

# THE ESSENCE OF QUALITY IN CORPORATE LOGISTICS MANAGEMENT

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**Abstract:** The purpose of this article is to present theoretical determinants of quality related problems in the management of modern corporate logistics. The article presents general matters relating to the interface between quality and logistics from the perspective of the determinants, advantages and disadvantages for the operation of modern enterprises.

**Keywords:** quality, logistics, management, enterprise.

## 1. Introduction

Presently, we can observe an enormous increase in the interest in quality related matters with respect to various fields of economic activity. Intensification of challenges creating new conditions and dynamics of operation of enterprises has become the reason for which attention has been paid to quality and its importance in such areas such as, for instance, production, customer service, management, or logistics which is a reference point for the deliberations undertaken in the article. Quality is a multidimensional and extremely complex phenomenon, and quality management, in particular in logistics which is one of the main driving forces in economy, becomes a necessity.

In the highly complex and turbulent environment in which modern business entities are supposed to carry out business activity, there are numerous approaches to succeeding in business. Along the development of logistics, there also develop numerous concepts which make up for the related effects, among which one may observe the concept of management through quality. The purpose of this article is to present theoretical determinants of quality related problems in the management of modern corporate logistics. The article postulates that enterprise strive to succeed through developing quality in logistics, while demonstrating opportunities and risks associated with it. It might appear to be an obvious postulate, but in practice it is difficult to achieve, primarily due to the multidimensionality of logistic processes and the complexity of the issue of quality. It is but a challenge to 21st century enterprises.

## 2. Methods

The purpose of the article was accomplished based on the cited interpretations of the issues in question in the course of a subject matter literature study. In particular, logistics, quality and enterprise management were considered. The research method used in this article is the analysis of the domestic and foreign subject matter literature, mainly non-serial publications and scientific articles. A subjective selection of literature sources was significantly reduced due to the limited space available in this article to present the specifics and the essence of the problems of management science as a vehicle for the author's own considerations.

## 3. Results

### 3.1. Quality and logistics

Co-existence of the concepts of quality and logistics is an integral part of the contemporary market. Relativity as well as some kind of multidimensionality of views defining quality result in that there is actually no single definition applicable to each and every case, and the concept of quality itself does change over time. Issues related to the concept of quality are of interdisciplinary nature. The term is interpreted differently in economics, sociology and marketing, it is interpreted differently in philosophical, production related, humanistic and technical terms, and it is perceived differently from the perspective of logistics. Quality is also interpreted differently by customers, consumers, buyers, manufacturers and other links in the distribution chain (Zapłata, 2009). On the other hand, logistics is generally defined as an activity coordinating flows of articles, information and funds within a given supply chain (Bowersox, Closs, and Cooper, 2012). Integration of flows and processes, and focus on thorough coordination and cooperation in resource flow processes are immanent identifiers of logistics. Its purpose is to 'coordinate the flow of raw materials and finished products, minimising the cost of the flow, and subordinating the logistic activity to the customer service requirements' (Christopher, 2011). In logistics, the most efficient and highly effective action to safeguard the functioning of all the primary processes carried out within a given operation system continues to be of primary importance (Langley, 1990). Objectives of logistics centre on three basic issues, namely quality, cost and time, both in operational and strategic terms.

Overall (total) quality of a product or service is made up of: overall quality and logistic quality (Price, and Harrison, 2013). Quality is linked to each and every aspect of the functioning of an enterprise, and it is an ambiguous, difficult-to-define category which refers

to both products and services, knowledge, information, management, and life in general (Cichoń, 2012). Quality means compliance with customer requirements, the level of customer expectation fulfilment, 'the level to which a set of inherent characteristics fulfils the requirements' (Łunarski, 2008).

Combining logistic issues with quality management aspects which, until recently, were considered separately, resulted in the distinguishing of the concept of logistic quality. Logistic quality is defined as the potential to create a new value in enterprise management (Chopra, and Meindl, 2012). This concept is related to the usefulness of logistics in an enterprise, thus its ability to create benefits (Rushton, Croucher, and Baker, 2017). Logistic quality does not only mean the quality effects offered to customers but also the quality of management and the quality manufacturing processes. A higher quality of logistics management enables accomplishment of better economic results. Achieving a higher quality in the sphere of production requires attention paid to the enterprise management quality, including the quality of management in the sphere of logistics. The logistics management quality enables accomplishment of better results with lower inputs, meaning accomplishing something which, until recently, appeared to be unaccomplishable (Bozarth, and Handfield, 2016). 'Quality' is not only the result of the production process, but it is determined by all the processes integrated within and for the creation and delivery of services to the customer' (Blaik, 2016). According to the Total Quality Management (TQM) concept, it is a prerequisite for the fulfilment of multiple and multidimensional needs of customers (Page, and Curry, 2000). The quality of the activities and the services carried out and provided by an enterprise refers to all the processes associated with creating and delivering values and benefits for the customer. One of such processes is the logistic process which, on the one hand, affects quality through an objective determination of quality features and, on the other hand, due to the fact that logistic processes are implemented at the interface with customers, so it has a direct impact on the functional dimension of quality (Blaik, and Matwiejczuk, 2008). In logistic services, quality refers to all the properties affecting a given logistic service's ability to meet both identified and anticipated needs. Customers' typical expectations in terms of logistic activities include, among others, punctuality and short delivery times, reliability, flexibility, unambiguous condition and characteristics of deliveries, and others.

The logistics system and the quality system are characterised by their integrating nature. The interaction between the two systems is based on customers' needs which are the central point of reference both in the field of logistics and in the quality science (Fonseca, Pinto, and Brito, 2010). On the other hand, the aforementioned systems are primarily differentiated by the area of the impact. A logistics system mainly focused on managing the flow of materials and information has a narrower range. In turn, a corporate quality system, as a kind of an organisational structure and procedures, processes and policies relevant to quality management, has a greater coverage (Brewer, Button, and Hensler, 2001). In addition, it should be mentioned that in logistics the quality programme is included in the overall quality

programme of the enterprise. The main factor of both of those programmes is the customer orientation and integration of all the levels of business and all the employees of the enterprise.

In economic practice, mutual relations between quality and logistics are considered in the following sections (Jeziński, 2017):

- internal logistics of enterprises and logistics of cooperation in the supply chain,
- the role of quality on the internal market and in cooperation with foreign entities,
- the function of quality in freely shaped and regulated areas.

A quality assurance motto which may successfully be applied to logistics as it is perfectly aligned with overriding purposes and activities implemented within this scientific discipline is as follows: 'Correctly and on time, for the first time, and every next time' (Rafele, 2004). One of the main principles of logistics states that the task of logistics is to ensure the required conditions (appropriate parameters) of goods at every stage of their presence in the logistics system, which directly translates into the quality of the product at the outlet from the system (Toman, 2011).

In logistics, quality means fulfilment of the customer requirements and expectations previously agreed with the customer with respect to the following customer service characteristics (Kisperska-Moroń, Płaczek, and Liniecki, 2003):

- the ease of obtaining necessary information, submitting and forwarding orders,
- the timeliness and reliability of deliveries and communication,
- the execution of orders in an accurate and complete manner, without unnecessary documentation,
- the timeliness and sensitivity to the after-sales service customer needs,
- the accuracy and timeliness of obtaining and forwarding information between functional departments within the company and between the company and its external partners.

Quality in corporate logistics is determined by the so-called logistic triangle principle. This principle states that the creation of a 'new value' for the customer requires three elements (Ładoński, and Szoltysek, 2007):

- synchronisation of activities within the three critical areas of logistics, namely: supply, production and distribution,
- optimisation of the use of the most important instruments of logistics (employees, fixed assets, equipment),
- assurance of an adequate quality of products.

Viewing the logistic chain from the quality management perspective may regard such issues as, among others, the logistic strategy, decisions pertaining to the adequate selection of raw materials and suppliers, the quality of subcontractors, the product designing process, installation in accordance with the 'just-in-time' concept, and the product storage (Coyle et al., 2016).

Logistics or, to be more precise, logistics management focused on quality first of all requires the integration and rationalisation of all the quality assurance processes as well as designing and developing such logistics systems that will enable the enterprise to accomplish long-term objectives (Rafele, 2004). The essence of quality in logistics generally boils down to providing customers with the highest value by meeting their requirements and needs. Therefore, it may be said that the basis of the concept combining quality and logistics management is to seek and develop high-quality logistics systems giving the possibility of anticipating (i.e. predicting, forecasting), realising and exceeding customer requirements.

The formal quality assurance process is characterised by four main stages: the transition from quality control to quality assurance, followed by comprehensive quality management evolving towards creation of values for the customer. In logistics, the quality assurance process comprises six steps (Coyle et al., 2016):

- commitment of the entire organization,
- understanding of customer needs and requirements,
- measurement of current performance,
- development of a quality strategy,
- implementation of the quality assurance process,
- continuous process improvement.

In conclusion, it needs to be stated that the issue of quality in logistics is quite a complex one. Customer service, to which all the activities of a given enterprise are now subordinated, may be considered the basis for the integration of logistics and quality objectives. Comprehensive quality management is more and more frequently applied in contemporary business practice, also by enterprises in which logistics plays an important role.

### **3.2. The importance of quality to logistics management in the 21st century**

In today's turbulent and highly competitive world, no enterprise may afford to ignore the contemporary methods of managing organisations which include, among others, quality management systems. Unfortunately, conventional strategies often turn out to be insufficient (Romanowska, 2009).

More and more enterprises take serious steps towards the preparation and implementation of processes to improve quality in logistics. Incentives encouraging to ensure corporate logistics quality are numerous. Among the most common causes of corporate interest in the improvement of logistics quality, which may also be classified as both chances of survival and opportunities for development in the current economic reality, we may distinguish (Bozarth, and Handfield, 2016):

- acquiring or increasing competitive advantage over other enterprises,
- following the actions of competitors,
- striving to eliminate the errors made in the past in relation to service,

- striving to meet customer needs and requirements,
- being able to reduce operating expenses,
- participating in initiatives involving the entire enterprise,
- logistics quality management realising the need to improve quality in logistics.

Application of the logistics quality comprehensive management concept, in particular with respect to the supply chain, is associated with the attempt to achieve the so-called 'logistic excellence' which the enterprise achieves upon fulfilment of the eight essential criteria being the elements of the quality assessment concept (Bowersox, Closs, and Cooper, 2012). The elements of the corporate logistic excellence include: partnership with customers, partnership with suppliers, long-term planning, integration of corporate functions, technological advancement, personnel mobilisation, an integrated information system, and quality indicators (Blaik, 2006). An enterprise may achieve logistic excellence in many ways. These include, among others, adequate planning and thorough integration of corporate functions.

Logistics quality management is a complex issue the importance of which to small, medium-sized and large enterprises becomes more and more significant over time. Ensuring adequate levels of quality in the enterprise, especially with regard to logistic processes, is now one of the main challenges for businesses (Blut et al., 2014). Complexity of quality management issues is highlighted by, among others, A. Hamrol Zymonik and Z. (2017), K. Lisiecka (2013), W. Łunarski (2008), E. Fiddler (2000), W. Urban (2018), and S. Wawak (2011), who promote interpretation of the concept as a planned and structured impact of the managing system on the managed system which comprises everything that leads directly to the fulfilment of quality requirements, subject to that the quality of any product/produce or service should be perceived as a relation between the properties of the product and the needs of the consumers (Evans, and Lindsay, 2016; Garvin, 1988; Urbaniak, 2004). This article interprets management of quality in logistics as management covering all the actions undertaken by the management of the enterprise, reflected by the adequate level of customer service logistics quality, enabling to generate lower costs of logistic processes and meeting all the other corporate logistics management objectives.

In the 21st century economy, dependencies between logistics and quality are more and more distinct. Logistics, due to its universal nature manifesting itself in the ability to use it in virtually any management area, has become one of the most important management tools used in the enterprise (Bendkowski, Kramarz, and Kramarz, 2010). On the other hand, quality is of significant importance to the survival, development, and broadly interpreted market success of enterprises. Combination of quality management and logistics management is the key to the success of the twenty-first century companies which, according to W.E. Deming, is the century of quality (Hamrol, 2008). Quality is more and more frequently perceived as one of the most important determinants of competitiveness of enterprises (Ingaldi, 2016).

Quality management in the area of logistics is an extremely important field. Quality in logistics is important both from the perspective of individual actions, processes, or logistic

chains, and entire logistics systems – to each link separately, and to all of them together (Nowakowska-Grunt, and Mazur, 2015) It is crucial to both the efficiency of the enterprise and the development of its corresponding image.

In the era of dynamically developing concepts of management, including quality management and logistics management, particular attention should be paid to the need for a multidimensional analysis aimed at providing quality in logistics with a new dimension and meaning, which will result in an increase in the efficiency of enterprises through the use of opportunities and elimination of threats posed by the efficiency and rationalisation potential of the combination of those two trends in management.

There are more and more postulates supporting application of the quality policy to the logistic processes carried out. Enterprises more and more frequently decide to integrate quality and logistics management systems, primarily due to possible advantages. Numerous companies undertake measures aimed at improving their business logistics in a manner enabling achievement of customer satisfaction by providing them with the best possible quality (Bienstock, Mentzer, and Kahn, 2015). The most important positive effect of the interest in the subject of quality in logistics has been presented in the next section of this article.

### **3.3. Conditions, benefits and difficulties of modern enterprises related to the implementation of quality management in logistics processes**

After a brief introduction to the problem of coexistence of the concept of quality and logistics in enterprises, and explanation of the essence of this type of combination, it is advisable to analyse the advantages and disadvantages of the solution discussed that may determine the success or failure of the implementation of the decisions made in terms of shaping quality in logistics. It should be noted that opportunities may become threats, and vice versa; therefore, it is worth to closely observe the changes arising both inside the enterprise as well as in its close and distant environment (Nogalski, and Śniadecki, 2001).

'Since the dawn of time, quality has been a challenge for mankind and a signpost to development' (Fraś, Gołabiowski, and Bielawa, 2006). Many years ago, an American statistician, E. Deming, a man known as the 'guru of quality', suggested what follows: 'Focus on quality, and profits will follow' (Hamrol, 2008). According to the Greek philosopher Plato, quality is nothing but 'a certain degree of perfection' (Fiddler, 2000). Following up on this statement, one may indicate that the pursuit of excellence should be the goal of every enterprise, mainly due to the fact that it is perfection that gives you the opportunity to succeed in the competitive struggle that has been accompanying enterprises since the earliest times. From the perspective of the specific nature of market operation of modern enterprises, an observation by M. Żemigala (2009) that 'quality is what distinguishes a company from the competition – a feature which is the most difficult to imitate' is particularly important. Thus, high quality is now a factor having a significant impact on the market success.

Research carried out by the Council of Logistics Management has shown that enterprises succeeding due to undertaking adequate actions in the quality assurance area may be characterised with the application of certain common features, namely (Coyle et al., 2016):

- conviction that all the employees are responsible for the improvement of quality,
- support and commitment of the chief director in activities aimed at improving quality,
- changes in the corporate culture consisting in focusing attention on customers and developing cooperation with suppliers,
- implementation of business processes irrespective of the functional divisions in the enterprise through the resignation from operation based on the so-called traditional 'functional funnel',
- clear tendency to perceive quality in logistics and work performance improvement in the company as an integral factor owing to which it is possible to succeed in the quality assurance process,
- regular measurement and reduction of variation in the implementation of the main logistics processes, for instance order fulfilment.

The new approach to the elements and processes related to the functioning of quality in the enterprise, more precisely – in relation to the logistics area, provides opportunities which, if properly identified, enable enterprises to adapt to the changing economic conditions and the ever increasing customer requirements (Perez et al., 2007).

In the case of quality impact on the operations of enterprises in the field of logistics, we are dealing with a wide spectrum of possibilities. Basic opportunities offered by the implementation of the concept discussed include:

- increasing the regularity and reliability of logistics processes,
- increasing the profitability of the company,
- succeeding in the competitive struggle on the market,
- gradual reduction of differences between the quality delivered to the consumer and the quality they expect,
- improving the customer service process on multiple levels of the enterprise operations,
- improving the coordination of activities between the supplier and the customer, timeliness of deliveries, and better quality of finished products.

Research into the impact of the marketing strategy on profit, carried out by Cambridge Strategic Planning Institute, showed that 'in general, companies providing high quality and having a high market share generate a five times higher margin of profit than companies at the opposite end' (Coyle et al., 2016). The statement, referring to quality in a comprehensive manner, makes it possible to presume that the aforementioned high quality, apart from the quality of the products and services as such, is also made up of, among other things, adequately structured logistic activities and processes (Kardas, 2015). Higher quality implies two types of benefits for companies, namely: reduction of the total cost as compared to

competitive entities through lower costs of quality, and the fact that quality is often the key factor in the purchase decision (Chen Chang, and Lai, 2009). Due to the foregoing, one may say that it becomes reasonable to perceive quality in logistics as a category affecting the company's profits, which in turn means that it is closely linked with the implementation of the basic objectives of the entity.

High level of quality facilitates accomplishment of the primary objectives of logistics, including in particular (Bowersox, Closs, and Cooper, 2012):

- reducing the costs of inventories,
- preventing additional costs due to the handling of returns, and related to storage and transportation,
- developing cooperation in the longer term, which in turn may lead to the integration of partners within logistics systems in the organisational and technical sphere,
- improving customer logistics service due to the increased value of products resulting from the increase in their quality.

Logistics makes it possible to achieve 'productivity through quality'. This is possible due to the fact that the implementation of the formal quality assurance process, also in the sphere of logistics, leads to a real decrease in the overall cost of operations. Coordination of quality improvement programmes and activities aimed at rationalisation of logistics in the enterprise makes it possible to obtain a synergistic effect in meeting the expectations of customers (Bansal, and Taylor, 2015). Awareness of the synergy discussed has a significant impact on the outcome of adaptation projects in logistics and quality within a given business entity to the ever-changing, ever-increasing demands of the modern market. So, the quality of the logistics management may stimulate accomplishment of positive results in all the main areas of business management, which may lead to an increase in the value of logistics services and the quality of the logistic relationships (Calabrese, 2012). One of the most significant prospects within the subject discussed is created by the broadly interpreted efficiency and rationalisation potential resulting from the combination of logistics and quality management.

Being aware of the benefits brought about by quality in logistics, one ought to pay attention an opposite phenomenon, namely certain dangers related to the problem. They are the opposite of the benefits; for instance, too low quality of basic logistic processes may lead to deterioration in the quality of goods and a loss of customers, and thus a reduction of the profits of the enterprise. Moreover, high level of quality of the products or services offered may be a source of challenges to the corporate logistics, associated with the need to handle more and more orders on newer and newer sales markets (Skowron-Grabowska, 2010).

This part of the article on the identification of possible threats to the application, lack of application, improper application, improper or incompetent application of the quality concept assumptions in logistics and logistic activities to improve quality is based on the following statement by K. Ishikaw: 'Quality is not everything, but everything is nothing without quality' (Hamrol, 2008).

According to Lao Tsu, 'quality is a kind of continuum that never ends. What appears excellent today does not need to be the same tomorrow. Perfection achieved is only temporary' (Kumar, 2013). These words seem to perfectly reflect the issues centred on the issues covering adverse aspects of the analysed concept. It is a threat in itself to the functioning of the enterprise, especially nowadays, to perceive quality in static terms, i.e. as a permanent element, because this factor is characterised by the enormous dynamics of the changes arising within it (Cavana, and Corbett, 2007). A failure to align the quality management policy in the sphere of logistics impact within a given business entity with the changing internal and external conditions may result in effects quite different from those assumed when undertaking activities aimed at integrating the quality management system and logistics management system.

Efforts to ensure quality assurance in logistics may be rendered void by a lot of different factors and situations which a given business entity will need to face. Among the most significant obstacles on the way towards improving the quality and performance in logistics, there are the following difficulties (Halvorsrud, Kvale, and Folstad, 2016):

- lack of support or insufficient support from information systems,
- barriers inherent within the company: both those of a functional nature and those of an organisational nature,
- lack of a structured database,
- incorrect identification of customer requirements and expectations, deviating from the actual status,
- disregard for the need to carry out training on the methods of improving quality,
- lack of recognition by the top management of the opportunities provided by the improvement of quality and performance in logistics,
- lack of monitoring of the company's activities which, although carried out outside the company, actually affect its functioning.

Appropriate decisions made in the area of procurement, warehousing, distribution and transportation have a significant impact on the quality of products. Other dangers arise, among others, from the lack of commitment of the top management, corporate myopia manifesting itself in the lack of recognition of contractors (i.e. suppliers and partners within the logistic channel) for the 'clients', or the lack of continuous updating of problems regarding quality assurance in logistics. As the above shows, paying attention to quality in logistics reveals a lot of logistical problems.

According to the views presented by W.E. Deming, in the future there will be two types of enterprises: those that have decided to implement a quality assurance system in their structures, and those that have dropped out of business (Hamrol, 2008). The very fact that an enterprise does not undertake any effort to improve the quality in various areas of its operations (or those activities are not sufficient) is a threat to it.

Due to the ongoing globalisation and deepening division of work, there is a justified fear that companies without logistics and due concern for quality will become companies with no future.

#### **4. Conclusions**

On the threshold of the 21st century, enterprises have to operate in a very competitive and dynamically developing environment. Coping with competition requires that enterprises create conditions for the development of modern management concepts, inclusive of paying attention to the opportunities brought about by the development of quality in the area of logistics. The importance and the scope of impact of quality of the operation of enterprises in the 21st century are increasing. The need to undertake appropriate initiatives is also visible in logistics. Changes in corporate attitudes towards simultaneous improvement of quality and logistics are necessary.

Application of the concept of quality management in logistics results from the search for new directions of effective corporate development. One of the most important reasons for the interest in quality in logistics is the effort to fill in the gaps existing between customer needs and requirements on the one hand, and the results actually obtained on the other hand, meaning avoidance of the differences between the expected quality and the quality delivered to customers.

Considering quality in logistics from the perspective of opportunities and threats that exist in relation to the specifics of the functioning of enterprises in today's modern and demanding market makes it possible to look at this issue in a comprehensive manner, and thus to contribute to a better understanding of the problem discussed. However, combining logistics and quality does not guarantee that the enterprise will succeed, but the versatility and flexibility characteristic of the concept, and the strong focus on customer needs, will make it possible to meet the challenges to companies that the modern markets pose.

Summarising the matters regarding the interface between quality and logistics, it may be concluded that because quality issues widely affect logistics, both favourably and unfavourably, quality may be considered as one of the most important determinants of the efficiency of logistics systems, in particular of the development of corporate logistics. Quality is a great challenge, not only to logistics, but also to many other areas of life, both in social and economic terms.

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