

# THE LIKELY ROLE OF AN EXECUTIVE LOGISTICS AND SUPPLY CHAIN MANAGEMENT PORTFOLIO ON THE BOARDS OF PRIVATE INDUSTRIAL CORPORATIONS

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## **Abstract**

The paper outlines the need for an executive logistics and supply chain management portfolio on the boards of private industrial corporations. The concepts of logistics and supply chain management are described in a business context, and the strategic, tactical and operational tiers thereof are discussed.

The various business activities that form part of logistics and supply chain management are indicated. It is described how efficient and effective logistics and supply chain management can enhance the competitive advantage and long-term wealth of a business. Five performance areas that collectively best represent successful organisational logistics performance are detailed.

**Keywords:** Board, Logistics Management, Control, Competitive Advantage, Supply Chain Management

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## **1 INTRODUCTION**

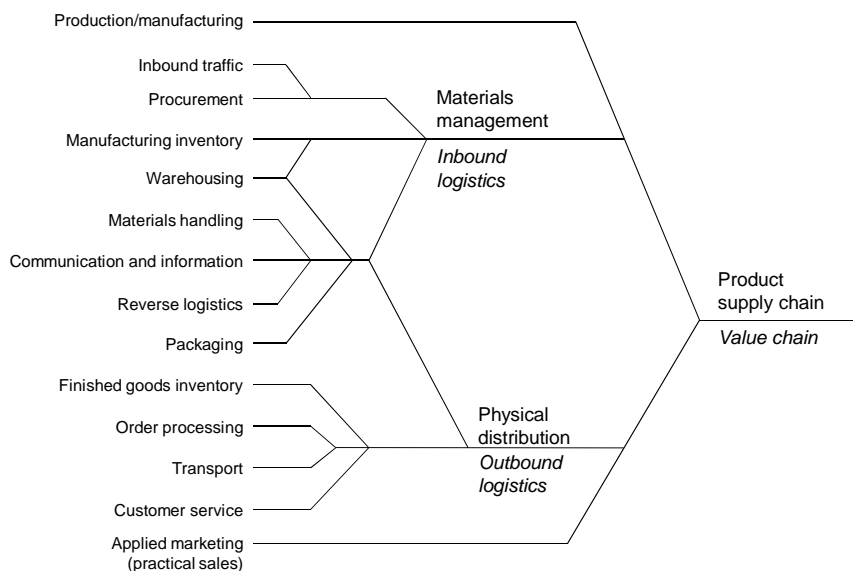
The purpose of this article is to outline the role and importance of business logistics and supply chain management as corporate functions, and to indicate the critical role that dedicated executive board membership can fulfil in the efficient and effective execution and control of business logistics processes in competitive market situations. The application of a reasoned, systematic logistics approach within product supply chains and the management of business logistics systems so that customers of corporate entities are provided consistently with the desired quality and required quantity of products, where and when they are needed, at an acceptable cost, make board representation of the logistics and supply chain management function an imperative.

The economic environment in most countries from the late 1970s to the early 1990s was marked by rapid change. This was facilitated and fuelled by two main driving forces: the emergence of freer competition both within domestic borders and internationally, and swift advances in technology. First, the emergence of more open market conditions was made possible mainly by the economic deregulation of both freight transport and the marketing of agricultural produce; the privatisation of many utility industries; the globalisation of business activities; and the liberalisation of international trade. South Africa also benefited by the lifting of trade sanctions. The effect was to make transport decision making and the distribution of goods more market-driven. Second, the introduction of specialised bulk-cargo ships, container vessels and high-capacity cargo aircraft; the development of effective information technology and easy electronic communications; the ability to perform comprehensive, complex numerical analyses through the use of information technology; and new holistic management approaches have all made it possible to manage logistically arranged supply channels in an integrated, coordinated fashion – almost in real time. In the 1980s, increasing business competition and more sophisticated consumer service requirements led to the realisation that product competitiveness would henceforth be determined more through logistically arranged product supply chains than through individual firms operating in isolation.

## 2 THE RELATIONSHIP BETWEEN LOGISTICS AND SUPPLY CHAIN MANAGEMENT

The Council of Supply Chain Management Professionals (CSCMP), the world's major professional organisation for supply chain management and logistics, defines logistics management as 'that part of supply chain management that plans, implements and controls the efficient, effective forward and reverse flow and storage of goods, services and related information between the point of origin and the point of consumption in order to meet customers' requirements' (CSCMP 2012). Figure 1 indicates that logistics management, production/manufacturing and applied marketing (i.e. practical sales) collectively constitute supply chain management. Systemic cohesion among the activities shown in Figure 1 is achieved through coordinated and integrated strategic, tactical and operational management (Pienaar & Vogt 2012: 12).

**Figure 1.** Composition of logistics and supply chain management activities



(Source: Pienaar & Vogt 2012: 12)

The definition of the concept of logistics management supplied above is the one that is generally accepted in contemporary business logistics management literature. Important implications of the definition are discussed below.

First, as the definition indicates, logistics management encompasses the functions required to (1) plan and prepare; (2) organise and implement; and (3) execute and control the activities of a firm when distributing materials or finished products to customers. Preparation and planning activities include the selection of facility sites (including type, number, location, size and capacity); durable equipment needed to facilitate the flow of products through the logistics network; distribution parties, including wholesalers, retailers and third-party service providers; and carriers (including choice of transport mode) required to offer services at the level demanded by customers to achieve the goals of the firm. The organisational and implementation aspects of logistics management include, firstly, the allocation and positioning of resources, and, secondly, the scheduling of production and distribution activities to respond to customer needs in an efficient manner in order to achieve the firm's objectives. Execution includes operational aspects (i.e. ongoing daily activities, such as stock keeping, routing trips, and scheduling deliveries, vehicles and crews), and control includes monitoring and reviewing performance (such as quality of service, expenditure, productivity and asset utilisation) to ensure that the logistics process satisfies customers effectively, the organisation's resources are deployed efficiently, and corrective action is taken when performance is not in line with goals.

Second, because logistics management revolves around planning, organising and executing/controlling the logistics process, it encompasses many of the firm's activities, from the strategic level to the tactical and operational levels. Logistical decisions are typically classified in the following way (Ghiani et al. 2004: 18; Simchi-Levi et al. 2004: 12):

- The *strategic* level (i.e. planning and preparation) deals with decisions that have a long-lasting effect on the firm. Because data is often incomplete and imprecise, strategic decisions are generally based on aggregated data (obtained, for example, by grouping individual products into product families, and aggregating individual customers into customer zones).
- The *tactical* level (i.e. organisation and implementation) includes decisions that may be updated at various intervals from monthly to annually. Tactical decisions are often based on disaggregated data.
- The *operational* level (i.e. execution and control) refers to day-to-day decisions, which are customarily based on detailed data.

Third, an objective in logistics management is to consistently be efficient and effective across the entire system. This objective can be achieved by minimising system-wide costs, from transport on the one hand to warehousing and keeping inventory of raw materials, semi-finished goods and finished products on the other. Therefore, the emphasis is not simply on selecting the cheapest or swiftest physical distribution method or on reducing inventories, but on an integrated and coordinated systems approach to the logistics supply chain process. The integrated total-cost systems concept is the trade-off of all costs that are in conflict with each other and that may affect the outcome of a particular logistics decision. The acceptance of the total-cost systems concept has therefore changed the relative importance of the different logistics activities.

The focus of integrated and coordinated management is the lowest total process cost, and not the achievement of the lowest cost of each function in the process. This statement recalls the adage that 'sub-optimisation is the name of the devil'. Corporate-wide integration is most effectively directed from board level, in this case ideally by an executive logistics and supply management portfolio.

### 3 ASPECTS OF COMPETITIVE ADVANTAGE

Studies dealing with the role of logistics management in creating competitive advantage and wealth within supply chains have indicated the following (Nix 2001: 62).

- The objective of logistically managing a product's supply chain is to enhance the competitive advantage of the entire chain, rather than improve the competitive advantage of any single member in the chain.
- The means to achieve competitive advantage is by creating greater value for downstream member clients than that offered by competitors.
- Customer value is created through cooperation and coordination to improve cost efficiency and/or service effectiveness in ways that are most valuable to key customers.
- The willingness to pay is not only based on a product's value per se, but is rather determined by the perceptions of customers and clients.
- To compete by adding customer value, a firm must clearly understand its customers' value perceptions and the product attributes demanded by them.
- Value perceptions differ among customer segments. A firm must, therefore, identify the customer segments that are important for its long-term success and adjust its capability correspondingly to deliver the value important to these segments.
- The competitiveness of several chain members can improve even if only one chain member becomes more cost-efficient and/or more service-effective.
- Delivering customer value in dimensions that are important to customers better than the competition leads to customer satisfaction and competitive advantage.
- By satisfying customers' needs and achieving competitive advantage, firms in a supply chain influence customers to make choices and respond in ways that improve the financial performance of all the members in the supply chain.

According to Stock and Lambert (2001: 11) an efficient and economical logistics system is similar to a tangible asset on a corporation's books. Although organisations do not identify this "asset" on their balance sheets, the enhancement of its value should be fostered at corporate board level. Reason being

that business logistics strategy, tactics and operations can enhance the long-term wealth of a business in four areas: (a) revenue growth, (b) operating-cost reductions, (c) working-capital efficiency and (d) fixed capital efficiency (Christopher & Ryals 1999: 3).

#### ***(a) Revenue growth***

Customer-service logistics can significantly influence sales volume and customer retention. Although it is not generally possible to determine the exact correlation between service level and sales volume, several studies have indicated a positive relationship between the two variables. Superior customer service (in terms of reliability and responsiveness) increases the probability that customers will remain loyal to a supplier. Experience indicates that higher levels of customer retention lead to increased sales: customers are likely to place increasing proportions of their orders with a vendor that consistently supplies superior service.

#### ***(b) Operating-cost reductions***

There is a significant potential for operating-cost savings through logistics. A large proportion of costs in many firms derives from logistics operations. Savings in transport costs, warehousing costs, lot quantity costs (i.e. the costs associated with purchasing and manufacturing in different lot sizes), information systems costs and the opportunity cost of carrying inventory all potentially represent an increased net operating profit. Logistics innovations that can reduce costs, such as time compression in the supply chain, must be recognised by top management. Businesses need to be made aware of how these savings can enhance their competitive advantage.

#### ***(c) Working capital efficiency***

Logistics can have a significant influence on working capital requirements. By their nature, long supply chains accumulate substantial volumes of inventory. The time span of transactions and the accuracy of order processing and invoicing may directly affect the ability to collect payments on time. Faster collection of payments and lower inventories make funds available for other investment opportunities. Working capital requirements can be reduced through time compression in the logistics chain and the associated improvement in cash-to-cash cycle times (i.e. the time from the payment for purchased materials until the sale of the finished product and collection of its transaction payment). The cash-to-cash cycle time can exceed six months in many manufacturing industries. Therefore, by reducing the amount of time in the logistics chain when no value is added, reductions in working capital can be achieved.

#### ***(d) Fixed capital efficiency***

Logistics is capital-intensive, and in many firms the opportunities for asset reductions are substantial. Investment in vehicles, handling equipment and facilities (such as workshops, terminals and warehouses) can be significant. Whenever the reduction of a firm's investment in fixed assets is considered, the feasibility of – and the expected value created by – pursuing an alternative strategy should be assessed.

Since financial results within organisations are generally made known deep into the following financial period, they have little value for day-to-day operational logistics management. A more immediate method of controlling logistics performance is needed to monitor daily activities. The following section focuses on the employment of non-financial measures that can be used to (1) monitor and review logistics performance; and (2) that are capable of providing diagnostics for use in problem resolution and improvement processes.

### **4 LOGISTICS SYSTEMS CONTROL**

Control includes monitoring and reviewing performance to ensure that (1) the logistics process satisfies customers effectively; (2) the organisation's resources are deployed efficiently; and (3) corrective action is taken when performance is not in line with goals and objectives. A continuing challenge for logistics managers is to develop and maintain an effective set of measures to inform decision making and support the achievement of financial success.

Performance measures should satisfy three basic requirements:

- (1) Collectively they should measure the performance of the whole system.
- (2) They should be quantifiable.
- (3) They should be statistically reliable, and capable of being obtained within a relatively short period at reasonable cost.

Logistics measurement systems have been traditionally designed to include information on five types of performance: (1) customer service; (2) logistics quality; (3) cost; (4) asset management; and (5) personnel productivity (Bowersox et al. 1999: 26). The first two of these performance areas are mainly focused on logistics effectiveness, while the latter three are concerned primarily with logistics efficiency. Several measures can be designed and implemented to specifically manage each of the logistics activities (shown in Figure 1), such as transport, warehousing and inventory control. Research suggests that leading-edge organisations are focused on performance measurement across these five areas, which collectively serve as a representative platform on which competitive position, value-adding capabilities and supply chain integration can grow (Fawcett & Cooper 1998: 341; Gunasekaran & Kobu 2007: 1995).

## 5 EMPIRIC RESEARCH

Research was conducted by the Department of Logistics at Stellenbosch University to determine the scope of analytical skills that logistics management executives should possess in order to execute business logistics practice. The opinion of 27 representatives involved in logistics performance measurement was solicited regarding the matter. The respondents all confirmed that, in their opinion, the five performance areas mentioned in section 4 as a whole can sufficiently represent organisational logistics performance in South Africa. The representatives were further asked to rank the five diagnostic measures that are most indicative of eventual financial success within each logistics performance area. Their average ranking per area appears in section 6 (Pienaar 2011: 196).

## 6 SURVEY RESULTS

### (1) Customer service

In order to determine whether the desired goods, services and information are consistently made available at the designated place and time, and in the required condition and quantity, feedback should be obtained directly and explicitly from the customer. In doing so, the following measures were judged to be most critical:

- i. Percentage of consignments delivered at the right (i.e. designated) place
- ii. Percentage of consignments delivered on time (i.e. at the designated time)
- iii. Percentage of consignments delivered damage free (i.e. in the required condition)
- iv. Percentage of consignments delivered complete (i.e. in the required quantity)
- v. Percentage of orders fulfilled and invoiced accurately

### (2) Quality

Logistics quality is closely related to the objective of achieving optimal customer service. Whereas customer service refers to how effectively customers' desires are conformed to, logistics quality refers to how efficiently (or cost effectively) customers' desires are met. From this perspective, the following measures were indicated as being most important:

- i. Damage frequency
- ii. Frequency of credit claims by customers
- iii. Frequency of product returns by customers
- iv. Ratio of orders sorted, packed, shipped and delivered accurately
- v. Ratio of orders documented and invoiced accurately

In (i) above, *damage* excludes faulty products that erroneously leave production/manufacturing and enter distribution. The reason for this exclusion is that production and manufacturing are not logistics activities (see Figure 1). Of the 27 respondents, 25 representatives confirmed that their organisations monitor

*damage frequency*. Twenty of the respondents indicated that they monitor damage incurred per individual logistics activity, for example during storage, materials handling and transport. In order to analyse the nature and cost consequences of product *damage frequency*, all of the respondents confirmed that they also record the *number of credit claims* and the *number of product returns*. Note that measure (iv) above refers to functional (i.e. physical) logistics quality, and that measure (v) refers to administrative logistics quality.

### **(3) Logistics cost**

Logistics cost (LC) is the direct reflection of monetary input required to accomplish specific logistics output, or availability/readiness to provide acceptable logistics service. According to the respondents, the following logistics cost measures are applied most:

- i. Comparison of actual LC versus budgeted LC
- ii. LC as a ratio of sales revenue
- iii. LC per unit delivered
- iv. Cost per logistics function (e.g. coordination of inbound traffic, transport, warehousing, inventory control)
- v. Comparison of current LC to historical cost standard (in real terms)

In general, the respondents indicated although *logistics cost* as a performance measure is not inherently diagnostic, however, it (1) alerts systems analysts to expeditiously pursue diagnostic investigation; and (2) gives guidance and often provides prognostic clues for the analysis of asset performance and personnel productivity (including untoward human behaviour).

### **(4) Asset management**

Asset management is concerned with the utilisation of the organisation's mobile equipment (e.g. vehicles and handling equipment), durable installed and stationary assets (e.g. workshop equipment), and current assets in the form of inventory (i.e. merchandise). The following measures were indicated as being the most important:

- i. Fixed-asset output: Examples for vehicles: Ton-km per period, container-km per period, deliveries per period, fuel consumption rates, tyre wear
- ii. Fixed-asset time utilisation (FATU) ratio =  $\text{Actual working time} \div \text{Total number of hours available}$  (Downtime ratio =  $1 - \text{FATU}$ )
- iii. Inventory turnover (A) =  $\text{Units sold in a period} \div \text{Average units in stock during the period}$
- iv. Inventory turnover (C) =  $\text{Sales revenue in a period} \div \text{Average inventory at sales price during the period}$
- v. Inventory turnover (B) =  $\text{Cost of goods sold in a period} \div \text{Average inventory at cost during the period}$

Respondents indicated that measure (iv) is generally applied when dealing with finished goods (which are time sensitive) and that measure (v) is in general applied when dealing with raw materials and semi-finished goods (which can often be stockpiled).

### **(5) Personnel productivity**

Personnel productivity refers to the quantity of output divided by the amount of human resources input employed to produce the output. The following human resources-related productivity measures were indicated to be mostly considered in logistics management:

- i. Comparison of actual achievement versus target achievement
- ii. Number of units delivered per human resources cost amount
- iii. Number of units carried/delivered per warehouse/transport employee
- iv. Average order cycle time
- v. Comparison to historical standard

Note that measure (iv) is not a ratio – it represents the average time duration between the reception and fulfilment of orders.

Given the objective of supplying a value-added finished product that is sought after by customers, it is clear that these activities are, or should be, integrating functions, which, in most cases, are broader than the traditional functions of a single business entity. In modern and diversified industrial economies, the maxim that one cannot be everything for everybody holds true: specialisation and the division of labour, with effective integration and coordination within a product's supply chain, are called for.

Competitive advantage is derived from the manner in which businesses perform their link activities in the value chain. If a business wishes to enjoy a competitive advantage in its area or span of the chain it must perform its activities in a more cost- and service-effective way than its competitors in other product chains, or than potential partners in its own chain. The activities in effectively integrated value chains should ideally be: firstly, of the minimum number feasible; secondly, effective in terms of quality or service; and, thirdly, performed at a relatively low cost. Firms ought to view each activity (link) in their value chain critically and evaluate whether they possess a competitive advantage in each of the activities that they perform. If not, they should consider outsourcing those activities in which they do not excel (Pienaar & Vogt 2012: 21).

## 7 CONCLUSIONS

Logistics management encompasses the functions required to (1) plan and prepare; (2) organise and implement; and (3) execute and control the activities of a firm when distributing materials or finished products to customers. Because logistics management revolves around planning, organising and executing/controlling the logistics process, it encompasses many of the firm's activities, from the strategic level to the tactical and operational levels. Logistics management forms part of supply chain management.

An objective in logistics and supply chain management is to consistently be efficient and effective across the entire system. This objective can be achieved by minimising system-wide costs, from transport on the one hand to warehousing and keeping inventory of raw materials, semi-finished goods and finished products on the other. This requires corporate-wide integration, which is most effectively directed from board level, in this case ideally through an executive logistics and supply management portfolio. Reason being that business logistics strategy, tactics and operations can enhance the long-term wealth of a business in four areas: (a) revenue growth, (b) operating-cost reductions, (c) working-capital efficiency and (d) fixed capital efficiency. Since financial results within organisations are generally made known deep into the following financial period, they have little value for day-to-day operational management. A more immediate method of controlling logistics and supply chain performance is needed to monitor daily activities.

Controlling the execution of supply chain activity is achieved through applying appropriate performance measures that reliably indicate when the system requires adjustment to bring its performance in line with the organisation's goals and objectives. The success in achieving the latter can adequately be attained through effectively monitoring and reviewing performance in the following areas: (1) customer service; (2) logistics quality; (3) cost; (4) asset management; and (5) personnel productivity.

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