

SUPPLY CHAIN IN THE CONTEXT OF QUALITY MANAGEMENT PRINCIPLES

LANAC OPSKRBE U KONTEKSTU NAČELA UPRAVLJANJA KVALITETOM

Doc. dr. sc. Miroslav Drljača
IAQ-Associate Academician
Zračna luka Zagreb d.o.o. & University North, Croatia
E-mail: mdrljaca@zagreb-airport.hr

Doc. dr. sc. Sanja Zambelli
Polytechnic of Rijeka
E-mail: sanja.zambelli@veleri.hr

ABSTRACT

Supply Chain is a complex system of suppliers, manufacturers, distributors and retailers integration for the purpose of producing and distributing goods / services in the right quantity, in the right place and at the right time, with a view to balancing supply and demand. It is a complex structure made by a numerous of subjects of different specialties. In order for the supply chain to fill its purpose it is necessary for each of the participants to perform their activities in a quality manner or in a manner that meets the customer requirements. Given the complexity of the structure, the number of participants and the diversity of activities, the supply chain quality management is a complex task. In order for the supply chain to be at the required level of quality, it is necessary to achieve the required level of quality of every activity, in all its structural elements. In the paper, using scientific methods of cognition, authors research the application of the quality management principle in accordance with the requirements of the international standard ISO 9001:2015 and explains how they affect the supply chain quality.

Key words: supply chain, quality management principles, supply chain quality.

REZIME

Lanac opskrbe kompleksan je sustav integracije dobavljača, proizvođača, distributera i trgovaca u svrhu proizvodnje i distribucije roba/usluga u pravoj količini, na pravom mjestu i u pravo vrijeme, s ciljem uravnoteženja ponude i potražnje. Radi se o kompleksnoj strukturi koju čini niz subjekata različitih specijalnosti. Da bi lanac opskrbe ispunio svoju svrhu potrebno je da svaki od sudionika svoje aktivnosti obavi kvalitetno, odnosno na način koji ispunjava zahtjeve korisnika. S obzirom na složenost strukture, brojnost sudionika i različitost aktivnosti, upravljanje kvalitetom lanca opskrbe kompleksan je zadatak. Da bi rezultat lanca opskrbe bio na zahtijevanoj razini kvalitete, nužno je dostignuti zahtijevanu razinu kvalitete svake aktivnosti, u svim njegovim strukturnim elementima. U radu, primjenom znanstvenih metoda spoznaje, autori istražuju primjenu načela upravljanja kvalitetom sukladno sa zahtjevima međunarodne norme ISO 9001:2015 i objašnjavaju način njihova utjecaja na kvalitetu lanca opskrbe.

Ključne riječi: lanac opskrbe, načela upravljanja kvalitetom, kvaliteta lanca opskrbe.

1. INTRODUCTION

In the Supply Chain (SC), numerous organizations are involved: suppliers of raw materials, manufacturers, logistics distribution centres, retail organizations, transport organizations and others. They are usually at different levels or at various stages of implementing a quality management system or an often integrated management system. This can affect the quality of the results of particular processes within SC or parts of these processes. Since each activity within these processes is equally important for the quality of the SC and the level of customer satisfaction at the end of SC, it is necessary to strive to equalize the quality level of all SC processes. This is a complex task and requires a full team approach to the SC quality management phenomenon. Quality Management is a process that recognizes and manages the activities needed to achieve the quality goals of an organization." [1] In modern terms, it becomes a business function as any other, with the participation of numerous specialists from different specializations and from different parts of the organization. The unique application of the quality management principle to all processes in all SC organizations contributes to the harmonization and equalization of the quality of all processes within SC, thus contributing to the quality of SC as a whole.

2. SUPPLY CHAIN

The SC is a complex structure. It is a complex system of integration of suppliers of raw materials, manufacturers, distributors and retailers for the purpose of production and distribution of goods / services in the right quantity, in the right place and at the right time, with a goal to balancing supply and demand. The traditional approach shows the SC as a one-way movement, from the procurement of raw materials to the production, to the distribution and sale of finished products to the end-user (Fig. 1). And this one-way structure is very complex because it is made up of a number of participants who carry out numerous activities within each process and so significantly affect the quality of the entire SC.

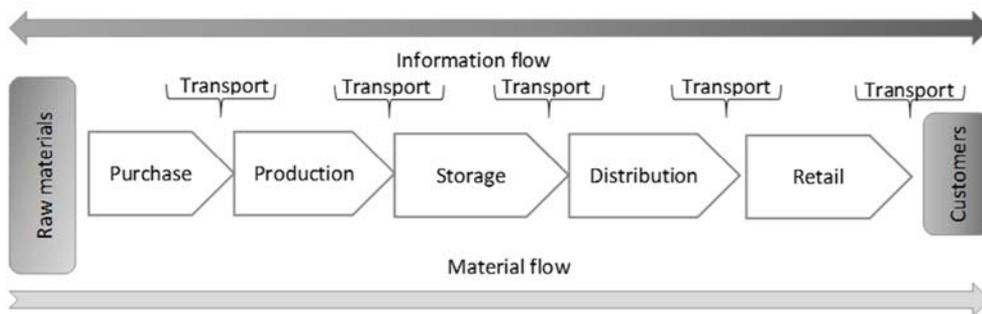


Figure 1. Supply Chain – traditional approach

The SC definition is complex, too. SC has the focus on the flow of goods. In addition to commodity flow SC also includes the flow of services and information. SC is a dynamic phenomenon. While traditional logistics is primarily based on warehousing and transportation activities, the SC also implies the flow of information between the many SC participants. Therefore, there is a need to talk about the flow of goods and information among SC participants, namely suppliers of raw materials, transport organizations, producers or service providers, product distributors, retailers that enable the product to reach the end-user and become a consumer. The same principles apply to services.

“The SC can be defined as a type of a dynamic system in which information, money and products are constantly exchanged among the chain participants.”[2]

„The supply chain can be considered a network of structures, distribution, transformation of procured materials into semi-products or final products for customer.”[3]

The SC can also be described as “... a series of activities and organizations through which materials pass during their journey from initial suppliers to end-customer.”[4]

Modern approach to SC is not a one-way phenomenon. It doesn't end with waste disposal in the environment after each SC cycle. What distinguishes it from the traditional approach (Fig. 2) is a feedback. “Waste is no more disposed of uncontrolled in the environment but is recycled. Part of waste that can no longer be recycled is disposed of permanently in a non-hazardous manner, in accordance with the regulations.”[5]

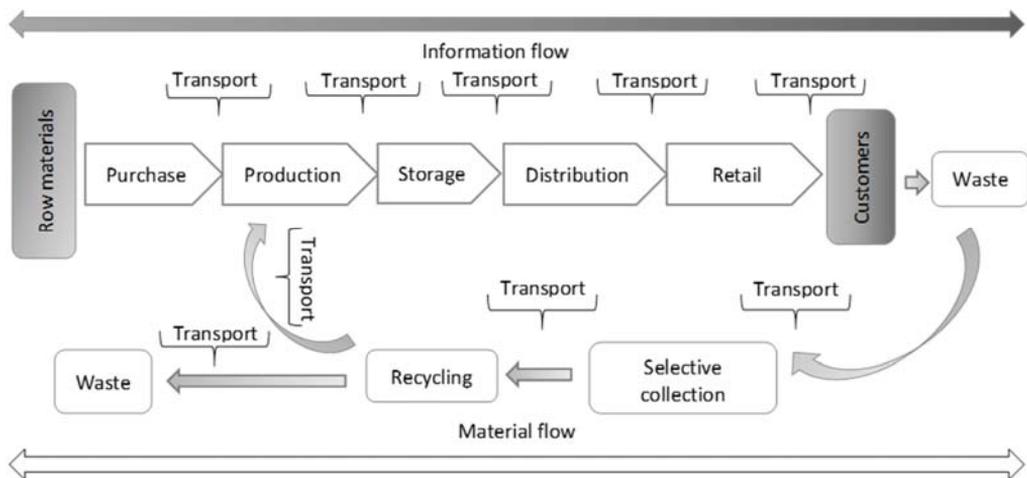


Figure 2. Supply Chain – modern approach

From the view (Fig. 2) it can be concluded that the SC – modern approach makes an even greater number of participants performing activities within the individual processes and thus significantly affect the quality of the SC. Their number is bigger than the SC – traditional approach (Fig. 1) because it also includes participants who manage selectively collected waste, recycling, and so on.

3. QUALITY MANAGEMENT PRINCIPLES

International Standard ISO 9000:2015 is based on the quality management principles described in that standard. The descriptions include a statement of each principle, a rationale of why the principle is important for the organization, some examples of benefits associated with the principle and examples of typical actions to improve the organization's performance when applying the principle. The quality management principles are:[6]

- *Customer focus*: Organizations depend on their customers and therefore should understand current and future customer needs, should meet customer requirements and strive to exceed customer expectations.

- *Leadership*: Leaders establish unity of purpose and direction of the organization. They should create and maintain the internal environment in which people can become fully involved in achieving the organization's objectives.
- *Engagement of people*: People at all levels are the essence of an organization and their full involvement enables their abilities to be used for the organization's benefit.
- *Process approach*: A desired result is achieved more efficiently when activities and related resources are managed as a process.
- *Improvement*: Continual improvement of the organization's overall performance should be a permanent objective of the organization.
- *Evidence-based decision making*: Effective decisions are based on the analysis of data and information.
- *Relationship management*: An organization and its suppliers are interdependent and a mutually beneficial relationship enhances the ability of both to create value.

4. SUPPLY CHAIN IN THE CONTEXT OF QUALITY MANAGEMENT PRINCIPLES

From Table 1 it can be concluded that SC – modern approach differs from the SC – traditional approach and because there is one more complex process that actually determines it as SC - modern approach, which is the waste management process.

Table 1. Supply Chain processes

Supply Chain processes – traditional approach	Supply Chain processes – modern approach
Raw material procurement process	Raw material procurement process
Production process	Production process
Storage process	Storage process
Distribution process	Distribution process
The process of transport	The process of transport
	Waste management process

The waste management process consists of several characteristic process steps, primarily selective waste collection, recycling and permanent non-hazardous waste disposal that can no longer be used in the production process as raw materials. This determinant is very important because it determines SC – a modern approach as a SC that takes place, among other things, on the principle of sustainable development. This is again important from the point of view of quality requirements as the number of quality requirements that such SC needs to be met is increasing. So the quality management principles should also apply to the waste management process that actually makes feedback. And just feedback is a phenomenon that is credited with transforming SC from traditional to modern approach. This feedback confirms that the SC management system is an integrated management system consisting of at least two management systems: the quality management system and the environmental management system.

The quality management principles need to be applied to all processes that take place within SC (Fig. 3). The quality of each of these processes is equally important, as well as the application of each of the principles, for SC quality as a whole. A systematic, integrated, consistent and comprehensive way of improving the performance and quality of the overall organization and each process is needed.

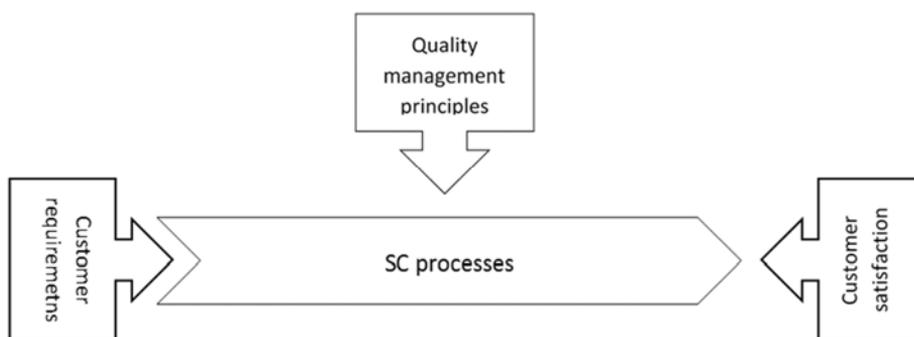


Figure 3. Supply Chain quality management model

The level of customer satisfaction of SC depends to a large extent on the application of quality management principles to all SC processes. SC participants are numerous organizations that perform certain processes or their parts. Each organization operating within SC is responsible for the quality of the process or part of the process it manages.

5. CONCLUSION

In order to reach a high level of SC, despite the numerous SC participants, it is necessary to harmonize the quality management system in the organizations of all SC participants, which means: to carry out education in all organizations according to a harmonized scheme, to apply a unique methodology for modelling business processes, to consistently apply the management principles quality at all processes in all organizations participating in SC, equally understand and consistently meet the requirements of ISO 9001:2015, as well as other standards. This is because management systems in all organizations are, to a greater or lesser extent, integrated, irrespective of the degree of knowledge of the management of this fact. SC is of particular importance to the economy of each country and its competitiveness as it defines material, information and financial flows. Any disorder that manifests itself in deviation from the required quality of SC can cause serious market disturbance and jeopardize SC mission, which consists in the integration of suppliers, manufacturers, distributors and retailers for the purpose of producing and distributing goods / services at the right quantity at the right time, with a goal to balancing the supply and demand on the market and thus the stability of the market. This actually means that the SC is in the function of ensuring the operation of one of the basic economic laws, which is the law of supply and demand. This phenomenon has its inner, national, regional and global context.

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