

# LOGISTIC PROCESS MANAGEMENT IN MODERN ENTERPRISES

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## 1. Introduction

This chapter presents the role and importance of logistic management in modern enterprises. At the outset author defined concepts of management and logistics, which play a vital role in the contemporary world. Thereafter logistic process of the enterprise and its four principal components – procurement, manufacturing, distribution and reprocessing has been described. The integration of these elements provides comprehensive management of the physical flow of materials and information transmission in all functional areas of business. In addition, thanks to the efficient organization system it contributes to the development of the company and facilitate obtaining a competitive edge. Management of logistic processes is here of paramount importance, as it determines the success of those processes and therefore – the enterprise itself. At the end author characterizes modern management concepts used in the logistic chain such as Lean Management, Agile Management, Quick Response, Just in Time and Total Quality Management, successfully put to use by a vast array of modern companies.

This chapter as the result of publication concerning the fields of management and logistics, constitutes an interesting study tackling the matter of logistic processes and ways to manage them efficiently. Aspects in question are ubiquitous in almost every manufacturing and trading company.

## 2. The notion and definition of management

Nowadays in order to efficiently manage the business and obtain a competitive edge, companies must meet many challenges of the developing world, such as globalization of the market for goods and services, rising competition as well as mounting consumers needs or alterations in the technology of data transmission. It goes without saying that to meet those requirements companies are ought to utilize the newest ideas and management sciences without which the organization is deprived of any chances of further development (Blaik, 2010).

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**Management** is an integral part of running a company, regardless of its profile. It includes setting organizational direction in the way that it is coherent, achieve its goals, develop and stands out from other enterprises. The main task of the person in charge is to make the most of every resource so as to fulfill underlying principles of efficient management. In order to do this one have to implement each and every function of management consisting of: planning, organizing, management of corporate finances, operations, information, human resources, marketing and controlling (Koźmiński, Jemielniak, 2008). Aforementioned actions are ought to be carried out successfully so that to fulfill aims of the company effectively (ie.using the resources wisely, eliminating waste and any activity without adding value) (Griffin, 1996). The main objective of the company is to achieve the greatest profit at the smallest possible cost. So as to obtain that one should offer some goods and services and get clients interested in them.

The creation of a product or service is dependent on the proper functioning of the processes taking place both inside and outside of the company. Volatility of the economy or the needs of customers force the managers to constantly seek new ways and solutions to meet the needs of future and present consumers. A good leader must bear in mind the market dynamics, as well as the welfare of employees. Properly selected and appreciated staff is a very significant resource, and may constitute a highly effective asset against the company's competitors. Efficacious management of knowledge and experience of the employees results in tremendous achievements and enables to avoid many mistakes.

In interpreting the definition of „management” two main aspects should be pointed out. The first one is **people – employees** who constitute a significant potential for the company. They are to be effectively managed, so as to make them feel as a vital part of an organization in which they operate. They should be provided with a number of opportunities for development; the ability to learn makes a good organization stand out. Contemporary conditions for functioning of the companies are somehow difficult hence each and every enterprise must have the ability to quickly adapt to change. This allows them to meet the needs of a broader range of customers, which translates into bigger financial gain and building the enviable reputation. Relations within the organization as well as its ability to communicate with the environment are of paramount importance. Sufficient and rapid flow of information in both directions affect the proper development of relations on the outside of the company. System of management also requires the management stuff to put to use a vast array of indicators which allows them to assess, control and introduce changes while keeping in mind the welfare of the client. Satisfaction of the consumer should be a priority objective of any enterprise, regardless of its type. It is now the key to success, because

a strong competition makes it difficult to attract new customers, and sometimes keep the old ones (Dołhasz et al., 2009).

What is more each enterprise requires an adequate **management of logistic processes** what is discussed later in this chapter.

### 3. The essence of logistics

The key element that accompanies the management is **the logistics**. It was initially understood as a holistic management of instruments of labor, materials, etc. It is now considered to be an extremely important link, which provides an increase in productivity of the company. It can be achieved through: (Niziński et al., 2011)

- reducing the cost of logistics processes,
- increasing the level of service to meet the needs of customers,
- acceleration of the funds turnover,
- reduction of conflict and loss among the various subsystems of the company as a result of streamlining and coordination of logistics processes,
- improvement of the reliability and accuracy of decision making.

Various definition of logistics are to be found in literature. One of them, provided by Council of Logistics Management (CLM) states that logistics is the process of planning, implementing and controlling the efficient, effective flow and storage of goods, services, and related information from point of origin to point of consumption for the purpose of conforming to customer requirements (Coyle et al., 2002). Other definition reads that logistics is a method of managing the supply chain both in the enterprise and between enterprises understood as planning, implementation and control of the flow of products: goods and services, along with the information and funds movement (Gołembska, 2012). The notion of logistics includes all activities that entail planning, execution and control of the space-time transformation of goods and changes in the volume of the range of products. Coordinated implementation of these activities activates the movement of goods, that efficiently links the delivery point with the point of reception (Szymonik, 2010).

There are many definitions of logistics. However, when analyzing them, one can observe three common, vital aspects (Skowronek, Sarjusz-Wolski, 1995):

1. Logistics primarily involves physical flow of products in enterprises and between them.
2. Logistics is the coordination of material flow while minimizing costs.
3. Logistics is a science in the field of economics, which explores the relationships occurring at a flow of tangible goods and information in the economy and its particular links.

**Logistics is therefore both a theoretical field of knowledge and a practical tool for supply chain management** within the enterprise and between companies, which is understood as planning, implementation and control of the flow of tangible goods, information and finance, in order to meet specific customer needs. It is intended to support various types of economic and social systems. In economic **systems achieving a predetermined level of customer service while maximizing profit** appears to be the essence of logistics. In social systems its aim is to **achieve a predetermined level of customer service while minimizing costs** (Korzeniowski et al., 2010). **The time** is also an important aspect when addressing the needs of the customers. It affects service levels and overall consumer satisfaction, which is a prerequisite in the era of wider competitiveness. Another key objective of logistics is **to provide a high standard of service delivery**, covered by the term „**quality**” (Figure 1).

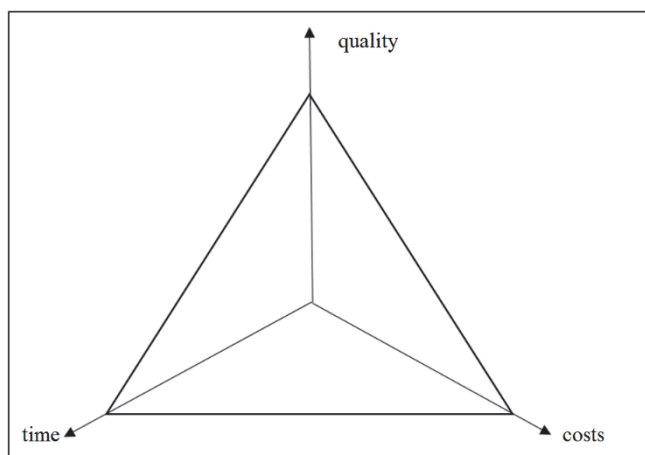


Figure 1. The aims of logistics

Source: Kisperska-Moroń, Krzyżaniak, 2009.

Logistics activities in a company is treated as a so-called competitive advantage due to the fact that it enables a real increase in the attractiveness of the offer, by lowering the prices of products, while raising their quality. In order to achieve that it is essential to improve the flow of goods and information, not only in the business environment, but also within the co-operating units, ranging from suppliers of raw materials to the market outlets for the finished products (Coyle et al., 2002).

Unification of activities in the area of the flow of goods and information exerts a significant impact on the speed of order fulfillment, as well as speed of response to changes in customer demand. Recognition system allows the integration of logistics activities in this field. Due to the fact that logistics is

currently inextricably linked with achieving a competitive edge **it has been treated as one of the main areas responsible for the management of the company.**

However, the area of logistic activities is primarily dependent on the location of logistics in business management strategy (Figure 2), then the integration of major and minor areas of logistics enterprises and their supply chain partners.

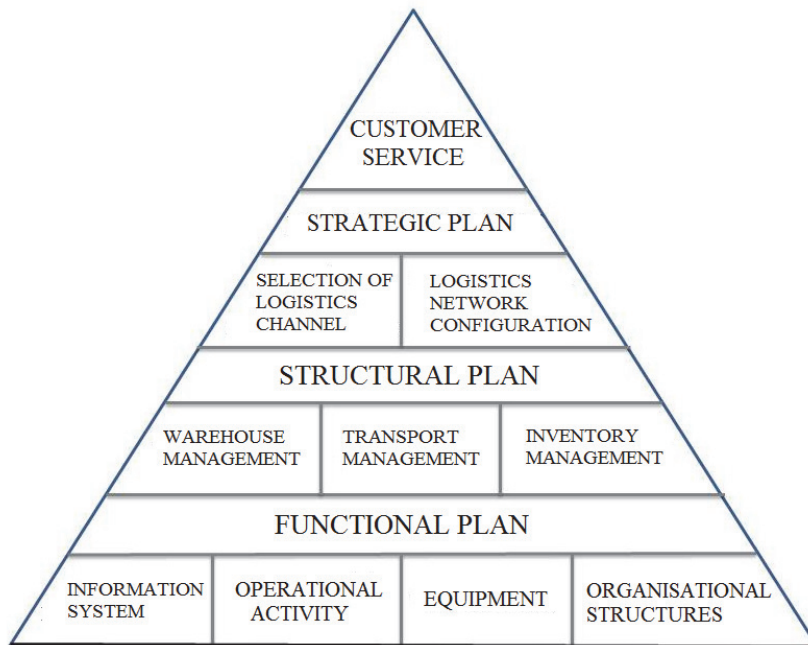


Figure 2. Logistics in the enterprise strategy

*Source: Golembaska, 2009.*

Logistic activities consists of multiple areas, such as (Kisperska-Moroń, Krzyżaniak, 2009):

- customer service,
- transport,
- inventory control,
- storage,
- the location of production plants and warehouses,
- order fulfillment,
- procurement of materials in production,
- demand forecasting,
- information management,
- manipulation of materials,
- supply of spare parts and after sales services,

- packaging,
- support for return freight,
- management of waste and scrap.

These areas are characterized by high dynamics of changes, stimulated by the environment of enterprises. Achieving **the main objective of logistics, which is a high level of customer service** is also difficult to complete as each recipient of goods and services has different needs and views on the criteria that are taken into account when deciding on cooperation with suppliers of tangible goods and services. Customer preferences apply differently when it comes to the purchase of consumer goods, or capital goods, and another way to purchase services. Logistics in every company is different. That is why it is so important for managers to be competent enough so as to take decisions in an effective and efficient manner.

For the above reasons, it should be emphasized that **modern logistics is characterized by dichotomy**. It causes a lot of complications in resolving significant problems within specific logistics systems. On the one hand, the management of the logistics department must be able to resolve the quality, market and strategic problems of logistics, on the other hand it should take heed of its in-depth troubleshooting in terms of quantity on current and tactical ground. Figure 3 depicts two faces of modern logistics.

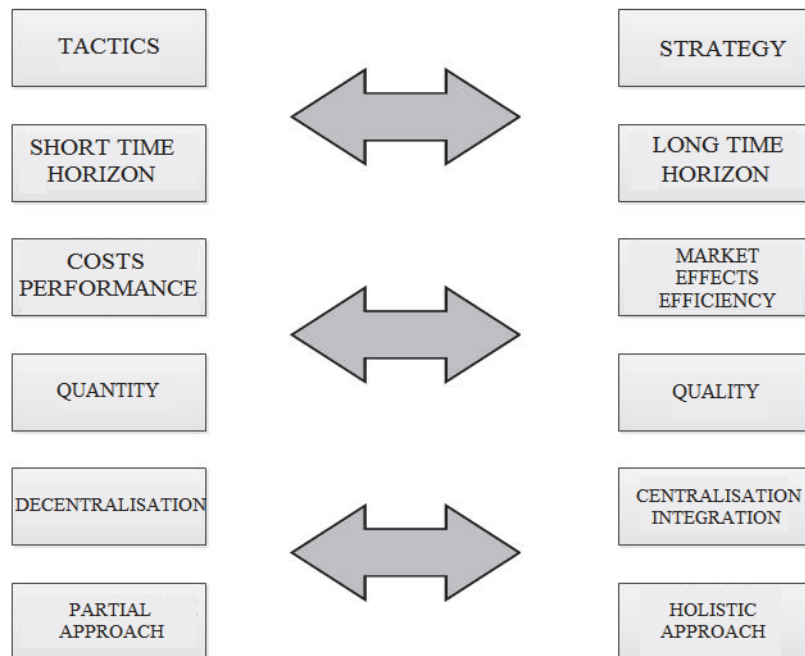


Figure 3. Two faces of modern logistics

Source: Blaik, 2010.

With awareness of the problems outlined above and knowing the array of skills to solve them, one can integrate logistics functions with other areas of the company. Moreover, compliance with the general purposes of logistics and directional objectives of the organization ensures the implementation of the system concept of logistics.

Currently, one can determine a number of factors influencing the constant development of logistics. These comprise the need to make the most of the available space, increasing the productivity and automation of processes, as well as reducing the costs associated with the staff. It is expected that properly functioning logistics in the company will benefit in reducing the cost of production, transport, shortening lead times, rational planning of inventory levels and a higher quality of service and products.

**In conclusion**, the understanding of what logistics is and how important a role it plays in every company delivers the proper organization of the company and its sound management. Logistics contributes significantly to the success of enterprises whose main purpose is to satisfy the final recipient. Every company, with significant market power makes every effort to deliver the customer service and hence the logistics, on the highest possible level, ensuring adequate quality and competitiveness.

#### 4. Logistic process in the enterprise and its components

The definition of the logistics process is directly linked with the definition of logistics. **The process is called „logistic”**, when the distribution, status and flow of its components, and hence people, goods, information and funds require coordination with other processes, due to the criteria of location, time, cost and effectiveness of meeting the desired objectives of the organization (Krawczyk, 2001). Logistics processes are associated with both the flow of materials and products (from suppliers in the distribution centers to stores) and information (from the end-user by the procurement system to suppliers and from suppliers of factors of production to their users) (Harrison, van Hoek, 2010; Urbaniak, 1999). They represent a set of interrelated tasks to ensure proper deployment, condition of items and the flow of material goods, information and funds. It is the logistics processes that must ensure sufficiently strong bonds between individual links in the supply chain. This is forced by the market economy, which causes the need for fusion, integration and coordination of these processes (Figure 4). Above-mentioned factors enable the company to achieve the assumed product quality and generate a profit (Kisperska-Moroń, Krzyżaniak, 2009).

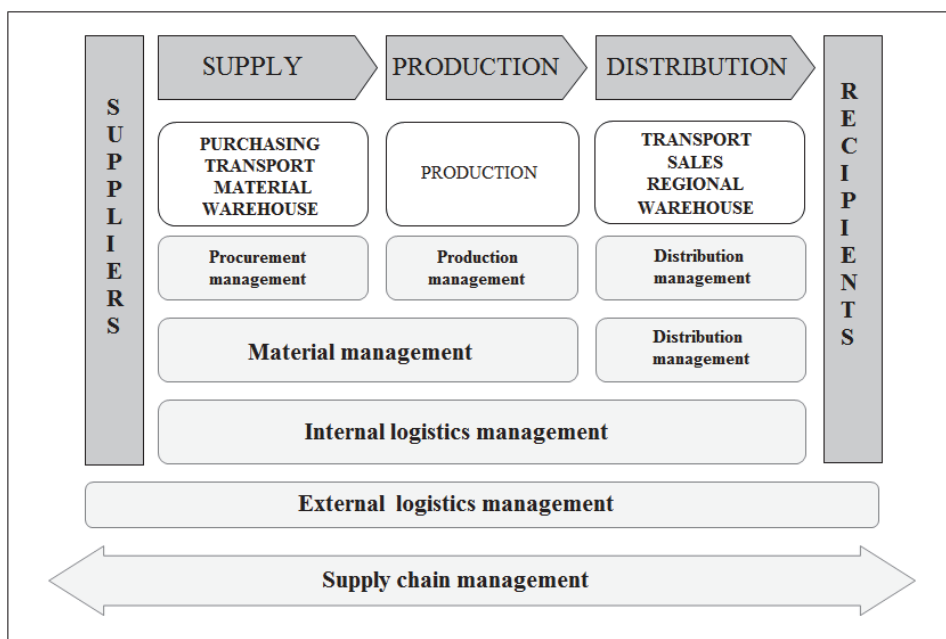


Figure 4. Integration of logistic processes in the supply chain

Source: Kisperska-Moroń, Krzyżaniak, 2009.

The activities of logistic processes are carried out by competent persons (including groups of employees) and / or means of work called carriers of work. The structural element of the process is the adequate object of a physical and informational character (Blaik, 2010).

Logistics processes consist of many directly related elements. Therefore they should not be considered separately but as a whole, due to the fact that such action may lead to incorrect conclusions. The basic components of the logistics process include:

- procurement process,
- production process,
- distribution process,
- recycling process,

They have been described in detail below.

### Procurement process

Purchase is considered as the exchange transaction, which starts when the needs of concerned organizations and a place where it can be carried out are known. Purchasing in the organization can be defined as a function responsible for obtaining materials, equipment, goods and services needed in an enterprise for the production process by the transaction of purchase, lease or other legal ways (Krawczyk, 2001). The main objective of purchasing processes is to ensure the



necessary supply of goods in the right quantity, the right kind at the right time, with the desired quality at optimum cost and in the most preferred form of delivery (Radziejowska, Mastej, 1997).

Supply warehouse or (in the case of direct delivery) the first stage of production is the place where the direct demand is covered (Pfohl, 2001). Procurement logistics links the processes of the flow of materials and information from the companies that supply the company to its supply warehouses. This integration comes down mainly to synchronization of the supply of materials. It is important that the supply of products used in the production are collected at the right time and place, and their subsequent batches are delivered within a specified timetable (<http://www.logistyka.net.pl>). Complexity, quality and on-time delivery condition efficient service production processes (Skowronek, Sarjusz-Wolski, 1995).

Procurement process as the process of movement of goods ensures the quality of components maintains of relationships with suppliers minimizes the costs and integrates the other areas of the company. It is responsible for cooperation with each link of the supply chain. Its efficient course is conditioned by a number of variables, such as: the selection of reliable supplier, control of sources of supply and creating appropriate relationships with contractors (Zimon, 2013).

The process of procurement is particularly significant because it supports the operation of the other subsystems of the company, mainly manufacturing and distribution. When properly organized it affects the quality of the product, the cost of the company and the level of logistics customer service (Dembińska-Cyran et al., 2001; Szpon et al., 2005).

### **Manufacturing process**

Production logistics deals with planning, organizing and controlling the flow of all essential goods during the manufacturing process, from supply warehouses, through the intermediary warehouses until the finished goods warehouses. Production is the link between the processes of supply and distribution. Its task is to ensure the availability of necessary materials and deliver the proper efficiency in the internal supply chain. The process provides rhythm and continuity of production while minimizing inventory quantities and costs associated with them.

The smooth functioning of the internal supply chain is possible as a result of proper control and rationalization of production processes, such as (Kardas et al., 2011, p. 120):

- inspection of goods prior to the start of the production process,
- control of individual stages in the course of production,
- quality control of the product after its manufacture.

Ensuring the above aspects can be obtained by applying various methods of logistics management, including TQM – described later in this chapter.

### **Distribution process**

The principal objective of distribution is to provide consumers with their desired products, in the right place, at the right time, maintaining the lowest total cost of distribution and the highest quality (Czubala, 2001). Distribution is now the main activity of any modern and focused on its development company. This is the field in which the enterprise can achieve a wide range of effects of management on a large scale and whose area of operation remains largely unrecognized (Christopher, 1999).

Considering the distribution process in the logistics chain we must focus on its most important element – the client. Distribution logistics ensures the efficient flow of the finished goods leaving the production passing through the processes of storage, transportation and ultimately brought to the end users. The validity of this process results from the continuous rivalry of the companies with speed, efficiency and optimization of every single stage of the distribution (Zimon, 2013).

The success of the distribution process is dependent on several factors related with the expectations of consumers, which in the era of globalization as well as diversity of products and services is difficult to satisfy. The efficiency of the distribution process is based on skilful classification of clients and analysis of their needs. It is also important to implement the feedback received from the distribution process and the development of adequate distribution policy (Zimon, 2013).

Distribution phase is the last stage of the logistic process. It combines the production phase with the phase of the purchaser supply. When efficiently organized it ensures efficient flow of finished goods to end recipients, thereby contributing to a faster turnover of funds used in the production of goods. It provides the disposal of the enterprise products and may therefore contribute to the increase of its market position.

### **Recycling process**

In every production process different kind of waste is generated. Their number began to cause significant adverse effects on the environment. The problem called the reverse supply chain or otherwise waste supply chain has been created. Environmental perception of the world has led to the treatment of such chains as indispensable in the entire logistics chain. The necessity of disposal of products resulting from the production process has become the ultimate goal of many companies who want to be seen as environmentally friendly. For that to happen, companies need to introduce some new rules (Szołtysek, 2009):

- selection principle – looking for alternative means of satisfying customer requirements, eliminating dangerous to the environment substances and materials;
- minimization principle – is based on the smallest possible space in packaging of the product in order to reduce the consumption of a given

material, it involves the adequate choice of packaging, so that the space was maximally utilized;

- maximization principle – provides reduction of wastage as a result of the greatest use of the available space by minimizing the free, unused area, eg. on the pallet;
- segregation principle – facilitates fast and efficient disposal of given types of materials.

The process of recycling is of paramount importance in every whole company. By determination of suitable sites for the production waste the safety of workers is improved. It can be applied at every level of the organization and should not be underestimated.

All the elements of the logistic process described above play a significant role in the company. Their integration enables comprehensive management of the physical flow of materials and information in all areas of the plant. In addition, these elements, thanks to efficient organization, contribute to the development of the company and its market position. They should therefore be planned, implemented, integrated and controlled. Furthermore those elements are to be merged because only the full integration of the activities in the logistics process ensures high efficiency (Skowron-Grabowska, 2010).

## 5. Management of logistics processes

Nowadays **logistics processes management** plays a special role and have a significant impact on the functioning of the company and its position in the competition. Initially, the scope of the logistics activities in the companies consisted mostly of transport zone and the organization of distribution and storage. However, these processes cannot do without the flow of information on raw materials or semi-finished products, storage and control of the inventory and customer service (Sadowska, 2014). Each of these elements exerts an effect on the processes. Wider perception of the logistics process enables their consistency and smoothness. **Contemporary logistics and logistics management constitute an important aspect of the company's strategy and are a guarantee of its development.** They facilitate the acquisition of new customers and enable the implementation of innovative solutions (Gołemska, 2010). Opportunities and dynamics of development, flexibility and openness in relation to the client's are the characteristics that the company can be proud of. This speaks volumes about their competitiveness, increases their value and reduces costs of conducting a business.

Logistics Management runs through all processes of the company. It starts with the identification of development strategies and then deals with processes of

production, storage and movement of raw materials, transport, control and exchange of information. The flow of data enables an appropriate respond to customers needs.

In order to obtain the pre-planned objectives of the organization, including its development or growth of competitive position, the concepts of company management should alter. Needs of modifications occur mainly due to the rapid development of industry, implementation of new technologies and innovation or the use of new solutions. Processes of transport and storage in the enterprise must be aimed at building efficient supply chains to the recipient. This is based on the sale, which ends the process and returns incurred costs as well as yield a profit. The flow of goods from supplier to customer, as well as the flow of money from the customer to the supplier, must be smooth and last as short as possible. The function of the planning of production, which comes from contracts or other marketing arrangements is of vital importance (Pisz et al., 2013). The condition and value of the company is often determined on the basis of its financial results, included in the documents. Given these features, you can say that the flow of goods is the basis for the development of the organization. It is of strategic importance that maintaining inventories is conducted in such a way as not to incur the high costs of storage and yet meet the needs of production, especially in moments of crisis. In contrast, innovation and continuous improvement should confer an advantage, thereby facilitating the work.

## **6. Concepts of logistics processes management**

To improve the functioning of the supply chain and increase its efficiency many methods and management tools are used. They facilitate decision-making, make it possible to analyze logistics processes, ensure the harmonization of activities of individual cells in enterprise, minimize costs, reduce the time tasks, guarantee effective inventory management, knowledge and understanding of customers' needs and improve the overall efficiency of the organization (Szymonik, 2013). Management approaches within the supply chain include:

- Lean Management,
- Agile Management,
- Quick Response,
- Just in Time,
- Total Quality Management.

These concepts have been widely characterized below.

## Lean Management

Nowadays, numerous and dynamic changes in the market, caused by the customers and competition, force companies to systematically improve the course taking place in their processes, primarily of logistics and production. The method of buying new machines and hiring additional staff is no longer, as it once was attractive, hence notwithstanding increased production the company is not able to compete with its market rivals. Increasingly important organizational changes are an essential element of one of modern management concepts, known as lean management (Wasilewski, 2011). It takes its origin in Japan, destroyed in the Second World War did not have a chance to compete with the giants of world industry, like the United States. The creator of the new thinking was Taiichi Ohno, a Japanese engineer who saw the need for organizational changes in then existing activities of the automotive company Toyota. The changes, which he steered into the reduction of waste contributed to the creation of the production system of Toyota (Toyota Production System – TPS), which became the model for most modern operating companies (<http://lean.org.pl>).

Lean management is a philosophy, a management strategy, which is based on a set of principles, techniques, behavioral and specialized tools. It can be defined as a management concept, which involves providing the client with an expected value, using the fewest resources (Grycuk, 2011). Its main task is to eliminate or reduce the processes that may pose a threat in the final positive assessment of organization by its suppliers. Keep in mind that the primary value to create the proper environment and work culture are the people. Thanks to them the implementation of Lean philosophy gives the company the ability to provide customers with products of good quality and in a timely manner (Sayer, Williams, 2015).

Lean management can also be described as the quest to provide the product desired by the customer, using half the resources (time of design, tooling, manpower, production space) that competition needs. In addition, efforts should be made to maintain minimum required reserves in place to reduce or eliminate the number of errors and to increase the variety of assortment (Womack et al., 1990). Lean management is based on the ideology of the removal and elimination of activities that do not bring added value as well as a continuous reduction of waste in all business areas. The aim is to involve a minimum number of materials, people, time, at the lowest possible cost. It is based on (Stachowiak, 2010):

- commitment and systematic improvement of the company's staff,
- treatment of the company's employees as „internal customers”,
- continuous evolution of the company due to the changing market,
- determination of the profits by the level of costs and not the size of the price,

- the involvement of employees in the elimination of excessive consumption of resources,
- standardization of documentation, methods of conduct, processes and performance measurement.

Companies using lean management are able to enhance the human resources management, which is reflected in the quality of products and services. They do this in the most efficient and economical way.

### **Agile Management**

Agile management is used in the logistics chain that undergoes changes that are difficult to predict. They can result from a number of crises, as well as unforeseen and customized customer orders. This method focuses on the skilful management of knowledge and experience, which is to be ensured by:

- skilled employees who share their experience and knowledge,
- innovation and the ability of creative thinking by employees,
- quick availability of products,
- the creation of added value.

The intellectual capital of the organization is essential to counter the unexpected phenomena occurring in the supply chain. Therefore, it must be skillfully collected and used (Szymonik, 2013).

### **Quick Response**

This method consists in rapid response to fluctuations in demand of tangible goods across the supply chain. It focuses on the recognition and rapid response to the varying size of the demand. This is possible thanks to the efficient use of time, based on partnership and trust of the suppliers. Information technology plays there an important role since it provides the advantage of time through the ability of rapid identification (eg. Bar codes, etc.) and automation in the area of procurement. Implementation of „Quick Response” to the organization occurs in stages by:

- appropriate training and counseling,
- analysis of the existing conditions between certain links of the supply chain,
- identification of expectations and goals,
- negotiations,
- reorganization of the prevailing motivation systems and existing technologies,
- control and observation.

The aim is to increase revenues while minimizing costs and increasing the quality of service in a short time (Suri, 1998).

## Just in Time

„Just in Time” is a concept of shaping relations between the company and its suppliers, customers and employees. It focuses on meeting the needs of customers, cooperation between suppliers, reducing inventory, increasing operational flexibility and problem solving (Fertsch, 2006). It is based on four assumptions: (Ciesielski, 2009)

- zero stockholding,
- small and frequent deliveries,
- short cycles of order execution,
- high quality.

The aim of the Just in Time is the preparation of products and services through appropriate planning, command and control of all material flows and their relevant information streams (Dworecki, 1999). With specific synchronization it is possible to reduce these streams, which has a positive impact on the speed of all processes in the organization (Sarjusz-Wolski, 2000). Just in Time is also, and perhaps above all, the elimination of all kinds of waste that occurs in the process. Its limitations should seek to minimize various factors, such as: (Harrison, van Hoek, 2010)

- a minimum of defects,
- a minimum of interruptions,
- a minimum of delay,
- a minimum of inventory.

JiT is the concept of production initiated by demand, which is why organization focused on material and information flow is that important. Hence the processes of supply, production and distribution should be organized in the way to facilitate its timely (as soon as possible) pursuit and the elimination or reduction of inventories was a direct result of the system. The company should focus on removing the causes that interfere with timeliness and thus discipline its employees and suppliers (Fertsch, 2006). The JiT applied in practice leads to the elimination of any kind of possible stock. It is usually used in the direct-line production and in automated production cells and assembly lines (Durlik, 2007).

The essence of the Just in Time is the reduction of inventory at the expense of increased frequency of smaller supplies. What follows is a required full coordination of material procurement, production processes, distribution and sales. Without the cooperation of these elements it is almost impossible to introduce this method to the enterprise. Moreover, the company must strictly observe the deadline of ordering and delivery (Figure 5).

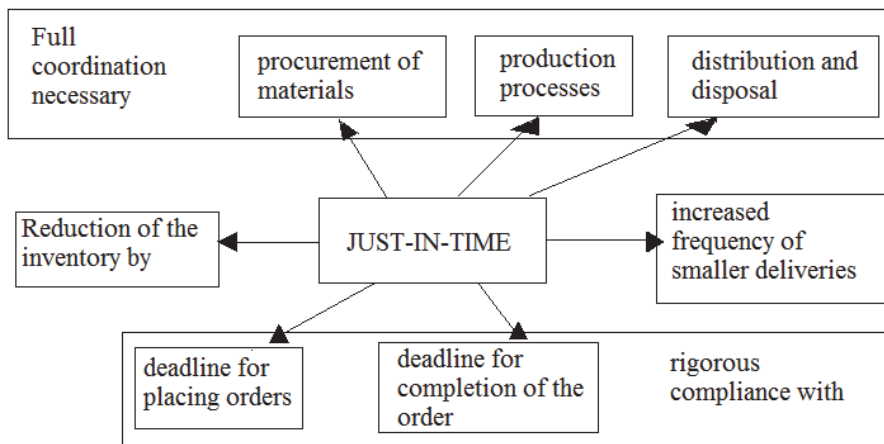


Figure 5. The essence of the Just in Time concept

Source: Niziński, Żurek, 2011.

It should also be noted that in the system JiT stocks are seen as a so-called „cover” for the problems occurring in the enterprise. Basically, they should protect the company from such situations like e.g an inefficient information system, machine breakdowns, quality problems, changes in schedules, absences of employees, change of tools, the problems associated with switching production, poor availability of raw materials, unreliable suppliers, unreliable transport. In fact maintaining a high level of inventory is not the actual way to solve the problems of the enterprise, it is just „covering” them. According to the philosophy of Just in Time lowering inventory levels reveal problems occurring in the enterprise whose solution requires an analysis in order to identify their source (Kowalska, 2005).

The benefits of Just in Time include, among others (Imai, 2007):

- shorten manufacturing lead time,
- reduction of the time spent on activities not directly related to production,
- improving the quality of logistics services,
- shorter cycles stable orders,
- reduce inventory,
- elimination of all troublesome supply,
- a better balance between the various processes,
- quick explanation of problems.

The drawbacks of that method are high costs, a long time of implementation and achieving the benefits. In order to meet the needs of the customer the quality of services and products must be close to perfection. Due to the diversification of orders the company has to be ready for changes in the supply and take into account many options of production. This aspect also involves adverse effects on the human factor. Permanent pursuit of perfection, delivery perfectly on time and in



the right amount can cause poor morale, thereby increasing the level of the work related stress (Ciesielski, 2009).

### Total Quality Management

TQM is a management philosophy for total quality management, possible to implement in each organizational unit of the company. It is linked directly with the requirements that are contained in ISO 9001. It is a strategy for continuously improving performance at every level and in all areas of responsibility (Zimon, 2013). The concept ensures the success of the company by the right strategy, processes, training, motivation, commitment, tools and resources. This applies in the total customer satisfaction (Grajewski, 2012). TQM can also be implemented to improve the supply chain, as shown in Figure 6.

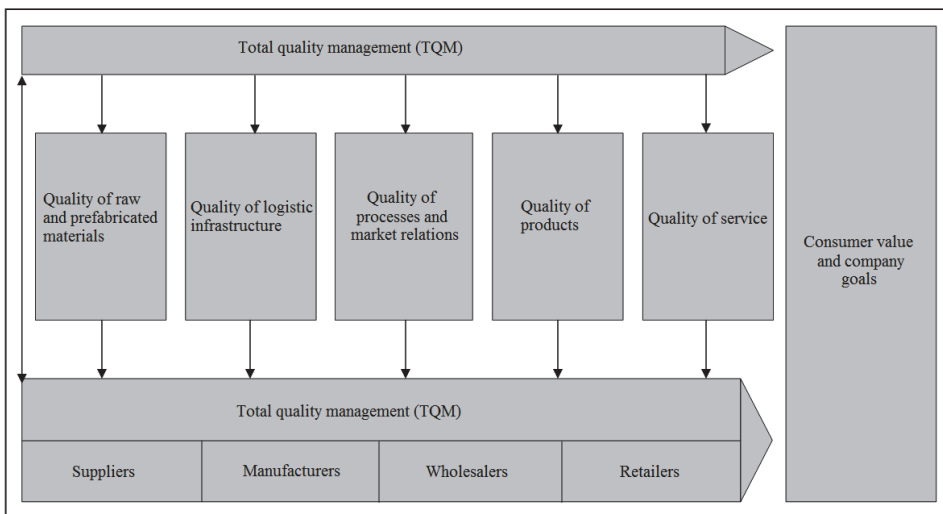


Figure 6. Supply chain in the area impacted by TQM

Source: Ciesielski, 2009.

TQM involves the whole company in the change processes that leads to the subordination of the existing structure to the culture of teamwork. Compulsory participation of every department of the company and all its employees is of paramount importance. Each process occurs by all levels of the organizational structure.

The main objective of the concept is the continuous quality improvement of products and services for complete customer satisfaction. The central element here is therefore the customer and its contentment (Figure 7). The client can be both an external customer, as a buyer or supplier of products, as well as an internal customer, also an organizational unit (eg. the magazine as a customer of purchasing department).

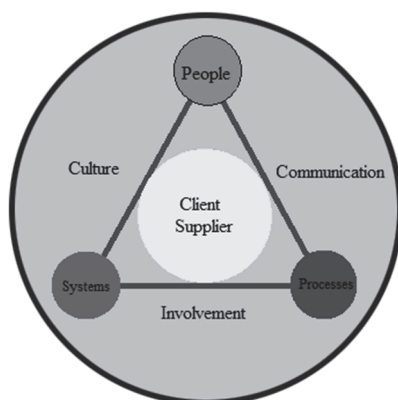


Figure 7. Presentation of the TQM model

*Source: own elaboration.*

**Quality management is based on four assumptions:**

1. Involvement of every employee of the company in its improvement.  
Improvement takes place through frequent streamlining of various elements in the enterprise. It should be noted that this ought not be done at great expense. A real increase in efficiency can be seen when the effect is caused by a myriad of small, significant but low-cost changes.
2. Processes optimization.  
Simple but universal machines and tools that can be quickly and easily rearmed must be used. This allows to maximize the time available for production. Synchronization of work can help to minimize inventory costs.
3. Reduction of the number of problems.  
Attention should be focused on business management, work organization and motivation.
4. Long-term use of methods.  
It is a long-term use of methods that will facilitate gaining a competitive edge leading to success. It must translate not only into the organizational activities, but also benefits the society or the environment. The company should take on the social responsibility.

One of the creators of the TQM' concept is an American statistician, Edward W. Deming. His concept in the field of quality management is based on (Hamrol, Mantura, 2002):

- control of the quality of processes and products, which take place in a series of actions, the so-called „Deming wheel”,

- application of fourteen principles in the work of the management company.

Deming scheme (ie. Wheel of Deming) illustrates the basic principle of continuous improvement – Figure 8.

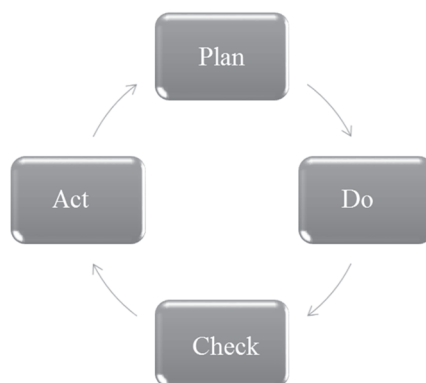


Figure 8. The Deming Cycle

*Source: Hamrol, Mantura, 2002.*

Deming wheel consists of four consecutive actions:

- Plan – one should plan a better way of action, using a better method. One should determine the current state, analyze the causes of the problems on the basis of the collected data and build an action plan to improve.
- Do – one should carry out pre-deployment changes on a small scale, and under controlled conditions. An action plan must be implemented.
- Check – one must thoroughly analyze the results of the experiment and draw conclusions. It is also advisable to confirm the deletion of the main causes of problems.
- Act – one should take appropriate action to implement the standard of the process, which has produced the most desirable results.

There are many other methods functioning in the area of supply chain management, but they put emphasis on other aspects of the company, including in particular, factors associated with improving the performance, processes planning or human resources management.

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