

IMPACT OF LOGISTICS OUTSOURCING SERVICES ON COMPANY TRANSPORT COST IN SELECTED MANUFACTURING COMPANIES IN SOUTH WESTERN NIGERIA

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ABSTRACT: *Transport costs arise from carrying inventory in-transit, from numerous operations connected with frequent and small deliveries resulted from just in time deliveries. Low costs, short time of transport and accepted level of risk are crucial for logistics managers. Focus on customer needs' satisfaction, order fulfillment, short transit time, on-time delivery; gives transport costs a new dimension. The research was carried out within manufacturing companies in south western Nigeria. The population of the study consists of top management staff, this includes logistics, procurement and marketing managers. The sample of this study consisted 10 Manufacturing companies from the list of fifty (50) quoted companies on the Nigerian Stock Exchange modified by Manufacturing Association of Nigeria in 2005. The data collected was analyzed using of regression analysis. The analysis shows that logistics outsourcing helps manufacturing companies to reduce transport cost. Transport is needed throughout the whole supply chain being the link between supply chain members. Consequently quality of transport service affects the competitiveness of the entire supply chain. The findings revealed efficient transport cost among outbound logistics activities indicating their significant effect on reducing transport cost. The paper recommended that outsourcing be encouraged. This is in order to promote economies of scale which reduces cost, enhances fleet management, as well as customers' satisfaction.*

KEYWORD: Outsourcing, Transport, Logistics Services, Logistic Management, Transport Cost, Fleet Management, Customer Satisfaction

INTRODUCTION

The globalization of business and the competitive pressures have led companies to the growing strategic importance of the logistics function within the organization (Kumar, Vrat and Shankar, 2006). The new competitive advantages also come up in front in the form of flexibility, lead-time reductions, reliable and quality deliveries, where Logistics Service Providers (LSP) play a key role in this regard (Parashkevova, 2007). Logistics and the management thereof are key impact on the daily lives of people, as well as on the economic state and development of countries

Logistics management is thus part of the supply chain that includes the process, planning, implementing and controlling procedures for the efficient and effective transportation and storage of goods including services, and related information from the point of origin to the point of consumption (in-bound, outbound, internal and external flows) for the purpose of conforming to customer requirements cost effectively and ensure that current and future profitability is maximized. (CSCMP, 2006). The definition above includes the flow of goods,

service and information in both manufacturing and service sector. Manufacturing includes the production of goods as diverse as consumer products, automobiles, chemical products, electronics, medical supplies and devices, computers and telecommunication products. The service sector includes entities such as government departments and organizations, universities, wholesalers and retailers. There is also need to consider the economic perspective of logistics definition. This includes the micro-economic and the macro – economic.

Logistics knowledge is highly specialized and so external logistics organizations, i.e. logistics service providers or 3PL's, are often engaged by firms to provide transportation and warehousing services, and sometimes to guide the development and implementation of best practices for both the transportation service itself as well as management of the transportation companies providing the service. Firms typically outsource a variety of activities in order to achieve specific objective, which includes reducing costs ,improving product quality ,improving flexibility (Lau & Zhang, 2006), increasing market coverage (Skjoett-Larsen, 2002), or perhaps to gain ready access to additional capacity.

Over the years, products and services have increased in complexity and variety, as have the demands of consumers, logistics services too have advanced as national and international markets of goods and services have expanded. Thousands of new products and services have been introduced over recent decades and are sold and distributed to consumers all over the world. As a result, market has thus become increasingly competitive and over the past two decades, in particular, companies have found it increasingly difficult to maintain traditional profit level and growth rates.

Companies are increasingly under pressure to seek ways in which to improve competitive advantage and profitability and that includes the efficiency and effectiveness with which their logistics activities are executed. Organization make use of outsourcing in order to reduce cost by transferring portions of work to outside suppliers, rather than completing them internally. Outsourcing in the manufacturing companies focuses majorly on how to reduce cost on transportation, distribution and warehousing which is part of their core business logistics activities. Distribution is getting the components and material needed to the right place at the right time and in right quantity. Due to various pressures and developments discussed in the preceding paragraphs, leading companies are generally striving for a level of competency superior to that of their competitors.

Despite many promising features and factors provided by a number of logistics service providers, a question still remains as to who would be most appropriate to have intrinsic knowledge of the customer's requirement, and while maintaining the accountability, responsibility and entails capability to not just strategize, but also to possess the necessary competencies to execute the operational aspects of the manufacturing companies (Hosie, 2008).

Panayides et al. (2007) emphasized that, logistics is a functional system which is crucial for improving efficiency, both in the flow of goods and information and to meet low-cost, fast, and reliable delivery objectives within a company and throughout a network of companies. Logistics significantly contributes to company's competitive advantage in both efficiency and effectiveness. Logistics activities and processes are fundamental elements that a company's supply chain capabilities and competences are based upon.

Sequel to all these, the paper attempts a panoramic view on the influence of transport cost on outsourcing logistics services, since Transportation is main engine that drives the vehicle of outsourcing logistics services.

REVIEW OF LITERATURE AND CONCEPTUAL DISCOURSE

Logistics process consists of any activity or group of activities that takes one or more inputs(human assets, equipment, facilities, information, material) transforms and adds value to them, and then provides output (e.g. logistics services) to one or more customers. Logistics process can also be decomposed into four levels:

1st level: The first level refers to the execution level of basic activities, such as transportation and warehousing. Table 2.1 shows that activities at this level are outsourced to a large degree.

2nd level: The second level refers to value-added activities.

3rd level: This level refers to the planning and control level. Activities that can be outsourced at this level are inventory management and transportation management. Sub-activities of inventory management are sales forecasting, stock control and event control. Sub-activities of transportation management include route planning and scheduling and event control. Table 2.1 shows that activities at this level are less commonly outsourced than the previous levels.

4th level: At the top level of logistics activities is the distribution network design. This is the strategic planning and control level in which decisions are made concerning road carrier selection, location and site analysis and logistics network management. When activities at this level are outsourced, the LSP takes care of the logistics network design and orchestrates the logistics flow of the network (Van der Vorst, Duineveld, Scheer, and Beulens, 2007). So far, few studies have included these activities in the investigation.

Table 1. Category of Logistics Activity and the most commonly Outsourced Activities during 1996-2004.

Category of Logistics Activity	Lieb and Randall (2002) ^a	Millen et al. (1997) ^b	Wilding and Juriado (2004) ^c
1st level: Execution Activities			
Fleet Management	22%	53%	51%
Shipment Consolidation	33%	42%	-
(Ocean) Carrier Selection	33%	33%	-
Transport	-	-	74%
Rate Negotiation	22%	11%	-
Logistics Information Systems	29%	22%	-
Warehouse Management	36%	47%	-
Storage	-	-	60%
Product Returns	11%	33%	-
Order Fulfilment	9%	33%	-
Order Processing	6%	16%	-
2nd level: Value-added Activities			
Product Assembly and Installation	11%	13%	-
Re-labelling & re-packaging	-	-	40%
Final Product Customisation	-	-	37%
3rd level: Planning Level			
Inventory Replenishment & Forecasting	6%	-	-
4th level: Strategic Planning Level			
Road Carrier Selection and Site Selection	-	-	-

Source: Van der Vorst et al; (2007)

By outsourcing logistics activities, firms can save on capital investment, and thus reduce financial risks. Investment on logistics assets, such as physical distribution centers or information networks, usually needs large lump sum of money, which involved high financial risk.

Cost reduction from logistics outsourcing comes mainly from better utilisation of capacity and better capital allocation. Capacity can be better utilized by the service provider because the peaks and drops in transport quantities offered by various clients can be counterbalanced, and because backhauls are often available. Thus the service provider can affect a great degree of efficiency, by exploiting economies of scale, among other things.

In addition, manufacturers can also better allocate their capital by, for example, refraining from investing in storage or trucks for the purpose of distribution capacity, which may reduce risk. Although few studies related to logistics outsourcing have focused on service performance, we argue that service performance is an important area to focus on because logistics outsourcing is often expected to influence service performance. For example, it could provide greater flexibility in adapting to changes in the market (Power *et al.*, 2006). When demand surges beyond a firm's own capability, a third party may be called in to help meet the increased demand (Razzaque and Sheng, 1998). In addition, lead-time reduction could be another potential benefit of logistics alliances. Long lead-time is often a problem and requires large inventories in transit and at the sales subsidiary (Bhatnagar and Viswanathan, 2000; Hallorsson and Skjott-Larsen, 2004). Through logistics outsourcing, LSPs can help clients to reduce lead time by means of several restructuring strategies, including faster modes of transportation, more direct transport or eliminating local inventory stocking points.

Outsourcing encompasses all things which include transportation that is important for good distribution. It requires adequate planning, operation and good decision making for any company who wants to achieve the desired goal. Planning is a very simple concept, consisting basically of a decision, today, on where the company should be tomorrow, and the selection of means and actions that will get it there. The purpose of planning is to facilitate the accomplishment of a company's goals and objectives. Transportation planning process is a cyclical process and made up of several interrelated steps

Thus, a company who wants to plan to outsource her transportation activities must first establish her objectives and specify the factors necessary in accomplishing them

Third Party Logistic (3PL)

Outsourcing to third party logistics services (3PL) and contract logistics generally mean the same thing (Lieb *et al.*, 1993). It involves the use of external companies to perform logistics functions, which have traditionally been performed within an organization. The functions performed by third party logistics service providers can encompass the entire logistics process or select activities within that process (Sahay & Mohan 2006). Third party logistics involves the use of external companies to perform some or all of the firm's logistics activities. A key rationale for such outsourcing is that with intensified global competition, firms are concentrating their energies on core activities that are critical to survival, and leaving the rest to specialist firms (Bhatnagar *et al.*, 1999).

According to Ojala & Jamsa (2006) A third party logistics performs the activities which are carried out by an external company on behalf of a shipper and consists of at least the provision

of management of multiple logistic services. These activities are offered to the customers in an integrated way, not on a standalone basis so the co-operation between the shipper and the external company is an intended continuous relationship.

Service Provided by 3PL

The 3PL starts work when manufacturing is completed. They deal with all issues related to distribution and also sometimes deal with disposal of leftover of raw material. The third party logistic companies are offering a number of services to the companies like public warehouse, dedicated warehouse, distribution and total logistic, (Tompkins Associates, 2009). Traditionally 3PL providers have been providing asset based services to the companies like warehousing, transportation, freight forwarding or customs brokerage. Latter on they emerged-one that is not asset based and is capable of creating an optimal solution in a global environment, (Sowinski, 2000). There is a vast range of different operations that are provided by 3PL service companies. Some companies tend to specialize in certain types and styles of operations, rather than trying to offer all of the many alternatives that are available.

Fourth Party Logistic (4PL)

The logistic company “Accenture” is the introducer of term 4PL in the market and registered as trade mark in 1996. As per Accenture the definition of 4PL is “it is an integrator that collects the resources, capabilities, and technology of its own organization and other organizations to design, build and run comprehensive supply chain solution” (Bajec, 2009).

The fast acceleration of e-capabilities and junction of technology have heightened the need for an over-arching integrator for supply chain-spanning activities and 4PL being an evolution in supply chain outsourcing shares the sources of supply chain spanning activity with a client and select teaming partner, under the direction of a set 4PL integrator. The outsourcing 3PL is now accepted as business practice and fourth party logistics is accepting as a breakthrough solution in modern supply chain, which meets challenges tactfully and provide maximum overall benefit (Bauknight & Miller, 2009).

(Hubner & Elmhurst, 2007) is of the view that “The 4PL service providers participate in supply chain coordination instead of providing operational logistics and fulfillment services, like a traditional third party logistics provider would”. Moreover, the manufacturer makes a contract with fourth party logistic provider, designs the supply chain strategy and coordinates with customer. The 4PL has to coordinate with customers’ customer and with 3PL service provider and also has to make contracts on their own behalf with 3PL service provider to perform the logistics activities, (Hubner & Elmhurst, 2007) as shown in figure below:

Services Provided by 4PL

The fourth party logistic manages the logistics process, regardless of what carriers, forwarders or warehouses are used. Therefore, 4PLs have become logical solution for business process outsourcing by providing visibility and integration across multiple enterprises. The Users of 4PL can put attention on core competencies to get the better output while managing and utilizing company assets and resources, as to inventory and personnel (Mukhopadhyay & Setaputra, 2006). A 4PL is treated as a strategic partner, rather than a tactical one and is a supply chain integrator that synthesizes and manages the resources, capabilities, and technology of its own organization with those of complementary service providers to deliver a comprehensive supply chain solution, (Mukhopadhyay & Setaputra, 2006).

The 3PL service providers are providing asset base and non-asset base services to the manufacturers. Simply we can say that it include the coordination of the distribution from one place to another, but 4PL are providing a superior expertise in warehousing, transportation and other logistic fields to the manufacturing companies. 4PL is mainly concerned with administrative service and embody administrative service in addition to the services offered by 3PL.

Criteria proposed by McIvor (2008), found poor decision making led to insignificant benefits of outsourcing and failed outsourcing projects. He provided four stage of comprehensive framework approach.

- The first stage is to recognize “core” activities that generate high customer value and competitive advantage. Cross-functional team, containing top management and lower level personnel required. Non-core activities should be outsourced, but non-core activities with political concern, such as union’s objection should be kept in-house.
- The second stage is to evaluate the company’s competencies in performing the core activities in relation to available external resources. Benchmarking internal and external suppliers and competitor’s capability and cost was suggested.
- The third stage is to perform total cost analysis using activity-based costing approach to compare internal and external supplier’s costs of the core activities. He recommends that the company should keep the core activities in-house if the company has cost advantage and if the core activities represent critical competitive advantage.
- The last stage is for the outsourcing company to consider several aspects related to external relationship such as control and organizing in favor of its own competitive advantage and to avoid potential threat and competition of the 3PL companies.

According to the conceptual model postulated by Seu Cheng (2009); that the strategic influence of logistics outsourcing on firm performance is moderated by contractual complexity.

Outsourcing encompasses all things which include transportation that is important for good distribution. It requires adequate planning, operation and good decision making for any company who wants to achieve the desired goal. Planning is a very simple concept, consisting basically of a decision, today, on where the company should be tomorrow, and the selection of means and actions that will get it there. The purpose of planning is to facilitate the accomplishment of a company’s goals and objectives. Transportation planning process is a cyclical process and made up of a number of interrelated steps

Thus, a company who wants to plan to outsource her transportation activities must first establish her objectives and specify the factors necessary in accomplishing them (Ndikom, 2004). Decision making process on the other hand, is the selection among alternatives of a course of action. A good decision increases the overall performance and profitability. It is at the core of planning. A plan cannot said to exist unless a decision (an investment in resources, a planned direction or a reputation) has been made. These are essential tool for effective outsourcing.

Bolumole et al, (2007) theoretical framework for logistics outsourcing distinguishes internal resource-based, external cost-based and external control-related factors influencing logistics outsourcing decisions. They state that combining the Transaction Cost Theory, Resource-

Based Theory and Network Theory provides a more complete perspective and a realistic explanatory capacity for analyzing organization's outsourcing strategies.

From a transaction cost approach make-or-buy decisions are influenced by asset specificity, frequency and uncertainty (Williamson, 1981). From a resource-based view the outsourcing decision is influenced by the ability of an organization to invest in developing, core competences, resources and capabilities, and sustaining a superior performance position relative to competitors (McIvor, 2008). From a power and dependence perspective, outsourcing decisions are influenced by relative financial magnitude of the exchanged resources, criticality of the activities, need for specific technological expertise, availability of alternatives and switching costs (Caniëls and Roeleveld, 2009). In outsourcing decisions, organizations also have to deal with issues that influence costs over time such as learning effects, possible loss of quality in the beginning, de-motivation, or the opposite, strong motivation (Van de Water and Van Peet, 2006).

Bolumole et al. (2007), McIvor (2000) and Caniëls and Roeleveld (2009) recognize the limitations of viewing outsourcing from a single theoretical perspective. Bolumole et al. (2007) combine Transaction Cost Theory with the Resource-based View and Network Theory in an outsourcing framework. Transaction costs represent the costs of physical and human resources incurred in order to complete an exchange of goods and services between parties. The TCE theory was described in detail by other researchers (Grover & Malhortra, 2003,).

The resource based theory (RBT) principally describes a firm as a set of resources, with resources defined as "those (tangible and intangible) assets which are tied semi-permanently to the firm". According to its principles, an organisation must secure an efficient set and organisation of the right type of resources in order to survive and improve its operational performance. Competitive advantage results from the ownership of – or unrestricted access to – inimitable assets, innovations, and resource barriers, which enable the firm to shift market positions (Bolumole et al., 2007). The concept of having a number of core competences, skills or capabilities which are prominent in helping a firm to achieve its purpose (Prahalad & Hamel, 1990) is very much in line with RBT. The desire to focus on core competences may be a potent reason for firms to turn to outsourcing of 'non-core' competences (Espino-Rodriguez & Padron-Robaina, 2006). In addition, the ability to achieve economies of scope and economies of scale is relevant in this respect (Kumar et al., 2006).

The network theory (NT) of the firm focuses on the formation of external relationships, organisational structures and alliances required to support the integration of the firm in its network. The cooperative act of outsourcing should result in benefits for the entire network, of which the firm is an integral part.

McIvor (2008) developed an outsourcing framework that integrates TCT and RBV. Espino-Rodríguez and Rodríguez-Díaz (2008) integrated the internal and relational perspectives in a single model of strategic evaluation. Van de Water and Van Peet (2006) also combine the TCT, RBV and the relational-based view.

METHODOLOGY

Study Area

South-Western part of Nigeria lies between latitude 6°N and $8\frac{1}{2}^{\circ}\text{N}$ of the equator and longitude 3°E and 5°E of Greenwich Meridian Time (GMT). The zone consists of Six States. These are Lagos State that stretches along the seaboard, Ogun, Oyo, Osun, Ondo and Ekiti State. The South-Western Geo-political Zone occupies an area of 79,048 Square Kilometres. The Zone covers about one-twelfth of Nigeria, and into it are packed almost 25 million or about one-fifth of the entire population of the Country. The area is washed in the South by the Gulf of Guinea. On the east it is bounded by South-Eastern Nigeria. On the West, it shares a common frontier with the Republic of Benin; and on the North, it is bounded by North Central Geo-Political Zone that consists of Kwara State, Kogi State, Niger State and others. (Somuyiwa, 2010).

The majority of the people in South-Western Nigeria are Yoruba's, which occupies major urban centres of this Geo-political Zone. In a related development, major population concentrations are found in the state capitals and other important towns in the region. There have been considerable increase in the population figures of these states; for instance, Oyo state was estimated to be 3.5 million in 1991 and 5 million in 2005. Lagos was estimated to be 10 million in 2005, while Ogun state was estimated to be 3.5 million in 2005 population census (NPC, 2006). It is interesting to note that all these can be attributed to the economic activities, which tangentially determine the rate of the distribution of these products (Somuyiwa, 2010).

DISCUSSION

Impact of Logistics Outsourcing on Company Transportation Cost

Transportation involves the shipment of components and raw materials from suppliers to the facility as well as the shipment of components from suppliers to the facility, as well as the shipment of finished goods to warehouses and other consumer locations. Warehousing is the storage of components and raw materials and finished goods while distribution involves management of goods on the physical part between production and consumption (Coyle, Bardi and Langley, 2003).

Table 4.1

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	4.662	1.082		4.309	.000
Inventory Accuracy	.116	.141	.070	.824	.411
Distribution Accuracy	.017	.022	.062	.747	.457
Decrease Warehouse cost	.100	.121	.072	.824	.411
Timely Delivery of shipments	-.414	.130	-.273	-3.191	.002

a. Dependent Variable: Transport Cost

Source: Result output based on field survey (2015)

The primary dependent variable is defined as TC = Transport Cost as percentage of the company's revenue. The primary independent variable of interest associated with the outsourcing of logistics related activities is warehousing, distribution, inventory and just in time. The variables are defined as Inventory Accuracy (IA), Distribution Accuracy (DA), Decrease Warehouse Cost (DWC), Timely Delivery of Shipment (TDS).

$$\text{Transport cost} = 4.662 + 0.116x_1 + 0.017x_2 + 0.100x_3 - 0.414x_4$$

R is 0.309 this implies the combined effect that the independent variables have on the dependent variable. Adjusted R^2 is 0.096. This implies that 9.6 percent of the variance in Transport Cost could be predicted from the independent variables attributed to, accounted for and explained by variance in the set of predictor variable taken as a whole. The table also shows that the analysis of variance for the multiple regression data produced F-ratio of 3.435 which is significant at $P < 0.05$ and 0.01, this implies that all the regression parameters are significantly different from zero.

Specifically, the coefficient of Inventory Accuracy in Transport Cost is 0.116 and is significant at ($p < 0.01$). This implies that a unit increase in Inventory Accuracy tends to produce 0.12 unit increase in Transport Cost. This could be attributed to the fact that when inventory is kept at a certain level it reduces the cost on Transport. On the hand Distribution Accuracy with a coefficient of 0.017 is positive and significant at ($P < 0.01$). This shows that 1 unit increase in Distribution Accuracy leads to 0.017 increase in Transport Cost, thus it can be said that when distribution is efficiently and effectively monitored through outsourcing reduces the cost on transport of manufacturing companies.

The coefficient of Decrease Warehouse Cost is positive and significant at ($P < 0.01$) meaning that additional increase in decrease warehouse cost tends to 0.10 unit increase in the transport cost. Timely Delivery of Shipments has a negative coefficient of -0.41 which is significant at ($P < 0.05$), this implies that a decrease in the timely delivery of shipments tends to 0.41 unit decrease in transport cost and this indicates that transport costs arise from carrying inventory in transit which is as a result of congestion and other road transport problems. Focus on customer needs, satisfaction, order fulfillment, short transit time, on time delivery gives transport cost a new dimension. This numerous operations connected with frequent small deliveries resulted from just in time delivery of shipment. Holter et al (1993), supports this findings that delay, lack or inaccurate delivery of shipment can be extremely costly as the consequence could be production down –time. In addition, Hallorson, et al (2004) said transit times affect the cash – to – cash cycle for most companies. Cash is tied up in inventory in transit that could otherwise have been employed elsewhere contribution to further revenue generation.

Transport is needed throughout the whole supply chain being the link between supply chain members. Because demand and supplies have become international processes short lead time is especially important for companies that operate in international or global environment. Consequently quality of transport service affects the competitiveness of the entire supply chain. From the study, it was revealed that transportation activity is mostly outsourced among manufacturing company. This corroborate the findings of Langley 2002, and Capgemini 2007, that up to 75 percent of firms reports positive impacts from transport activities this is in line with

CONCLUSION, POLICY IMPLICATION AND RECOMMENDATION

Based on the findings made in the study, shows that outsourcing logistics activities contributes to organizations ability to control costs, improve customer service and allow company to focus on its core competencies. The aim of this research has been to investigate the impact of outsourcing logistics activities in manufacturing companies in south western. This literature review and survey manufacturing companies shows the benefits that can be achieved through logistics outsourcing and highlights how important it is for an organization to clearly define its reasons for outsourcing. It also points out the potential problems with outsourcing and the need for organizations to identify and recognize the problems and deal with them accordingly. It is evident that logistics outsourcing is increasingly viewed as a strategic initiative with far-reaching consequences, and that it requires careful consideration and a thorough process to improve the chances of success.

From the findings of the research into the impact of outsourcing logistics activities in manufacturing company in south western Nigeria it appears that the most prominent reasons for outsourcing is that the majority of the organizations are under pressure to focus on core competencies and to cover expanded geographic markets. Organizations are also under pressure to improve customer service and reduce costs. It was found that the majority of the manufacturing companies are involved in outsourcing their transport activities. Outsourcing also has a significant effect on both transport cost and customer satisfaction. This helps the manufacturing company to effectively perform in a competitive market. However, Barthelemy, 2003; Brandes *et al.*, 1997; Jennings, 1997 propose that the improper use of outsourcing could play an important role in the competitive decline of firms.

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