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INNOVATIVE SOLUTIONS IN LOGISTICS IN THE SECTOR OF SMALL AND MEDIUM-SIZED ENTERPRISES

INNOWACYJNE ROZWIĄZANIA W LOGISTYCE W SEKTORZE MAŁYCH I ŚREDNICH PRZEDSIĘBIORSTW

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Streszczenie. Zmiany, jakie następują w gospodarce, pociągają za sobą konieczność coraz częstszego wprowadzania innowacyjnych rozwiązań, które pozwolą na uzyskanie przewagi konkurencyjnej. Znajduje to także odzwierciedlenie w działaniach logistycznych, które wspierają procesy produkcyjne, usługowe czy organizacyjne. Celem badań była ocena znaczenia wprowadzania innowacji w przedsiębiorstwach należących do sektora MSP, z uwzględnieniem wewnętrznych i zewnętrznych źródeł wprowadzania rozwiązań logistycznych oraz motywów, jakimi kierują się przedsiębiorcy przy podejmowaniu działań innowacyjnych z zakresu logistyki. W artykule przedstawiono także istotę innowacyjności w funkcjonowaniu przedsiębiorstwa, jak również główne definicje i rodzaje innowacyjności.

Key words: innovation, small and medium-sized enterprises, logistics.

Słowa kluczowe: innowacyjność, małe i średnie przedsiębiorstwa, logistyka.

INTRODUCTION

Liberal market economy is characterised by competitiveness, an increasingly shorter product life cycles, and fast-paced changes. All these factors mean that enterprises are forced to look for new solutions in many areas of their activity, including logistics. In result, companies are on the lookout for new ideas regarding innovative production of goods and services, as well as related logistics solutions. For this purpose, they develop innovations that support production, service, marketing, and organisational processes. Such approach enables enterprises to survive on the market, in particular the small and medium-sized enterprises (SME), for whom today's market conditions pose many challenges. By implementing innovative logistics solutions, they can strengthen their market position and develop such tangible benefits as competitive advantage and customer satisfaction.

The specific feature of the Polish SME is their large number, which means that with the high share in the gross domestic product they have, they become the driving force of Polish economy. The most dynamic growth of this sector began in 1989 and can be divided into three stages. The first, called the preliminary growth stage, took place after the political transformation, with the introduction of new law that facilitated business, i.e. the Act on Economic Activity and the Act on Economic Activity with the Participation of Foreign Parties

(Raport o stanie sektora..., <http://badania.parp.gov.pl/files/74/81/305/5000.pdf>). What followed can be called an “explosion” of business activity, which coincided with rapid growth of the SME sector. The number of newly opened companies grew briskly and their share in the gross domestic product increased. This occurred simultaneously with bottom-up privatisation and the privatisation of state-owned enterprises (Janiuk 2004). During the second stage, which lasted until 1994, the number of start-ups exceeded 2 million (Wkład małych i średnich przedsiębiorstw..., www.parp.gov.pl/files/74/81/92/wklad.pdf). The third stage, characterised by market self-regulation, began in 1995 and continues till the present day. Its distinct feature is the stabilisation of the growth rate for most companies. Although the number of economic entities is continuously growing, it happens at a slower rate than during the previous stage.

The above means that the sector of small and medium-sized enterprises is the most dynamic sector of the Polish economy, and accounts for 99% of the overall number of businesses (Działalność przedsiębiorstw... 2014) SME companies create the most jobs in the Polish economy. The advantage of small and medium-sized enterprises is that they can quickly adjust to changing conditions, maximise their operational efficiency, and they remain responsive to customer needs. However, companies from this sector are also more susceptible to adverse economic conditions, more so than large enterprises.

This study was conducted in late 2013 and early 2014 on a sample of 150 random enterprises from the SME sector operating in the Lesser Poland Province (Malopolskie). The study was based on a questionnaire which contained questions about the importance of innovations introduced, sources of inspiration for engaging in logistics innovation, and the reasons for implementation thereof. The data obtained were analysed statistically and presented in the form of graphs.

THE IMPORTANCE OF INNOVATION IN CONTEMPORARY ENTERPRISES

The flow of goods and services in a market economy is becoming increasingly difficult since it requires the information not only to be collected, but also correctly processed. If an enterprise has a strong market position and meets all the requirements of competitiveness, it is able to provide good quality services for its customers. The focus on providing the right goods and services to customers in a specific place and time, at an attractive and competitive price, provides an opportunity for enterprises to grow. This growth can be achieved by improving the flow of goods and services to satisfy the buyers' needs or by increasing overall efficiency, which in the end reduces delivery costs (Skowronek and Sarjusz-Wolski 1999).

Enterprises which want to remain competitive must demonstrate high levels of productivity, efficiency, flexibility, and innovation (Bossak 2006). The last factor is related to actively seeking new solutions. An innovative enterprise is one that is capable of searching for information about new technical or technological solutions and is constantly monitoring changes in its environment. Companies introduce innovation for many reasons, and among them to (Penc 1995):

- improve and modernise production processes including efficacy and quality,
- better adapt to the environment,
- enhance quality and product competitiveness,
- remove barriers and activate resources, as well as increase general operational efficiency,

- improve the organisation and work methods, as well as conditions and safety at work,
- increase export capacity and capability to implement strategic objectives.

Innovation is in itself a creative act, set into motion in the world of ideas, but realized in the world of human action, that is through implementation. It is an on-going activity which starts with noticing an opportunity, and ends with making the decision to implement the idea and starting its implementation (Mc Gowan 1994). Innovation is also the implementation of a new or significantly improved product, process, new marketing method or new organisational method in economic practices, workplace organisation or relations with the environment (Bossak 2006). Innovative activity can be conducted both internally or externally (for example, by purchasing know-how or technology). Research and development (R&D) is also a very important initiator of innovation, yet it is not always available to SME enterprises (Czy warto inwestować... 2009).

There are three types of innovative activities a company can conduct within a given period of time (Podręcznik OSLO 2008):

- innovative activity which culminates in success, i.e. implementation of the innovation (regardless of whether it is commercially successful or not);
- activity which has not yet ended in implementing the innovation, i.e. an on-going activity, which is in progress during a given period;
- innovative activity which is for some reason interrupted or aborted before the innovation is implemented.

Realizing how big the need for innovation is, it is easier to understand the definition of the term “innovation” coined by various authors over the years. Selected definitions are shown in Table 1.

Table 1. A list of definitions of “innovation”

Definition author	Definition
Drucker (1992)	A specific instrument of entrepreneurship; the act that endows resources with a new capacity to create wealth
Freeman (1994)	Innovation is the first commercial transaction involving the new product, process, system or device, i.e. in other words, when it is sold first time
Griffin (1996)	The managed effort of an organisation to develop new products or services, or new uses for existing products or services. Innovation is also a form of control in the sense that it helps the organisation to keep up the pace with competition
Kotler (1994)	Innovation refers to any goods, services or ideas which are perceived as new
Kopaliński (2006)	Introduction of new things; something newly introduced, a novelty, reform; origin: late Latin <i>innovateo</i> 'renewal' from <i>Lat. innovare</i> 'renew'; see in- 2; <i>novare</i> 'refresh; change' from <i>novu</i> .
Kukliński (1997)	The ability to create and absorb innovations is the biggest challenge for the Polish society and economy at the turn of the 20 th and 21 st centuries. Recently, the definition of innovation has changed; it has transformed from a single event into a series of phenomena and processes that create new models of production technology
Marczyk (1971)	A cultural value (tangible, such as a tool, or intangible, such as a work method) that is treated as new at a given time and place
Oslo Manual (definition used in the programme 'Innovative Economy') (2005)	An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations. A common feature of an innovation is that it must have been implemented. A new or improved product is implemented when it is introduced on the market. New processes, marketing methods or organisational methods are implemented when they are brought into actual use in the firm's operations
Schumpeter (2000)	The introduction of a new good, new method of production, the opening of a new market, the conquest of a new source of supply of raw materials or half-manufactured goods, and the carrying out of the better organisation

Source: author's compilation based on the literature on the subject.

Most of the aforementioned definitions emphasise that innovation is something novel; it can be a new product, new production process, or new service. The novelty may be implemented inside the company or in the market through introduction of new goods or services. An innovation can also be an improvement of an existing product or process.

An enterprise which implements an innovation must be aware of the risks involved. Not every innovation will be accepted by consumers. However, the firm's activities and contribution to creating a new product boosts its position in the market, leads to further development, and expands the knowledge and skills which may bring innovative success in the future.

TYPES OF INNOVATION

A marketing innovation is the implementation of a new marketing method involving significant changes in product design or packaging, placement, promotion or pricing. Marketing innovations are aimed at better addressing customer needs, opening up new markets, or better positioning a firm's product on the market, with the objective of increasing the firm's sales (Matusiak 2008). The distinctive feature of a marketing innovation, compared to other marketing strategies, is the implementation of a marketing method that has not been hitherto used by the company. It must be part of a new marketing concept or strategy that represents a significant departure from the firm's existing marketing methods (Glossary: Marketing innovation, <http://ec.europa.eu/eurostat/statistics-explained/index.php/>).

Innovations in product distribution involve the use of new concepts for product placement, including the promotion of a firm's goods and services. Innovations in pricing involve the use of new pricing strategies to market the firm's goods or services. Examples include the first use of a new method for varying the price of a good or service according to demand (e.g. when demand is low, the price is low) or introduction of a new method which allows customers to choose desired product specifications and then instantly see the price for the specified product. New pricing methods whose sole purpose is to differentiate prices by customer segments are not considered innovations (Podręcznik OSLO 2008).

An organisational innovation is the implementation of a new organisational method in the firm's business practices, workplace environment or external relations. Organisational innovations can increase a company's performance by reducing administrative or transaction costs, improving labour productivity, or reducing logistical costs. Organisational innovations in business practices involve implementation of new methods for organising routines and procedures for the conduct of work. These include, for example, implementation of new practices to improve learning and knowledge sharing within the organization. An example is implementation of practices to improve employee relations and employee development, such as education and training programs (Matusiak 2008).

A process innovation is the implementation of a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software. Process innovations can be intended to decrease unit costs of production or delivery, increase quality, or produce or deliver new or significantly improved products. Examples of new production methods are the installation of new automation equipment on

a production line or use of computer-assisted design for product development. Delivery methods concern the firm's logistics and encompass equipment, software and techniques to source inputs, allocate supplies within the firm, or deliver final products (Podręcznik OSLO 2008).

A product innovation is the introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses. This includes significant improvements in technical specifications, components and materials, incorporated software, user friendliness or other functional features. This type of innovation uses employee knowledge and skills and usually plays a significant role in gaining competitive advantage. The firm's objective with regard to innovation is to strengthen its position relative to other economic entities. Achieving this objective is possible when a given innovation is beneficial from the market's and customer's point of view. In other words, it is the market forces that determine if a given innovation is beneficial or not (Zuzek 2010).

An eco-innovation is an activity which consists of significantly improved or new processes, techniques, or products that do not generate or reduce negative impacts on the natural environment. Enterprises whose objective is to achieve sustainable development tend to pay more attention to environmental issues, realising that environmentally friendly activity is often a decisive factor in gaining competitive advantage. Such firms strive to save natural resources and use technology that decreases the cost of production and improves the quality of products. Eco-innovations embrace also changes in the organisational structure aimed at reducing or preventing the firm's negative environmental impact. According to a classification of eco-innovation in company operations, they can be divided into innovations contained in a product or service, in the production process and ancillary-production process, and in the management and organisation of the enterprise (Zuzek 2011).

APPLICATION OF INNOVATION IN LOGISTICS

Innovations in logistics have increasingly more strategic significance for any enterprise. They condition the attractiveness of goods and services, which is a prerequisite of a firm's growth, and can be translated into its competitive advantage in the environment in which a company operates. An incentive for the implementation of innovations in logistics is to ensure timeliness, reliability, and security of product delivery while managing costs wisely. The proper use of resources (knowledge, skills, and experience) owned by an enterprise is what conditions its weak or strong position on the highly competitive market. The ability to think independently and creatively is an essential part of professional competences and must continually be developed and improved. Entrepreneurs should create conditions conducive to the introduction of innovative solutions and creation of genuinely entrepreneurial attitudes in their firms. This attitude should be displayed not only by managers, but also be encouraged in the firm's employees, so that they provide novel solutions to the tasks set for them. Human resources are a highly important factor of innovations in logistics because fostering employee creativity is necessary to introduce new ideas which lead to innovative solutions affecting firm growth. Therefore, employees' education, knowledge, and experience are crucial.

Innovation in logistics should be reflected in (Doskonałość w logistyce... 2010):

- constant development of the innovation-implementing team,
- continuous improvement of performance quality,
- continuous implementation of effective practices and actions,
- searching for new, better methods for the implementation of logistics tasks,
- satisfaction with work and honesty towards customers,
- elimination of old practices and habits used to no avail in the area of logistics.

It should, however, be kept in mind that innovative logistics solutions are not limited to IT processes only. The basic assumption of all such solutions is their proper adaptation to changes in the environment and adequate response to market requirements. Constant changes in the economic environment forces enterprises to respond quickly, while at the same time managing their growing responsibility for the natural environment (Harrison and van Hoek 2010).

Searching for innovative logistical solutions which meet consumers' requirements and expectations is very important from the viewpoint of the enterprise's image. Some of the main objectives of innovations connected to logistics processes include (Pfohl 2008):

- reducing process costs, modularisation/standardisation of logistics services,
- developing new services to cover customer requirements,
- covering basic market requirements.

Some of the basic features of the development of innovations in logistics include (Little 2007):

- a shift from cost-oriented towards customer-oriented innovation,
- developing resources necessary for creating innovation,
- developing adaptable and flexible logistic systems and networks,
- boosting market and technological know-how as key success factors for an enterprise.

A properly built and organised logistics process leads to decreased costs and is the most important objective set for the innovations implemented. Creating new goods and services in order to meet the demands of increasing competition is the most important objective set for innovative solutions (Fig. 1). It should be remembered that affordable price and reliable product are no longer the only buying criteria for the customer, who is constantly searching for new options, of which innovative logistics is an important aspect.

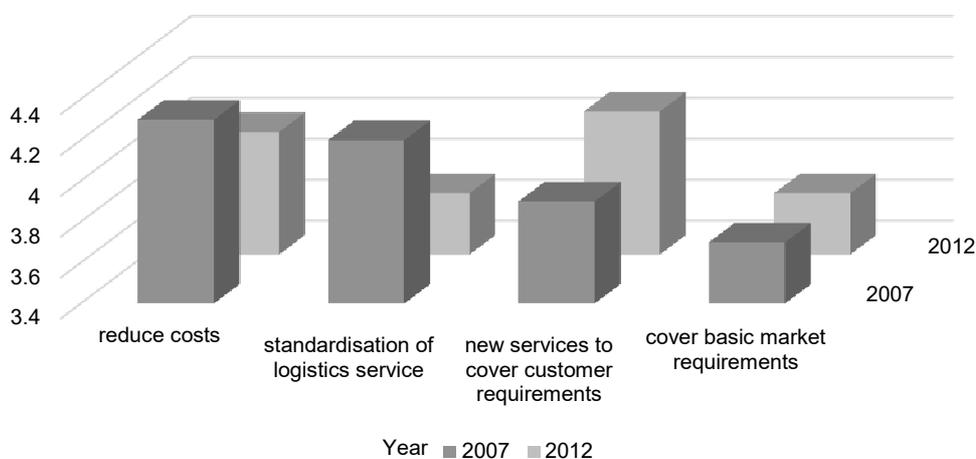


Fig. 1. Objectives of innovation
Source: Pfohl (2008).

In order for the implemented innovations to have a positive impact on the firm's operations, the firm's strategy and resources must be properly aligned. Below are the general guidelines for both shippers and logistics service providers (Pfohl 2008):

- in order to optimise resource allocation, bundle innovation-related activities in department or line function with clear responsibilities, align innovation projects with strategic objectives and report to board level;
- modularise and standardise service offerings in order to generate cost efficiencies;
- implement structured and continuous market intelligence activities in order to identify new customer needs and technology trends (market/technology intelligence);
- involve external partners as early as the concept development phase;
- implement a balanced system of indicators consisting of both cost- and customer-oriented measures.

Logistics service providers can address their specific deficits by (Pfohl 2008):

- developing and implementing a concept for market launch and rollout of new products/ /services;
- developing and institutionalising a continuous learning loop and a supporting knowledge management;
- establishing tools and methods to support innovation activities within logistics.

THE IMPORTANCE OF LOGISTICS INNOVATIONS IN SMEs

The main objective of the implementation of innovation in enterprises is to gain competitive advantage in the market, and consequently to maximise profits in relation to investment outlays. Small and medium-sized enterprises that want to function in the competitive market must demonstrate efficiency and flexibility in all their operations.

In the enterprises studied, logistics innovations were important to over 62% of respondents, with about 30% declaring that they were very important. Only less than 1.5% of enterprises replied that innovation-related activities in logistics had no significance to them (Fig. 2).

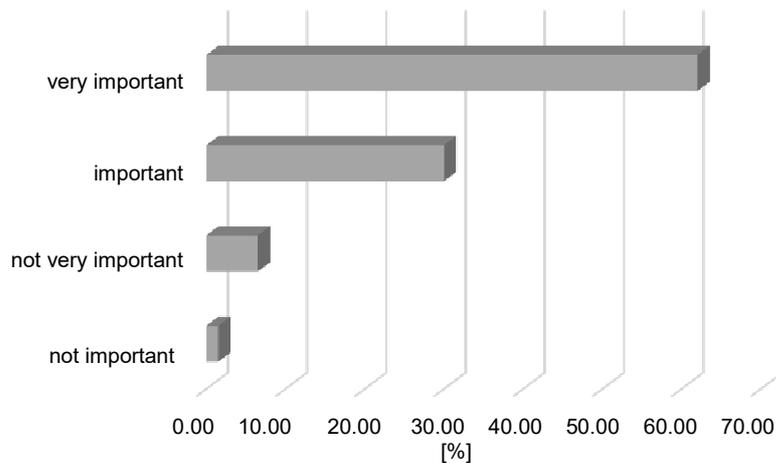


Fig. 2. Assessment of logistics activities including innovation

Over 120 respondents admitted the need to implement new, more cost-effective solutions in logistics. In the questionnaire used in the study, entrepreneurs were asked to choose and identify main external and internal initiators of change in the area of logistics. In case of external motivation for implementing logistics innovations, 75% of respondents indicated that they were motivated by: customers (29.7%), competition (25.5%), suppliers (24.7%), contracting parties (14.4%), fairs and exhibitions (3.2%), and consulting (2.5%) – Fig. 3. Remaining 25% of respondents answered that the impulse for innovation in logistics came from inside the company, and was due to the owner initiative (16.5%), human resources (5.0%), and the R&D work conducted (3.5%).

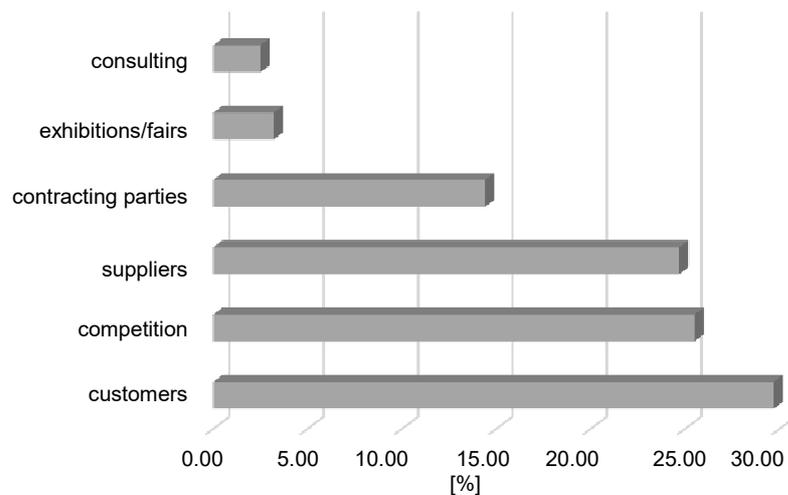


Fig. 3. Most frequent sources of logistics innovations

Considering the fact that in the case of creating innovative solutions external factors outweigh the internal ones, entrepreneurs were asked to identify what drives them to actually implement logistics innovations (Fig. 4).

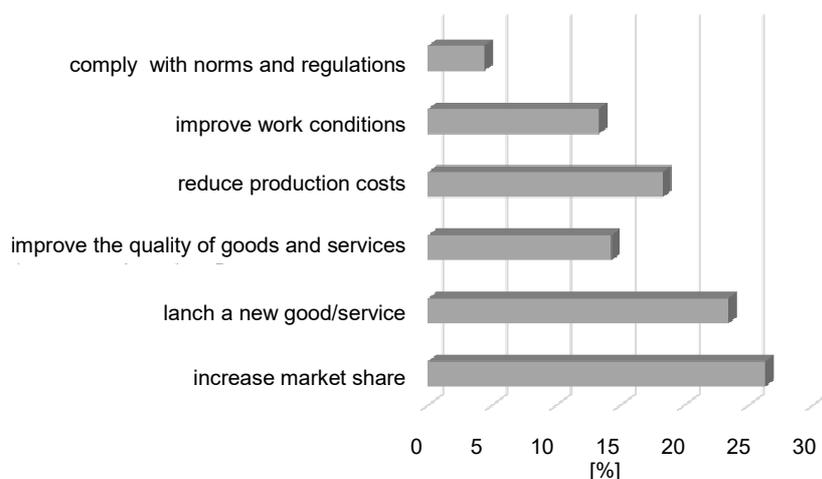


Fig. 4. Main reasons for implementing innovations in logistics

The decision to implement such innovations is predominantly determined by company objectives, that is to increase its market share, or launch a new innovative product or service. Cost factor is also important; according to the entrepreneurs interviewed, the costs were significantly lower as a result of implementing logistics solutions. Entrepreneurs also wanted to improve work conditions and comply with legal norms and regulations.

Information related to further development of logistics activities in small and medium-sized enterprises also turned out to be very important in the study. Almost 68% of the respondents were interested in further development of logistics activities, especially taking into account the principle of sustainable development, which has a positive impact not only on the growing demands of customers, but also on the market and the environment in which the enterprises operate.

CONCLUSION

Nowadays, the highly competitive market forces companies and organizations to implement innovation, be it a new product, technology or organisational solutions. In global economy, it is crucial for an enterprise to create conditions conducive to innovative and creative thinking, and to use innovation not just as a corporate buzzword, but as a synonym of breakthrough ideas that will be implemented. This is also the case of the logistics market.

The study conducted indicates that entrepreneurs are aware of the fact that innovative logistics solutions are a very important element that enables them to gain competitive advantage. The analysis of the data collected confirms that entrepreneurs are able to identify the sources that trigger innovation, both internally and externally. They are also able to point to the factors which motivate them to take up such new ventures. Majority of the firms analysed (about 70%) showed willingness to continue to develop their logistics processes, believing them to be important.

Three-quarters of entrepreneurs believe that their readiness to implement innovations in logistics can be attributed to customers (29.7%), competition (25.5%), suppliers (24.7%), contracting parties (14.4%), and fairs and exhibitions (3.2%). Entrepreneurs from the SME sector are well-aware of the fact that only far-sighted management will enable them to operate successfully in the increasingly competitive and demanding market.

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Summary. Changes occurring in the economy necessitate a more frequent implementation of innovative solutions that drive business growth. This is also reflected in logistics activities which support production, service and organisational processes. The objective of the study was to estimate the importance of implementing innovation in enterprises from the SME sector, taking into account external and internal sources that inspire novel logistic solutions, and the motivation that drives entrepreneurs to engage in logistics innovation. The paper also attempts to capture the essence of innovation in business practice, and provides main definitions and types of innovation.