

THE ASPECT OF INTEGRATED LOGISTICS FOR SUSTAINABLE DEVELOPMENT

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Abstract

The main aim of the article is to present the importance of innovativeness and innovation in every level of supply chain management and therefore for sustainable development. There is focused on the paper the role of innovativeness and innovation in creating competitive advantage.

In this paper authors present problems connected with Supply Chain Management, which allow many companies to improve their market position. Companies recognize that their problems, challenges, current efforts and position for development do not belong primarily to the area of strategic decision-making but to the four other dependent areas: organizational structure, planning, people and style.

Authors point out the need for effective communication, within organization and also cooperating companies. This goal can be achieved thanks to information and communication technology (ICT), with special attention to mobile technology.

Keywords: Logistics, Sustainable Development, Supply Chain Management, Information Technology

1. INTRODUCTION

Changes in the economy are affecting the development of logistics management. In the changing market managers have to use modern methods, techniques and ideas of management. Their obligation is to learn how to implement them effectively into practice. Effective and efficient logistics management is an essential element of strategic management. This takes place both at the levels prior to the core business companies (suppliers), as well as occurring afterwards (customers), and its main aim is the broad exchange of information and resources. The issues involved in this exchange of logistics have become increasingly popularized in the fields of science and practice.

The global perspective of supply chain management has changed the nature of the processes of creating and implementing innovation, extending beyond the boundaries of individual companies. Bearing in mind the conditions and objectives of supply chain management, it should be emphasized that the development of innovation is increasingly a result of the cooperation of business partners, often on an international scale.

Global supply chain management must include sustainability requirements in its strategy. The aim of sustainable development is therefore the long-term and responsible growth of global economic systems, coupled with social development (where social cohesion, diversity and cultural richness are sought), while improving the quality of the environment by reducing the harmful effects of production and consumption and preserving natural resources.

2. SUSTAINABLE LOGISTICS

In the era of globalization, a very important role is played by logistics. This applies not only to the functioning of individual companies but also to national economies and even the world economy. The phenomenon of competition can now be observed not just in individual companies but entire supply chains. The pace of

development of the modern economy means that companies are forced to constantly introduce more and more new solutions, resulting in innovation driving the progress of the market. Enterprises are competing in the search for innovation in the logistics market, and thus technologies are developing at a dizzying pace.

The implementation of the concept of sustainable development into business practice and the need to meet the challenges of the twenty-first century, at the root of which lies the widespread awareness of the profound global ecological crisis, are now causing particular attention to be given to issues related to environmental quality and cost-effective exploitation of resources. The assumptions of sustainable development clearly indicate that the search for new solutions to technical, technological and logistical resources, and rationalization of the economy, energy and waste should be a priority for all business sectors and services.

In the context of the considerations on sustainable development it should be noted increased interest in the phenomenon of sustainability in logistics. In recent years, in the context of sustainable resource management, there is a new concept, that of reverse logistics.

It should be emphasized that reverse logistics, which is "embedded" in traditional logistics as being representative of the ecological perspective, applies very well to the imperative of promoting sustainable development, including the sustainable use of environmental resources. It allows for the realization of the concept of a circular economy, whose primary challenge is to move away from a linear model of the flow of raw materials to a model of closed material and energy cycles, significantly reducing the high degree of entropy of the modern economy by optimizing the total utility index [13].

The essence of balanced logistics has been embodied in the sustainable logistic chains that have arisen on the basis of the logistic ecological logic concept. The main assumptions of these chains are [6]:

- subordination to the principles of sustainable development,
- strategic partnership between actors in the chain and their extended shared responsibility,
- imposition of appropriate standards for the entire chain,
- flexibility, etc.

The goals of sustainable logistics are as follow [10]:

- fast, trouble-free information flow,
- high level of use of infrastructure and personnel,
- improvement of the management process,
- elimination of intermediate links,
- shortening delivery time,
- stock reduction
- improved customer service,
- reducing the cost of goods movement,
- such an impact on the environment, which meets the requirements of sustainable development.

Together with globalization progresses, there is a process of internationalization of enterprises and their supply chains. Changes in the international market, the liberalization of foreign trade, favourable conditions for foreign direct investment and the dynamic development of transport and Information and Communication Technologies (ICT) facilitate the emergence of transnational and even transcontinental supply chains. Hence, there emerged the concept of global supply chains.

3. SUPPLY CHAIN MANAGEMENT

Information and communication technology (ICT), and in particular, the mobile technology, plays a key role in furthering the goals of global supply chains integration. While the most visible manifestation of the Internet has been in the emergence of e-commerce as a new retail channel, it is likely that the Internet will have an even

more profound impact on business-to-business interaction, especially in the area of supply chain integration. The Internet can redefine how back-end operations - product design and development, procurement, production, inventory, distribution, after-sales service support, and even marketing - are conducted, and in the process alter the roles and relationships of various parties, fostering new supply networks, services and business models [4].

Mobile technology and huge amount of smartphone applications are quickly finding their way into various supply chain management functions such as procurement, inventory management, transportation, package tracking and sales force automation.

The supply chain integration should begin with internal integration. In order to achieve external integration and for an effective supply chain management, in the first place one needs a correct i.e. as well conducted internal integration, a well organized internal flow through particular phases of the enterprise. The concept of supply chain management cannot be realized on a large scale if a well organized, planned internal logistic chain is unavailable.

The company applies the principles of reduction, reuse and recycling in many ways, in order to improve the sustainability of the industry [7]. Logistics covers the planning, coordination and control both in the aspect of time and space, the course of actual processes in the realization of which organization is a participant, for the purpose of efficient and effective goal achievement by an organization [9].

Construction of the supply chain requires choosing the right partners - links in the chain. It is important (to ensure the continuing effectiveness and guarantees of success) to define the conditions for internal collaboration. Attention should also be given to defining a new leadership strategy and determining the strategy for the partners involved. Integration of such cooperation is reduced to ensure sustainability and identify cooperation partners, internal networks cooperation and leadership.

Global integration and local adaptation strategies of logistics in the relationship between production and commercial B2B companies is a complex issue, where, according to the paradigm of sustainable development, in addition to the economic results have to be met, often very diverse, social and environmental standards.

An efficient supply chain can flexible and quickly find itself in the new reality, and sometimes it is the promoter of the change. These efficiency factors can be translated directly into the features that define each supply chain, and which in recent years are more visualized (3V):

- visibility
- velocity
- versatility

Currently, in order to be successful, supply chains have to achieve outstanding results in the field of 3V (visibility, velocity, versatility), and therefore ensure transparency, speed and versatility of operation (U. Ruhi and O. Turel). Transparency is focused on resources, particularly inventories (inventory visibility) and their visibility throughout the supply chain. Speed means the ability to satisfy the needs of customers in terms of lead times and responsiveness (fulfilment velocity). Versatility is the ability to collaborate with suppliers and customers to coordinate the flow of goods in the face of different delivery requirements and conditions (coordination versatility) [11].

4. INNOVATION IN LOGISTICS

Innovation and time are the main competitive advantages [14]. Time, here, is understood as the frequency of the introduction of new or significantly upgraded versions of the product. Its growth changes and shortens the life cycle of such products in comparison to conventional products. The different phases of the life cycle are short in-time and rapid demand-dimension [15].

Innovation is critical to the success of many firms. Innovation is the practice of bringing inventions into widespread usage, through creative thinking, investment, and marketing. That's why basic invention is typically needed to spur innovative activity. "Invention is that spark where it all begins", said Flemings [3]. Innovation is also defined as: A new product, a new service, a new production process, application or organisational structure, which is launched in the marketplace or made use of in production, for the purpose of generating economic value. Innovation is based on new knowledge and new combinations of existing knowledge. New knowledge may be gleaned from practical experience or generated through systematic research and development, and is reflected in gradual modifications and improvements, or in more extensive and radical innovations [1].

Innovation is also a term in need of clarification as to how it will be used in this thesis. Common definitions of innovation are wide: anything "new", e.g. a new service or a new organisational structure, is an innovation.

The European Strategy for Sustainable Development recognises the important role that education and training systems should play in order to achieve the objectives of sustainable development. Education and training should contribute to all three axes of sustainable development, namely the social, economic and environmental dimensions. However, there is an information gap on how the concept of education for sustainable development has been translated into practice at Member States level. Furthermore, Member States could benefit from the exchange of good and innovative ways of delivering education for sustainable development.

A consequence of the booming market, which is set up to meet increasing customer demand, has led to changes in the organization of enterprises. The most important are shortening product life cycles. The first generation Volkswagen Golf, for example, was produced from 1974 until 1983. (Convertible version until 1993, and the Caddy van to 1992, while in South Africa the car was produced continuously until 2009). The latest (sixth) generation VW Golf was produced from 2008 to 2012 (only 4 years). On the other hand, extensions to the range can be seen e.g. cars of the same model are offered with many variations in engine, bodywork and equipment; all this in order to better meet the needs of increasingly informed and demanding customers. In this specific race for customer acquisition companies are seen to offer newer products but with a lower level of quality than the previous versions, a phenomena that is especially noticeable in the consumer goods market. This leads to the creation of simpler, cheaper and more attractive products for the less affluent and less prepared customers. From this premise, it can be assumed that the life cycle of that product will be shorter than its earlier versions. Such products are technologically excellent and good value, however their shelf life is limited. Such market changes have led to the appearance of the phenomenon of disruptive innovation [14].

The innovations have strong influence on the sustainable development, but not every innovation makes a positive contribution to sustainable development. At the outset, innovation is just a source of structural change, social and economic, contributing to economic growth and fluctuations in economic activity. To what extent innovation as a whole promotes employment and/or reduces environmental degradation is not predetermined from the start but depends on the social framework, price ratios or the choice of technology: In principle, it can be shaped.

Various theoretical and empirical studies suggest that innovation, on the whole, offers a positive contribution to sustainable development:

- The new theory of growth puts the emphasis on increasing returns to scale, i.e. a general growth of the factor productivity (and thus the environmental and resources' productivity).
- The structural change driven by innovation, among other factors, leads to a reduction on environmental strains ("gratis effects") [8].

One of the most important goals is the consolidation of transport streams, connection into a single controllable whole of business entities and institutions which are concerned with movement and act within the city area, as well as the event network management in a way providing a desired level of life quality and the city

management at a minimum cost level in consideration of ecological standards [11]. The coordination also includes an appropriate organisation of municipal services provided for business entities and the people. Another important goal is the reorganisation of in-city relations to achieve a stable balance between space and transport within this space. It may be accomplished by relevant planning, organisation and management [12].

The primary objective is to create transport solutions for the benefit of the city environment in terms of road safety, air and noise pollution, accessibility, energy consumption, safety and the visual environment. This applies to the transportation of goods and services to and from city areas. At the same time, goods transport should ensure a level playing field for the retail trade in the city area and the vast shopping centres outside the centre of city.

Innovation in logistics is not, however, solely associated with the involvement of modern IT solutions. A sign of modernity can also be a way of thinking. Innovative solutions in logistics can also manifest themselves in [5]:

- continuous improvement of a team carrying out innovation and continuous verification of work and commitment,
- constant vigil over the quality of activities,
- constant focus on work of the the team which is working on the implemented practices and shared values,
- activities involving the constant search for new and better ways to implement the tasks of logistics,
- satisfaction with work and honesty to customers, elimination of old habits, behaviours and barriers associated with changes in the area of logistics activities.

It follows that the most important drivers of innovation that somehow push companies to create new value in logistics are human resources and organizational culture.

5. CONCLUSION

To stimulate invention and innovation, we have to pay careful attention to education. Education and training build the critical foundation for sustainable development. The Commission encourages Member States in their efforts to develop more strategic approaches to sharing knowledge and good practice in a bid to stimulate Education for Sustainable Development (ESD) [2].

Logistics could play the key role in implementing such ideas into practice. The idea of monitoring the realisation of logistics strategy based on the observation of the control variables, determination of concordance of the actual level of the assigned indexes included in the strategic plan, and finally specification of methods of processing and channels of information flow, complies with the concepts of the object (functional) early warning systems. It should be noticed that the objective control of the logistics strategy should also use indexes concerning the organisation, technology, product, suppliers, competition and logistics service providers.

Logistics has always played and it still does play a significant part in competitive strategies based on leadership within costs, differentiation (also within logistics service), shortening time cycles and the use of the company's capacities.

The management-oriented integration of all logistics functions and processes becomes more important, because it is conditioning not only effective organisation and enterprise modernisation, but it is also opening new possibilities of solving problems and using potential effects in the operating and strategic activity.

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