



Supply Chain Management Strategy in Building a Competitive Advantage Through the Implementation of Logistic 4.0

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Abstract. This study aims to examine supply chain management in building competitive advantage through logistics. This study indicates that: 1) Strategic supply chain management is achieved to win the supply chain or at least survive in market competition. Efficient and robust logistics 4.0 must rely on technology applications related to logistics, including procurement, storage, inventory, transportation, warehousing, packaging, security, and handling of goods and services in the form of raw materials, intermediate, and finished goods. 2) in generating competitive advantage, supply chain management lies in the problem of value advantage and productivity advantage. This advantage can be achieved through a process that ensures the production of high-value product characters desired by consumers. The dominant indicator of value in commodities is quality. Companies that can produce premium quality have a value-added in front of consumers. Productivity advantages are reflected in high production volume with low cost per unit process.

Keywords: Supply chain management · competitive advantage · logistics · procurement

1 Introduction

These days, companies face a rapidly changing environment and operate in an increasingly competitive market. This is indicated by the increasing number of companies emerging and providing the same product or service. Often, consumers must be wiser and more critical in choosing the product or service used to obtain maximum results. This condition will make the competition even tighter so that every company must start competing to provide the best service to satisfy its customers. This circumstance encourages companies to integrate their supply chain management systems with their suppliers and customers.

Manufacturing companies are starting to realize that providing low prices, quality products, and the best service requires all parties involved in a company's production process. This aspect can work well if all parties can work together effectively, starting with suppliers who handle raw materials from origins into factory components, factories that turn raw materials into finished goods, transportation companies that transport raw

materials from suppliers, and distribution channels that convey raw materials and finished products to the customers. Supply chain management arose from this recognition of the relevance of all parties [1].

A product's supply chain is made up of a collection of businesses that work together to generate and distribute it to its final destination. Supply chain companies are typically made up of manufacturers and distributors as well as service providers like logistics service providers [2].

One of the strategies in the supply chain is a responsive strategy and an efficient strategy. In creating a responsive strategy, companies can do better by conducting market research to capture what the market wants and respond quickly to market wants. The responsive strategy covers the supply chain's ability to respond to and cope with large demand, meet consumer needs shortly, handle a large variety of products, provide high service to consumers, and handle demand uncertainty. The higher the supply chain's ability to do each of these things, the more responsive a company will be, but the costs incurred by the company will also be greater [2].

The company's primary resources, which are a source of competitive advantage, are limited to resources within the company's organization and the organization as part of the supply chain management systems. An important task for top management is to manage the supply chain at the most cost-efficient level while maintaining high flexibility in building relationships with suppliers to respond to customer needs [3].

Increased competition in business, increasingly complex customer demands, and more and more products are emerging. Currently, many factors trigger companies to compete to create innovative products. This is done to increase competitive advantage.

A well-integrated network within a corporation is essential for increasing this competitiveness. Companies in the production, importation, and service industries have long recognized the value of optimizing their supply chains to cut costs and improve their position in the market. Reducing costs and increasing competitiveness can be achieved by employing supply chain management to coordinate the flow of information, products, and materials between companies' suppliers and distributors. The rise of technology and the internet has unquestionably transformed the way businesses operate and provided new avenues for gaining competitive advantage [4].

The business world is likewise being affected by the internet's rapid expansion and development [5]. As a result, the overall supply chain process, from raw material procurement, factory production, and distribution, to delivering products to customers, is transformed. Medium and large companies will soon need the internet and e-commerce for their SCM.

Management accounting information systems have an important role in supply chain management. Several cost management methods or techniques can be used to assist top management in managing the company's supply chain. To deal with the rapidly changing business environment, companies always try to build sustainable competitive advantage by improving product and service quality, speed of service time, and cost-efficiency. In fact, now many companies are starting to implement supply chain management. The company's competitive advantage is determined by quality, time, and cost management.

In a dynamic business environment, companies must agilely provide solutions to customer needs that competitors do not currently provide. In marketing theory, it is often

called unmet demand. Companies must continuously innovate services and operating processes that can provide this unmet demand solution - a solution that is currently not provided by competitors.

All companies require supply chain management (SCM). SCM integrates all activities of the movement of goods, both material goods from suppliers, processing material goods into the work-in-process and finished goods, and then distributes these finished goods to customers. SCM ensures that the company's organization can deliver quality products or services at the fastest time and the most efficient cost.

Many previous studies examined a company's strategy to develop and improve its competitiveness to be more competitive in global market competition. To increase competitive advantage, companies must support their internal functions and communication with supply chain partners effectively [6]. SCM practices positively impact competitive advantage. From several studies, it can be seen that there is a relationship between supply chain management practices and the competitive advantage of an organization or company [7].

Thus, logistics 4.0 can help supply chain management build a competitive advantage. This will help the company meet customer needs efficiently to achieve the desired goals. This research intends to ease companies in determining the strategy that will be carried out to deal with the company's weaknesses and priorities in the future.

1.1 Supply Chain Management

Supplier, manufacturing, distribution, and warehousing and storage integration are all part of Supply Chain Management, which aims to reduce costs and improve customer satisfaction by ensuring that the right amount of product is manufactured, stored, and delivered at precisely the right time and place for the right location [8].

What sets supply chain management apart from its competitors is its ability to manage the flow of products or goods in the SCM, and also how the system of manufacturing and distribution operations of a firm may collaborate in order to meet consumer needs [9]. Customer satisfaction, reduced costs and improved supply chain results are the primary goals of SCM. SCM also reduces the amount of time needed to focus on distribution and planning tasks.

1.2 Competitive Advantage

As a result of competition, the effectiveness of a company's performance-enhancing activities, including innovation, good practice, or cohesive culture can be assessed. In the context of competition, competitive strategy is the pursuit of an advantageous competitive position in an industry. When it comes to industry competition, the competitive strategy is all about establishing a strong, profitable, and well-defended position.

The ability of a firm to generate a fighting stance against its competitors, is the definition of competitive advantage [9]. An organization's ability to distinguish from its competing companies is based on its ability to make strategic management decisions [9]. A company's competitive advantage is derived from the value it provides to its customers or clients. Dimensions of competitive advantage measured in this study include delivery reliability, time to market, and product innovation.

A supplier's ability to meet customer expectations in terms of on-time delivery is measured by the supplier's delivery dependability, as the products must be delivered with the best quality possible [10]. The interdependence between partners in the supply chain network will strengthen the delivery of products and services upstream to downstream. Delivery dependability will also create long-term relationships that need each other. So that product availability and on-time delivery will be achieved.

Innovation is a broader concept that discusses applying new ideas, products, or processes. Innovation is the result of the company's creative ideas. So the company is expected to form new ideas in dealing with competitors and customers with various kinds of current demands. An effective product innovation/new product development strategy is often a determinant of the success and survival of a company. New product development requires effort, time, and ability, including the magnitude of the risk and cost of failure. However, if the product development can produce positive results and penetrate the market share, this is a significant advantage for the company.

To have a competitive advantage, an organization must be able to incorporate or promote a product faster than its competitors [11]. It is possible for a company to gain market share and perhaps lead the market if it launches a new product more quickly than its competitors.

1.3 Logistic 4.0

To support industry 4.0, logistics should conform to or follow these three trends. This change is necessary to ensure that the logistics function continues to play an important role in the transporting goods, relevant information, and machineries [12].

Logistics 4.0 can follow the aspects including planning for resources, intelligent transportation systems, warehouse control, information security, transportation management systems [8].

First, Logistics Resource Planning 4.0. The implementation of Logistics 4.0 requires facilities and infrastructure that are connected to the internet to facilitate the Internet of Things (IoT), Internet of Service (IOS), and Internet of People (IOP). All UPGB facilities, warehouses, transport vehicles, and other supporting facilities must be integrated into the CPS to monitor all information, data, and material movement. Improvement of facilities through modernization and technological improvement needs to be carried out to enable the application of effective, efficient principles and access that is not limited by time and space.

Databases and applications are used to download and upload data from facilities and goods. Dispersed controllers are used in system design to conduct payments, controls, and arrangements easier. Supply chain alignment and integration is made easier with the help of new technologies that allow for more precise resource estimates. An instantaneous view into changes in both goods volumes and movements makes this possible. Resource planning management methods will improve overall productivity, agility, and flexibility to changes in the supply chain following the adoption of Industry 4.0 and the application of CPS.

Second, Warehouse Management systems. The warehouse implements a management system to enable the arrangement of materials in the warehouse and the inbound and outbound good movement follow the First In First Out (FIFO) rule. The arrangement

of sacks in pallet arrangement follows the order of registration of goods so that recording and reading information by sensors becomes easier and more organized. Warehouse updates or repairs need to be carried out to apply the principle of efficient and fast material movement recorded either per pallet, package, or truck. A warehouse is an essential part of the flow of goods that determines the supply chain performance.

According to Industry 4.0, warehouses must be a logistics provider's primary competitive advantage. A paradigm shift inside the way warehouses operate will occur as a result of the adoption of Industry 4.0. Adopting and implementing a Warehouse Management System (WMS) that incorporates "smart" management will transform logistics operations into future needs in the Industry 4.0 model.

Third, Transportation Management Systems. The movement of materials relies on a transportation system to be integrated with order management systems and distribution centers. Transportation management should be developed cloud-based to facilitate internet-based management with IoT, IoS, and IoP implementations. The supply chain node is logistics transportation that requires systematic management (Transportation Management Systems/TMS). Interaction between message management systems (OMS) and distribution center (DC) and warehouse can be established through TMS. Excessive (very expensive) cost control can be controlled by integrating TMS with other supply chains (such as Warehouse Management Systems and Global Trade Management Systems); and by handling electronic communications with customers, trading partners, and operators. As its scope expands to add other capabilities, TMS has become a popular choice for companies of all sizes and industries.

Fourth, Intelligent Transportation Methodologies. GPS technology is used to monitor, control, and regulate movement in a specific path, direction, and time, making transportation extra efficient and effective. Conveyances are equipped with RFID tags and Bar Codes so that interested parties, including logistics management, consumers, and partners, can quickly and easily access the CPS. Computational hardware and sensors are used in intelligent transportation systems. Telecommunications and data processing are used in virtual operations and planning techniques. TMS works with a variety of transportation systems, including control, infrastructure, policies, control methods, as well as transportation management.

Fifth, Information Security. Accessible by the general public, all data and information on the internet are at risk of interception and exploitation. High-security principles are required to safeguard customer data and information as well as access to logistics systems. For instance, in transactions at the end of the customers, the RFID tag must be deactivated to protect the confidentiality of the consumer's address.

2 Research Methods

This research used the type of library research. A literature study was carried out by reviewing various journals and related reference books, which can be analyzed and concluded from various sources obtained by researchers. The research approach is qualitative research that is oriented toward natural phenomena that occur, and this research was not carried out in a laboratory. The research conducted was descriptive where the researcher collected information, not in the form of a series of numbers for this research.

The information can provide an overview or present problems and solutions to existing problems. Analysis of the data used was to analyze the content.

3 Results and Discussion

Focusing on efficiency and accuracy in response to customer demands is paramount in supply chain management [2]. Supply chain management can promote the integration of previously independent organizations, to enhance organizational collaboration [13]. The company's policies are applied to the six supply chain performance factors, which include transportation, facilities, information, inventory, prices as well as and resources [14].

Raw materials are procured through supply chain strategies, which in turn determine how materials are transported to and from the firm, products are made, and finished goods are shipped out to customers along with follow-up services. The supply chain strategy defines on which distribution, services and operations, will strive to achieve well from a value chain perspective [10].

In order to optimize their lengthy company's supply chain performance, supply chain management strategies entail a wide range of impactful methods and techniques. There must be good cooperation between the company and its suppliers in order to benefit from strategic supplier partnerships. Long-term relationships between a company and its suppliers that have an impact on each firm's strategic and operational capabilities and help them achieve significant, long-term benefits are defined in this study as strategic supplier partnerships [13].

Sharing information, committed relationships, cooperation, and process integration are all essential components of a successful supply chain management strategy. Long-term relationships can be built with a sustainable relationship between all relevant parties in a supply chain management system and cooperation, while accurate information sharing will speed up the procedure of supply chain management practices from suppliers to final consumers. A good and mutually beneficial relationship between all parties, of course, a long-term relationship can be achieved. Meanwhile, process integration combines all supply chain management activities so that all activities run smoothly [14].

The strategic objectives of supply chain management need to be achieved to make the supply chain win or at least survive in market competition. To be able to win the market competition, the supply chain must be able to provide products that are: (1) Cheap, (2) Quality, (3), On time, and (4) Varied. To achieve these goals, the supply chain must convert the above objectives. It can be achieved if it can: operate efficiently, create quality, and be fast, flexible, and innovative.

Efficient and robust Logistics 4.0 must rely on and use technology applications: (i) Resource Planning; (ii) Warehouse Management systems; (iii) Transportation Management systems; (iv) Intelligent Transportation systems; and (v) Information Security [12]. The existence of logistics as a flow of goods or services aims to provide goods in the right quantity, at the right time, at the right location, and the right cost. The main logistics activities are procurement, storage, inventory, transportation, warehousing, packaging, security, and handling of goods and services in the form of raw materials, intermediate goods, and finished goods.

Companies must decide on a supply chain strategy for obtaining goods and services from outside. Some of these strategies include: Multiple Suppliers, Few Suppliers, Vertical Integration, Keiretsu Network, Virtual Company.

With a multiple-supplier strategy, suppliers respond to requests, and demand-quotes specifications, with orders, generally going to the low-bidder. Having few suppliers implies that buyers are more likely to forge long-term relationships with loyal suppliers rather than seeking short-term attributes, such as low cost. Fewer suppliers can create value by enabling suppliers to have economies of scale and a learning curve that results in lower transaction costs and manufacturing costs.

Vertical integration can take the form of forward or backward integration. Backward integration suggests a company buy its suppliers. Forward integration advises component manufacturers to create finished products. Keiretsu is a Japanese term to describe employees who are part of a company. Keiretsu members are guaranteed to have long-term relationships and therefore expected to act as partners who provide technical expertise and stable product quality. Companies that rely on various supplier relationships to provide services on demand. Also known as a hollow corporation or network corporation.

This supply chain research focuses on a process that ensures products are distributed to consumers with high quality and low cost. Competitive advantage can be realized through value and productivity advantages.

This advantage can be achieved through a process that ensures the production of high-value product characters desired by consumers. The dominant indicator of value in commodities is quality. Companies that are able to produce premium quality have a value advantage in front of consumers. Productivity advantage is reflected in high production volume with low cost per unit process.

A company's competitive advantage is built on the value it creates for its customers that exceeds the company's costs of producing it. Superior value is achieved by offering lower prices than competitors with equivalent advantages or by supplying distinct advantages that more than compensate the higher price. Purchasers are willing to pay more for superior value. This is more directed at how organizations can create goods that can give a higher value than the costs incurred, and consumers must feel that the benefits of buying specific are greater than the cost they have spent [17].

4 Conclusion

Supply chain management is applied to win or at least survive in market competition. Logistics 4.0 relies on and utilizes technology applications in order to be efficient and robust. Transporting and storing goods in their various stages of production, from raw materials to intermediates to finished products, as well as packaging and securing them are all part of the logistics process.

Competitive advantage can be achieved through ensuring the production of high-value product characters desired by consumers. The dominant indicator of value in commodities is quality. Companies that can produce premium quality have a value advantage in front of consumers. Productivity advantages are reflected in high production volume with low cost per unit process.

Manufacturing companies are advised to implement supply chain management and formulate appropriate strategies to compete effectively in an increasingly volatile and

unpredictable business environment. A partnership between academics and manufacturing practitioners can be nurtured as the basis for consideration of decision making and formulation of appropriate manufacturing strategy policies.

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