cost, time and quality (De Toni & Tonchia, 1998). Logistics Managers have to agree on the metrics to be used in evaluating performance with their transportation providers.

2.2 Transport management practices (Tmp) and logistics performance

As Robb *et al.,* (2008) mentioned, since logistics deal with physical, informational and cash flow management, it is generally recognized as a major determinant of business performance.

Firm performance on the other hand can be classified as financial performance, which reflects 'the fulfillment of the economic goals of the firm', and operational performance, which reflects key operational success factors that, might lead to financial performance (Venkatraman & Ramanujam, 1986).

In the literature, various empirical studies, such as Ellinger *et al*., (2000), showed that logistics is a strategic vector in companies' organization and influences their performance; Fugate *et al.,* (2010) found that logistics performance positively impacts organizational performance

2.3 Conceptual Framework

The conceptual model in Figure 1 was developed to explain the relationships between the dependent and independent variables of the study which was subsequently tested. The model was developed based on the fact that, the cumulative evidence from literature revealed that logistics performance is a multidimensional construct that can be characterized by multiple perspectives (Gunasekaran *et al.,* 2001).

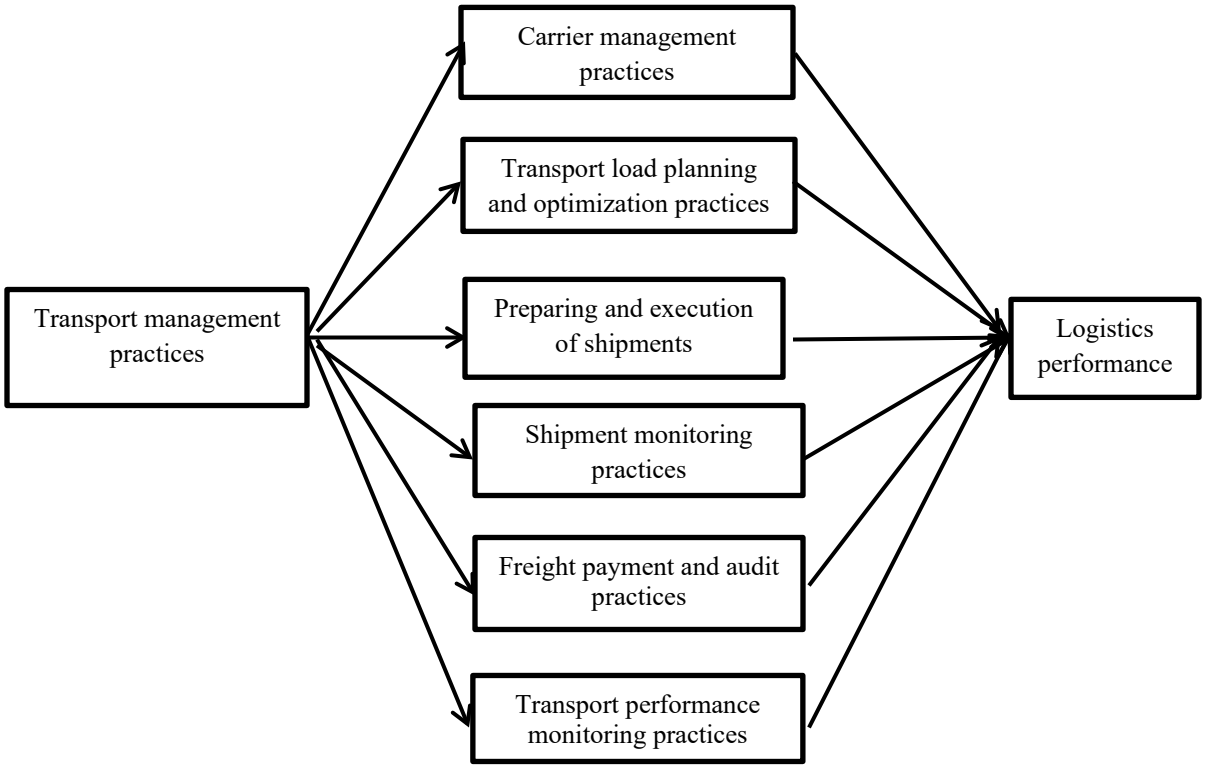

Figure I: Conceptual framework showing the relationship between transport management practices (tmp) and logistics performance

3. Methods

The study was conducted in food and beverages companies in Lagos State, Nigeria. The State is the most industrialized state in the country (Adebayo, 2020). Ten (10) food and beverages companies in Lagos State, Nigeria listed on the Nigerian Stock Exchange (NSE) were selected from the study population using purposive sampling while three hundred (300) questionnaires were administered. The choice of the food and beverages companies was based on its ubiquitous nature in the study area. Furthermore, their products contribute to daily living and the companies contribute significantly to the gross domestic product of Nigeria.

4. Data Collection

Data collected were analyzed using inferential statistics such as factor analysis to reduce the large number of variables into a few ones and the factor scores generated from the factor analysis was used in the multiple regression model to evaluate the effect of TMP on logistics performance.

4.1 Multiple regression model of the effect of TMP on logistics performance of the selected food and beverages companies.

$$y = \alpha + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \beta_7 x_7 + \varepsilon$$

Where:

y	=	Logistics Performance
α	=	Constant
$\beta_1 \ldots \beta_6$	=	Slope representing degree of change in independent variable by one unit variable
x_1	=	Carrier management practices
x_2	=	Transport load planning & Optimization practices
x_3	=	Preparing and execution of shipments
x_4	=	Shipment monitoring practices
x_5	=	Freight payment and audit practices
$_6$	=	Transport performance monitoring practices
ε	=	error term

5. Results and Discussion

Data was analyzed based on the 176 questionnaires that were completed and returned by the respondents in the selected food and beverages companies, thereby indicating a response rate of 58.67%.

5.1 Test of Hypothesis

The research model for this study was developed by examining previous research findings and the relevant theories adopted in the literature reviews. Thus, the study sets up the hypothesis below:

H_o1: Transport Management Practices have no effect on firms' performance in Lagos State, Nigeria.

The hypothesis was tested using factor analysis and multiple regression to evaluate the effect of the independent variables: carrier management practices, transport load planning and optimization, shipment monitoring practices, freight payment and audit practices, planning and execution of shipment, and transport performance monitoring practices on the dependent variable (logistics performance).

Factor analysis is a data reduction technique that attempts to identify the underlying variables that explain a given pattern of correlations within a set of observed variables. The study used factor analysis to reduce data so as to identify a small number of factors that explain most of the variance that is observed in a much larger number of manifest variables or constructs (Adebayo, 2021).

The study viewed firms' transport management practices as a construct since they were measured by a number of items. Hence, factor analysis was used to identify factors that are highly correlated with the constructs. The study used principal component analysis with varimax rotation method and rotated solutions for ease of identification. Also, the study used Monte Carlo Simulation based on Parallel Analysis to determine the number of factors to be extracted. Additionally, the study generated factor scores based on the regression method for each construct. The generated factor scores was used as weights of the factors to create composite index of the construct measured.

Table 1: Kmo and Bartlett's Test

Bartlett's Test of Sphericity	Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.546
	Approx. Chi-Square	1125.857
	Df	*561*
	Sig.	*.000*

In Table 1, Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) value is .546 significant at p = 0.000, therefore factor analysis was appropriate. To determine how many components (factors) to 'extract', Kaiser's criterion was used, whereby components that have an eigenvalue of 1 or more were extracted.

Table 2: Initial Extraction

Component	**Initial Eigen values**			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.826	8.312	8.312	2.826	8.312	8.312
2	2.615	7.692	16.004	2.615	7.692	16.004
3	2.148	6.319	22.322	2.148	6.319	22.322
4	1.983	5.833	28.155	1.983	5.833	28.155
5	1.727	5.079	33.234	1.727	5.079	33.234
6	1,654	4.865	38.098	1,654	4.865	38.098
7	1.629	4.790	42.889	1.629	4.790	42.889
8	1.412	4.152	47.401	1.412	4.152	47.401
9.	1.229	3.615	50.656	1.229	3.615	50.656
10	1.187	3.492	54.148	1.187	3.492	54.148
11	1.155	3.396	57.544	1.155	3.396	57.544
12	1.068	3.141	60.685	1.068	3.141	60.685
13	1.031	3.033	63.718	1.031	3.033	63.718

As shown in Table 2, the first thirteen (13) components recorded eigenvalues above 1 (8.312, 7.692, 6.319, 5.833, 5.079, 4.865, 4.790, 4.152, 3.615, 3.492, 3.396, 3.141, 3.033). These thirteen (13) components explain a total of 63.718 percent of the variance as shown in the Cumulative % column. Thereafter, orthogonal rotation using varimax was conducted. However, to determine the number of factors to be extracted when rotated, a Parallel Analysis was conducted using Monte Carlo Simulation rather than using the Scree Plot. Thus, by comparing the eigenvalue obtained in SPSS with the corresponding first value from the random results generated by parallel analysis, the values that were larger than the criterion value from parallel analysis were retained as factors. Thus, eight (8) factors were retained after varimax rotation with the distribution of the variance explained being adjusted after rotation.

Table 3: Rotation Sums of Squared Loadings

Component	Total	% of Variance	Cumulative %
1	2.498	7.342	7.342
2	2.354	6.925	14.266
3	2.066	6.075	20.342
4	2.008	5.906	26.248
5	1.850	5.441	31.689
6	1.795	5.279	36.968
7	1.763	5.185	42.153
8	1.662	4.888	47.041
Extraction Method: Principal Component Analysis			

Consequently, in Table 3, the components explained (7.342, 6.925, 6.075, 5.906, 5.441, 5.279, 5.185, and 4.888 percent respectively) and the total variance explained by these eight factors was 47.041 per cent. The eight factor loadings were finally used as factor scores for multiple regression analysis.

Table 4: Multiple Regression Model Summary of The Effect of Transport Management Practices On Food And Beverages Companies' Performance

Model	R	R2	Adjusted R2	F	Sig.
1	.791[a]	.626	.608	34.971	.000[b]

a. Predictors: (Constant), REGR factor score 8 for analysis 1, REGR factor score 7 for analysis 1, REGR factor score 6 for analysis 1, REGR factor score 5 for analysis 1, REGR factor score 4 for analysis 1, REGR factor score 3 for analysis 1, REGR factor score 2 for analysis 1, REGR factor score 1 for analysis 1

b. Dependent Variable: logistics performance

The multiple regression model obtained from the factor scores loading as shown in Table 4 below explained only 62.6% variation in transport management practices influencing the logistics performance of the selected food and beverages companies. This was statistically significant as it was confirmed by F-value of 34.971, $p < .05$. Hence, the hypothesis that transport management practices have an effect on logistics performance in the selected food and beverages companies was accepted.

Table 5: Coefficients of The Effect Of Transport Management Practices On Food And Beverages Companies' Performance

	Unstandardized coefficients		Standardized coefficients		
Model	**B**	**Std. Error**	**Beta**	**T**	**Sig.**
1 (Constant)	3.858	.039		98.165	.000
REGR factor score 1 for analysis 1	.614	.039	.737	15.500	.000
REGR factor score 2 for analysis 1	.009	.039	-.011	-.240	.810
REGR factor score 3 for analysis 1	.059	.039	.070	1.490	.138
REGR factor score 4 for analysis 1	.058	.039	-.069	-1.468	.144
REGR factor score 5 for analysis 1	.144	.039	-.173	-3.654	.000
REGR factor score 6 for analysis 1	.053	.039	.064	1.346	.180
REGR factor score 7 for analysis 1	.163	.039	.196	4.134	.000
REGR factor score 8 for analysis 1	-.023	.039	-.027	-.572	.568

However, in Table 5 only the coefficients of three (3) factors were significant. These three factors were then renamed accordingly. REGR factor score 1 was renamed reduced freight expenses, REGR factor score 5 was renamed vehicle

routing while REGR factor score 7 was renamed shipment tracking. Freight expenses made the highest significant contribution of 73.7% followed by shipment tracking with a contribution of 19.6%, while vehicle routing made the least significant contribution of 17.3%' This implied that, transport management practices reduce freight expenses for the firms thereby resulting in lower logistics costs. Also, transport management practices enable shipment tracking in real time by providing the ability to view where drivers and shipments are located in real-time. Furthermore, it enables users to optimize vehicle routing and scheduling for efficient delivery. Transport management practices also helps the firms to plan and manage shipments and determines the cheapest and most efficient carrier/mode using better route planning, load optimization, carrier mix and mode selection. Thus, the study found that transport management practices have significant effect on the logistics performance of the firms. This finding conforms to Mukolwe and Wanyoike (2015) that transport management and the practices impacts positively on operational efficiency.

6. Conclusion

Empirically, the study indicated that transport management practices have significant effect on logistics performance of the selected food and beverages companies. This implied that an increase in firms' can be influenced by embracing transport management practices within the logistics management function. Also, the study tested and confirmed the conceptual model built as well as the hypothesis postulated. Thus, the study concluded that transport management positively influences firm performance. Also, the study has tested the conceptual model on transport management practices and logistics performance. This research notes three key areas in which transport management practices influences firms' logistics performance: are reduced freight expenses, enhanced shipment tracking, and vehicle routing and scheduling. Thus indicates the importance of transport management practices in driving firm performance. However, based on the finding of the study, it was recommended that managers of the sampled firms should in addition to the use of transport management practices develop a dynamic transportation strategy for their supply chains that must be responsive, both as to service and cost demands and implement the Logistics 4.0 that goes beyond the use of traditional information and communication technology in order to further drive performance.

References

Abdullahi, A. S., Operating environment, Dangote Sugar Refinery Plc Annual Report 2015, p.31, 2016.

Adebayo, I. T., Effect of transport management systems and practices on consumer goods industry performance in Lagos State, Nigeria, being an Unpublished Ph.D Thesis submitted to the Department of Transport Management, Ladoke Akintola University of Technology, Ogbomoso, Oyo State, Nigeria, 2021.

Ballou, R.H., Basic business logistics: transportation, materials management, physical distribution, 2nd Edition, New Jersey: Prentice-Hall, Inc. 1987.

Byrne, P. M., "Shippers, unite!" *Logistics Management,* Vol. 43, No. 7, 25. 2004.

Bowersox, D. J., Closs, D. J., and Cooper, M. B., *Supply Chain Logistics Management* (3rd Ed) McGraw-Hill, Boston, 2010.

De Toni, A., and Tonchia S., Manufacturing flexibility: a literature review. *International Journal of Production Research,* Vol. 36, No. 6, pp. 1587-1617. 1998.

Ellinger, A. E., Daugherty, P. J., and Keller, S. B., The relationship between marketing/logistics interdepartmental integration and performance in U.S. Manufacturing firms: An empirical study. *Journal of Business* Logistics, Vol. 21, No. 1, pp. 1-22. 2000.

Fugate, B. S., Mentzer, J. T., and Stank, T. P, Logistics performance: Efficiency, effectiveness, and differentiation. *Journal of Business Logistics,* 31, pp.43-61, 2010.

Goldsby, T. J., Iyengar, D., and Rao, S., *The critical role of transportation in business and the economy*, Financial Times Press, New Jersey, USA. 2014.

Gunasekaran, A., Patel, C. & Tirtiroglu, E.. Performance measures and metrics in a supply chain environment. *International Journal of Operations & Production Management,* Vol. 21 Issue 1/2, pp.71-87, 2011.

Gustaffson, K., Jonson, G., Smith, D., and Sparks, L., Retail logistics & fresh food packaging. London: Kogan Page. 2006.

Jahre, M., and Hatteland, C. J., Packages and physical distribution: Implications for integration and standardization, *International Journal of Physical Distribution and Logistics Management,* Vol. 34, No. 2, pp. 123-139. 2004.

Kuncel, N. R, Hezlett, S. A. and Ones, D. S., Academic performance, career potential, creativity, and job performance: Can one construct predict them all? *Journal of Personality and Social Psychology,* 86, pp.148–161, 2004.

Laird, M., Logistics Management: A Firm's Efficiency Performance Model, Unpublished BBA Thesis presented to Ohio University, USA, 2012.

La Londe, B. J. B., A crisis in transportation. *Supply Chain Management Review,* Vol. 8, No. 8, pp. 7-8. 2004.

Liviu I., and Emil, C, Methodologies for performing and assessing transportation management, proceedings of International Conference on Economics, Law and Management, 3rd Edition (ICELM-3), Targu Mures, June 4-7, pp.239-251, 2008.

Meixell, M. J/, and Norbis, M., A review of the transportation mode choice and carrier selection literature. *International Journal of Logistics Management,* Vol. 19(, No. 2, pp.183-211, 2011.

Mukolwe, G. A., and Wanyoike, D. M., 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,* Vol. 3 No. 6, pp.1134-1156, 2015.

Musau, E. G., Namusonge, G. N., Makokha, E. N., and Ngeno, J., The effect of transport management on organizational performance among textile manufacturing firms in Kenya, *International Journal of Academic Research in Business and Social Sciences,* Vol. 7 No. 11, pp.1015-1031, 2017.

Mwangangi, P. W., Influence of logistics management on performance of manufacturing firms in Kenya. Unpublished Ph.D Thesis, Jomo Kenyatta University of Agriculture and Technology., 2016.

Ng, T. W. H. and Feldman, D. C. (2009), How Broadly Does Education Contribute to Job Performance. *Personnel Psychology*, Issue 62, pp.89 – 134, 2009.

Nuahn, T. D., Impact of logistics and transportation practices on the performance of Kenyan cooperative creameries. Unpublished Master of Business Administration Thesis, School of Business, University of Nairobi, 2017.

Robb, D., Xie, B., and Arthanari, T., Supply chain and operations practice and performance in Chinese furniture manufacturing. .*International Journal of Production Economics,* Vol. 1 No. 12, pp.683-699, 2008.

Slater, A., Vehicle Load Planning.International. *Journal of Physical Distribution & Logistics Management*, Vol. 10, No. 2, pp. 77 – 99. 1979.

Stock. J. R. and Lambert.D. M., (2001). Strategic Logistics Management, 4th Edition, McGraw Hill, USA, 2001.

Thomas, J. G., Deepak, I., and Shashank, R., The critical role of transportation in business and the economy in definitive guide to transportation, the principles, strategies and, decisions for the effective flow of goods and services. New Jersey: Pearson, 2014.

Tseng, Y. Y., Yue, W. L., and Taylor, M. A., The role of transportation in logistics chain. *Eastern Asia Society for Transportation Studies, 2005.*

Younkin, M. (2006). Where are you on the transportation best-practice continuum? Available: http://images.fedex.com/us/autodistrib/TransBestPracMYounkinMPNovDec06.pdf/ June 25, 2020.

Venkatraman, N., and Ramanujam, V, Measurement of business performance in strategy research: A comparison of approaches. *Academy of Management Review,* Vol. 11 No. 4, pp.801-814, 1986.

Originality

This paper is among the first known to examine the influence of transport management practices on logistics performance of large manufacturing firms in Nigeria using data reduction technique and multiple regression.

Biographies

Adebayo, I. T. (Ph.D) is a Lecturer in the Department of Transport Management, LAUTECH, Ogbomoso and specializes in Transport and Logistics Management and has published articles both in the areas of forward and reverse logistics including supply chain management.

Prof. Remi Aworemi is also a Lecturer in the Department of Transport Management, LAUTECH, Ogbomoso and specializes in Transport Operations and Management and has published several articles in these areas.