

The Benefits of an Integrated Supply Chain Quality Management

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Abstract

Although both have as referential customer satisfaction, Total Quality Management and Supply Chain Management strategies are rarely applied together, the element that differentiates them is precisely the way of approaching quality within the company or in the entire supply chain. This paper aims at highlighting aspects regarding the application of Total Quality Management principles in the supply chain, analyzing the most common practices in the field of Supply Chain Management and representing the benefits resulting from the integrated approach of these two strategies.

Keywords: Supply Chain Quality Management; strategic planning; customer satisfaction; integrated approach.

1. Introduction

Understanding the changing preferences of customers while obtaining their trust and confidence are some of the biggest challenges companies face today. Innovating is, therefore, essential to keep up with trends and develop adequate responses to outside stimuli. Low quality is not an option. However, delivering top-quality products does not guarantee market competitiveness, mostly because customers have further requirements. They expect the products to be delivered at the right place and at the right time; that requires sustainable measures based on an automated, cost-effective logistics system, effective procurement, production, distribution, and inventory management. We believe that competition is no longer carried on between companies, but between their supply chains, so managers must adjust their management strategies and integrate the latest Supply Chain Management (SCM) practices. While Total Quality Management (TQM) is focused on quality assurance and total control of processes and resources to ensure that the products fit the customer requirements, SCM adds a new dimension to quality management, bringing up the idea of efficiency by adding short-term delivery deadlines.

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2. Materials and methods

2.1. Total Quality Management and Supply Chain Management

Leadership and organizational effectiveness of companies are based on the concept of quality, being closely linked to the development of sustainable resource management, where an efficient logistics system has as effects, on short-term, increased productivity and real economic benefits, and on long-term, a truthful competitive advantage. In this context, Total Quality Management is the most commonly used management strategy, which focuses on cost reduction, quality assurance of goods and services, customer satisfaction, employee awareness, as well as analysis of the results and ongoing performance monitoring. According to [1], Total Quality is “an effective system for integrating the quality development, quality maintenance and quality improvement efforts of the various groups in an organization to enable production and service at the most economical levels which allow customer satisfaction.” Quality tools include, but are not limited to, case analysis tools, decision making, and assessment tools, data collection and analysis instruments, affinities diagram, benchmarking analysis, brainstorming, project management tools, and other process management tools. Although quality management has its origins in the production sector, the concept has spread rapidly in the service sector, including logistics, where quality management principles are successfully applied to deliver quality services at low costs. One of the most prestigious groups of US logistics specialists, The Council of Logistics Management uses the term *logistic management*, which is defined as: “the process of planning, implementing, and controlling the efficient, effective flow and storage of goods, services, and related information from the point of origin to the point of consumption to conform to customer requirements.” [2]. Logistics is part of a broader framework that focuses on the coordination of business functions (marketing, production, financial) within the company and between companies. The process is known as *the logistics chain* or *the supply chain* or *the chain of suppliers*. Logistics includes storage management, transport operations management, inventory control, order issuance and processing, carrier selection, product packaging, palletizing, and the return of the goods (reverse logistics) [3,4]. No matter how proper the company's internal administration is, its decisions will typically be affected while interacting with external entities. That causes the shift from the concept of logistics as an internal activity of the company, most often for operational purposes, to logistics in the form of the supply chain. The design and efficient operation of a supply chain is a component of the planning activity performed on a strategic level, involving network configuration decisions regarding the location, the capacity of the facility and the technology required, as well as on tactical level by making decisions regarding the purchase, processing, and distribution.

2.2. Embedding Total Quality Management into the supply chain

The conceptual basis of TQM's philosophy is the principle of continuous improvement. It integrates the efforts of all the personnel involved to provide quality products and services that fully satisfy the customer's requirements [5]. Considering the different opinions expressed by specialists [4,6], the basic principles of Total Quality Management applied within the supply chain are (Figure 1):



Figure 1: Integrated Supply Chain Quality Management

- *Customer focus:* the fundamental purpose of any customer, both individuals and institutions, is to get the required good or service at the best value for money and under the most advantageous conditions. To keep the pace, the suppliers must show increased adaptability and continuously develop the ability to understand and meet the demands of their customers. Since the supply chain includes the end-user, the supplier, and several customers, who, in turn, become suppliers for other constituent elements of the chain, there is a need for appropriate communication between them.
- *Leadership and commitment towards quality:* besides developing a quality management system, top management must consider the significance of quality and innovation and include strategies to improve the quality of provided goods and services. Since it is directly responsible for the quality management system's effectiveness, the top-level manager must lead and support those who contribute to the fulfillment of performance targets, indicating the role and responsibilities of each team and allocating resources efficiently. Moreover, it must ensure that all parties involved (upstream and downstream) engage with meeting the standards, and they prove their commitment to the continuous development of a quality management system.
- *Engagement of people:* total involvement of the employees can only be achieved by empowering them, eliminating any fears regarding the workplace, cultivating their sense of responsibility and involving them in the decision-making process, but also encouraging them in terms of professional development and by providing them training courses and programs, but also rewarding innovative ideas or ideas that create value.
- *Process-based approach:* the supply chain includes a series of correlative processes, such as acquisition, production, storage, sales, or transport, based on their own rules and with personal goals, independent of each other. However, the output elements from a process represent the input elements in the next process. Thus sometimes, some dysfunctions may have the effect of weakening or even breaking the whole chain.
- *Relationship management* is an essential part of quality management as its mission is to achieve the

company's vision, mission, and objectives. All employees of the company and upstream and downstream companies involved in product supply are aware of their importance as elements of the supply chain and contribute to the continuous improvement of quality. The TQM implementation team settles meetings and reunions to discuss specific issues (ex. Delays of carriers on the x road, delays caused by customs formalities) and formulate solutions for unresolved issues (e.g., route reconfiguration, back-up solutions).

- *Continuous improvement*: the key element of gaining a competitive advantage is not just tracking the quality of products or processes but also ensuring the entire supply chain's performance. Continuous improvement and innovation are two essential attributes, with direct implications for developing the company's ability to respond to a dynamic market and adapt its products to the customers' needs. Examples of such initiatives are: adapting logistics services to specific customer requirements, facilitating the ordering process, reducing delivery times, and managing customer complaints.
- *Evidence-based decision making*: a thorough management analysis must support the decision-making process. It takes into account a series of predictions based on past activities, the information contained in audit reports, and customer complaints. It reduces the risk of decisions based on personal opinions.
- *Mutually beneficial supplier relationship*: in the context of TQM implementation on the supply chain, the manager's responsibility is to establish an effective product inspection strategy and build mutually beneficial relationships with suppliers to create value for the entire supply chain. Thus, more and more large companies pay special attention to supporting suppliers, such as by providing capital, technology, human resources, equipment, and training or assisting with specialists to help them improve their processes, thus pursuing the gain of multilateral benefits.

2.3. The impact of Supply Chain Management practices on the company's performance

The Supply Chain Management approach implies integrating all elements of the supply chain into a single entity and managing it as a whole while being aware of the value and particularities of each element within the chain, as well as the relationships between them, with the ultimate purpose of creating value and achieving customer satisfaction – both intermediaries and customers (Figure 2) [6,7]. Improving the quality of processes within the supply chain brings cost reductions, enhances resource management effectiveness, increases productivity, and ensures business sustainability. There are three processes related to the supply chain: acquisitions, internal logistics, and distribution [4].

- *The acquisition* is the primary function of supplying. It manages all the activities and processes to provide the company with raw materials, goods, and services required.
- *Logistics* refers to the transport and storage of products along the supply chain. It turns the purchased products into ready-to-deliver goods.
- *The distribution* includes a series of activities carried out for the efficient placement of goods from the source of supply to the point of delivery indicated by the customer.

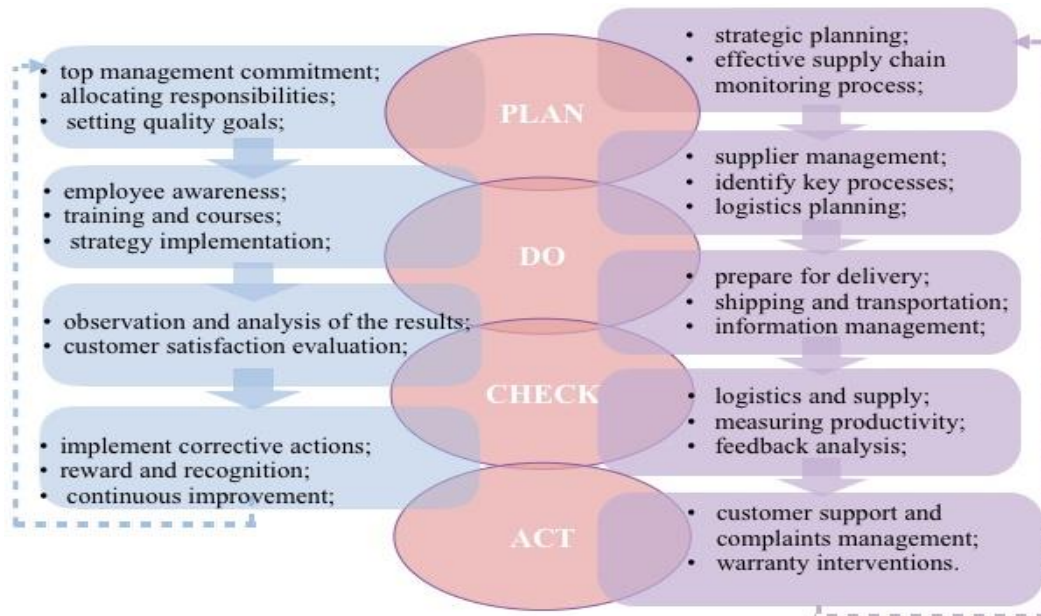


Figure 2: PDCA cycle in Supply Chain Management

In practice, there are five essential practices in the field of SCM [6,7]:

- *Strategic planning:* managing material, financial, human capital, and information flow, and developing strategies regarding responsibilities and delegation of authority.
- *Information management:* companies must implement efficient information systems to manage data regarding costs, budgets, deliveries, profit, or complaints. Information and communication technologies are vital elements in developing relationships between suppliers, sub-suppliers, or courier companies, practically among all the elements of the supply chain.
- *Management of customer complaints and suggestions:* collecting customer complaints and communicating them to employees across the entire supply chain helps them understand the customer requirements so that the products and services offered can fully satisfy their needs. Moreover, based on feedback received, companies reassess their activity and raise their standards to fulfill their customers' expectations.
- *Close relationship with key suppliers:* inventory reduction can be considered a referential to the company's competitiveness, hence choosing suppliers and strategic partners within the supply chain and building a strong relationship with them bring multilateral benefits, primarily because they provide a favorable climate for optimizing processes and developing new strategies to improve the quality of delivered products, but also because it develops a culture of quality that transcends organizational boundaries, integrating quality in the supply chain.
- *Reducing delivery time:* in today's society, ensuring customer satisfaction no longer translates only into the delivery of quality products, without defects, but in several advantages, most importantly delivering maximum efficiency or better said, precisely at the right place and at the right time.

2.4. Integrating TQM and SCM: similarities and benefits

Implementing an integrated TQM-SCM strategy has the effect of improving the company’s performance, but only under the conditions of participatory management and by directing efforts to improve customer relationships and fulfill their expectations (Table 1). Thus, in the case of a policy based on the SCM approach, the top management should consider the organizational culture of each company from the supply chain. He should develop strategies to manage all the resources upstream and downstream of its own company and carefully manage customer feedback.

Table 1: Benefits of implementing an integrated TQM-SCM strategy

• market competitiveness	• management by facts	• safety deliveries
• customer satisfaction	• employee awareness	• „Just in Time”
• improved leadership	• information management	• faults reduction
• cost reduction	• close relationship with suppliers	• positive feedback
• quality goods and services	• efficient resource management	• market expansion

Simultaneous implementation of TQM and SCM involves adopting particular practices [7], such as employee awareness, customer relationship management, resource management, strategic partnerships with key suppliers, information and communication technologies, organizational culture, feedback analysis, and continuous improvement.

3. Results

Public entities and private companies have a different perspective on the implementation of Total Quality Management practices on Supply Chain Management and applying them to improve companies' performance. This research aimed to determine the level of comprehension of TQM's fundamental principles and whether their management approach is focused on customers' needs and to highlight the different approaches to SCM on public/private companies. The comparative analysis is based on survey research, taking into consideration the responses obtained from 50 public organizations and 50 private companies from Romania, the largest country in Southeastern Europe. We sent email surveys to logistics companies and specific messages to logistics managers using the LinkedIn app, trying to collect data regarding their perception of the relationship between TQM and SCM. The managers had to give grades to specific TQM-SCM practices used in their companies, using a scale from 1 to 5, following their importance on the supply chain performance. The advantage of survey research is the number of organizations participating in the study and the use of standardized data, which allows an objective comparison. Still, there are limitations regarding the lack of detail obtained from the survey responses and the managers’ unwillingness to provide accurate or honest answers. The study revealed several impressive results that require further research. One particular area relates to the customer focus and improving effectiveness in private companies, while public institutions mainly focus on resource management and strategic partnership.

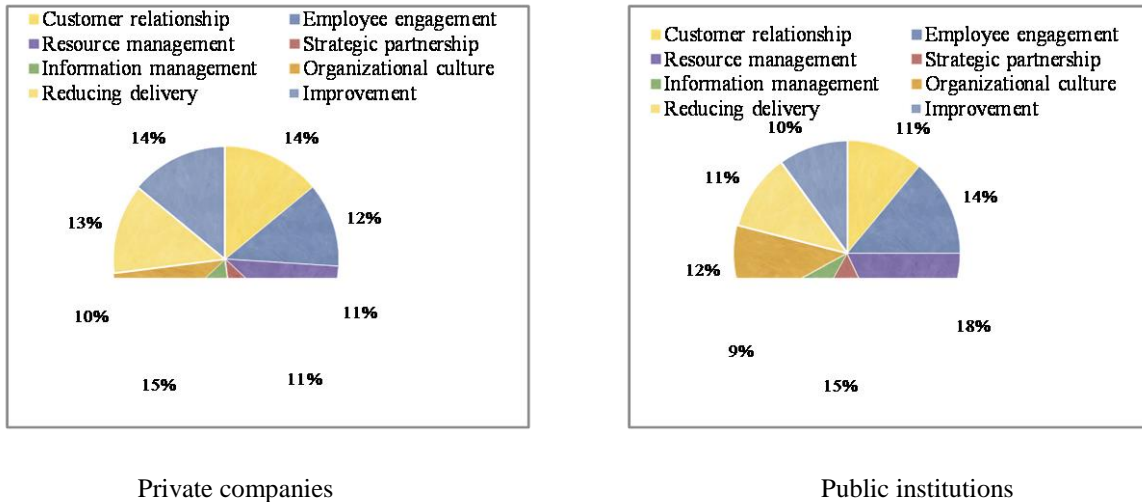


Figure 3: Logistics managers' perception of TQM – SCM practices

Both management strategies have good results, though private companies have more interest in improvement (e.g., information management and reducing delivery), which has better results in the long-term. On the other hand, institutions use limited public funds to procure goods and services; therefore, effective resource management is more than necessary. Furthermore, employee engagement should be a widely used strategy. Both private and public SCM and TQM managers should pay more interest to these practices, because they deliver superior value to customers and affect the system’s overall performance, positively influencing the supply chain management.

4. Conclusion

While business performance focuses on continuous improvement, with the primary objective of maximizing customer satisfaction by providing the right product under the right conditions and at the best price, obtaining the competitive advantage is therefore conditioned by the integration of strategies, partnerships, technologies, and information systems meant to give value to the entire supply chain. The flexibility and collaboration between raw material suppliers, manufacturers, logistic companies, and customers are the key elements of a modern vision, based on several practices that have proven their effectiveness over the years. Implementing a Supply Chain Quality Management strategy starts with developing a quality improvement plan with defined responsibilities and authorities for each supply chain element. TQM and SCM surely have their particularities, but an integrated approach can maximize the benefits obtained throughout the entire supply chain to fulfill the essential purpose of achieving customer satisfaction.

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