ENTREPRENEURSHIP AND MANAGEMENT
PRZEDSIĘBIORCZOŚĆ I ZARZĄDZANIE
Tom XIV, Zeszyt 7
http://piz.san.edu.pl

Logistics Management

Editor: Katarzyna Kolasińska-Morawska

Łódź 2013

This magazine is financed by Społeczna Akademia Nauk
All the articles published in the magazine are subject to reviews.

Editor: Katarzyna Kolasińska-Morawska
Adjustment:Dominika Świech
Typesetting i cover design: Marcin Szadkowski

ISSN: 1733-2486

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Printed version is the original version of the magazine.
Printing and binding: Mazowieckie Centrum Poligrafii,
ul. Duża 1, 05-270 Marki, www.c-p.com.pl; biuro@c-p.com.pl

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Preface

It is my pleasure to announce that new „Logistics Management" volume published at the University of Social Sciences in a series of scientific „Entrepreneurship and Management" is ready to be released. This is a special edition because all articles are published in English and therefore it can be distributed and promoted abroad as well. Articles presented in the following volume concern area of logistics management and are result of observation, analysis, research and professional experience of scientists from the University of Social Sciences and invited representatives of scientific and business. The following volume is focused on distribution channels however spectrum of subjects presented is wider as logistics is comprehensive scientific discipline.

Logistics, as a scientific discipline, achieved on the one hand a strong and stable position in the field of management and engineering sciences on the other hand is one of the main areas of business practice that effectively integrates business processes. Logistics processes that cover the area of procurement, production (internal) and distribution are very important, even crucial impact on the effectiveness and efficiency of the entire enterprises. In this light the tasks of distribution channels are extremely important. Optimization of logistics activities in the sphere of distribution plays crucial role in the success of the whole business venture because distribution channel ends at client-consumer who is treated as a business sponsor. Such sponsor can determine success of particular company by choosing one or another product or service through one or another distribution channel.

Logistics within scientific disciplines refers to detailed disciplines such as management science, commodity, computer science, finance, production engineering, the science of defense and security. On the practical field logistics plays key role in the support for businesses in the areas of marketing and customer service and technical organization of the flow of physical goods. In this regard a special place and importance is undertaken to research and development (R&D) which should be responsible transfer of knowledge from science to business. The subject of articles presented in the current volume of "Logistics Management" covers a broad spectrum of issues in the field of logistics in theoretical and practical frame as well. Presented articles are result of scientific research and cover five main areas as follow:

- logistic customer service within distribution channels,
- ecologistics, e-Logistics and ICT usage in logistics,
- relationship and partnership management in supply chains,
- logistic centers and their role within distribution channels,
- research methods, sustainable development and innovative strategies in logistics.

Two authors have presented their articles in the area of logistic customer service. Dr Katarzyna Kolasińska-Morawska has described logistics customer service issues in online sales of fast-moving consumer goods on the example of network retail companies. Dr Michal Chmielecki turned his thoughts towards multi-cultural customer service in third party logistics. Area of e-Logistics and ICT usage in logistics has been elaborated by four authors in current volume of "Logistics Management". Dr Joanna Krygier has described the role of Supply Chain Management (SCM) systems in the management of global supply chains. Two authors dr Katarzyna Świerszcz and dr Sławomir Bartosiewicz have presented article concerning IT and telematic systems in polish logistics centres. In that area dr inż. Pawel Morawski has described e-Logistics tools in distribution channels.

Topic of relationship and partnership management within supply chain has been described by three authors. Dr Katarzyna Świerszcz and dr Sławomir Bartosiewicz presented their thoughts about partnership as a determining factor of competitive strategy in supply chain management. In turn mgr inż. Marta Brzozowska has described relationship management issues in supply chains on the example of chain retailers.

Dr Bartłomiej Stopczyński has presented topic of logistic centers as the integration of international supply chains, while dr Robert Seliga has turned his thoughts into ecologistics as contemporary trend in building the image of medical units. Three authors prof. dr hab. Tadeusz Sikora, dr inż. Paweł Nowicki and dr inż. Piotr Kafel have presented topic of food safety management and fulfilmment of selected hygienic and sanitary requirements in polish grocery stores networks. Problems of material flows in recovery logistics were described by two authors prof. dr hab. Mirosław Włodarczyk and dr inż. Jerzy Janczewski in their article. In turn dr inż. Danuta Janczewska in her article has analysed the position of innovative strategy in marketing-logistic management in SMEs Sector.

Current volume of "Logistics Management" contains extremely valuable article in the area of strategic research programme. Prof. dr hab. inż. Adam Mazurkiewicz and mgr Ludmiła Łopacińska have presented evaluation of new technology solutions developed in strategic research programmes as one of the most important aspects ensuring competitiveness of modern knowledge based economies. Prof. dr hab. Łukasz Sułkowski has described the identity and demarcation of management in family of social sciences.

Giving that volume of "Logistics Management" to the reader's hands editors hope that it will be a source of valuable knowledge and inspiration for further research in the area of logistics and distribution.

dr Katarzyna Kolasińska-Morawska

Przedsiębiorczość i Zarządzanie
Wydawnictwo SAN – ISSN 1733-2486
Tom XIV, Zeszyt 7, ss. 7–16

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Multi-Cultural Customer Service in 3PL

Abstract: Successful companies understand what their customers want. Less successful companies often find it hard to obtain a good understanding of what their customers value and how they should be treated, and spend considerable time hustling to do things that are not fully appreciated by their customers. This applies to third-party Logistics sector as well. This paper explores the influence of cultural differences in customer service in 3PL. It outlines the important aspects of culture for international customer service, shows the potential cultural traps and why companies fail to gain maximum value from the customer service. This article offers advice on how to organize international customer service optimally while considering cultural issues.

Key-words: Cultural Values, Customer service, Service Quality, Customer Satisfaction.

Introduction

The idea of adopting third party logistics services has grown in different industries around the world during the past several years and it involves outsourcing logistics activities that were traditionally performed in-house. Opportunities arising from globalization, advances in technology, and outsourcing mean that companies in logistics sector must turn their attention to customer service across national borders. The key is to manage customer service to satisfy customers better than the competition does and that can be done among others by using cultural differences as a competitive advantage. This article explores the influence of cultural differences in customer service in 3PL. It outlines the important aspects of culture for international customer service, shows the potential cultural traps and why companies fail to gain maximum value from the customer service. This article offers advice on how to organize international customer service optimally while considering cultural issues.

Third-party Logistics

According to Sink and Langley [1997], there seems to be no common definition of third party logistics that will satisfy all industry observers and views third party logistics as using the services of an external supplier to perform some or all of a firm's logistics.

Bhatnagar et al [1999] also refer to third party logistics as the use of external companies to perform logistics activities either in part or in full. Laarhoven et al [2000] defines third party logistics as activities performed by a logistics service provider on behalf of a shipper and consisting of at least management and execution of transportation and warehousing. Other elements such as inventory management, information related activities, value added activities are also included. According to Knemeyer and Murphy [2004], 'third-party logistics' can be referred to as 'logistics outsourcing' or 'contract logistics'. Coyle, Bardi, and Langley [2003, p. 425] for example define third-party logistics to involve "an external supplier that performs all or part of a company's logistics functions" and to "encompass suppliers of services such as transportation, warehousing, distribution, financial services, and so on."

The majority of shippers worldwide are increasing their use of 3PL services, with 64 percent of respondents reporting a rise. At the same time, the 16th Annual Third-Party Logistics Study report indicates an average of 42 percent of total logistics expenditures being spent on outsourcing, the same as last year's study. However, 24 percent of shipper respondents reported a return to insourcing 3PL services and 58 percent report they are reducing or consolidating the number of 3PLs they use, indicating uncertainty about the global economy continues to impact 3PLs (16*th* Annual Third-Party Logistics Study, http://www.3plstudy.com).

3PL companies challenges

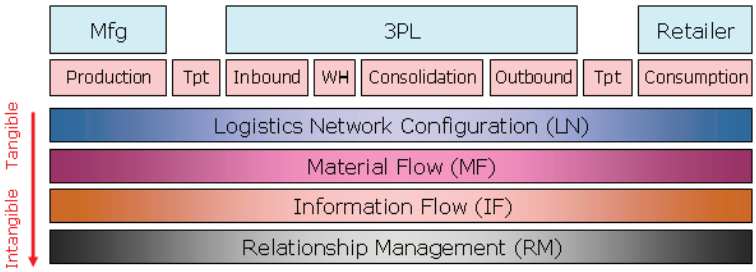
There are not many papers which look at the challenges faced by 3PL companies and address how they can overcome such challenges. However, not many of them have been devoted to cross-cultural communication and management issues [more on this topic Sułkowski 2012].

Logistics planning attempts to make decision at three different levels:

- strategic,
- tactical,
- operational.

All these three levels are differentiated by their planning horizon. In figure 1 the 3PL challenges are differentiated by their level of tangibility. At the top level is the Logistics Network Configuration layer (most tangible), to Material Flow layer, to Information Flow layer, and finally to Relationship Management layer (least tangible).

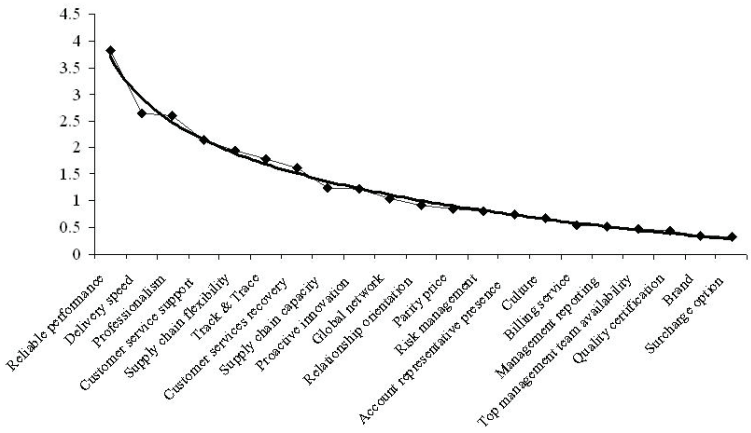
Figure 1. Layers of challenges faced by 3PL companies



Source: M.L.F. Cheong, *Logistics Outsourcing and 3PL Challenges*, http://dspace.mit.edu/bitstream/handle/1721.1/3908/IMST011.pdf.

3PL companies most of the times seek long-term relationship with their clients and thus are very concerned with maintaining good relationship through good performance and customer service level (Fig. 2).

Figure 2. Relative importance of 3PL service features



Source: T. Coltman, *Price and demand: what do 3PL customers really want?*, University of Wollongong Research Online, http://ro.uow.edu.au, retrieved 29.11.2012

Today's 3PL marketplace is experiencing significant change and established 3PLs are adjusting their business models to provide greater value to shippers. The 16th Annual Third-Party Logistics Study report shows relationships between shippers and 3PLs continue to be successful with 94 percent of 3PLs and 88 percent of shippers stating communication, flexibility and openness are key to contributing to their success. However just 68 percent of shippers judge their 3PLs as sufficiently agile and flexible, down from 72 percent last year suggesting this is an area where 3PLs can make significant further contributions to supply chain success. (16*th* Annual Third-Party Logistics Study, http://www.3plstudy.com). It must be stressed that cross-cultural understanding is a key to successful communication and thus successful customer service.

Customer service

Most of the companies operating in logistics sector perceive customer service centers as cost centers. Relatively few companies see customer service centers as providers of competitive advantage [Feinberg, Ruyter, Bennington 2005]. Creating a winning customer strategy is to deliver a customer value proposition based on a thorough understanding of the customer's culture, values and needs. All of the aforementioned elements of culture influence an effective life relationship. Customer relationships are nowadays viewed as strategic assets and the customer service center must be made into a strategic part of the organization and central part of the Customer Relationship Management (CRM) system. Economic and competitive challenges of the XXI century require that functions of customer service change from an order taking to creating a long term strategic relationship with a client [as described in: Sułkowski, Morawski 2012].

According to McKinsey, "The key is to develop a customer service strategy that successfully balances costs, revenues generated, and quality. Only then can companies transform their call centers into strategic assets that provide a competitive advantage and promote growth" [McKinsey Quarterly, April 2005].

Cross-cultural differences in customer service in logistics sector

Evidence has shown cross-cultural differences do exist and can be observed, measured and statistically tested [Pizam 1999; Reisinger, Turner 1999]. The role of culture in the world of business has been the subject of various research for at

least twenty-five years. It plays more and more important role in management sciences [Sułkowski 2002, Sułkowski 2008]. The complexity of culture makes impossible to create one, proper definition. One of the most commonly used definitions of culture, being not a complex one at the same time, in the literature on culture is the definition by Hofstede. Hofstede and Hofstede [2005] suggest that "culture is the collective programming of the mind that distinguishes the members of one group or category of people from others" [p. 4]. Bjerke [2004] expresses the opinion that culture is a mechanism which fuses social structures [p. 13]. Thus culture is an output formed by a given community consisted of some bases, ideas and classes. Schwartz [qtd. in Lewicki et al. 2007] describes culture as the values, distinguishing ten essential values, namely: power, security, traditions, conformity, benevolence, universalism, self-directions, simulation, hedonism achievement and power [p. 237]. The values might cooperate with each other or there might be a conflict between them. In practice, the values which are on the opposite side of the circle tend to be in a conflict.

Service quality and satisfaction

One can define service quality as the consumer's comparison between service expectation and service performance [Parasuraman, Zeithaml, Berry 1988]. Although service quality is known to have multiple dimensions [Grönroos 1990], there was no general agreement as to the nature or content of the dimensions [Brady, Cronin 2001]. Although, Parasuraman et al. [1988] identified five dimensions of service quality included: tangibility, reliability, responsiveness, assurance, and empathy, collectively referred to as the SERVQUAL, Carman [1990] found the items of SERVQUAL required further testing to ascertain their broad applicability. An alternative approach to using SERVQUAL was a simplified performance measures–only model, namely, the SERVPERF approach [Teas 1994]. This approach was especially useful when service expectations were ambiguous or unknown.

One can define satisfaction as contentment determined by comparing customer expectations to the actual perceptions regarding service [Hoffman & Bateson 1997]. Satisfaction can also be referred to a customer's emotional evaluation and subjective judgment about the received service, and has been conceptualized as the fulfillment of drives, motives, needs, or expectations [Oliver 1980]. Satisfaction has been an important measure in marketing since it stems from the belief that users who were highly satisfied with their service experience would likely become loyal users, and there is a chance that they will share their satisfaction with others [Manning 1999]. Rust and Oliver [1994] viewed service quality as an antecedent of satisfaction.

Intercultural management is an essential part in practicing global CRM. When polled in 2007 by the Conference Board, 80% of companies worldwide believe customer satisfaction to be directly related to their turnover [Feinberg, Ruyter, Bennington 2005]. In support of this, research shows that a 5% increase in customer retention results in a net present value increase in profits of between 25% and 95% [Liu, Furrer, Suharsham 2001].

Customer service across cultures

Table 1 is a compilation of issues that must be addressed while the 3PL company is planning to incorporate, improve or simply change their cross-cultural customer service.

Table 1. Customer service across cultures

Assessing importance of customer service	Assess the importance of customer service. Before getting started, you need to figure out how important customer service is to your business strategy. For example, if you focus on low prices, customer service excellence may not make too much sense.
Assess target markets.	One must understand what countries and customer segments constitute the company's target market. This will help assess the need for multi-cultural customer service, and identify what languages to support in customer service strategy. In most of the cases, this is obvious but in many other cases, one may need demographic information that tells what languages are primarily and secondarily spoken in specific target markets. Customer service representatives' accents, dialects, and understanding of the customer make or break the transactions. Customers in general do not tolerate poor language skills and they will not call a customer service center twice if the language skills are not up to par. For a customer service center, a number of native language speakers is of course preferable because they know all the nuances that help convey meaning and establish understanding with the customer.
Language preferences	One should also find language preferences through primary customer research, where one may find that customers have different language preferences depending on the communication channel. For example, English may be possible for email and chat but not for phone conversations in many countries.
Assess the scope of customer queries	Customer queries fall into four broad categories of varying complexity and interaction depth: informational, transactional, advice-related and diagnostic. On average, transactional, diagnostic and advice-related queries present more service differentiation opportunities through customer service than informational ones.
Reflecting values and norms	Customer service should respect and reflect the values and norms of particular cultures. Customer service representatives should be able to understand and match the cultural background of the customer. Customer service representatives need to be able to understand and answer the customer correctly according to the customer's expectations, which are imbedded in the norms and values of the customer's culture. Intercultural awareness plays a very important part in this process. For example let us take Hofstede's Power Distance Index into consideration. It is very likely that in some cultures customer will want to speak to someone of at least the same rank and someone with authority. In such case, the customer service representative, who may be a young low rank employee, should transfer the customer and not take it personally. Situations like these which are handled incorrectly can easily lead to frustration for both the customer and the employee, resulting in customer defection and lost sales. On the other hand for customers from Low Power Distance Index cultures e.g. Anglo-Saxon customers, where the emphasis is on pragmatism; matters how the issue is resolved, not who resolves it.

Cross-cultural training	Due to globalization, cross-cultural communication has become a vital part of every training more than ever before. According to Datamonitor, all over the world there are roughly 926.000.000 interactions per day between customers and businesses and 95% of communication in call centers occurs over the phone. Not surprisingly, successful operations of a customer service department are contingent upon one of the organization's core competencies which is efficient communication. It is worth stressing that This is more important in phone interactions than in other channels such as email due to its real-time, high-touch nature..
Adopt culturally nuanced policies and practices	Customer service policies and practices are often implemented with little or sometimes even without any consideration to cultural aspects. – but they should be. Good example can be cross-selling or upselling. In some countries, it may not be polite to cross-sell even at the end of a successful customer service interaction. Another example can be a 48-hour response time for email queries may be acceptable in some cultures but tantamount to ignoring the customer in others.
Leverage technology.	Enabling highly culturally differentiated customer service adds to the cost of service. It is therefore important to leverage technology-enabled automation, where possible, to curb the costs. Language-aware customer query routing, multilingual user interfaces, knowledge-guided customer interactions and culture-aware interaction tools (e.g. chatbot technology) can help in this area.
The perception of excellent customer service	The perception of excellent customer service is different in different cultures. For companies it is important to acknowledge that excellent customer service lies in the eyes of the customer. Research has shown that culture has an important influence on customer service; quality expectations and customer satisfaction because perceived service quality varies among different cultures.
Customers involvement and expectations	Customer service representatives are engaged in different degrees of interactive customer service work. A high degree of person-to-person interaction requires considerable adaptation during the service interaction. According to InformationWeek, European customers expect Customer service representatives to answer about 80% of their questions without reference, which is different from the US where customers do not have such high expectations. This is also culturally contingent. Strong Uncertainty Avoidance Cultures (like many European countries) place a particular value on expertise. Taken together with the fact that one of the most important success criteria for customer service is to be able to resolve an issue the first time around, it is not difficult to predict that the technical competence of a CSR becomes an important variable in high uncertainty avoiding cultures.
Conflict management	Customer service centers often have to handle conflicts. In many of such situations, customers can be very emotional. Therefore, customer service representatives have to understand the emotional triggers of their customers. And this is also influenced by culture.
The cultural context of teamwork in customer service centers	The outcome of teamwork in customer service departments is highly influenced by culture. It has been documented that, provided that certain conditions are met, multicultural teams are more successful than teams consisting of team members from only one culture in terms of better and more creative ideas etc. One important condition to make it work is: successfully managed diversity. This requires highly skilled and excellent leadership.

Source: Own study based on: Turek 2000, Bianchi 2001**,** Herbig and Genestre 1996; Furrer, Liu, and Sudharsan 2000; Liu, Furrer and Sudharshan 2001; Bianchi 2001; Reimann, Lünemann, and Chase 2008, Datamonitor, Hofstede and Hofstede 2005.

Summary

Logistics is an important part of every economy and every business entity. The worldwide trend in globalization, customer orientation, lead time reduction, cost reduction, reengineering has led to many companies outsourcing their logistics function to Third-Party Logistics companies, in order to focus on their

core competencies [see Hertz & Alfredsson 2002, Lieb & Randall 1996]. It has never been more important for companies to be able to provide customer service that meets the needs of a multicultural customer base. That means not only providing customer service in different languages depends on what you sell and who your customer is, but also understanding the varied cultural backgrounds of customers.

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Przedsiębiorczość i Zarządzanie
Wydawnictwo SAN – ISSN 1733-2486
Tom XIV, Zeszyt 7, ss. 17–28

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The Position of Innovative Strategy in Marketing-Logistic Management in SMEs Sector

Abstract: The marketing-logistic management is now the very interesting method for entrepreneurs and consolidate the conviction, that perfecting the marketing and logistic skills of enterprise contributes to growth of competitiveness of enterprise. Activity of SMEs found on the modest resources than in biggest enterprises, therefore building the logistic and marketing advantage by innovative strategy is often the right direction of growing of competitiveness of SMEs. The aim of article is presentation of space and possibilities of application of innovative strategy in SMEs in confectionery sector. Formulating of innovative strategy is connected with marketing methods and perfecting the logistic process. Necessary is growing the level of logistic and marketing education of managers by learning and study of logistic and marketing- especially of marketing-logistic management specialization.

Key-words: SMEs, strategy, innovations, marketing, logistic.

Introduction

The marketing – logistic management becomes now the interesting concept for entrepreneurs, and thus consolidates opinion, that improvement skills of marketing and logistic contributed to increasing of competitive position of the enterprise in the market.

The activity of enterprises from SMEs sector based on the smaller material resources than in big ones, thus building of logistic and marketing skills is often the right direction of development of SMEs.

Orientate and integration of marketing and logistic activities for common goal, who is the customer makes more effective, dynamic and flexible the system of marketing and logistic in enterprise. The consequence of this orienta-

tion is going into improvement of wide broadly innovation in all areas of activity of enterprise, according the idea of meet demand of customers the best way.

The aim of article is presentation of meaning and position of innovative strategy in marketing and logistic managing of SMEs. On the example of research in SMEs in confectionery branch there are presented the model of marketing and logistic management and consideration of building of innovative strategy.

The marketing and logistic managing in SMEs sector

The competition and strong attempts of reach the competitive advantage make that using the traditional methods of managing is often insufficient. Also the used the individual and separately conceptions of improvement the managing of enterprise not ensure the expecting advantages. For this reason the modern enterprises building the methods of management by integration of many aspects of activity. Commonly used model of marketing- mix in present conditions should be extend of marketing and logistic conception, up to instruments of logistic- mix, and connecting with new ideas of lean- management and reenginiering. Each of those conceptions needs the individual approach and adapt the methods of management to the individual characteristics. Sułkowski said that the main marketing ideas are the tools for managers, and help receive the planned goals of organizations [Sułkowski 2009, p.16].

The one from more promising conception of management is integration of logistic management with marketing oriented conception of enterprise. The main function characterized the modern enterprise is delivery the values to the customers. Demands of clients are more different and the spiral of demands inevitable constantly growing, additional the conscious of meaning of quality is growing, too. The explicitly tendency of enhancement of quality is especially significant in area of delivery service and structure of demands for integrated logistic performances. Particularly it means that there are necessary oriented for time, quality, flexibility and shaping numerous interrelationships.

The rules of marketing and logistic management can be formulate according theory "Direct Beam of Value" [Dytwald 1997, pp. 49–54]. This theory defines three options of delivery of value for customers:

- Option of Operating Excellence – expressing in offer the products and services with the best price for customers. This price is shaping by optimization of process from point of view of customer and costs, time, flexibility, effectiveness, convenience of customers and shaping of effectiveness of process.
- Option of Product Leadership – consisting for innovations, project of new products and their introducing into market, creating the new structure of organization based by processes.

- Option of Customer Intimacy – expressed recognized of customer's demand and his chain of value and building the stable relationship with him.

Direct Beam of Value formulated by M. Treacy i F. Wiersema [Treacy, Wiersema 1995], showing the integration of logistic and marketing process in enterprises.

Developing of new products, building the long-term relationship with customers and adapt the logistic processes of material and information flow confirms the necessity using of marketing and logistic instruments simultaneously. Innovations are defined in the same time as the main direction of marketing- logistic activity.

Szymura-Tyc [Szymura-Tyc 2001] supplements this theory by building the marketing assets, carry on to competitive advantages of enterprise. In marketing assets there are: distinguishing products, advantageous price, identity of mark, connections in distribution channels, reputation and image of company.

The supplement of discussion can be the additional logistic assets integrated with Direct Beam of Value. Logistic assets which influence of attractiveness of logistic offer for customer are:

- unique skills of creation of logistic process,
- their dynamic and flexibility of components of logistic process,
- effectiveness and efficiency of logistic processes.

The Innovative Process in SMEs

According the Shumpeter's theory the innovations born as science research effect, and lead to trans forming knowledge into a material form. Shumpeter identified innovations with introduction to production the new products or improvement still existing product or method of production [Schumpeter 1960, p. 322]. He defined the term of innovation wide, as open a new market, application a new method of selling or buying, using a new raw materials or half- products, application a new organization of production. It should be accented, that Schumpeter's theories assumed, that the main creators of innovations are the big enterprises, and he named them as " innovators", whereas SMEs – as " imitators". Shumpeter's views are not grounded in economical practice [Stawasz 1999, p. 50], and in opinion of contemporary researches SMEs are faster react for signal from environment and changing needs of customers. SMEs can acting more flexible, faster create the innovations and make the shorter the time of their implementation and commercialization [Nowacki, Staniewski 2010, p. 16].

Introduction the wide definition of innovation according Oslo [Oslo Manual, 2005] give the possibility changing the statistic data by the new position, as imitation characteristic:

- innovation by improvement,

- innovation by changing the products and process,

as regards by SMEs. The contemporary of types of innovations distinguish a new categories [OECD 2010, p. 5], as technical innovations:

- product innovations,
- process innovations,

and non-technical innovations:

- organizational innovations,
- marketing innovations.

The non- technological innovations recently were not recognized as main as product or process innovations. In Poland from 2008 The Main Statistic Office (GUS) introduced near the technological innovations data – the new non-technical ones.

The organizational innovations mean the implementation of new method of organization in rules of activity in enterprise, in way of work place organization or in relation with environment. Those new methods are implemented for reach the better results by cost reduction in administration or transaction costs and increasing of job satisfaction, gaining access to activities, which are not subject of commercial exchange, as for example non-codification external knowledge. The marketing innovations apply the implementation of a new marketing methods, including the significant changes in project or construction of product, or in distribution, promotion or price strategy [Oslo Manual 2005, p. 49]. The goal of implementation of marketing innovations are the better satisfy of needs of customers, open the new markets or a new positioning of product in the market for the growth of selling. There are observed the connection between non-technological, innovations and strategic decisions concerning technological investments, as buying technology or new machines or apparatus.

The researches of innovativeness of SMEs

Researches of innovativeness are conducted by GUS in Poland, and the results are published in papers " The Innovative Activity of Enterprises" and "Science and Technique". Results of GUS are not separate the micro enterprises and presented data for enterprises employer over 10 persons [Juchniewicz, Grzybowska 2010, p. 34]. Results of GUS show the low innovativeness of enterprises in Poland. The similar results appear from European Commission Report, and the level of Summary Innovation Index in Poland is lower than average factor in EU countries. For this reason Poland is included into group of catching up countries [European Innovation Scoreboard 2006]. In opinion of EU researchers this situation follows of low expenses for R&D in Poland. This view can be discussed, and in author's opinion the important reason is not identical definitions of innovative activity of SMEs in different countries.

Researches by Borkowski [Borkowski 2011, p. 43] show that Polish enterprises benefit from EU funds to Carry out the innovative activity in Program of Innovative Economy. However the financial support is not enough to create the R&D department in small enterprises or using the service of science units as universities, research institutes, consulting enterprises and experts. Borkowski states that the most often implemented innovations in SMEs are:

- the product innovations (27%) – as a new product, new service or changes in view of existing products,
- the process innovations (37%) – as a new or improved processes,
- the organizational innovations (10%) – as new programs, new methods of development of competences of employees,
- the marketing innovations (9%) – as changes of image of product, changes in distribution or promotion or prices instruments of marketing),
- the ecological innovations (8%) – as innovations in environment al policy.

The last researches [Wojnicka 2011] show that enterprises who conducted the concentrated and coherent strategy in innovative have the better opportunity of success and receiving of competitive advantage. In Wojnicka' s opinion those enterprises who have not the innovative strategy can receive the success in the short run and they will not to retain their success.

Researches by author of confectionery branch indicated that SMEs are interested non- technological innovations mainly, as organizational and marketing innovations. In confectionery branch in Poland there are over 1000 enterprises, and only 10 belong to group of "big" enterprises, and rest belong to SMMEs (Small, Medium, Micro Enterprises). In researched enterprises SMMEs in confectionery branch there are the examples of logistic& marketing management based on connecting of marketing activity with logistic system of enterprise. Enterprises who implemented the marketing& logistic management considered this method as innovative activity. The goal of organizational innovation is to receive the better financial results, the higher level of effectiveness and the better using of human resources and intellectual capital of enterprise. The main group of innovations in SMEs in confectionery branch are the following:

- The organizational innovation – means the creation of a new method of organization of work in researched SMEs, or a new structure of organization or a new type of relation with environment. Example: creation of new department in enterprise, not exist until now, implementation a new method of TQM in enterprise.
- The process innovations – consist of a new production process or implementation of a new process, not using yet in enterprise. Example: a new method of communication inside company between each departments, by intranet.

- The marketing innovation – consist of implementation of new method of marketing, based on marketing-mix. According to product the innovations were as whole new project of structure of product, construction and applications. Example: participation the first time in international fairs with support from EU funds by SMEs from confectionery branch.
- The ecological innovation – by implementation of ecological technology of production, and the special treatment of raw materials according the ecological conditions. Example: using the packaging materials according with recycling rules in chocolate production, changing the heat systems from coal-fired up to gas-fired.

In observed SMEs were indicated implementation of a new kinds of packaging, more useful for customers or with in accordance with the requirements of the quality standards. Enterprises in confectionery branch based their market strategies on improvement of marketing processes and organization of management, however the main barriers of innovative activity was indicated as:

- lack of support instruments adjusted to needs of SME,
- lack of system supporting in branch of region,
- difficult of credits.

Other factors as barriers and limited innovative activity in SMEs in confectionery branch are presented on Fig.1.

Figure 1. The factors limit the innovative process in SMEs. The factors limit the innovative process in SMEs

Source: own study on Zakrzewska-Bielawska, *Wyzwania rozwojowe małych i średnich przedsiębiorstw. Innowacje, technologie, kryzys*, Difin, Warszawa 2011, p. 293.

The innovative strategy in marketing & logistic management

In area of marketing & logistic strategy there are innovative activity for development of marketing and logistic processes. The main idea to creation of innovation will be phenomena and changes in environment and opportunities which exist in environment of enterprise. The main goal of marketing & logistic strategy are make shorter the time of delivery, optimal of management of magazines and stocks, to improve the selling effects, realization of customer´s invoices for products and services. Necessary should be the whole coordination of activities to present offers. In American research there are conclusions of Service Response Logistic, that the coordination of every activities is the main direct of modern logistic[1] affect on growth of effectiveness of production.

There are many innovative strategies, and can be show the offensive or defensive strategies, based on own resources or concentrated on imitation activities. Discuss of innovative strategy supporting the marketing & logistic management can be analyze in three dimensions:

- project, producing and commercialization of new products or modernization of existing products,
- project and implementation a new or changing technological processes,
- project and implementation of new or changing systems or under-systems of management.

The innovative strategy connected different area of economy activities, and can exist as many space of generalization.
It can be a strategy as follow:

- the direct company – in existing branch or future, planning economy space,
- the direct branch of activity- for example industrial or agricultural,
- geographical region- for example local government voivodeships,
- country strategy,
- global strategy – for example environmental or energy programs, Lisbon Strategy.

The innovative strategy in industry regards:

- expected future changes in traditional industrial technologies, for example changes in machinery industry, automotive, mining, chemical, food industry,
- planning changes in traditional branch of industry, as machinery,

1. A wide opinion of American research by M. Cichosz (2009), *Lojalność klienta a logistyka firm usługowych,* Oficyna Wydawnicza SGH, Warszawa, pp. 123–127.

automotive, chemical, mining, energy, pharmaceutical, agricultural and food industry,
- new, future technique as micro-electronic, photonic, micro- systems, nano- technique, bio-technique, cell-technology, molecular-technology, software, simulation,
- new area of application as production branches, building, communications, in recycling,
- using a new raw materials, new sources of energy, computerization, environmental protection.

The innovative strategies in services including as follow: project of a new services in many categories, diagnosis and training, predicting of changes in traditional kinds of services, using a new sources of energy, using a new future techniques and technologies.

Recognition of relationship between SMEs and others elements of market allowed for identify of barriers to reach the success and adjustment the logistic and innovative strategies to expectation of market. One from aspects of marketing analysis of conditions of innovative activity is catching of information about kinds of implemented innovations and their effects as hard or soft- effects. In space of diagnosis included sources of financing of innovative projects and implementations. According Białoń, Janczewska [Białoń, Janczewska 2009] for creation of innovative strategy the main problem is researching and evaluation of factors allowing of this creations for implementation and commercialisation. Preparation of this diagnosis can be difficult in SMEs, for reason of not enough knowledge about gist of the matter and course of innovative process[2]. The knowledge about characters of sources of innovations and prognosis of future activities is important in own enterprise and in competitive enterprise to formulate stages, too.

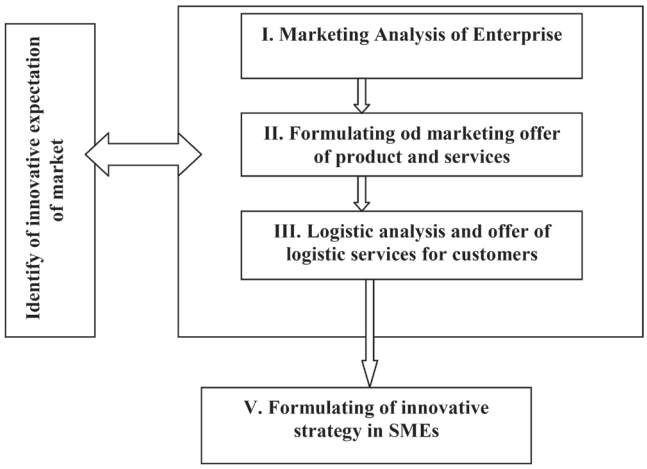
The stages of formulations of innovative strategy show on fig. 2.

The marketing and logistic analysis based on stages in two dimensions: in dimension inside enterprises and the second one in dimension outside. Starting of creation of innovative strategy should be noted the experiences of main factors of innovative enterprise. Should be formulated the following example questions:
- Are innovations the main part of value of company?
- Are managers interested in implementation of many kind of innovations?
- Were prepared the innovative strategies in the past in enterprise as part of whole strategy of company?

2. During discussions in enterprises in SMEs confectionery sector – owners said that in their companies there are not any innovative activities, because they supposed, that „innovations" should be important and crucial- making discovery. After analysis of changes and activities show that were marketing, organizational, environmental innovations – because those activities were quite New in SMEs.

- Were this past strategies understanding?
- What is the value of those past strategies?

Figure 2. Stages of innovative strategy based on marketing and logistic management in SMEs



Source: Own research of D. Janczewska (2011), Wpływ zarządzania marketingowo-logistycznego na poziom luki technologicznej w przedsiębiorstwach z grupy MSP, „Przedsiębiorczość i Zarządzanie", Tom XII, zeszyt 9, Wyd. SWSPiZ 2011, pp. 81–95.

Diagnosis inside company includes the management methods, especially in innovation area. The main is the ability of co-operation with outside organizations, science organizations. The climate for innovations is important and marketing of innovations, motivation system for employee, as participants in innovative activity. The decisive is the person of owner[3]

All this factors should be researched and be helpful to choose the innovative activity in SMEs.

Conclusion

Identify of space and possibility of implementation innovative strategy in marketing and logistic-management in SMEs needs the wide knowledge and building of data of market and abilities of enterprises. Innovative strategy takes an important place in management of SMEs and formulating of innovative strategy is connected with supply logistic- and distribution by catching the information about environment and competitive companies. Necessary is

3. The American researches show that owner decise about innovations in company – comparison with S. Collins – *Od dobrego do wielkiego , czynniki trwałego rozwoju i zwycięstwa firm,* Wyd.SPM Projekt, Wrocław 2003.

growing of education level of managers by training in logistic and marketing. Implementation of changes in management of organization as effect should be measure and level or indications of effectiveness of processes can be analyzing and implemented.

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Przedsiębiorczość i Zarządzanie
Wydawnictwo SAN – ISSN 1733-2486
Tom XIV, Zeszyt 7, ss. 29–38

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Problems of Material Flows in Recovery Logistics

Abstract: Some aspects of recovery logistics in automotive services have been presented, mainly on examples of recovery of used tires and oils after exploitation. Special attention has been paid to the main problems of the material streams management in recovery logistics and occurrence of „grey zone".

Key-words: recovery logistics, automotive services, road transport, product recycling

Introduction

The common presence of automotive transport in global space has a significant impact on development of this branch of economy, becomes a creation of new logistic categories. On 2009 year the quantity note above 1 billion cars, with 75 % of passenger cars, and the rest are load-carrying cars and busses [Menes 2012, p. 6]. Prognosis of near period perspective determine that the global quantity of cars will be above twice, mainly for reason of countries entering in age of motorization, as Russia, China, India, Brasil and South Africa.
Those countries have a large opportunity to reach the European level of motorization, as quantity of cars per one thousand of inhabitants[1].

Activities and logistic processes in materials and information flow space from suppliers to producers, wholesalers and customers sometimes are described as "forward logistic" and are quite good recognizes and described in literature of subject matter. There is lack of sector research in service processes and utilization or used parts and operating materials in automotive branch.

1. In 2009 in EU this motorization level was 469.

Problems of reverse logistic are not so well recognized and need details researches. The goal of article is presentation of selected issues of reverse logistic in automotive services, on found of re-use of using parts of cars and materials.

Management of flows of recovery logistic

Cars warrants possibility of moving and comfort, and for those reasons most of families possess several cars, and the same is in companies using road transport – they have a lot of cars and loading-cars. The road transport dominates in carriage of cargo and wide availability to the road infrastructure causes that in every situation – even small cargo we use car. Growth of quantity of cars in the world besides a lot of advantages brings about increasing of many negative logistic effects, consisting of supplier, production and distribution of cars and negative effects from exploitation processes. In last time there are growing the awareness in many enterprises about essence of reverse logistic [Sadowski 2008, p. 131], as found of logistic management in single enterprise and in delivery chain. Modern approach to reverse logistic problems gives the possibility of creation the additional income in enterprise.

In literature of subject as ground activities of reverse logistic describe: collecting, sorting, material processing, and project of logistic net for reverse. Management of flows in logistic need the following activities [Pokharel, Mutha 2009, pp. 176–179]:

- prognosis of supply and demand of quantity of remains fit for re-use,
- plans of location of places of storing the reverse materials,
- describe of structure of reverse logistic as their availability for recycling processes and re-using,
- coordination in planning and control of processes in space of reverse logistic,
- evaluation of goods produced from recyclable materials.

In enterprises with services of cars the reverse logistic can be resource of creating of added value. Those enterprises can participate in chain of gaining and selling used exploitation materials, used parts of cars and complex and others elements of cars, especially in purchase processes and changing of parts for quite new or regenerated ones.

Rogers i Tibben-Lembke indicated the eight resources of effective reverse logistic [Rogers, Tibben-Lembke 1998, p. 33]:

- the second rate position of reverse logistic in relation to the rest of problems in company, it means that problems of logistic management are saved later,

- unsuitable environmental politics of enterprise,
- lack of system approach,
- problems with competitors,
- inconsiderable interest of managers,
- financial barriers,
- personal barriers,
- regulation and law barriers.

In Poland there are additional many barriers, as follows:

- low level of awareness of managers, employee and clients in automotive services,
- existing a black economy,
- lack of effective control,
- lack of actual law rules.

In management of reverse logistic can be listing: verification with checking and testing of parts and complexes for re-using and analysis of work cycles of parts, complexes and whole machines, information systems, regeneration and repairs, financial management and outsourcing. Especially in automotive services the key issues with strong influence for effective management of reverse logistic are as follow:

- information about reverse flows,
- control of re-using materials,
- distribution re-using materials into repairs centers and into retail market,
- project of reverse logistic nets,
- logistic strategies,
- learning of top management and employee,
- close cooperation with re-using materials markets,
- relationship with other companies in nets,
- using of possibilities of internet,
- standardization and optimizing processes supporting activity in reverse flow space.

The reverse logistic in systems of recycling of a product

The waste created during using of cars – connected with changing of used parts, changing of liquids or elements – and regenerated in production process can be arise as full value products. Regeneration can be explained as reinstate used parts to their prior state and condition, especially chemical and technological properties, shape, diameters, and other characteristics necessary to further work. In Poland arrive enterprises engaged in regeneration of automotive parts and more and more often there are foreign investments from Western Europe [Góra 2012, p. 11]. Regenerated parts and elements are treated as alternative for using new and expensive spare parts.

In the last time the attractiveness of regenerated parts of cars in Poland growing. For owners of long used cars the main thing is fast repair with using not so expensive parts – suitably to value of old car [Włodarczyk 2002, p. 84], for reason of financial crisis and looking for saving of money. The most of attractiveness of regenerated parts are low price, environmental value and quality.

The effective process in reverse logistic is regeneration of tread. This process is realized as first one, before recycling process as granulation or burning in cement mills or Power stations. Now the tread regeneration process is most important service for fleet. Cost of regeneration of tread is average 35–40% lower than price of new tire. The time of using the new one and regenerated tires can be similar. Good and bad points of regeneration of tires are presented in table 1.

There are estimated that in EU countries (in "old" EU – 15) in every second tire of trucks is with regenerated tread. In Polish market the tread-tires are not so popular. In Poland there are about 100 thousand tread-tires per year, it means about 20% of new ones. In case of passenger cars this factor is lower [Opony bieżnikowane, 2010].

For transport operating in hard difficult conditions Michelin offers the guarantee tread-tires for segment X-Works. Tires in segment X-Works are using in building-places, in difficult regional transportation of row or waste materials and during exploitation are especially exposed for damage risk and destroy. In this case the cost of activity of transportation enterprises are significantly growing.

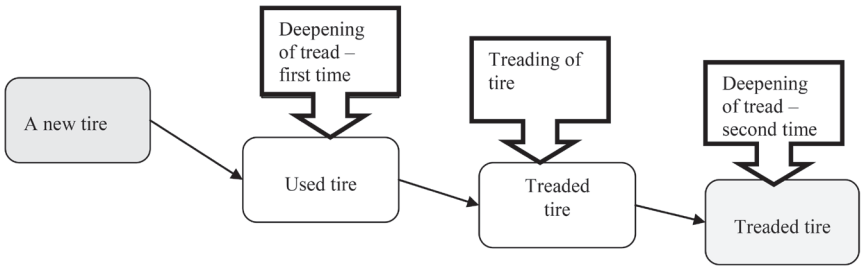
Table 1. Good and bad points of regenerated tires

Bad points	Good points
-Smaller choice of tread tires	- Lower price of tread tire
-Shorter time of using than new tires	-Certificated and confirmed the technical parameters
-Deepening of tread make lower stiffness of brake blocks and makes longer the braking distance	-Deep tread eliminate the phenomena of aquaplaning, and support traction in snow
-Probability of damage in several years old tire is bigger than in new one	- Possibility of tread many times
-There are necessary of control of tires designated to treading	- Smaller threat of environment
- Lower than for new tires:	- Smaller costs of road transport
adhesion on wet or dry road, braking distance, driving possibility, noise level, comfort, durability of tread, resistance and condition of rolling	- Possibility of quality comparable with new one
- Smaller technical and economic competitiveness of SMEs who tread tires	- Growing environmental awareness of drivers
- Ban of install on the axles tread tires in buses with speed to 100 km/h	- Big interested of transporting enterprises
- Small interested of individual drivers	

Source: own, based on *Opony bieżnikowane* 2010, http://www.opony.com.pl/artykul/opony-bieznikowane/?id=1009, 2012 07 31.

Michelin company offers changing of tire corps, if it is perforated or damaged and for this cause the tire is not able to treading. This offer concerning the Michelin´s tires produced and bought in 2010, and tires prepare to treading up to end of 2012. User can change the tire corps free, and pay only for treading.

Figure 1. The exploitation process of Michelin´s tire – four stages



Source: own study.

The offer of „Guarantee of Treading by Michelin" gives the certainty, that is for 10% possible of treading the tires. The solving allowed for better usage of life of four times of tires from Michelin, and make lower of 36% cost of every traveling kilometer. After total using of new tire it is possible to make tread deeper and in this case the characteristics are high about 25%, and in the next process is possible the same. The four time usage of Michelin´s tire showed on fig.1.

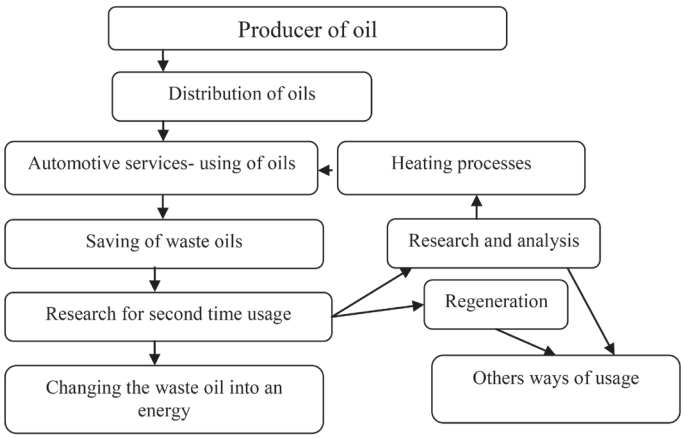
The research by MotoFocus in 2005 year show that in Poland not so many companies using the possibilities from treading of tires of trucks. Now the Polish transporting companies use in smaller level from treading of tires than transporting companies from West Europe – although growth of treaded tires market, and growing of quantity of orders for those services [Górzyński 2010]. There is prognosis, that requirement for treaded tires will growing, in dynamic in proportion of quantity of motor vehicles in Poland.

The recovery logistic in recycling systems of oil waste

Oil waste from motor vehicle are mainly used motor oils and gear oils, and in industry there are polluted hydraulic, gear, machinery, turbine, compressor, transformer and heat oils. In smaller size oil waste designated from industrial processes as treatment of metals, protective oils, and oils for special usage, and from separation process [Przewodnik dla przedsiębiorców 2011, p. 18]. In last years the quantity of mineral oils decreased, and increased the delivery of synthetic and half-synthetic oils. Synthetic oils have the longer life of usage,

and it is the favourable for prevention of waste of environment. The flows of waste oils show on fig. 2. The waste oils are the dangerous waste. In automotive services the main places of oils waste are service stations, damage stations, transport centres, and industrial apparatus. Owner of waste oils if is not able to utilize the waste oils – should transfer those waste oils to companies guarantee the utilization according law. In accordance with generally accepted principles of correct management the rules of management of waste oils is regulated by government rule [Dz. U. z 2007 r. Nr 90, pos. 607, with changes].

Figure 2. The waste oils flows in automotive branch



Source: own study.

Companies who sell oils should realize duties of standard level of recycling them or by specialized enterprises, organized by government rules and possessing the special agreements.

The waste oils are stored selective according requirements of industrial usage or neutralization. In case when process is profitable the oils should be not mixing or added to other waste materials, liquids as cooling liquids, brake fluid, heating oil or stable materials.

The waste oils should be:

- the first: waste oils should be regenerated, by recycling, in reaction refined process with separation of waste particles, effects of oxidation;
- the second: if regeneration process is not possible – there are necessary other recovery process,
- the third: if both process are not possible, the neutralization should be allowed.

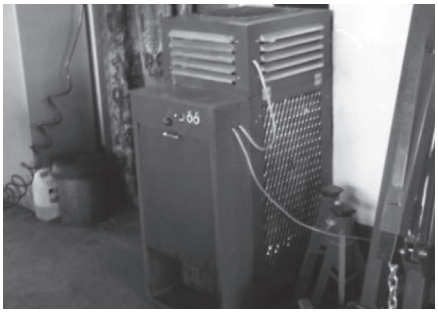
In Poland there are five producers providing oil regeneration processes, who have installation for recycling of oil. In two of them there are working significant installations with capacity of 115 MW, and this installations work in 50% of capacity, for reason the low supply of oils. Example of so big installation is Orlen company in Plock.

In Poland the logistic system of collecting the waste oils does not exist, and this type of collecting is not so wide. The small enterprises can not supply the waste oils to collecting companies, because cost of transport is higher than price of waste oils. The main barriers of collecting the waste oils in SMEs are:

- the low price of waste oils,
- lack of monitoring system of usage the oils,
- non-legal burning of oils,
- non- legal moving of oils over the borders,
- lack of regulations of recovering the waste oils,
- lack of government supporting of recycling processes of waste oils.

The researches show that in Poland burn about 30 thousand tons of waste oils – in case 200 thousand tons of all types of oils on the market per year [Czerwińska 2011]. In automotive services burn of oils there are in small garages, who changes oils in motors and gears. There are necessary the chip heating apparatus, where the waste oils are burned and in Poland this chip apparatus are produced for big scale, sometimes the service garages build themselves. Examples of chip heating apparatus show figures 3 and 4.

Figure 3. Industry produced heating



Source: own materials and photos.

Figure 4. Heating apparatus produced in service-garage apparatus

Source: Pogoński 2012, p. 45.

There are special government regulation allowed usage of waste oils to burning process if oils have the special certificate. In this case the waste oils can be burned as fuel in heating apparatus with capacity up to 10 MW without the

special agreement. If this oils have not the special certificate should be used as fuel in special heating installations. This installations have status of Waste Burning Installation (WBI) and there are the special conditions: technical and organizational of activity those WBI. In this companies should be special laboratories to research of waste oils and their parameters. All the time the oils used in WBI should be analyzed before burning and energy recovery. And the special conditions are for managers in Waste Burning Installations, including the special exams with national qualifications.

Summary

The recovery logistic is different than traditional logistic in approach to every logistic operations. In supply chain the recovery logistic has a main position by integrating function of technical, economic and environmental side of logistic processes. The characteristic is separately activities of traditional and recovery logistic in every enterprises. In Poland now many companies are interested in recovery logistic, for reason an interesting usage of waste oils. Examples of recovery logistic in automotive branch is usage of tires and oils. The activities in recovering and treading of used tires are included in system way according with CRS; and activities with waste oils are now non- system and not according with rules, rather like "black sphere".

It is necessary to research the recovery logistic process, especially in automotive branch, as a resource of waste materials and liquids. In this case in future we can be more interested in environmental development of automotive branch.

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Przedsiębiorczość i Zarządzanie
Wydawnictwo SAN – ISSN 1733-2486
Tom XIV, Zeszyt 7, ss. 39–50

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The Role of SCM Systems in the Management of Global Supply Chains

Abstract: As a result of globalization and internationalization of the economy, it is increasingly difficult to gain and maintain the competitive position of individual companies. In order to compete effectively in global markets they decide to strengthen cooperation and integration with their business partners, so they are able to achieve synergistic effects. In the process of the integration of global supply chains supported by SCM systems they can manage their processes more effectively and become more competitive. This article emphasizes the role of supply chain management systems in optimization of processes and increasing the efficiency of global supply chains.

Key-words: SCM systems, supply chains, supply chain management, global supply chains

1. Introduction

In the era of globalization of the economy the tie has become the most important determinant of competitiveness, in addition to the efficient and effective management of information. Time-oriented competing strategies in the global supply chain should be achieved by compression of time in all processes of the supply chain. Strong international competition involves both searching for ways to reduce the costs of the business while maintaining a high level of quality of service and providing effective physical and information flows.

The main objective of the supply chain becomes minimizing or even eliminating bottlenecks, delays, errors or surplus stock. To achieve this level of optimization, global supply chains have to apply advanced solutions in the field of information and communication technologies, which include supply chain management systems.

The purpose of this article is to show the role of these systems in the effective management of global supply chains. Their application allows to achieve a better coordination of activities and processes, supply, production and distribution while maintaining a high level of customer service, faster and more effective decision-making, faster response to change and achieve a higher level of reliability while maintaining a high degree of flexibility.

In addition, SCM systems allow for better coordination of the various suppliers of the design, development and production, which significantly reduces the time to create and market new products. As a result, this leads to increase the level of customer satisfaction and value to the organization that are components of the supply chain.

In Poland, the majority of both large and small and medium-sized enterprises are aware of the benefits of supporting the implementation of systems management processes. According to a study conducted by VansonBourne in 2011, 68% of the representatives of the Polish SME sector from European countries, including Polish, believes that the new technology is a key factor that will help them get out of the current economic impasse, and more than half of the respondents (54%) say that the investment in information technology will be the determining factor on whether their activities will develop, or at least survive [Jaworska 2012][1]. The research carried out in the second half of 2011 to the Polish medium and large companies found that for about 62% of investment managers in all areas of information technology is essential. However, there is a large percentage of companies (38%) who did not see a need in the near future [Jaworska 2012][2]. Nearly 80% of businesses said they spent on the implementation and maintenance of IT solutions only up to 10% of the total expenditure of the company. You can see, therefore, that there are serious shortcomings in this regard. Managers approach with caution to any changes in the sphere of implementation of management support systems. Until recently one of the most important reasons refraining from adopting supply chain management systems have been economic and technical barriers associated with the lack of availability of such systems for most small and medium-sized enterprises. Today, in the era of the Internet, not so much a problem of costs and availability, as the lack of detailed knowledge about the opportunities offered by information technology in specific areas of manage-

1. A study conducted by VansonBourne in November 2011 on a sample of 700 small and medium-sized enterprises in the Czech Republic, Greece, Polish, Romania, Russia, Ukraine and Hungary.
2. The study "Information technology management processes in Polish companies – Trends and reviews" conducted by Xevin-Consulting, the study was almost 200 managers representing the departments of management, finance and IT in 150 medium and large enterprises.

ment, and a strong attachment to traditional methods of communication and data exchange between business partners [HIT-Kody Kreskowe 2009].

Among the reasons for the low rate of implementation of SCM systems the practitioners mention the organizational (problems with carrying out the project) and psychological barriers and the lack of commonly recognized data exchange standards. Effective supply chain management requires the free and fast access to constantly updated information for all co-operating entities. This means that partners must bestow a certain degree of confidence. In a Polish business this barrier is in many cases very difficult to overcome. Barrier in terms of standards, in turn, is associated with the introduction of the entire, often very complex supply chain, uniform standards for data exchange (the data format and transmission protocol) and labeling and also standards for automatic identification of goods (GS1 logistics label, barcode, RFID technology), which greatly simplify the integration between partners and an integral part of supply chain management systems.

2. Global supply chains - issues and challenges

Each of the traditional functions of the company's organizational structure (administration, accounting and finance, human resource management, research and development, procurement, production, logistics, trade and marketing) is supported on its own. Support for these features (except production) results in insufficient focus attention and resources on the core business. Businesses, especially those who operate in global markets, more and more are willing to reach for a solution in the form of outsourcing, which is entrusted to support activities, which are not core competencies to external entities, specialized in their fields. Global supply chains of these companies are very large and complex. The consequence of these changes is the conversion of existing, local forms of companies' organization into the new global structure. This trend is in line with the concept of the development of virtual enterprises. These companies have spaceless nature, characterized by focus on the skills of partners (each partner has unique abilities and / or resources to determine its existence in the structure of the virtual), a high degree of mutual trust partners, the use of modern information technology and innovation (as a result of the ability to respond quickly to changes in the environment). The idea behind the appointment of virtual enterprises, among others, is the use of the key responsibilities of the various partners. The configuration of the virtual enterprise depends entirely on unique capabilities and resources of the partners involved. Partners creating such an undertaking should be

specialists in their field, so that each stage of the value chain development could be carried out by the most competent unit [Adamczyk 2005]. Some traditional permanent companies thus become virtual companies developing its activities in a geographic dispersion. These companies operate due to the increasing use of modern information technologies, effectively changing the traditional business model for a modern, more competitive one. For this type of businesses one can include, inter alia, Dell and Hewllet-Packard companies, that use the skills and resources of virtual groups located in far-flung places around the world. [Krygier 2007, ss. 117–130].

Supply chain management on such a formed market raises problems mainly related to overcoming geographical barriers and time differences. Although the purchase price of many goods may be lower abroad, there are additional transport costs, costs associated with the need to maintain higher safety stock coverage of local taxes, fees and duties. Supply chain management may also need to comply with other provisions and take into account cultural differences. The most common challenge facing global supply chains is to eliminate the inefficiencies in the form of inventory shortages or excess inventories of finished goods, spare capacity or high transport costs. This inefficiency is caused by the most common inaccuracy or delays in the transmission of information in the chain. Too high level of storage of raw materials or components, for example, can result from the lack of information on the exact date of the next delivery. The reverse can be caused by inaccurate information on demand. This uncertainty is due to the unpredictability of events taking place within the company and in its environment. We have to deal with uncertainty about the demand for the product, delays attributable to the suppliers of defective parts or poor quality materials or unexpected disruption to production. To satisfy customers, manufacturers often cope with these difficulties maintaining inventory levels of materials or products exceeding actual needs. Safety margin acts as a kind of safety buffer against the lack of flexibility in the supply chain. This approach on the one hand protects against the loss of benefits due to unfilled orders, on the other hand, however, significantly increases operating costs. Often repeated in supply chain management is a problem called “bullwhip effect”, in which the information about the real demand for the product is distorted in the process of moving from one participant in the supply chain to the other. A slight increase in demand for the product may cause significant variations in stocks of real needs in the form of substantially increasing the amount of stored goods at different levels of the chain. This wave of changes along the supply chain results in the excessive storage costs, production, storage services, costs of supplies, etc.. An example of a company that successfully secured itself from this kind of impact

is Procter & Gamble. The company has revised its marketing strategy, sales strategy, and supply chain processes and applied tools for accurate forecasting of demand. Eliminating the "bullwhip effect" is possible thanks to the fact that all participants in the supply chain have accurate and timely information on supply and demand, share information about inventory levels, schedules, forecasts and supply, have accurate knowledge about how to adapt production and supply plans distribution.

3. SCM systems - functions and tasks

To analyze the problem of using information systems for supply chain management, we should come back to the concept of SCM as a management concept. The term "Supply Chain Management" first appeared in the 90s of twentieth century in the United States. In the literature one can find many differing definitions of supply chain management, which causes problems with a clear interpretation of this term [Krygier 2012]. The Institute of Supply Chain Management defines SCM as the design and management processes to add value beyond the organizational boundaries, which aims to meet the real needs of end customers. [*Supply Chain*...]. Most supply chain management is defined as the management of the physical flow of material goods and services, information and funds between the links of the chain of processes or steps carried out by the chain in order to implement all aspects of customer service in accordance with the principle of 7R, and thus provide the right product, in the right amount, in the right place at the right time, the right price and the right quality [compare Blaik 2011, p. 193].

Rise to the concept of SCM was a response to the problems associated with the need for enterprise coordination, cooperation and exchange of information between cooperators. Supply chain management involves the planning and management of all business activities involved in the procurement processes, supply, processing, and all the activities in the field of logistics management. Importantly, it also includes coordination and collaboration with partners in the distribution channels, which can be suppliers, intermediaries, third-party service providers and customers. The essence of supply chain management is to integrate the management of supply and demand between the companies. Supply chain management is the integration of key business functions and processes of individual companies - supply chain into one cohesive and efficient business model. It includes all the aforementioned logistics as well as manufacturing operations, which raises the need for coor-

dination of processes and activities also with other functions such as marketing, sales, product design, finance and information technology. SCM is now a modern and constantly evolving method of management, the objectives are, inter alia, to ensure customer satisfaction by providing them with the appropriate values, the effective management of production processes, costs, and resources to maximize the total value of the supply chain and its cells and increase its profitability. Full integration of the supply chain is to achieve a competitive advantage [compare Witkowski 2003].

The most important task of SCM for achieving the aforementioned purpose is to ensure the synchronization of supply and demand throughout the supply chain through the integration and coordination of material flow processes and financial flows of information. Efficient flow of data and information for all links in the chain is a prerequisite for the effective implementation of the remaining cash flows, and therefore the only possible solution to the full implementation of the concept of SCM in achieving a competitive advantage, including the use of appropriate information technology solutions. SCM strategy could not be effectively implemented without the support of the technology. The answer to needs of supply chains mentioned in this article are supply chain management systems present in the IT market. The Supply Chain Management System (SCM) is the information system based on SCM method, used for supply chain management. Its task is to coordinate the movement of goods between cooperating within the supply chain enterprises, so that each of them can optimally adapt their activities to the real demand. SCM systems allow to coordinate the flow of information, material goods and services, reduce operating costs and increase sales with full use of the assets of the business through improved interaction and communication between all entities forming part of the supply chain. Systems in this class contain modules that are responsible for specific functions and processes carried out both inside and outside the company. [*Systemy SCM*...].

The main suppliers of SCM systems in the world are Oracle, SAP and JDA. In Poland, the production of this class of systems (integrated with ERP or independent) is run by, inter alia, Comarch, HeuThes and UNIT4. SCM software is primarily used to support the process of product design, decision-making about the sources of supply, forecasting demand for the product, storage and transport and goods distribution management. Usually it has a very wide range of functionality. Table 1 shows examples of functional modules, which consist of commercially available SCM systems.

Table 1. Examples of functional modules of SCM systems

No.	Type of module	Range of functionality
1.	Supply Chain Optimization	It enables the creation of optimal supply chain process, captures data from each event of the supply chain and enables the restructuring of the chain of events that put the company at a loss, as well as optimizing the use of internal and external resources.
2.	Supplier Relationship Management	It serves as a repository of information about suppliers, and helps to strengthen cooperation in order to reduce costs.
3.	Demand Driven Supply Network	It combines all suppliers, manufacturers, business partners and customers in a large network in order to improve meeting rapidly changing customer needs, allows monitoring of inventory stored in the warehouse, collects information on orders, shipments and invoices.
5.	Supply Chain Event Management	It collects real-time data to monitor the work - chain of events, users can instantly identify problems and appropriate to respond to them.
6.	Transport Management System (TMS)	It helps in managing the movement of goods transport (finished or semi-finished). Based on the key information (eg. distance, location, road) systems, this class will help you determine the optimal method and mode of transport.
7.	Warehous Management System (WMS)	It allows you to control the flow and storage of goods (both finished and semi-finished products - for example, components or parts), and the transport of those goods to a destination (such as a different store) to optimize the unused inventories based on actual information related to the disposal of waste, availability of goods in the warehouse for incoming and outgoing deliveries, etc.
8.	Demand Planning (DP)	It allows for precise prediction and shape customer demand.
9.	Distribution Planning	It allows for full transparency, allowing for a better balance service levels and inventory.
10.	Field Sales Forecasting	It allows you to enable sales representatives and retailers in the creation of local forecasts.
11.	Inventory & Replenishment Planning	It allows for the identification and optimization of inventories of products in different locations in order to ensure an appropriate level of customer service.
12.	Vendor Management Inventory (VMI)	It moves the planning tasks of inventories in the direction of customers, allowing the manufacturer to establish real partnerships with both suppliers and customers.
13.	Advanced Planning & Scheduling	It helps those responsible for planning and scheduling production to create a master plan of production, taking into account the constraints and also for meeting the demand resulting from sales forecasts, orders, direct stock plans additions distribution centers, or a combination of all the above sources.
14.	S&OP (ang. Sales & Operations Planning)	It provides a complete picture of demand and supply planning across the company, improving teamwork and enterprise operational efficiency.

Source: own study based on the available in the market for supply chain management systems.

Software for supply chain management is divided into two categories: software for supply chain planning (to model existing supply chains, to generate forecasts of demand for products and develop optimal sourcing and manufacturing plans, identify the storage of finished products and the mode of transport appropriate to the product) and software for implementation of the supply chain (to manage the flow of products through distribution centers and warehouses to ensure the reach of these products to the right locations in the most efficient manner, allowing you to track the physical status of goods, materials management, warehouse operations and transportation and financial information relating to all participants in the supply chain.). [Laudon, Laudon 2011, p. 303].

One of the most important and most complex supply chain planning function is demand planning, which determines the amount of product that will satisfy the needs of all customers. Whirlpool Company manufacturing washing machines, refrigerators, stoves and other household goods, uses systems for supply chain planning, to ensure that what is produced is consistent with the needs of customers. The software by i2 Technologies, to supply chain planning used by Whirlpool company, includes modules for scheduling the main allocation plan (spatial distribution) and inventory planning. This system also has tools based on web to joint planning, forecasting and replenishment to share and combine sales forecasts with its main sales partners. Technological improvements in supply chain planning and the use of the most modern distribution centers have helped increase the availability of products in stock for interested customers in the level of 97% while reducing excessive inventories of finished goods by 20% and forecast errors by 50% [Laudon, Laudon 2011, pp. 303–304]. An example of software to support the implementation of supply chain systems are WMS. This type of system by Poland's BCS was implemented in one of the polish companies operating in the food industry – Binder International Warsaw. This warehouse management software used in company operates on the plans for the procurement of supplies customers, directs the movement of goods, monitors and controls the flow of finished products in two production sites located in Tarczyn and Nasielsk. The software allows a comprehensive warehouse management through the use of radio communications, taking into account the nature of multi-employer plan. The software equipped with mobile terminals and printers allows to enter and process data in real time, controlling all warehouse processes and generates reports for management. An additional advantage of WMS implemented at Binder International Warsaw is its integration with the enterprise operating in ERP, which provides quick access to data stored in one place. Among the benefits from the implementation of the WMS, mentioned by the company, are among others: improving the quality of working storage, reduction of operating costs and solid shortening warehouse operations, improving the quality and repeatability, and traceability of lots of

traffic through all stages of production, storage, distribution and optimization of storage space [*Wdrożenie systemu WMS-Tiger*...].

4. SCM systems in the management of global supply chains – the effects of the implementation

Implementation of network and integrated supply chain management systems allows companies to match supply to demand, allowing to reduce inventory levels, improve service delivery, reduce time-to-market and more efficient use of resources. In most companies the total cost associated with the operation of the supply chain are a significant part of the operating expenses, sometimes reaching 70% of total operating costs. Reducing these costs is a key influence on the profitability of companies. SCM is also reflected in the increase in sales, since the accurate control of the supply chain increases the company's ability to provide the customer with the right product at the right time [Krygier 2012]. Table 2 summarizes the benefits achieved by companies that have decided to implement SCM system.

Table 2. Benefits achieved through the implementation of SCM system (data based on the experiences of companies OktaSoft and Information)

The benefits of implementation of OctaSoft iRenesans.SCM	Benefits of implementing Infor Infor SCM
Growth of the accuracy of demand forecasts as a result of the implementation of Demand Planning and Sales Prediction: 25-80% Reduction of inventory levels while simultaneously increasing customer service levels (to cover the demand, the percentage of completed orders) as a result of the implementation of the Planning and up the warehouse: 25-60% Reduction of inventory and shortages in customer distribution centers as a result of the implementation of the Buyer Inventory Management: up to 50% Effective productivity growth: 10-20% Growth of efficiency: 10-16% Growth of customer service levels: 3-20% Reduction of defects in materials and raw materials: 20-50% as a result of the implementation of Production Planning and Scheduling Reduction of costs throughout the supply chain: 25-50%	Growth of margin increased by 20% Growth of customer retention rates by 20% Shortening of the transaction are realized by 35% Growth of the accuracy of delivery by 5% Reduction of inventory by 20% *(Information based on data from over 1,600 manufacturers, retailers and suppliers of transport and logistics services who have implemented Infor SCM)*

Source: own study based on the information OktaSoft [online], http://www.oktasoft.pl/irenesans/irenesansscm.html, access: 10.07.2012 and Infor [online], http://pl.infor.com/rozwiazania/scm/, access: 10.07.2012.

In addition to the benefits exchanged by the producers and software integrators, SCM systems give businesses the following effects:

- obtaining accurate and complete information on the status of orders,
- adjustment of production to demand,
- Customer Service Optimization (Accuracy, timeliness of delivery)
- reduction of the time of the contract,
- reduction of inventory levels while maintaining the ability to perform unscheduled orders,
- identification of bottlenecks,
- shorter planning cycles,
- avoiding of interruptions and delays in the supply chain,
- reducing costs throughout the supply chain (including the cost of inventory and storage costs),
- frees higher margins on products,
- keeping a flexible pricing policy,
- speeding up the production process,
- active planning and demand response,
- streamlining business processes,
- improving the delivery process,
- optimizing the use of resources,
- faster development of new products,
- effective management of change,
- a positive impact on decision-making,
- better adaptation to rapidly changing market conditions.

These benefits mean the elimination of redundancy and improve efficiency, which resulting in a return on investment (ROI) and return on equity (ROA) and affects the market value of companies.

7. Conclusions

As a result of globalization and internationalization of the economy, it is increasingly difficult to gain and maintain the competitive position of individual companies. In order to compete effectively in global markets they decide to strengthen cooperation and integration with their business partners, so they are able to achieve synergistic effects. In the process of the integration of global supply chains supported by SCM systems they can manage their processes more effectively and become more competitive. Discussing the problem of the use of SCM systems in the management of global supply chains we cannot underestimate the role of the Internet in their development and popularization. Before the Internet has become a common tool used in busi-

ness, supply chain coordination was hampered due to restrictions on the flow of information between the different internal systems in use by the company, designed to handle the purchasing, materials management, production and distribution. Difficulties were also in exchanging of information with external partners of companies, because the systems of suppliers, distributors and logistics partners were based on incompatible standards and technology platforms. Systems that integrate functions of the company as part of its internal processes for handling chain were not designed with the support of external supply chain processes.

Growth of the Internet has created ready-made companies the possibility to use the telecommunications infrastructure that does not require a large investment in the creation of appropriate tools. Today, the development of technology driven supply chains allow customers to fully control the purchasing, improve coordination and communication between provider partners and help reduce costs in any company belonging to the supply chain. Thanks to the use of web-based solutions it is much easier to effectively utilize the "pull" demand-driven model (so. production model on request). Internet technology allows so to deviate from sequential chains in which sequential flow of information and materials from company to company was replaced by the parallel channels. Information flow between supply chain links in these channels are carried out in many directions at once, so that the supply chain members are able to quickly adjust their schedules or orders to changes.

The division of powers, efficient interaction and exchange of information and co-ordination and integration of processes in the chain make the participants can act as one company.

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Przedsiębiorczość i Zarządzanie
Wydawnictwo SAN – ISSN 1733-2486
Tom XIV, Zeszyt 7, ss. 51–62

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Logistic centers as the integration of international supply chains

Abstract: The paper presents the role of logistics centers in gaining a competitive advantage by organizations, which use their services. Due to the changes of today's economy their role is still growing. The logistics centers become important elements in today's supply chains. Unfortunately, growth of logistics center in Poland is very slow. It caused that Polish companies have competitiveness disadvantage which results from insufficient logistic infrastructure.

Key-words: logistic centers, supply chains, organizations.

1. Introduction

The arising of global markets, the intensive development of information technology, strong pressure on costs, the development of e-business and dynamically growing market of services have resulted in changes in modern logistics. In their result it significantly increased cargo shipments. Also the size of the different orders have been decreased simultaneously their frequency and quantity have been increased. However, the most important change is the increase in the importance of customer service, which has become the key to gaining a competitive advantage.

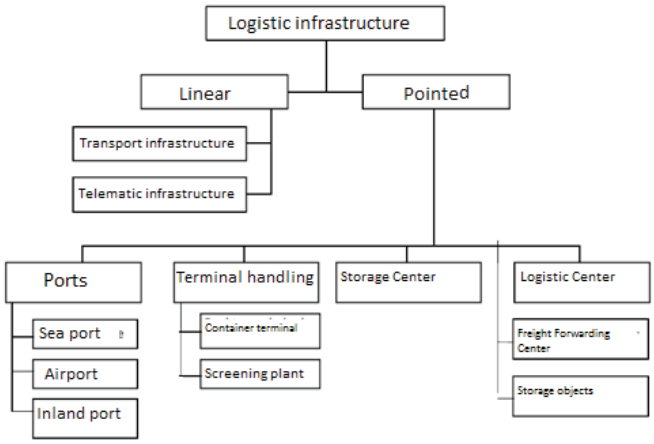
Today the market count most companies, which on the one hand can withstand intense cost pressure, and on the another can be flexible in relation to customer requirements. This causes, that the importance of logistics in the modern enterprise is much greater than it used to be. It forces using a completely new management mechanisms.

The question is, how important are the logistics centers on the functioning of supply chains and what is their impact on the competitive position of organizations, which use their services.

2. Logistic centers as an important element of modern supply chains.

Increase the importance of logistics, the emergence of large companies that offer wide logistic services, cooperation between smaller companies and, above all, the significant increase in demand for logistics products caused the appearance of logistics centers. The logistics centre is a centre in a defined area within which all activities relating to transport, logistics and the distribution of goods - both for national and international transit, are carried out by various operators on a commercial basis. This is a spatially-functional organization, which has logistic infrastructure. That organization offer services in the reception, storage, and issuing of accompanying goods and services distribution, provided by independent relation to the sender or the recipient [Fechner 2004, p. 24]. It is part of the point of the infrastructure logistics (fig 1.).

Figure 1. Logistics centers as part of the logistics infrastructure



Source: I. Fechner, 2010, p. 23.

These objects are created at the junction and the intersection of a number of individual supply chains. In these places there is a big demand for logistics services and other services accompanying them. That demand has been transformed into supply of logistics and complementary products and services. They are offered by many different companies operating in such places. To ensure synergy and commercial cooperation, it is important that a logistics centre is managed in a single and neutral legal body (preferably by a Public-Private-Partnership).

Logistics centre includes the following functional areas:

- intermodal loading terminal – it's a facility, where the cargo is handling between the different modes of transport. In the logistics centre must be at least one such object that supports at least two modes of transport;
- components places, magazines, and other objects, in which the materials are stored;
- he associated services (e.g., car service, car wash, etc.);
- office space and other associated with the additional services offered by the centre.
- In each of these areas is usually a lot of logistics companies offering a wide range of services. The basic ones are:
- cargo consolidation, when products come from many sources and are intended for one recipient;
- sorting good, if they derived from several sources and are provided for the same audience;
- storage of goods.
- the separation of goods in accordance with the contracts.

In addition, the centre has many other companies offering a range of services necessary for the smooth functioning of businesses, ranging from rental of warehouse, office and industrial space rental, through consultancy services in issues related to logistics and marketing, financial services, information technology services and service relating to the means of transport or domestic services. All of these services make logistics centers become an important partner in modern supply chains.

Services offered by the companies operating in logistics centers are generally more competitive in relation to traditional companies or independent implementation of logistics functions directly by producers. This is due to the high degree of concentration of such services in the logistics center, joint material flow systems, knowledge and information and the high level of cooperation, extracted commonly by companies administering the infrastructure hardware logistics center.

Therefore more and more traditional partners in supply chains are replaced by companies operating in the logistics centers. This allows the improvement of the business system and gain advantage over competitors. However, this advantage is not sustainable. Companies operating in the logistics centers offer their services to all interested, also the competitors of companies using their services. Therefore, this vulnerability can be quickly compensated by copy solutions and cooperation by competition.

This does not mean that logistics centers have little effect on the competitive positions of their clients. Along with the rise in popularity of the center's

services, the cooperation with them becomes necessary to be competitive. Lack of cooperation with logistic center will be caused permanent weaknesses.

Logistics centers are formed not only due to the ability to build a better competitive position by companies that use their services. Their existence gives a number of other benefits.

First of all, thanks to the existence of logistics centers, you can significantly improve the logistics at a higher level of supply chain than the individual enterprise. Logistics center enables consolidation of the movement of goods in large cargo streams. This is due to the fact that logistics centers are places of gravity products requiring logistics and transport-forwarding services. This allows you to create large cargo consolidations and streams them to similar network nodes [Fechner 2010, p. 25].

Following this it is possible to create conditions for the growth of transport co-modality. Large batches of goods and diverse transport infrastructure and the infrastructure to support the charges, which offers logistics center enables the selection of the means of transport that they are optimally adapted to the nature of the product, the type and quality of transport infrastructure on the carriage. Thanks to this it is possible to optimize the use of the means of transport, the application of appropriate technology in data transport conditions etc. An additional benefit is the ability to raise return loads for means of transport, which further increases the efficiency of logistics operations [Fechner 2010, pp. 25–26].

Following benefits go beyond business nature. In Europe there is a tendency to increase the participation of multimodal transport in freight transport. This is due to urge European Governments to reduce the burden of transport in general. A greater share of less burdensome for multimodal transport is the most ambient of motor transport. Multimodal transport, if there is a suitable infrastructure is also cheaper than road transport, so its development contributes to improving the competitiveness of companies.

With the formation of logistics centers it is also possible to better shape the spatial governance. Industrial investments and logistics are invested in designated industrial areas, which are generally one of the items is logistics center that support them. This improves the logistics, shortens distances and time, reduces the amount of handling which must be made in order to carry out the tasks facing the enterprises.

So by the way such actions cause the release sites in inner cities into office and residential investments, contributing to their development. This reduces the annoyance of the business operation for the inhabitants and at the same time contributes to economic development. On the one hand, the new sites are attracting investment, increasing the amount of jobs for

white-collar workers, with other aggregate industrial activities and in parallel to the industrial and logistic districts, that increases attractiveness of the regions for this type of investors.

An additional benefit from the existence of logistics centers is the development of logistics services for the urban logistics. By focusing companies and logistics resources in one place, it becomes easier to manage the supplies of inhabitants in the city.

3. Models of developing of the logistics centres

Logistics centers are formed usually by two evolutionary models. In the first evolutionary model, the result is a long development policy specific to urbanized area in which economic sector has created the conditions to invest in the production and commercial activities. The effect of the different forms of economic activity of a strong saturation is an instance demand for logistics services and the emergence of logistics operators who are starting these services implement. The most common places of education to this type of logistics centers were sea ports and large industrial and commercial centers.

The sea ports for many years focus on trade and are important nodes in the flow of products. The development of globalization increased importance of long distance transport, and sea ports in order to adapt to the larger trade flows and new requirements have been transformed into a great all-in-one, multimodal logistics centers. Without big ports-nodes would be impossible to achieve the today's scale of trade.

Next, the large industrial and commercial centers are a natural place of operating for many companies of various industries. The trend to outsourcing services and to reduce the nuisances caused a significant increase in the demand for logistic services. Very often the natural increase in demand has become over time the engine to the formation of logistic centre, though in contrast to the sea ports, this was not a definitive reason why such center has arisen. Often in large industrial district many organizations operated without causing the launch to create logistic center.

The main advantage of creating a logistics center according to the evolutionary model is its naturalness. The centre is created in places, where there was a big demand for logistics services. It's rise was due to the natural needs of the existence of such a centre, in connection with, the risk of failure in this case is minimal.

The disadvantage of this model is the dynamics of development. The speed of creating such the centre is small. Can often be a limiting factor

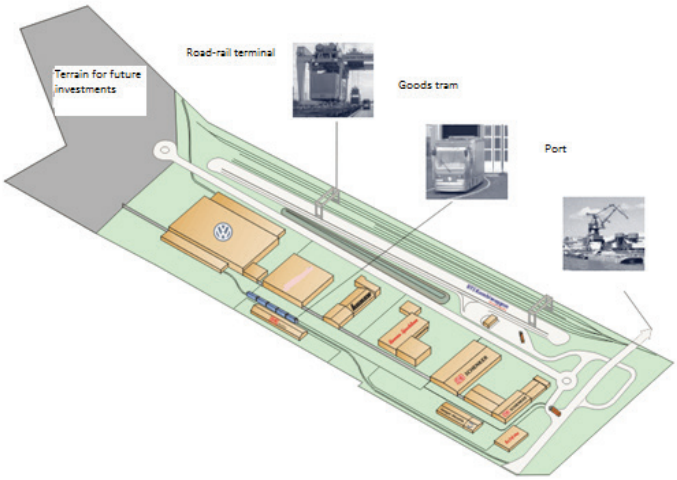
in its rise, because the slowness of this can cause natural dispersal potential. This can be seen in Poland, where instead of logistics centers around large industrial centers, dozens of heavily distributed storage centers belonging to many operators.

An example of a logistic centre that was created in this way may be Barcelona sea port. It is the most important transport and service infrastructure of Catalonia, whose zone of influence extends to southern and Central Europe and Northern Africa, Far East and Latin America. In 1994 was established the initiative of Government of Catalonia, Barcelona, port authorities, and local businessmen that on the existing sea port was created modern, multimodal logistics center. This initiative was a success. Currently, the port has become an important hub of supra, through which runs every day many goods. A year passes by him almost 50 million tons of cargo, more than 2.3 million containers and 2.5 million passengers. The Centre has further plans for development, and its ambition is to become one of the most important logistics centers for Europe and the Mediterranean.

Logistics centers was created not only as a result of the natural tendency of economic development of the region and the demand for logistics services companies operating there. Often a logistics center was due to an informed decision of the authorities, that lead to creating such center at a specific area by creating conditions for economic activity economic, incentives and amenities for investors. These were mainly addressed to companies incentives to logistics, production and trade to undertake activities in this place. As a result, in that place the organizations started their activities that form the foundation under the future logistics centre. Elements that attract future users were logistics infrastructure, storage facilities and land.

A characteristic feature of this form of development the centre is that logistics infrastructure begins the process of building the other investments and stimulates economic growth. It is also the main advantage of this model of creating logistics center. Thanks to this initiative there is possibility to boost economic development in areas at risk of stagnation. On the other hand does not always external initiatives are able to develop enough to center was established. Polish examples show that some of them may not get the right momentum and does not attract a sufficient number of business partners and, therefore, the initiative could end up being a failure. Therefore, the disadvantage of this model of development is a big risk of failure, especially if the initiative does not receive adequate support, including financial authorities.

Figure 2. Plan of Dresden logistic center



Source: http://www.gvz-dresden.de/ (21.06.2011)

An example of stimulating activities, that a result of which was the Logistics Center, may be the initiative at Dresden. In 1997 it was created the company Enwicklungsgesellschaft Dresden mbH GVZ. Its goal was to create a large logistics centre in Dresden. Shareholders were local authorities and German Railways. In the early years of 1998 and 1999 they marked the location of the site of the old railway infrastructure and restored them preparing to the future investments. They built a new infrastructure, necessary for the operation (energy, telecommunications, media and waste drainage of rain and road access). So prepared land divided into investment fields, which have been put up for sale, because it assumes that the Board of logistics center will be the owner only to time their sales, and the infrastructure for the handling of intermodal and magazines will be build by the operators [Fechner 2004, pp. 13–15].

Activities of the Logistics Center was officially launched on May 9, 2001. Currently there are three main centre zone (fig. 2) [Fechner 2004, pp. 13–15]:

- car service center (parking lots, living service for drivers, gas station, car wash, car service) forwarding centre consisting of warehouses and transshipment facilities that support the cars and trains,
- intermodal freight terminal hub Centre for bulk cargo and ro-la train terminal at the port Albert on the Elbe,
- the trucks parking on the squares (Autohof) for 70 trucks, car wash, workshop repair, service station, gastronomy and motel for drivers.

Still, in the Centre are the sites for the new operators to start logistical business there.

4. The experience of Polish in the construction of logistics centers

The development of logistics centers in Poland did not follow at the appropriate level. The country has several terminals to allow reloading of goods from one transport branch to another (most often in the train-car relationship), there were built around the large agglomerations many modern inventory centers, however, all these activities do not have developed a network of logistics centers. Currently there are only two logistic centers corresponding to the definition (satisfying the condition of multimodality). The first one is the Silesian Centre of Logistics S.A. in Gliwice, established on the basis of this river port city. Another is the International Logistics Centre in Sławków, which was created by rebuilding terminal Slavkov [Fechner 2010, p. 29].

This group can include also the Swarzędz-Jasin logistics center at Poznań, which currently does not have a container terminal, but plans to create it, and a Konin Logistics Centre, which does not have its own container terminal, but can work with container terminals operating in other locations [Fechner 2010, p. 29].

Following this multimodal transport in the country share is still very low and generally applies to goods delivered to Polish audiences mainly from countries where this infrastructure is more developed (e.g. German ports), and so is the kind of forced by neighbors. This is due to several factors.

First, the public sector is passive. Exceptions (eg. Konin Logistics Center), local and regional authorities do not show greater involvement in the construction of such facilities. In effect, a large part of the initiatives to create a logistics center does not go beyond the plans, and assumed they often fail after a few years of idle action (eg. the initiative of Wrocław). In Germany and Italy, the local and regional authorities are the main initiator and initially they are driving force behind the formation of logistics centers.

Another serious problem is underdevelopment of the railway infrastructure. This applies to both the infrastructure: railroad, which does not meet the AGTC requirements and the limited number of specialized intermodal terminals to carry removable trailers, chassis or truck. Also the number of modern land intermodal terminals, in particular on the Polish Eastern border is insufficient. Existing terminals are suffering from a major lack of modern and efficient cargo handling equipment, lack of monitoring systems of the journey and the safety of goods.

However, the biggest problem seems to be the organization of multi-modal transport. The main rail carrier, PKP Cargo is not interested sufficiently in the train carriage multimodal. On the other hand, most of existing in-

land terminal belong to private organizations. This causes the difficult access to rail services on the one hand, and to terminals from second hand, which translates to high prices and poor service. Worse, this situation causes the lack of interest of both, private companies and PKP Cargo in development of new logistics centers. Private sector prefer to create logistical infrastructure based mainly on road transport, creating storage centers at major highway nodes. The State-owned railway operator will focus on traditional services do not require cooperation with private entities.

Problems with the quality of the infrastructure for the intermodal services and their bad organization and the problems of cooperation between carriers and terminal owners cause a lack of competitiveness of multimodal transport. No company will be not carrying goods of an intermodal container transport only for the idea. It must pay off, and since intermodal transport is slower and more expensive than a car transport, it loses fight for the customer.

The last barrier in the formation of logistics centers is inadequate State support. This applies to both, the financial and legislative support. State budget invests insufficient in logistic infrastructure. Access to the railway track is too expensive, even though the track infrastructure belong to state. Also the scale of expenditure on investment in the railway is unreasonable.

All this causes a lot of restrictions in access to modern logistics services for companies operating in Poland. This forces them to use in the supply chains of traditional logistic operators, and even its own infrastructure. This translates into less efficiency of logistics, and so on the weakness of competitive Polish companies. This means worse competitive position, particularly for companies exporting goods abroad.

Perhaps this situation will change, because in the draft Transport Development Strategy to 2020, prepared by the Ministry of Infrastructure, one of the chapter is dedicated to the integrated system of transport, including intermodal transport. According to that strategy, the strategic goal for intermodal transport Infrastructure in Poland posed by the Ministry is the creation of a favorable organizational and technical, economic and financial condition for dynamic development of intermodal transport system. Their goal is to reach the participation in railway transport 10-15% in 2020 (today it is less than 5%) [Ministry of infrastructure 2011, p. 62]. It is to be achieved through intensive upgrading of the liner and the point railway infrastructure and improving cooperation between logistics companies.

The most important goals for the Ministry are [the Ministry of Infrastructure 2011, p. 62]:

- creation of a network of nodes of transshipment facilities (intermodal terminals, logistics centers),

- modernization of railway routes in order to adapt them to the requirements of modern rolling stock used in an intermodal container transport (including about the low-hanging train configurations),
- implementation of telematics and satellite systems, optimize and control processes on transport, which contribute to reduce the time of delivery and eliminate the threat of the condition of cargo carried,
- improved cooperation with rail operators, the operators of combined transport, logistics centers, the owners of terminals and state authorizes.

Figure 3. The predicted localization of multimodal platforms

Source: Ministry of Infrastructure, http://www.mi.gov.pl/, p. 63, (20.06.2011)

Especially first point seems interesting from the point of view of logistics centers in Poland, because it says, that these centers arise. All the more that the strategy assume creating a network of multi-modal platforms covering the whole country (Fig 3). If such a network forms, the Polish companies will have access to modern logistics services and can improve its competitive position.

However, it must be remembered, that this is not the first such program construction of logistics centers. The map shows that a large part of the multimodal platform is based on existing storage centers, managed by private developers, who built them primarily for car transport. This begs the question whether they will be interested in the development of its objects.

5. Summary

Logistics centers are today an important part of the supply chains and networks. Thanks to the wide range of services offered in their area, they allow to improve the competitive position of companies benefiting from their deals. At the same time they contribute to increase transport efficiency and multimodality. Logistic centers also reduce the negative effects of enterprises on the environment. They are also an important driver of speeding economic development in areas adjacent to them.

Unfortunately, there are too little of them. They need support of both local and central authorities to arise. They need also cooperation to organizations and institutions setting up at center. In the Polish conditions is not possible, therefore, the amount of operating logistics centers is small, and they do not form a network to fully exploit its potential. And the competitive position of Polish enterprises is weak.

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Przedsiębiorczość i Zarządzanie
Wydawnictwo SAN – ISSN 1733-2486
Tom XIV, Zeszyt 7, ss. 63–73

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Relationship management in supply chains on the example of chain retailers

Abstract: Trade is one of the most developing sectors in economy, despite the global crisis. Nowadays, the biggest part of sales is gained by the chain retailers. Crucial role in this development play products and their prices. These are also factors which give competitive advantage in the market place. Due to that it is so important to cooperate in the most effective way with suppliers of those products and also using the best methods to manage the relationships within the supply chains. There are presented examples of good practices and indicated future trends in the sector.

Key-words: chain retailers, suppliers, relationship management.

Introduction

In the current state of world economy, supply chain management became a challenge, especially in the retail sector. This part of economy includes sales in the supermarkets of the biggest chains stores in Europe. There are many examples of such chain stores: Tesco, Real or Sainsbury's. Next to the co-exists companies which have few different chains stores in different countries, like: Jeronimo Martins Distribution from Portugal or Metro & Makro Cash & Carry from Germany.

According to Main Statistics Office at the end of 2010, the number of stores in Poland was about 346 000 [GUS, 2011]. The biggest part were small shops with the sales area smaller than 400 m^2 – which gave 98,4%. Discount stores, so stores with the sales area from 400 m^2 up to 2499 m^2, gave 1,3%, and supermarkets (sales area from 2500 m^2) 0,2%. Despite that fact, percentage of sales value looked different, because in discount stores and supermarkets in 2010 with reference to whole retail in stores and on the gas stations gave

22,1%. Similar in Europe, this economy sector is well developed. There are few companies from other continents, but they are not a great threat. According to the Business Consulting Group report from 2006, between 1991 and 2005, number of discount stores in Europe was nearly doubled – from 17 300 to 34 000, where most of them is located in Germany and France. However, food prices in 2001 – 2005 lost 1% [Key Note 2007].

Key Note Report indicates that European market of discount stores gave 18% of whole sales market in 2006. Very good example of chain stores give German chains Aldi and Lidl, which had 50% of sales market share. In 2002–2006, sales market value in Europe increased of 28,6% to 15,65 billions pounds. Traditional sales market was replaced with organized and concentrated distribution, which reflects itself with amount in European economy [Tordjman 1994].

Trade market development in Europe

Sales in Europe plays significant role, because chains stores sale not only groceries, but chain stores are used as distribution channels and most of their profits come from this type of business. Most of supermarkets have products of their own brand, which are usually produced by well–known companies, but these can be sold for smaller prices, because their price does not include brand value, which is the most expensive.

Sales sector in Europe was rapidly transformed and expanded through the last decades, similarly like his American counterpart. There were built supermarkets within especially prepared trade parks. It led to lost of balance between big chain stores and small family shops. During years, every week shopping became some kind of ritual in which whole families take part. [Barros, Alves 2003].

On the other hand, chain store expansion gave customer bigger choice of products. In Europe, development of this sector is also a key to fight for the customer and continuous mergers and collaborations between different corporations.

In the last years, there can be observed few trends according to which sales market is developing. One of those is internationalization, so making allies with foreign companies, which come to the new market or broaden their chains.

The next move concerns brands of products sold in the chain. The brand has to have value for the customer and should be appropriate for him and for the product. What is more, it is important to know how many brands belongs to the chain and how many does not, although they are sold in the chain [Sułkowski 2012].

Also technology development concerns sales market and today chain stores use modern technologies in their stores and supply chains, so they

can be more effective and decrease costs. In the last years, popularity gained RFID technology (identification with use of radiofrequency) which in Europe is in the phase of test in the stores, however in the USA it was developed by the sector leader – WalMart [Ogden-Barnes 2005].

Due to technology it is possible and it became easier to manager customer service. It is possible to control, mainly due to loyalty cards, which customers use during each purchase, and simultaneously companies get information about customers. This knowledge can be used in market research, moreover it gives view of how different social groups spend their money and what products they buy.

Next example of using technology is multi-channel distribution – today chain stores are not only supermarkets, but there are also shopping on the Internet or by the phone.

As it can be observed, sales sector is much more complicated that we can think of. There are many variables which affect the business success, especially nowadays when world is changing rapidly. However, there are many companies, which gained success despite though market rules. In the table 1, there are presented leaders in chain stores sector in the breakdown of turnover value estimated for 2011.

As it can be observed, key role play chain stores from richest European Union's countries: Germany, France and United Kingdom. In the presented breakdown there is only one representative from USA – WalMart. It is one of the world greatest retailers. However in Europe, it does not play such a significant role as in the North America, as it it only in the second twenty of the presented breakdown.

Table 1. Leaders in chain stores sector

No.	Chain store	Turnover (billions €)	Country of origin
1	Metro	63,7	Germany
2	Tesco	63,6	GB
3	Carrefour	58,8	France
4	Schwarz	54,0	Germany
5	Rewe	50,0	Germany
6	Aldi	47,0	Germany
7	Auchan	44,4	France
8	Edeka	43,0	Germany
9	ITM	33,0	France
10	E.Leclerc	30,0	France
11	Casino	26,7	France
12	Sainsbury	21,0	GB

13	WalMart	21,0	USA
14	Morrisons	20,4	GB
15	El Corte Ingles	18,0	Spain
16	System U	17,8	France
17	IKEA	17,2	Sweden
18	PPR	16,5	France
19	Mercadona	15,4	Spain
20	Euronics	15,1	Netherlands
21	Migros	13,8	Switzerland
22	Ahold	12,2	Netherlands
23	Tengelmann	12,0	Germany
24	Kingfisher	11,7	GB
25	A.S. Watson	11,6	Netherlands
26	Marks & Spencer	10,1	GB
27	Expert	10,0	Switzerland
28	DSG International	7,4	GB

Source: http://www.retail-index.com, access 20.11.2012.

Interesting example is grocery sale in chain stores. This market in Europe in 2011 gained about 2,9 trillion euro turnover in more than 240 000 points of sale. The biggest turnover was in France, Germany, Poland and United Kingdom. [retail-index.com, 2012]

The biggest chain stores in this breakdown are French Carrefour, German Metro (which has supermarkets: Real and Metro Cash & Carry) and Schwarz Group (Lidl and Kaufland), and British Tesco and also Rewe Group (Rewe and Penny).

Table 2. Grocery sale in chain stores in Europe

No	Chain store	Turnover (billions €)	Country of origin
1	Carrefour	81,2	France
2	Tesco	77,9	GB
3	Metro	66,7	Germany
4	Schwarz	62	Germany
5	Aldi	57,2	Germany
6	Rewe	53	Germany
7	Edeka	44	Germany
8	Auchan	44	France
9	ITM	38	France
10	E.Leclerc	35	France

Source http://www.retail-index.com, access 20.11.2012

Analyzing trade European market, it can be observed that it is very well developed and still has great chances for further development. Mainly due to the interests of world – known concerns in stepping into that market. Companies like WalMart want to open its stores in Europe, because they can see great potential for high profits in the future.

Competitive advantage in the retailing sector

The chances for the market are in the advantage which is used by the biggest chain stores which buy great amounts of commodities and thanks to they decrease their supply costs.

What is more, they operate with the small number of suppliers; they can have products with their own brand and sell them in lower prices.

Due to much strength, there can be observed many weaknesses. One of them is lack of trust within customers. It is not easy to persuade customers to the products of unknown brand, because these are perceived as of worse quality. What is more, there are problems with legal trade on Sundays and during holidays. There are no good solutions for these problems which would satisfy customers, chain stores and their employees. Next thing is the chain stores do not invest in advertising. Most of the advertisements refer to the local market.

Between strengths and weaknesses there are also chances for the future. Main is the fact that customers prefer to buy in chain stores due to their convenience and possibility of buying all the needed products in one place. Moreover, chain stores have advantage in negotiating lower prices from their suppliers and due to that they can lower their costs, which give them opportunity to compete with lower prices and additional services like opening hours, customer service and on-line shopping.

However, there are few threats for this sector. One of them is having in their chain, stores of the same kind, for example: Carrefour and Dias belong to Carrefour. They have to compete with each other in the market, due to the fact that they generate profits for the same company. Another threat comes from customers' knowledge who knows the fact about high profits of chain stores and their attitude to their suppliers and employees. The biggest problems here are ethics and ecology what is nowadays in the very interest of chain stores.

There can be said a lot about trading sector, however the most import ant fact is that it is the most developing business in the world. Global trading became much easier due to modern technologies and usage of RFID.

Examples of gaining competitive advantage in the trading sector are very similar to other parts of economy. Main factor is the price. Chain stores have

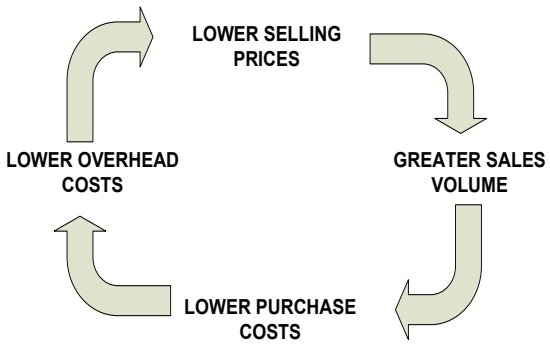
to lower its overall costs to supply their customers with appropriate products in the lowest possible prices. There are many possible ways to achieve that.

First step gaining competitive advantage was implementation of electronic data interchange (EDI system) in the chain store and distribution sector. Using modern technologies gave opportunity to faster response to market needs. Moreover, there was possibility of sharing information about sales, forecasts of needed products, monitoring promotion and production plans [Fernie 2004].

Good example of competitive advantage in the retailing sector is French Carrefour. It had identified three elements which have impact on overall company's financial standing [Arnold 2002]. For Carrefour it was closed in circle shown below in figure 1.

As it can be observed, Carrefour's management claimed that if they sell more products in lower prices, sales value would be higher. If they sell, more products, they can buy more from their suppliers. If that would take place, they can negotiate lower prices, because they would have advantage in the negotiations.

Figure 1. Carrefour's moral circle



Source: S.J. Arnold (2002), *Lessons learned from the world's best retailers,* "International Journal of Retail & Distribution Management", Volume 30, Number 11, pp. 562–570.

If their buying costs are lower, their overall costs are lower, what gives higher profits and that is how the circle closes.

Concept of supplier development is used to keep lower prices in the whole supply chain. It goes to achieving lower costs and gaining more market shares. If the companies' profits are higher, it can enter new markets and build new stores, what gives it bigger market share. It is gaining competitive advantage through its own strategy, giving their suppliers chances of selling more goods in the Carrefour stores. Thanks to cooperation with Carrefour, its suppliers

get protection for their future investments and they can develop their own business through supply chain expansion. Lower prices in the supply chain lead to higher value of sale, and for the suppliers it means selling more products. Moreover, if the collaboration is a success, suppliers can count on long-term contracts, and it was pointed that it is a protection for their businesses. What is more, it gives them a chance for further development, because their client extends its markets with them. After entering new market, suppliers can sell their products also through local chain stores.

Carrefour is one of the biggest retailers in Europe, and its suppliers have their impact on that position. If suppliers can not deal with the market conditions, their client will not succeed. Due to that, both sides work for the win-win scenario to be competitive in the market.

Competitive advantage in the retailing sector is able to be achieved in two ways. First one is price but the second one is product availability. Companies struggle to keep as low inventories, however still keep as much as they have to satisfy the customers. They need to balance on the very sharp edge where on one side is customer satisfaction and selling the product and on the other hand there are costs of keeping stock in the stores or warehouses. What is more, there is also a problem of short due dates as most of the retailers sell groceries which have short due dates and while keeping products in stores, those can be out – dated. Company can lose three times – because of costs of keeping inventories, throwing out products which are after due dates and losing customers when there is no product availability.

Nevertheless, retailers have very strong supply chains which give them opportunity to compete in the market. Example of the well managed supply chain can be found in the Sainsbury's case. The philosophy assumes that supply chain should not constraint the business [Retail Supply Chains Trends, 2003/2004]. For Sainsbury's supply chain means:

- the right goods, right place, right time;
- ease of handling and shelf replenishment;
- ability to meet new business needs;
- unbeatable costs.

The company wants to collaborate with the suppliers as close as possible by using paperless system for ordering and payments. They would like their suppliers to move completely to the IT systems to communicate and collaborate at all levels.

Most of the companies are likely to reduce their prices which would give them opportunities for development and expansion. Due to that they manage their supply chains in the way which would give them a chance for competitive advantage in the global marketplace.

Supermarkets force their suppliers to reduce prices as much as possible and these activities influence all the way down the supply chain to farmers. [Skinner, 2004] Nowadays, retailers use their greatest weapon ever in the fight for the customer – e-trading. Their suppliers fancy having clients who operate in such well-developing environment due to that they need to be responsive for the requirements of the retailers. Mostly they need to concentrate on lowering prices which are the order winners for their customers. Very common tool for such practice are online auctions but with usage of Dutch reverse auction system. Retailers define specification and invite their suppliers to take part in the auction. However, the opening bid is the higher price. Winner needs to point the lowest price for its products thanks to that retailers can buy goods on very low prices as their suppliers fight with each other for the deal. Nevertheless, there is also another thing. The winning supplier usually gets contract for several months and after that time there is being organized another auction and the same suppliers needs to bid for the next contract as well. For the food suppliers, so farmers who are the last in the supply chain, it is not what they are looking for. Their costs of production are much greater than expected by the retailers. What is more, they can not be sure that they would be able to produce enough crops which are required. They are dependent on weather conditions which can be destructive in their effects.

As it can be observed, cooperation between manufacturers and suppliers is not always as bright as manufacturers say. There are many hidden problems which can affect the relationships between them. It seems that sometimes instead of heading for competitive advantage, manufacturers take advantage of their suppliers to help themselves gaining more shares in the market.

However, to find compromise in the concept of supplier development and gaining competitive advantage, there are also positive examples of cooperation between manufacturers and their vendors, taking it from the suppliers' point of view. Also suppliers can see good sides of this idea.

An example can be found in the cooperation of the Marks & Spencer and its supplier, manufacturer of kitchen products [Chopra, Meindl 2001]. Supplier development process requires from both sides great sense of trust to each other and the stronger party should feel responsibility for the partner's profitability. So did Marks & Spencer when after introducing in the market new products, manufacturer realised that the costs had been miscalculated and exceeded the price at which the product was sold to the retailer. Meanwhile, customers found this new product as a great value for money there were paying and made the merchandise a great hit in the market. When Marks & Spencer's managers found out about the manufacturer's problems, they helped them to solve it. A team built from M&S and manufacturer's managers

reengineered both the product and production process to decrease overall costs of manufacturing. Moreover, M&S decreased its margin to give a manufacturer a chance for sufficient profit. Due to this reaction M&S have built deeper relationship with its vendor and as well saved its own benefits flowing from the great sales of the product. What is more, there was developed higher level of trust which can be used in the future products' introductions.

Another example can be found also in the history of Marks & Spencer which is known as one of the best customers for the manufacturers. While entering US markets, M&S began cooperation with Burlington Mills [Burt, Dobler, Starling 2003]. At the same time, British pound had declined in value, so M&S reopened the contract to investigate if its overseas vendor has been making fair profit. Management of Burlington Mills commented that fact officially, saying that it was the first time in its history when customer had been concerned about their profits. This situation made Marks & Spencer the most desirable customer in the US.

Conclusions

Building relationships in the supply chains is one of the most demanding aspects in management, especially in the situation when each company has to take note of costs and opportunity of profit. It is especially important in today economy crisis, if there can be found trustworthy business partner and due to that company can count on long – term contracts which would give profits on appropriate level. Chain stores built their position on the basis of products, which they offer, their prices and availability (using stores locations). The last factor is dependent on company's financial situation and its strategy, which would be used in building new points of sale. However, products and their prices are dependent on suppliers, who offer their products in the lowest possible prices.

Depending on expansion strategy, suppliers are treated differently. In the chain stores built in one country, there are used local suppliers, because it helps with company's image. Example is chain store "Biedronka", who is owned by Jeronimo Martins Distribution. The same company owes chain stores in Portugal, and these are developed in a similar way, but these are completely different brands. There is also similarity in offered products in both chain stores. In Polish discount markets can be found products of Polish manufacturers, however in Portugal – local producers.

Similar rules prefers chain store Lidl, which belong to German Schwarz Group. However, this chain store is known across Europe, so it sells local products but in the reference to European regions. Due to that, Polish manufacturers can sell their products in others European countries.

Both mentioned strategies give opportunities to local manufacturers, because they use rule of nearness to marketplace, what leads to lower prices for the customers. Moreover, it has social aspect, because it is a way of building an image of socially engaged retailer and customers get positive impression.

These are few examples of building relationship with suppliers in the supply chains in retailing companies. Strategies used by global market leaders differentiate from regional chain store leaders. Nevertheless, product sale in the chain stores has global character, mainly due to communication technologies development. Nowadays European chain stores in the developed countries compete with usage of modern Internet technologies, for their electronic trade. There is still a challenge to deliver products to given private address and it is possible, but if chain store in near customer. However, in the future this type of sales can be developed, especially due to changing life and work style. In developing countries, possibility of using electronic trade is in very early stage, mainly due to lack of Internet connections. However, there is also chance for the suppliers, which would be able to offer their products to more customers.

Relationship management strategies in supply chains are different and often adapted to local market conditions and to chain abilities. In the future, retailing will be developing due to changes in society and need of comfort during shopping. It can be perceived as chance for chain stores owners, and also for their suppliers it can be easier to develop their business and gain higher profits [see more Sułkowski, Morawski 2012].

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Przedsiębiorczość i Zarządzanie
Wydawnictwo SAN – ISSN 1733-2486
Tom XIV, Zeszyt 7, ss. 75–80

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Ecologistics - contemporary trend in building the image of medical units

Abstract: Twenty-first century posed new challenges to society. The rapid development of industry, a wave of new products, and as a result of waste has forced the increase of public interest in the activities of environmental concerns. Increasingly, the medical units implement ecologistic management policies because this concept became an opportunity to attract new patients by strengthening their positive image in the environment.

Key-words: ecologistics, public relations, medical unit.

1. Introduction

Twenty-first century has set new challenges to society. The rapid development of industry, a wave of new products, and the related waste also forced the society increased interest of ecological activities. Increase public awareness of ecology has a direct impact on the behavior of firms in the market. High dynamics and competition within the market makes the company look for newer and newer ways of being competitive. More and more people expect from companies not only an excellent product at the right price, but also the actions of an environment-friendly. These activities are meant to build the company's image in the environment.

Increasingly, the ranks of institutions implementing management policies ecologistic also join medical units for which ecologistic concept of operation has an opportunity to attract new patients by strengthening their positive image in the environment.

The purpose of this article is to point ecologistic role in managing marketing activities of medical units in the field of public relations.

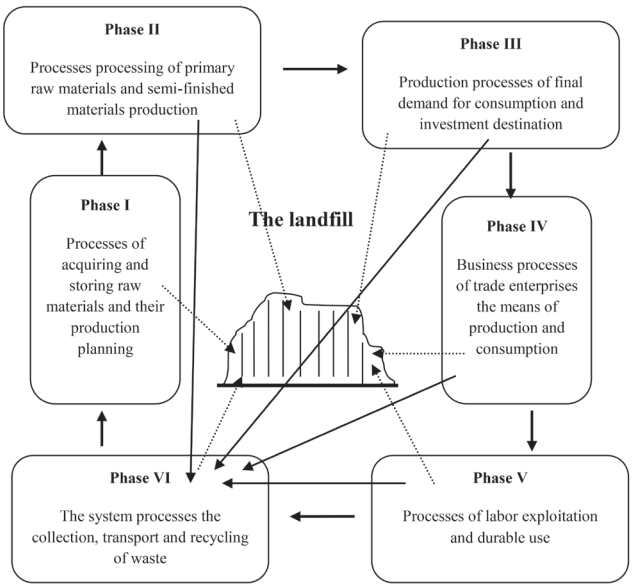
2. The essence of ecologistics

Disposal of waste resulting from his stay human more often requires special methods and management techniques for the efficient and above all safe disposal. In recent years, ecologistics has become a popular concept in support of these activities [Sułkowski 2012]. Ecologistics task is to study and create special programs, organizational, technical and economic, in order to efficiently manage the entire process of waste disposal. Found in the literature states that a term used to describe ecologistics integrated process that [Korzeń 2001]:

- is based on the idea of recirculating flows, management of waste materials and information linked to them (illustration 1);
- provides organizational readiness and ability to disposal and recycling of waste according to accepted standards;
- provides technical and managerial making decision to reduce (minimize) the negative effects of environmental impacts.

It should be noted that the term „ecologistics" is a term relatively young and in the literature there is a large number of studies undertaken in the publication on the topic.

Figure 1. The physical flow (recirculation) waste materials in the economy



Source: Z. Korzeń, *Ekologistyka*, ILiM, Poznań 2001, p. 22.

In the literature, listed several reasons ecologistics implementation of medical waste in health care. These include, among others [Marciniak 2008, pp. 38–42]:

- lack of infrastructure in the medical unit for proper disposal of medical waste;
- in the absence of systematic dumping of waste, use of proper collection and storage;
- providing an efficient transport to disposal sites;
- use effective methods of disposal.

As can be seen from the above material, the concept is a modern method ecologistics logistics management in the sphere of mainstream environmental health units. Ecologistics entrance into the realm of logistics management was forced medical entities laws and regulations, as well as the increasing demands on the efficient provision of quality medical units and medical supplies in the removal and disposal of medical waste.

Efficient management ecologistic in medical entities also contributes to change their perception on the part of stakeholders – both patients and companies cooperating with a particular medical unit.

3. The importance of building the image of medical units

Building a corporate image is a long process [Sułkowski, Morawski 2012]. Increasingly, for building the image of the companies specialized cells responsible public relations. This situation also occurs in the case of medical units, both of these state-owned and private. Medical units (NZOZ, hospitals, etc.) noted the growing importance of marketing activities, including in particular the activities of public relations in order to attract new and maintain existing patients.

PR history dates back to 1787. Then the first time he used the U.S. President T. Jefferson. However, already in 1823 at Yale University said nothing of public relations in the sense of "to promote the public good" (good PR).

The first attempt to define the term public relations has taken the International Public Relations Association (IPRA), which laid down that: "Public relations is the management function of a continuous and planned by which the organization acquires and sustains understanding, sympathy and support those that are interested or have may be interested in the future – by examining their opinions about the organization, in order to maximize their adaptation to its objectives and its activities to achieve – through planned, wide dissemination of information – better cooperation with the public and to more effectively pursue their interests" [Kupiec, Augustyn 2004].

The definition given by Webster's New International Dictionary examine public relations in three key areas:

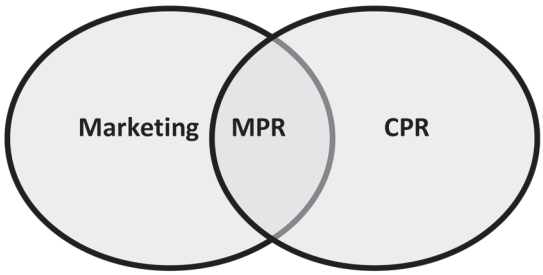
1. Activities – static or dynamic
2. State – using wording that the company has a good or bad public relations.
3. Profession – the professional skills.

so that "Public relations" is the [Szymańska 2005, p. 79]:

1. Industrial activity (connection, corporations, professional groups, government or other organization) in the field of building and maintaining a good and productive relationship with their environment, which aims to adapt the organization to its environment;
2. Condition of the business or the extent of its success in obtaining the understanding of all the economic and social organization to adapt to its environment, defined as good or bad public relations;
3. Art or occupational skills for organizing and conducting the business.

Ph. Kotler also draws attention to the fact that more and more companies are increasingly being used by marketing public relations (MPR). This eminent author of several books in the field of marketing, said that marketing and PR are part of the joint, which shows a figure 2.

Figure 2. The relationship between marketing and public relations



Source:: A. Szymańska, *Public Relations – komunikacja z otoczeniem,* p. 98.

Explanation of terms used in the diagram:

MPR – marketing public relations

CPR – corporate public relations

The above diagram shows two distinct areas of public relations and marketing, but also we can see the common area activities - MPR, which includes activities related to the promotion and communication. Marketing public relations in this system serves as a communication, and corporate public relations management function on the interaction of an organization with its environment [Kitchen 1997, pp. 242–243, 256].

To sum up public relations can be implemented by medical units:

- information leaflets for patients and partners;
- special events to promote eco-friendly management style medical units;
- a web page containing information about implemented and carried out activities ecologistics;
- use of the latest trends in the storage of hazardous waste (eg containers at the point of blood donations (figure 3).

Figure 3. Specialized containers

Source: http://www.med-plast.com.pl/katalog.pdf, pobrano z dnia 25.02.2012.

4. Summary

Modern medical units are increasingly recognize the need to build a positive image in their environment. Increased competition creates opportunities for marketing projects aimed at building and strengthening the image. For this purpose, looking for new forms and concepts that would meet the objectives of the project. In the era of the growing importance of ecology in the area of the organization has identified the concept of ecologistics that it can be successfully implemented in the sphere of organization of marketing activities, including in the area of management authority. Paying attention to the eco-environment functioning health care increases the chance of an increase in patient satisfaction, and thus to build a positive image of the medical unit.

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Przedsiębiorczość i Zarządzanie
Wydawnictwo SAN – ISSN 1733-2486
Tom XIV, Zeszyt 7, ss. 81–92

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IT and telematic systems in Polish logistics centres

Abstract: This article presents factual data on the quality of IT and telematic systems which are currently used in logistics centres in Poland. The conducted study confirmed the fact that only the Silesian Logistics Centre Joint Stock Company in Gliwice makes the best use of available IT systems. Other logistics centres in Poland use hardly any IT systems. If there are any, they have been adjusted to the company's own needs and the market.

Key-words: IT, telematic systems, tools of information technology, modules of information technology systems.

Introduction

Logistic centres should use state-of-the-art IT systems in order to operate effectively and provide the best quality comprehensive logistic services. Such systems support decision-making processes by performing logistic tasks; they are used to operate devices, save money and make logistics centres more attractive.

Identification of IT and telematic systems

A logistics centre is an economic subject which consists of many logistics companies. It plays many functions, employs many workers and provides comprehensive logistic services. It is essential to implement IT and telematic

systems so as to manage such a centre efficiently, monitor its operation and also facilitate an exchange of information (Table 1).

Table 1. Business branches in logistics centres

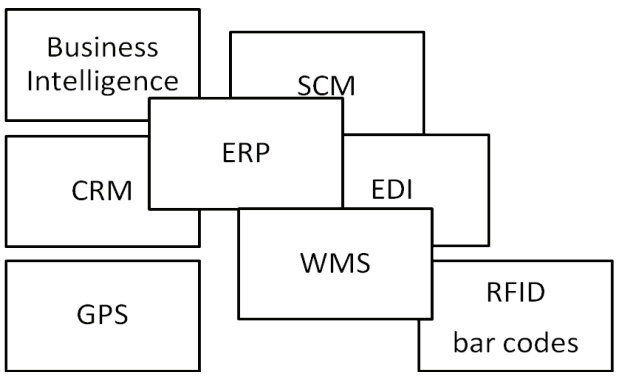
ACTIVITY OF A LOGISTICS CENTRE AND PROVIDED SERVICES
LEADING SERVICES (physical) referring to products
1. Intermodal transport.
2. Unimodal transport.
3. Loading and unloading in short- and long-distance connections.
4. Executing orders.
5. Transloading transfer freight provided by many suppliers and shipped to a great number of consignees.
6. Storing freight provided by many suppliers and shipped to a great number of consignees.
7. Distribution and replenishment of stock which is supposed to be delivered to many consignees.
8. Providing equipment for transportation and storing in a warehouse.
ADDITIONAL SERVICES (non-physical) supporting leading services
SERVICES
1. Handling returnable packaging.
2. Postal and courier services.
3. Commercial services.
4. Catering services.
5. Customs services.
6. Legal services.
7. Hotel services.
8. Gas station services.
9. Monitoring of buildings and cleaning services.
10. Providing city utilities.
11. Waste recycling.
12. Providing social services for employees and customers of the centre.
13. Automotive repair services.
14. Health care services.
15. Culture and entertainment services.
16. IT services.
FINANCIAL SERVICES
1. Making payments.
2. Keeping business records.
3. Insurance of transported cargo.
4. Insurance of carrier and deliverer.
5. Keeping customers' accounting books and providing factoring services.
6. Audit.
7. Controlling.
8. Open account.
9. Bank services.
10. Investment services.

MANAGEMENT SERVICES
1. Planning, organizing and coordinating the activity of all companies in the centre with regards to counselling, role of transport services over short- and long-distances.
2. Marketing services.
3. Monitoring demand.
4. Forecasting sales.
5. Creating schedules in agreement with particular transport companies.
6. Promotion and advertising.
7. Analyzing the choice of means of transport, tariff.
8. Despatching freight and process optimization within the supply chain.
9. Controlling of rendered logistic services.
SUPPORTIVE SERVICES
(supportive) supporting leading and additional services
Providing information within the centre and outside it with the use of various tools and methods.

Based on the authors' own source.

Study observations and analyses confirm that logistics centres in Poland are not yet well developed and they cannot use tools which would enable them to play all the functions given in Table 1. [Mindur 2012, pp. 509–510]. The process of implementing of such systems is time-consuming and expensive. However, after they have been implemented, they will definitely bring benefits in the long run. The changes will allow logistics centre to reduce maintenance costs and time needed to execute orders as well as render comprehensive logistic services, which will lead to an improved level of services and greater customers' satisfaction. Figure 1 presents tools and IT systems used in the operation of logistics centres.

Figure 1. Tools and IT systems used in the operation of logistics centres



Source: own study.

ERP [Mindur 2012, pp. 514–515, 519] or Enterprise Resource Planning, is a system which plays many important roles in the activity of a logistics centre. One of these functions includes integration of activities in a company on all its levels. This, in turn, allows to use assets in the best possible way and control internal processes in the organization. It should be pointed out that thanks to the ERP, the flow of information is much better and any vital information for the company is constantly updated and available any time the organization makes a decision. Another advantage of the ERP is its flexibility. The software can be adjusted to the size of the logistics centre and correspond to the profile of the centre (e.g. the possibility of eliminating certain modules, or adding some more according to the customer's needs). It should be emphasized that the ERP systems integrate management functions and the functions are the following [Mindur 2012, p. 515]:

- finances;
- storing;
- stock management;
- monitoring executed orders;
- planning and monitoring of production;
- supply;
- sale;
- dealing with customers;
- accounting;
- human resources management.

The systems consist of modules (which have particular functions). They are used in [Mindur 2012, pp. 515–519]:

- finance management;
- management accounting;
- human resources and payroll;
- planning and monitoring of production;
- quality management;
- logistics management;
- suppliers management;
- materials management.

Versions of the ERP systems can get more advanced after elements of other IT systems have been added to them. They can be used in a form of other integrated modules which cooperate with each other, such as:

- SCM;
- CRM;
- Business Intelligence.

SCM [Mindur 2012, p. 524], or Supply Chain Management, is an IT system used in the management of chain supply. In a logistics centre, which is a hub of complex network of logistic activities, is an important tool that enables the centre to manage a flow of goods and become competitive to others. With regards to a logistics centre, the system is particularly beneficial in the relationship between the centre and its customers and good suppliers. The SCM system is less often used inside the centre, i.e. in the production, providing supplies for the production and distributing manufactured products (an additional and supportive activity of the logistics centre).

The system consists of modules which include ones used in [Mindur 2012, pp. 525–528]:

- supply chain management;
- planning a demand;
- forecasting sales;
- planning and replenishing stock;
- managing supplies in the consignee's place;
- planning and drafting schedules of production;
- planning sales and operational planning.

CRM [Mindur 2012, pp. 520–521], or Customer Relationship Management, is an IT tool used in monitoring contacts with customers. The tool consists of three integrated sub-systems:

- **operational sub-system** (gathering information on customers and planning to establish contacts with them with respect to marketing procedures and tailoring services in order to satisfy needs of an individual customer);
- **analytical sub-system** (analyzing the compiled information, predicting trends, preferences and behaviour of customers, which will allow to improve the offer, make it more profitable and eliminate any factors which do not bring profits);
- **contact sub-system** (coordinating contract methods with contractors – the Internet, telephone, fax machine, personal contacts etc.).

The system consists of modules. They are used in [Mindur 2012, pp. 521–524]:

- gathering personal information on contractors;
- getting access to databases with information on product offers;
- managing tasks to perform;
- getting access to the history of contacts;
- making analyses, preparing statistics and scenarios;
- making reports and documents.

Business Intelligence [Mindur 2012, pp. 533–535], is an IT tool which facilitates making decisions, especially strategic ones. Thanks to this tool, it is pos-

sible to seek, compile and analyze a huge amount of scattered information by a specially designed "wholesale company of data", coming from particular modules of the ERP systems.

The Business Intelligence system consists of modules which are responsible for [Mindur 2012, p. 534]:

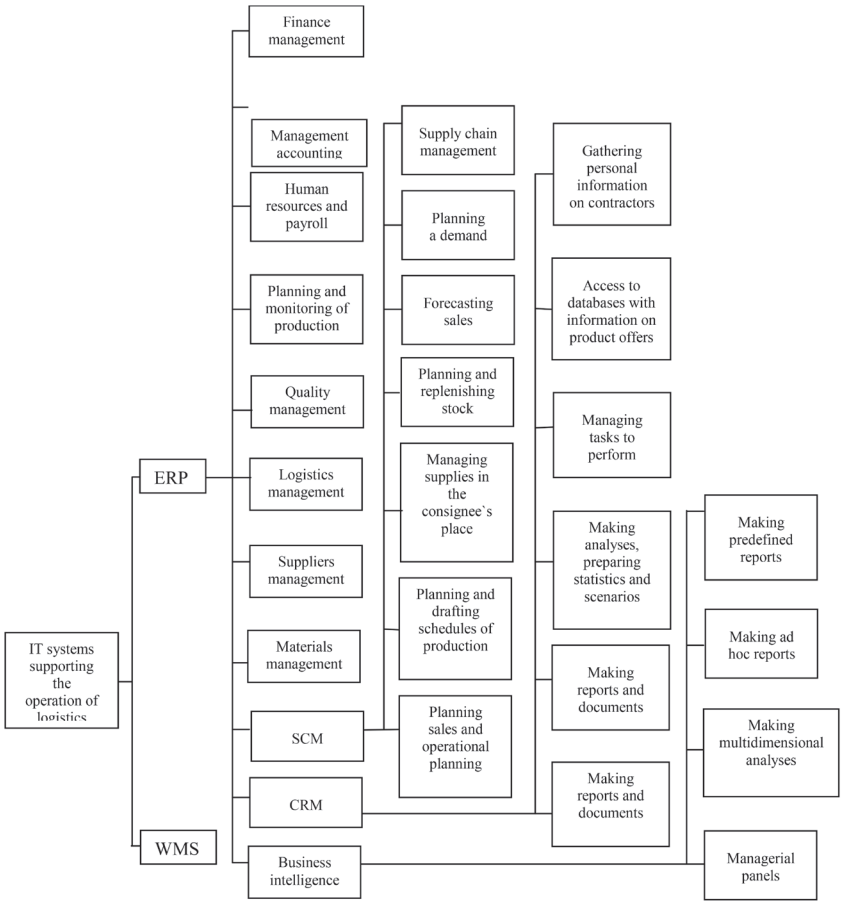
- making predefined reports;
- making ad hoc reports;
- making multidimensional analyses;
- making graphic presentations of results of the analyses (managerial panels);

WMS [Mindur 2012, pp. 528–533], or Warehouse Management System, is an IT system supporting the management in warehouse processes. It facilitates day-to-day handling a great number of goods of various kinds, shipped by many forwarders to many consignees. The system effectively helps with managing vast warehouse space and automation of warehouse operation with the use of the RFID technology [Dobkin 2008, Chapter 8; Kozłowski, Sikorski 2009, Chapter 4; Wieczerzycki 2012, Chapter 6], bar codes, mobile devices (radio terminals, forklift navigation, steering with voice) an many others. With the use of this system it is also possible to monitor expiry dates of goods and dispatch them according to the methods: LIFO, FIFO and FEFO[1].

It should also be pointed out that the WMS system is integrated with the ERP system (an exchange of information by f. e. the application of the EDI standard, i.e. Electronic Data Interchange) [Wieczerzycki 2012, Chapter 7]. Thanks to the GS1[2] standard, it is possible to use the Track & Trace System, which allows for tracking the localization and handling the labelled product, f. e. on all stages of warehouse turnover. Moreover, the system enables to perform the procedure of stocktaking without any stoppages in the operation of the company. It also facilitates effective control of certain activities connected with transport and forwarding because it is equipped with the function of planning the best routes and thus, thanks to the system, it is easy to find the most effective and economical mode of transportation. Figure 2 presents two IT systems used in management in a logistics centre.

1. (ang.) FIFO – First-In First-Out (the first freight to be shipped is the one which came first), LIFO – Last-In First-Out (the first freight to be shipped is the one which came last), FEFO – First-Expired First-Out (the first freight to be shipped is the one which will expire first).
2. http://www.gs1pl.org/ (situation as of 8 Nov 2012).

Figure 2. Module structure of IT systems used in management in a logistics centre



Source: own study, based on M. Mindur (ed.) (2012), *Logistics, Technical Infrastructure in the World,* II issue, ITeE – PIB, Warszawa–Radom, pp. 50 –535.

GPS [Januszewski 2007, p. 47], is an IT system of telematic support, which enables to control the localization of vehicles, general state and also conditions in load-carrying bodies of the vehicles.

Analysis of IT and telepathic systems currently used in logistics centres. At present, technologically advanced IT systems such as the ERP, WMS, SCM, CRM, are rarely met in Polish logistics centres.

In two private logistic centres, i.e. in the Centre for Logistics and Industry Investments Poznań Joint Stock Company in Swarzędz (CLIP) and also in the Logistics Centre in Łososśna Joint Stock Company none of the mentioned IT

systems was implemented. Because of their specific character, the centres use only systems which facilitate decision-making processes.

The "Euroterminal" Slawkow Ltd uses the ERP system. The need to invest in the introduction of a new system is connected with the need to control planning and production processes together with consignees and suppliers. The system not only appeared to facilitate the operation of the centre but also makes this operation less expensive. Table 2. presents IT systems used in logistics centres in Poland.

Table 2. IT systems used in logistics centres in Poland

	Name of the centre	Name of the implemented IT system				
		ERP	WMS	SCM	CRM	Other systems implemented for the centre's own needs
1.	The Silesian Logistics Centre Joint Stock Company in Gliwice	x	x			x
2.	The „Euroterminal" Slawkow Joint Stock Company in Slawkow	x				x
3.	The Logistics Centre in Łososna Joint Stock Company					x
4.	The Centre for Logistics and Industry Investments Poznań Joint Stock Company in Swarzędz (CLIP)					x
5.	The Wielkopolskie Logistics Centre Konin-Stare Miasto Joint Stock Company					x
6.	The Pomeranian Logistics Centre in the Port of Gdansk Joint Stock Company					x
7.	The West Pomeranian Logistics Centre in Szczecin-Swinoujscie Joint Stock Company					x
8.	The Logistics Centre in the Port of Gdynia Joint Stock Company					x

Source: own study.

The Silesian Logistics Centre Joint Stock Company in Gliwice is one of the most modern logistics centres in Poland and it has introduced two IT systems:
1. MRP II/ERP IMPULS, made by the BPSC Company.
2. WMS (Warehouse Management Systems), made by the Logifact Company.

The MRP II/ERP IMPULS system systematically updates information on ongoing processes in the organization and adjusts it to the need of the company. Thanks to the system the company can properly analyze and evaluate data and then make right decisions. Goods stored in this centre are entered in an electronic database and the procedure remains in compliance with requirements of the act of law on free customs zones. The system is used both inside

and outside the centre. Some studies confirmed that it effectively supports the work of the centre and brings a lot of benefits. Thanks to good synchronization, the system helps to reduce costs of storing supplies and a loss incurred due to unused equipment and other assets of the company is not so dramatic. Moreover, the system is also used to prepare detailed reports on all individual tasks as well as on the whole operation of the company. Its authorities have then a clear image of the company's position and can make proper decisions. It can be added that the Silesian Logistics Centre Joint Stock Company in Gliwice tries to meet demands of its customers and gives updated information on stored goods via an Internet website.

The centre also uses the WMS system (Warehouse Management Systems), made by the Logifact Company. The system is highly beneficial because it:

- improves the service of storing customers' goods;
- gives detailed information on the stored supplies, notice of delivery, order of shipping
- the product, current stages of the service – preparing the despatch, place of storing of the product etc. with the use of an Internet website;
- provides an electronic exchange of information in case the customer asks for such.

The described system is an invaluable tool used to improve the quality of services in a warehouse. Due to the system, the control of a warehouse as well as its subunits and zones appears to be easy. It allows for systematic monitoring of supplies, their number, and checking all stages of execution of orders. With the use of the mentioned IT system, employees of the logistics centre can determine the method of storing and choose the best kind of packaging. The system also enables to divide warehouse space into smaller units and lease them to the customer. Thanks to automation of databases and a possibility to have a detailed insight into the stock and the structure of the warehouse, the company can manage the warehouse space in the best possible way so as to generate the highest profits. Another advantage of the system is an option which allows for preparing detailed reports bearing reliable and most vital information needed in order to manage the warehouse effectively and introduce potential changes.

As we can see, the WMS IT system is definitely a good investment. Thanks to its numerous advantages and automated mechanisms it brings a lot benefits and makes warehouses more attractive.

The Silesian Logistics Centre Joint Stock Company in Gliwice does not currently use the CRM system (Customer Relationship Management). However, the system is necessary to establish and remain in contacts with customers – it allows for choosing more adequate marketing procedures for

potential customers, improving methods of dealing with them and, consequently, making them more satisfied with the rendered services. These factors are highly important as we should bear in mind that keeping a regular customer is ten times less expensive than gaining a new one. Another positive quality of the IT system is facilitating the flow of documents. The system also coordinates tasks performed by employees of customer service departments. It allows for effective performance of assigned tasks and reduce the time of work, which leads to saving money.

Despite the fact that the CRM system brings a lot of benefits, we should not forget that the purchase and implementation as well as maintenance costs of the system are expensive. Apart from the above costs, the company must also train its staff to be able to use the system. The time of the implementation of the CRM system and training staff are time-consuming, thus, expensive.

Although the Silesian Logistics Centre Joint Stock Company in Gliwice does not have the CRM system it manages to provide satisfactory services to customers and enjoys having a group of regular, loyal clients. In the authors' opinion the CRM system does not have to be necessarily implemented because the logistics centre effectively operates without it. The purchase and implementation of the system would take a lot of time and money. The company would have to wait a long time for the investment to become profitable. Thus, the centre in Gliwice has postponed the purchase of the system until more distant future.

Another IT system waiting to be implemented due to its advantages is the SCM system, i.e. Supply Chain Management system. It is used to organize a supply chain. It allows for synchronization of products circulating between cooperating customers of the SCM system, that is, supply chain management.

Despite its benefits, the system still has not been implemented in the Silesian Logistics Centre Joint Stock Company in Gliwice. At present, the system can be seen in distribution centres or companies which decide to initiate business on a great scale. The centre in Gliwice does not deal with a huge production or distribution. However, the system might be useful in the distribution systems already existing in the centre and it could offer its customers a wider range of services. What is more, it might facilitate the management of storage procedures but the WMS system, which the company has implemented before, is quite efficient and adequate. Due to expenses which the centre would have to incur, if it decided to buy the SCM system, the investment does not seem reasonable, at least, for the time being.

Conclusions

The presented analysis of logistics centres in Poland confirms the fact that the Silesian Logistics Centre Joint Stock Company in Gliwice makes the best use of available IT systems. This makes the Gliwice company the most modern on the market of logistic services in Poland. The SCM or CRM systems might not bring the centre huge benefits. Thus, it is not really necessary to implement them.

Other logistics centres in Poland use hardly any IT systems. The systems they use have been adjusted to the company's own needs and the market.

To sum up, we can say that there is no single logistics centre in Poland which would use integrated IT tools required to support all the functions mentioned above. It is due to the fact that a design and implementation of complex IT solutions take money and time. A sea logistics centre in Finland and some more centres in the United States can be perfect examples of companies which take maximum advantage of available IT systems.

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Przedsiębiorczość i Zarządzanie
Wydawnictwo SAN – ISSN 1733-2486
Tom XIV, Zeszyt 7, ss. 93–104

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Partnership as a determining factor of competitive strategy in supply chain management

Abstract: In the study the authors made an attempt to analyze the role of cooperation and integration of various subjects on the market in the complex process of supply chain created in a spirit of partnership. The issue is analyzed in three aspects:

- **the first** aspect defines the concept of partnership and its role in the strategy of supply chain management;
- **the second** one refers to partnership between suppliers and customers in the supply chain, with respect to criteria and components which influence these relationships;
- **the third** one refers to the pragmatic meaning and its challenges connected with cooperation based on the idea of partnership.

To present the problem more thoroughly the authors used the analytical and synthetic study method.

Key-words: partnership, trust, cooperation, convergence of objectives, decision integration, synergic effect of supply chain.

1. Introduction

In the delivery network no company is a lonely monad. It does not operate only on its own or relies only on its own potential. It is not possible to act like that if a company wants to operate successfully on the market, be competitive and systematically improve the quality and range of its services. More and more businesses are aware that that the idea of partnership is the most effective strategy which has to be adopted if the company wants to meet the requirements.

The necessity of partnership, which is perceived as the ability to cooperate and integrate activities with others, results from a few vital reasons. They include among others:

- growing requirements with regards to comprehensive and complex services; they make companies extend their offer (services or products) for customers;
- a need to react promptly to customers' changes in demand and preferences;
- growing requirements with regards to time and place of delivery;
- economic calculation;
- constant globalization of the market;
- a rapid technological development; growing democratization of information, thanks to which both customers and companies have wider and better access to information on products as well as services of particular companies, and thus, a bigger choice and expectations, and finally, a possibility to lessen the risk.

It can be observed that all these factors are clear reasons why certain changes with regards to the operation of the company should be implemented and why the company should consider the idea of partnership.

The aim of the article was to:

- explain the necessity to coordinate processes and establish cooperation in a spirit of partnership between subjects in the chain supply;
- focus on the idea of partnership and methods of building and maintaining it;
- present various kinds of partnership and select the most proper one;
- point out pragmatic benefits and challenges which are connected with cooperation in the spirit of partnership in the supply chain.

2. The idea and principles of partnership in the strategy of supply chain management

The idea of partnership in a supply chain is an ability to cooperate with others, involve in tasks which require harmonious team work which is performed by particular subjects (contractors) in order to achieve **joint objectives**, which are inferior to various individual objectives [Kisperska-Moroń, Krzyżaniak 2009, p. 307]. In other words, partnership is identified with the ability to undertake various joint tasks, which can refer to both investments and organization. This ability is required to achieve individual objectives. However, the idea of joint objectives is superior to the idea of achieving individual objectives and aimed at creating some values and becoming more competitive [Witkowski 2010, p. 42].

Partnership also means the ability to take a risk and solve problems together [Witkowski 2010, p. 41].

The ability to harmonize various activities refers to the following processes of the supply chain [Kisperska-Moroń, Krzyżaniak 2009, p. 307]:

- **material supply process,** which involves executing on time deliveries of materials needed for production and keeping the right amount of material of various kind.
- **production process,** which refers to the production of items meeting customers' requirements and following the sales plan in the right period of time, amount and range of products;
- **distribution process,** which involves collecting produced items, then taking them to a warehouse, levelling out the stock, loading products according to the customer's order, and finally, transporting the goods to the customer.

Partnership in a supply chain should be built on a few fundamental principles if it is to be seen and bring expected effects. One of them is **the principle of confidence**. The principle is highly valued particularly in modern times, often called "Transparency Age". Confidence is treated here in two aspects: both as "a lubricant" and "a binder" present in relationships with various subjects [Hejduk, Grudzewski, Sankowska, Wańtuchowicz 2009 - http://www.e-mentor.edu.pl]. The ability to understand the idea of confidence is an essential condition to create an effective process of supply chain. It is a basic element for creating a favourable atmosphere which would facilitate building constructive relationships between various subjects of the supply chain. It is however difficult to give a clear definition of the word "confidence". Having analyzed professional literature, we can assume that confidence is a state of readiness towards the other person whose activity is focused on joint interests. The principle of confidence includes certain expectations from individual subjects involved in the process of the chain supply. The expectations are about requirements for giving reliable information on the demand, sales forecasts, production schedules and orders as well as other information on the flow of products and customers' behaviour. The principle of confidence also refers to the service, especially to the period of time in which the placed order is executed, the way of dealing with customers, the rate of order execution or the application of a supply management system by the supplier/seller with respect to a specified turnover rate [Coyle , Bardi, Langley Jr. 2010, p. 279, Witkowski 2010, p. 39].

It is beyond any doubt that the principle of confidence in building a competitive strategy of supply chain management is highly important if we want the chain to function efficiently. The role of confidence is growing along with the growth of the relationship between particular subjects of the

supply chain (the supply chain is complex: suppliers' suppliers – suppliers manufacturers – wholesalers – retailers). This, in turn, is connected with a various kind of services (complex and comprehensive rendering of services), an economic calculation, progressive globalization of the market, a rapid technological advancement, progressive democratization of information, thanks to which customers and companies (including business rivals) have greater access to information on products and services of particular companies as well as greater expectations. Some authors point out another important argument, which emphasizes the superior role of confidence in the relationship between subjects of a supply chain, i.e. lessening the risk [Das, Teng 2001, pp. 251–284, Zsidisin 2003, pp. 217–224, Skowron-Grabowska 2010, p. 65].

Another fundamental principle of partnership between subjects of a supply chain is the **principle of joint objective (convergence of objectives).** In other words, the principle involves the necessity to treat objectives of the particular subject as less important and set forth objectives which would be joint ones and superior to the ones of the particular, individual subject of the supply chain. They are following:

- providing a product which would meet quality requirements;
- reliability of supplies;
- low costs;
- high sales level;
- effective use of assets and many other factors.

When so many various subjects are engaged in the process of supply chain, it is highly important to take on coordinate and integrated activities in order to achieve joint objectives. These activities include:

- providing convergence of objectives of the coordinated processes (of subjects of supply chain) by synchronization of tasks – in the time, place, number and quality;
- eliminating appearing discrepancies and preventing them from reappearing in the future;
- eliminating excessive and unnecessarily repetitive activities:
- eliminating similar or identical activities performed by different subjects.

Another key principle allowing for building and enhancing partnership in the supply chain is **the principle of joint decisions (integration).** The principle applies to [Kisperska-Moroń, Krzyżaniak 2009, p. 312]:

- **stages of management,** i.e. planning, organizing, motivating and controlling activities on all stages of the management (strategic, tactical and operational);
- **the scope of functions,** i.e. planning and coordinating of work of particular departments in the organization (marketing, sales, finances);

- **the scope of activities,** i.e. planning and coordinating of work of the department responsible for material flow (the processes: supply, production, distribution; target customer).

The idea of taking integrated decisions is an essential base for the synchronization of strategic, operational and tactical activities. It also plays an important role in the flow of product in the whole process of supply chain [Kisperska-Moroń, Krzyżaniak 2009, p. 310, Śliwczyński 2007, p. 97]. Taking joint decisions contributes to an efficient performance and integration of particular processers of the supply chain. In other words, it is possible to prepare so called productive capacity, financial resources, human resources, to agree further joint activities, mutual time relationships, methods of cooperation and exchange of information. In that way we can shape products (their quality, availability) and the quality of dealing with the customer as well as the mentioned processes and the company assets [Kisperska-Moroń, Krzyżaniak 2009, p. 312, 316]. Taking integrated decisions and effects of such decisions are one of the most advanced forms of integration. It allows the involved subjects to analyze the situation together in order to determine future demands and methods of satisfying them in a way which would be beneficial for all the involved subjects. The cooperation includes:

- planning of new products;
- forecasting of demands;
- making out schedules of replenishing the stock and synchronizing individual plans of the subjects [Harrison, Hoek van R. 2010, p. 312].

Integration which is interpreted in the above way is not only the most advanced stage of cooperation of particular subjects in the supply chain but, what is more, is the most crucial and the most difficult task of the cooperation between the subjects. Interests of each subject of the supply chain are given equal consideration. In other words, the cooperation focuses on the needs of the joint market and target customer [Kisperska-Moroń, Krzyżaniak 2009, p. 310].

Taking joint decisions is nothing different but raising standards of the cooperation, its quality and effectiveness.

The need of partnership understood as a cooperation between particular subjects of the supply chain arises out of a few important factors [Kisperska-Moroń, Krzyżaniak 2009, p. 308]:

- the need to achieve the objective, which involves realization of many processes, both internal and external as well as cooperation with many subjects;
- complex processes;
- a mutual dependence of the processes (cause – effect);
- requirements of the target customer (with regards to the time and place).

The main **factors which motivate** subjects to establish relationships in a spirit of partnership include [Witkowski 2010, p. 44]:

- a decrease in costs or increase in effectiveness of assets;
- an improvement of the quality of customer service;
- competitiveness;
- levelling out of profits or an increase in profits.

External factors which enhance the spirit of partnership include:

- similarities between subjects in terms of objectives, culture, philosophy and technique of management;
- willingness to share information and adopt joint objectives and strategies of the development;
- balance of all the factors which make up the bargaining power of the partners;
- a unique character of the cooperation;
- common rivals;
- common customers;
- a close localization;
- a tradition of cooperation.

With regards to partnership in supply chain, depending on the adopted criterion, we can give **a few types** [Witkowski 2010, s. 42]:

- time criterion:
  - **short-term partnership** (operational);
  - **long-term partnership** (strategic).
- criterion of the level closeness of economic relationships between the subjects:
  - **Type 1 partnership –** a short-term and limited cooperation in planning and coordination selected supply chain activities with regards to one or more subjects;
  - **Type 2 partnership** – agreement to integrate a broader range of selected activities over a longer time frame;
  - **Type 3 partnership –** a significant level of operational integration, in which the partner is treated as "a continued part" of the organization, with no anticipated end date.

The decision on the choice of the type of partnership should be taken after the analysis of potential internal motives and external conditions of the cooperation in which all elements of partnership have been considered. Low internal motives and negative external conditions should discourage the partners from establishing closer relationships. However, in the course of time, enhanced internal motives and greater chances which result from improving external conditions might contribute to a development and closer coopera-

tion, which, in turn, might result in a shift from Type 1 partnership to strategic cooperation, characteristic for Type 3 partnership [Witkowski 2010, p. 45]. A joint cooperation undertaken in the spirit of Type 3 partnership and readiness to work out a compromise lead to a situation where all the subjects achieve their objectives and are winning parties.

3. Partnership with suppliers and customers in supply chain

Partnership with suppliers and consignees in a supply chain can take many forms depending on the relationship between the partners. According to the concept „Sako" we can differentiate between two kinds of partnership:

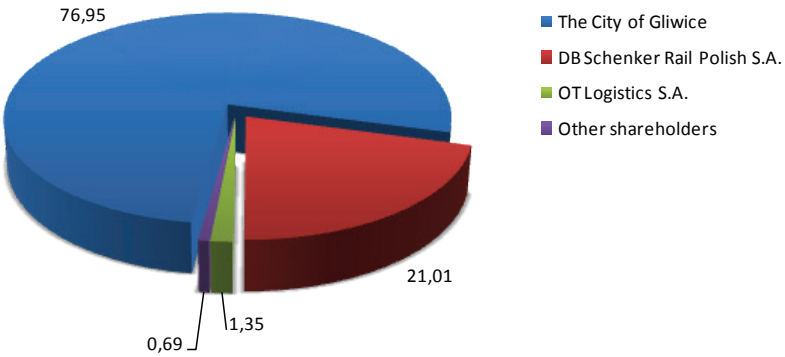
1. **The first partnership is a formal distance** between the partners. Relationships between the partners are based on free-market rules and are price-oriented. The partners conclude a detailed agreement which stipulates their rights, commitments and sets out cooperation terms. This kind of partnership is void of unnecessary familiarity in mutual contacts, which allows for a complete independence of each other. Upon termination of the contract, either party is allowed to leave with no obligations [Harrison, Hoek van R. 2010, p. 343].
2. **The second partnership** between suppliers and customers is **a vertical integration of partnership.** Mutual relationships are established and enhanced with respect to capital relations. In some cases only the partners conclude formal agreements. Most often the relationships are based on mutual confidence. The partners agree on general terms of their cooperation. They believe that "it is worthwhile to do more than the other party expects from us". **The vertical integration** includes at least two links of a supply chain and can:
   - be directed backwards;
   - be directed forwards;
   - go in both the directions simultaneously.

The environment in which the partners live and operate affects the nature of the relationships between them. Thus, the durability, intensity and closeness can be different in a different relationship and evolve with time. The leading subject does not have to remain in the same relationships with all suppliers and customers. The choice of the best possible subject is an important strategy [Harrison, Hoek van R. 2010, p. 343].

The Silesian Logistics Centre Joint Stock Company in Gliwice as a leading subject is a joint stock company, whose main shareholder is the Gmina of Gli-

wice. It possesses 299, 561 shares, which makes up 76.95% of the total share value. Moreover, Schenker Rail Polska Joint Stock Company is in possession of 21.01%, or 81,808 shares. OT Logistics Joint Stock Company has 5, 240 shares, which amounts to slightly more than 1% of the total share value. The remaining shares, which make up less than 1%, (0.69%) are possessed by other shareholders. Figure 1. presents the structure of the shareholding.

Figure 1. The structure of shareholding in the Silesian Logistics Centre



Source: http://www.scl.com.pl/akcjonariat,d42.html, on:11 April 2013.

Currently the following companies located in the premises of the logistics centre do joint business activity within partnership:

- Saol Company – a limited liability company which is a part of the Central European Distribution Corporation (CEDC), one of the greatest producers of alcoholic beverages. The company rents 2,400,000 [sq m] of warehouse area and 350 [sq m] of office area;
- Carey Agri International Poland – a limited liability company which is a part of the CEDC
- Multi-ex Joint Stock Company, which rents warehouse space in the premises of the logistics centre;
- C. Hartwig-Katowice Joint Stock Company – Gliwice branch; transport, forwarding, logistics;
- Free Customs Zone – established under the Regulation of the Council of Ministers of 25 January 1993 – belongs to the Municipality of Gliwice. The municipality budget unit – The Board of Free Customs Zone acts on behalf of the Municipality of Gliwice and deals with administrative and management matters.

- Polish National Rail CARGO;
- BPH Bank;
- Customs Chamber in Katowice;
- A surveyor and control company;
- A translation agency;
- A container terminal operator;
- Automotive logistics operators.

Dividing suppliers into a few categories and adopting a different kind of different partnership for each of them will allow the leading subject to manage the supply chain more effectively. There are a few methods of divisions of suppliers into categories. It is commonly assumed that the customer will always attempt to gain the strongest bargaining power. Bearing this in mind, we can conclude that crucial criteria that considerably affect the relationship between the supplier and the customer are [Harrison, Hoek van R. 2010, p. 347]:

- a relative power of the customer;
- a number of suppliers who are able to supply a product in the shortest possible period of time.

Thus, the following components are applied:

- **strategic components** – the customer has a great bargaining power but a limited choice of suppliers. In this case he should act carefully and try to establish a positive relationship with suppliers to guarantee regular deliveries in a long term;
- **crucial components** – the customer's bargaining power is weak and the number of suppliers is very limited. In this case the customer should strive to improve this situation by looking for some more suppliers or substitutional components as well as by ordering the research and development department to eliminate crucial components from new products, if it is possible;
- **standard components** – the customer's bargaining power is weak but he has a great choice of suppliers. Since he uses standard parts, the best form of providing supplies is a traditional tender.
  Standard components:
  - are not prepared together with the supplier;
  - are not brand components;
  - do not affect practical values, especially the safety of products;
  - do not require substantial investment on professional equipment.
- **mainspring components** – in the case of a greater number of suppliers and strong bargaining power the customer can effectively negotiate the price and terms. However, the customer should be tactful while negotiating so that suppliers do not feel offended.

4. Pragmatic role of partnership in building a competitive strategy of supply chain

The application of partnership principles and observing them instead of the application of free-market rules in various subjects of the long process of supply chain allows to achieve a so called **synergic effect**, or extra benefits which would not be possible to achieve if the partners did not cooperate but acted separately.

Free-market relationships between partners usually include agreements concluded for a short period of time. The parties to the agreement do not enter in close relationships and hardly ever conduct joint research studies and the number of suppliers for each component of the supply chain is big [Harrison, Hoek van R. 2010, p. 355].

In modern times, because of the fact that external and internal conditions of building relationships among subjects of the supply chain are constantly changing, more attention is paid to non-market mechanisms of a cooperation. Japanese companies are good examples of such a trend because they find mutual commitment and confidence the most essential elements of every transaction. Without these two elements we cannot say about partnership. Although such relationships can involve a certain increase in costs and can entail a risk, they appear beneficial in the end. They bring **economic and strategic benefits** which are difficult to achieve if we apply a traditional market model of relationships [Harrison, Hoek van R. 2010, p. 355; Witkowski 2010, p. 40].

1. **Economic pragmatism** connected with a partnership cooperation includes:
   - limited costs arising out of a reduced need to conduct negotiations and discuss agreements;
   - a reduced need to control the supplier's reliability (e.g. with regards to the quality of deliveries);
   - increased efficiency;
   - lower costs of transactions and flow of product;
   - more effective customer service.
2. **Strategic pragmatism** connected with partnership cooperation includes:
   - shortening of production and supply cycles;
   - toning down conflict which appear among suppliers, customers and service companies;
   - acting against competitiveness of objectives;
   - levelling off the bargaining power;

- preventing the possibility of taking decisions on the basis of various information;
- creating more favourable condition for long-term investments.

While discussing positive aspects of the principle of partnership in establishing relationships between subjects we should not forget about certain problems which accompany relationships based on mutual confidence and commitment. These negative aspects are [Harrison, Hoek van R. 2010, s. 355]:

- an inability to make a precise estimation of the value of certain elements, e.g. studies on a project;
- a necessity to gather information on a potential partner before taking a decision;
- a risk of disclosing confidential information to rival companies;
- a danger resulting from opportunistic behaviour of suppliers.

Despite certain disadvantages of partnership, it should be pointed out that the adoption of this idea, treating it as a fundamental value and accepting rules which are closely connected with the idea, is the only chance of establishing creative and effective relationships in subjects of a supply chain. It also facilitates gaining an advantage over rivals and creating a value added, which is beneficial for all links of the supply chain, individual customers and corporate customers.

Summary

The main driving force of every business entity includes effective operations and meeting demands. It is however difficult to find such a great variety of activities in one company. To provide so many activities it is vital companies integrate and coordinate a lot of processes within the supply chain. The requirement will be fulfilled after companies have implemented the idea of partnership, understood as the ability to shape economic relationships between subjects (links) of the supply chain, created in the spirit of confidence, shared risk and benefits. Such partnership is the most advanced level of a cooperation. It leads to more synergic effects and a greater advantage over other competitive businesses.

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Przedsiębiorczość i Zarządzanie
Wydawnictwo SAN – ISSN 1733-2486
Tom XIV, Zeszyt 7, ss. 105–112

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Food safety management – fulfillment of selected hygienic and sanitary requirements in polish grocery stores networks

Abstract: This article shows the way how to carry out the hygiene and sanitation requirements in Polish networks of grocery stores. The study was conducted in the fourth quarter of 2012 in the south-eastern Poland. There were chosen three organizations that meet certain conditions: medium size Polish grocery network without participation of foreign capital and up to 30 retail locations within the group. Studies based on a case study model. The research found that regular and unannounced inspections carried out to each store's, impact on increasing safety of food offered and the verification of GHP requirements on the headquarters level has a significant impact on the safety of food offered as well as on the knowledge and behavior of employees. In addition, the fulfillment of the requirements of GMP/GHP by employees of surveyed grocery networks is performed by a high level. It was also shown that the information obtained from representatives of the company, the level and details of the conducted control by the State Sanitary Inspection varies from region to region and from the person who carried out the inspection.

Key-words: GHP, GMP, HACCP, food safety, grocery stores, retail.

Introduction

With the increasing importance of food safety, there can be observed growing interest in the retail and service operators with the issue of food safety management [Kijowski, Sikora 2003; Kołożyn-Krajewska, Sikora 2010; Luning, Marcelis, Jongen 2005; Clute 2009]. According to the fact that main target for every company is getting enough profit for its to stay and keep a good market position, it`s not always enough to implement a quality management systems and integrate them to all other business systems and solutions in the company [Wolnowska 2012, pp. 21–25]. Over the years, the HACCP system in Poland has been implemented by most of the big enterprises, but the level of implementation in a medium-sized companies was larger than among small ones and this dependence on the size of the company has been confirmed by foreign and domestic researches [Trafiałek, Kołożyn-Krajewska 2008; Azanza Ma., Zamora-Luna 2005, pp. 15–22; Panisello, Quantick, Knowles 1999, pp. 87–98; Morkis G. 2005]. Small and medium-sized enterprises justify completely different motives for starting the implementation of the HACCP system in their establishments. The reasons for small businesses do not arise from the basic idea of the HACCP system, which ensure the health and safety in food production. The main reason for the implementation of this system is the Law requirements [Trafiałek, Kołożyn-Krajewska 2005; Dz. U. 2010 nr 21 poz. 105]. To meet this increasing requirements of law among food safety is one of the biggest challenges for the food industry. Operators of the food chain, including grocery chains, implement systems to ensure food safety while minimizing the risk of hazards [Małecka 2006]. For several years in Poland it can be seen an increasing trend to implement food safety systems such as GMP/GHP and HACCP by the trade and service retailers, including grocery stores [Nowicki, Sikora 2012c]. This is mainly due to the change in regulations under which the above systems has become mandatory [Dz. U. 2010 nr 21 poz. 105] as well as increasing customer awareness and knowledge on hygiene and quality in the retail and service sectors [Nowicki, Sikora 2012b], who increasingly pay attention to the way of offering and displaying food products. Polish grocery chains wishing to be successful in a market dominated by the network with the foreign capital, in the company's strategy must take into account the client's requirements and to implement an appropriate system to ensure food safety. Appropriate food quality and safety of products guarantees regular customers and offer the opportunity to develop its business and make a profit [Nieżurawska 2001, pp. 32–33].

The research description

The study was conducted in the fourth quarter of 2012 in the south-eastern Poland. There were chosen three organizations that meet certain specified

conditions: Polish grocery chain of medium size without the participation of foreign capital and up to 30 retail locations within the group. Studies were case studies. In each of the organizations there were interviewed persons responsible for the operation of management systems, which are representatives of the leadership of the organization in this area as well as with the employees responsible for purchases. The study was conducted in the form of in-depth interviews on the basis of pre-prepared script. In addition, a random selection of two retail outlets occurred within all three networks, and the confirmation of collected data during interviews was done. Characteristics of organizations contains Table 1.

Table 1. Characteristics of the selected organizations

Organization	Characteristics
Organization 1.	Network of 26 stores ranging in size from 40 to 1000 m^2. Average store size: 200 m^2. More than 60 thousand. indexes. All the shops are in the network's own stores, without franchising option. The network also sells online. Average number of employees in the whole organization is about 330 employees. Legal form: joint-stock company.
Organization 2.	Network of 15 stores ranging in size from 35 to 800 m^2. Average store size: 150 m^2. All the shops are in the network's own stores, without franchising option. Average number of employees in the organization is 200 employees. Legal form: cooperative.
Organization 3.	A network of 9 food retailers ranging in size from 80 to 850 m^2. Average store size is approximately 300 m^2. In large stores about 17,000 indexes of products are sold while in a small ones there are about 5000 index of products. All the shops are in the network's own stores, without franchising option. The network employs about 190 employees. Legal form: a partnership.

Source: own research.

Results of the researches

Scenario of the interview on the fulfillment of health and hygiene requirements for Polish grocery chains has been divided into three groups of questions relating to the following areas:

- GMP/GHP requirements for employees of grocery stores,
- Cleaning and programs for DDD (Disinfection, Disinfestations, Deratisation),
- Evaluation of supervision by the inspection bodies – SSI (State Sanitary Inspection).

In the area of GMP/GHP requirements [Nowicki, Sikora 2012a, pp. 723–734; Kafel, Nowicki 2010] for employees of grocery stores networks, management representatives were asked whether employees comply with the following requirements:

- before start to wash itself,

- to wear white or light colors clean protective clothes, including headgear and footwear, clothes should always be clean and undamaged, and completely cover the employee's personal clothes and hair,
- any cuts and abrasions must be covered with a waterproof bandage,
- to follow hygiene and cleanliness rules during work particularly of hands, to have a short cut and not painted nails,
- not to use pins or safety pins for fastening clothes,
- not to carry breakable or sharp objects in the pockets,
- to remove for working hours such decorations / jewellery as rings, brooches, necklaces, clips,
- before entering the restroom and exit out of the store area and trading places, remove protective clothing,
- wash hands with soap and a brush under running clean water after using the toilet and every time after going outside, after every "dirty" activities and any other time when it is appropriate,
- immediately notify the supervisor of an infectious disease, or the suspicion of infectious disease at home, with purulent skin diseases, throat or diarrhea,
- to have a disposable gloves and protective masks, as long as it is necessary to use them,
- to take care of cleanliness at its workstation, following in this regard the applicable instructions,
- Do not consume any food in the store areas.
- Do not use personal cosmetics with very intense smell.

Representatives of tested networks in accordance replied that all of the above requirements are scrupulously adhered by employees. Only in the case of the requirement for washing before beginning of work, the representatives indicated that there are cases when employees fail to comply with this requirement, explaining it by the lack of time for that. Requirement for disposal of jewelry for working hours, such as rings, brooches and clips in the network No.1 is strictly followed at the stands with fresh meat products and cheese where there is a high risk of falling off the above items into food. In the case of other employees working in this grocery store network, no longer enforces the observance of this requirement, due to the fact that products are packaged individually and are not affected by this threat. In turn, in case of network No. 3 this obligation applies to all employees of shops. The exception is wearing of wedding rings, where there has been conducted a risk analysis, that indicated low risk arising from such behavior and at the same time major problems with enforcing the employees to fulfill this requirement. For the network No. 2, there is an absolute obligation to remove the jewelry, because of the rotation system of work in the stores, where workers during a shift perform a variety of duties.

Additionally representatives were asked if they carry out the verification of GHP requirements at level of network's headquarters. In all networks such controls are conducted. In a network No. 1, two operations managers are employed and they are responsible for the overall control of the stores as well as they check realization of these requirements. Such control is carried out at least once a month. The result of this control is immediate reaction to the particular problems and non-compliances, while in the case of cyclic repetition of non-compliance, employees are punished for non-payment of bonuses for example. A similar solution was used in the network No. 2, where there was hired an external company conducting an average of two times a month checks in stores. The networks No. 3 controls are conducted daily by ad hoc method by the store manager and monthly by management representative, where he makes an unannounced visit during which he verifies the daily work and organization of the store.

In the area of cleaning and DDD programs, representatives of the enterprises has been given a set of questions designed to present how surveyed companies operate in this area. To the question about compliance in regard to separation of clean and dirty zones and how to comply with this requirements, for networks No. 2 and No. 3 this requirement is one of the subject of a documentation and is strictly adhered by employees by changing protective clothes and strict hand washing. While in the case of network No. 1, alike in the other networks, this requirement is properly described and there has been documented obligation to comply with it, but it happens that employees do not always correctly recognize the clean and dirty areas, and they are not made aware during the trainings that such action is very important and mandatory. Another question posed in this area was the question of carrying out checks of cleaning and disinfection operations from the headquarters level of network. For a network No. 1 controls are performed at a single store and headquarters do not monitor it. However, in networks No. 2 and No. 3 inspection is carried out at headquarters level but controls/audits are carried out by external companies that report the results to the network's headquarters. The network representatives were also asked about the existence of common and standardized procedures for cleaning and disinfection operations within the network. In networks No. 1 and No. 3 procedures are the same in all stores and the requirements for their implementation were consolidated at the central level. In the network No. 2 procedures and instructions are common, but forms have been developed individually for each store. This was due to large variations in the stores, and the number of employees and functional layout. So, designing individual forms made controls easier and faster for external company, because auditor automatically knew whether all planned actions

had been carried out correctly and in a timely manner. In the case of DDD programs application in all tested companies requirements in this regard are complied with. In all analyzed networks, taking care of realization of these requirements were entrusted to external companies which have signed contract with the headquarters and based on that they control individual stores. The exception in this case is the network No. 2, whose stores are in various locations (different districts and provinces). Stores located in the county other than the head office are the new locations and there have not been carried out DDD treatments yet by cooperating with the network company, because as they explained, the buildings in which they are located are new. As the representative of the management assured, if necessary, DDD company will also perform treatments in these locations.

The last area about which the representatives of the tested network were asked, was to evaluate the supervision by the inspection bodies. One of the questions that they were asked during the interview was, whether all stores in the network are subject to supervision of the same unit of the State Sanitary Inspection, and whether there are differences in the approach to control by inspection body, depending on the region (county, state) within the same network. In networks No. 1 and No. 3 individual stores are subject to various units of the State Sanitary Inspection and from information provided by the representatives of the companies, the level of control and details of its performance varies depending on the region. In the opinion of the representatives of the enterprises, audits conducted by the State Sanitary Inspection, despite supervising regulations are the same across the country, vary and are not carried out according to a standardized model that exists and each individual SSI unit has access to it, but to a great extent depends on the person who performed the inspection, which unfortunately is not correct and is not in accordance with accepted principles. On the other hand shops belonging to the network No. 2 are subject to the same institution the State Sanitary Inspection and representatives did not notice significant differences in the controls. Further questions in this area were about the analysis of the results of the State Sanitary Inspection's control and the manner of performing of this analysis. In all examined organizations, the analysis is conducted at headquarters level and in the case where there were some non-compliances, their consequences were analyzed by persons seconded from headquarters, who were supposed to make corrective actions and provide information on the causes of those non-compliances. When employees turned out to be guilty, they were directly penalized. Additional information received from representatives of subjected networks was fact, that headquarters provides information about audits conducted by State Sanitary Inspection and eventual non-compliances at one location to the others in order to raise the security of their food products.

Conclusions

1. The unannounced inspections of individual shops are conducted regularly and they significantly increase the safety of offered food.
2. GHP verification at networks headquarters' level has a significant impact on the safety of food offered as well as on the knowledge and behavior of employees.
3. The fulfillment of the GMP/GHP requirements by the employees of surveyed grocery chains is performed on a high level.
4. The solutions used for the fulfillment of the GMP/GHP requirements by employees in grocery stores networks have a wide variety of approaches to meet them.
5. Fulfillment of DDD programs in all tested networks is done by outside companies, hired to properly take care of an appropriate level of security.
6. The information obtained from company representatives about control level and details of its process by the State Sanitary Inspection varies from region to region and from the person who carries out the inspection.
7. There is a good system for transferring information about the results of the analysis of the State Sanitary Inspection controls between the headquarters and individual locations.

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Przedsiębiorczość i Zarządzanie
Wydawnictwo SAN – ISSN 1733-2486
Tom XIV, Zeszyt 7, ss. 113–128

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The use of multi-level evaluation approach in research projects undertaken within strategic research programmes

Abstract: Evaluation of new technology solutions developed in strategic research programmes is one of the most important aspects ensuring competitiveness of modern knowledge based economies. The review presents a complex evaluation system, with two dimensions (formal and factual ones) taken into consideration by the authors, which enables the conduction of evaluation of research projects, in order to ensure their correct completion. The evaluation system was developed on the basis of the analysis of empirical case studies of research projects undertaken within strategic research programmes after a thorough examination of the aspects considered in the evaluation process, focusing particularly on the possibilities of introducing changes in the projects. The system is being implemented in the currently realised strategic research programme *"Innovative Systems of Technical Support for Sustainable Development of Economy"*, coordinated by the Institute for Sustainable Technologies – National Research Institute from Poland.

Key-words: evaluation, strategic research programme, multi-level approach, methodology.

1. Introduction

The issue of evaluation is increasingly important to the founders of strategic research programmes[1], who want to be informed what happens with the funds

1. A strategic research programme is defined here as a multi-objective, high-budgeted and long-term scientific research programme, coming from the science and innovation policy of a country that has a multi-level structure and is characterised by the hierarchisation of

allocated to such programmes. Moreover, in order to develop a knowledge based economy, it is very important that the outcomes of these programmes are innovative and competitive for the market [Scriven 1994; Weston 2004; Chang et al. 2010].

However, what to do when there are obstacles on the way to the development of the already planned results? Should the tasks undertaken in strategic research programmes be continued or given up? And what is the role of the multi-level evaluation of research projects undertaken within strategic research programmes in such situations?

However, the changes are difficult to be introduced into practice, because the institutions do not want to admit that research projects should sometimes be eliminated [Quillen 2011]. The literature shows that the executors of the programmes prefer continuing the realisation of the projects which do not bring any values [Kandel et al. 2004; Bannier 2005] and to finish them correctly, but only from the formal point of view. This is the problem of the mentality of the society in which people believe that a negative evaluation means something bad [Pullen-Seufert et al, 2008; Karakashian et al. 2006]. They do not want to convince themselves that the negative evaluation can also bring positive aspects, like for example in the case of the rejection of the projects which no more are of interest to the surrounding, the transfer of funds towards other, more prospective tasks.

The article reports the results of a systematic review of empirical literature on how evaluation of research projects undertaken in strategic research programmes is conducted, especially focusing on the retention of multi-level structure of evaluation. The purpose is to examine if the evaluation process is conducted only from a formal point of view (single-level evaluation) or if it also considers the needs of the market and the directions of national strategic documents and foresight projects (multi-level evaluation). Then the author presents the actions possible to be undertaken, which are necessary for efficient and effective decision-making.

2. Methodology

Sustainability and marketability of innovative products are very important aspects for the realisation of strategic research programmes, as the market potential of results developed within them decides on the general success of the programme. Therefore, different characteristics of the products, among others, economic, technological, social, organisational and legal, must be precisely evaluated. The author's multi-level evaluation approach presented contains two

the research projects. The aim of the strategic research programme is to increase the competitiveness of the national economy through the development of innovative products and services and the realisation of research activities contributing to the solutions of scientific, technical, educational and social problems

types of evaluation: formal (1st step of evaluation) and factual evaluation (2nd step of evaluation). The author is going to prove that these two steps should be conducted in order for the results of the research projects to be fully achieved.

The author defined *the formal evaluation* as the investigation of the project with regard to the relevance of its objectives and results with the assumptions designed before the start of the project, the correct allocation of funds and the methods of the project management. *The factual evaluation* – enables to verify the project from a wider perspective with reference to the national strategic policy and current needs of the market. It also enables to indicate if the products are original, how high the levels of the implementation maturity and the commercial potential are, and what happens with the products after the termination of the research projects. To sum up, the formal evaluation mostly aims at examining the aspects of the efficiency and the cost-effectiveness of the research project, whereas the factual evaluation aims at verifying the aspects of the relevance, the novelty, the impact and the sustainability of the project. These two types of evaluation comprise different sets of evaluation criteria. Based on the literature analysis [Daigneault et al. 2009; Stufflebeam 2009; Linquiti 2012] and the formulation of definitions of formal and factual evaluations by the author, the criteria have been matched with the evaluation types. The proposed evaluation criteria to be used in formal and factual evaluations at all stages of the realisation of the research projects are presented in Table 1.

Table 1. Evaluation criteria indicated for multi-level evaluation approach

Evaluation criterion	Description
Formal evaluation	
Efficiency	Assessment if the objectives of the project are achieved and the planned results obtained (subject-matter efficiency). Analysis of project management strategies (management efficiency).
Cost-effectiveness	Verification of the correctness of fund spending in the project.
Factual evaluation	
Relevance	Indication if the objectives of the research project are relevant to the directions from national and sectoral strategic documents and foresight projects.
Novelty	Assessment of the originality of the results.
Impact	Assessment of the conformity of the objectives of the project with the needs of the surrounding and the opportunities of the implementation of the solutions to the economy. Especially the level of the commercial potential is taken into consideration.
Sustainability	Analysis of the opportunities of the usage of the results developed in the research project after its termination and the utility of the results in mid- and long-term perspectives.

Source: authors.

The author identified the evaluation approach used in several strategic research programmes, based on the following research methods:

- case studies – for the selection of strategic research programmes;
- document analysis – in order to gather information on the evaluation approach of research projects undertaken in strategic programmes previously identified. The information was mainly gathered from the evaluation reports;
- comparative analysis – in order to compare the evaluation approaches in these projects and to check if the multi-level structure of evaluation of research projects was retained.

The criteria of the selection of strategic research programmes were the following:

- the strategic character of a programme;
- the content of the programme concerning the design of the technical innovations;
- the leading position of the institution coordinating the programme in national or international research system;
- availability of information on the evaluation process of research projects undertaken within a strategic research programme.

The usage of the aforementioned methods and criteria enabled the selection and an in-depth analysis of 15 case studies of the evaluation of strategic research programmes: Core Research for Evolutional Science & Technology – CREST [Japan Science and Technology Agency 2006]; Advanced Technology Program – ATP [Rezendes 1994]; Exploratory Research for Advanced Technology – ERATO [Gamota G. 1999]; Development of Innovative Systems of Manufacturing and Maintenance 2004–2008 – PW-004 [Mazurkiewicz 2006]; Hydrogen Early Adopters Program – h2EA (Performance Management Network, 2004); Hydraulic Turbine Research Programme [Avellan et al. 2002]; Finnish Nanoscience and Nanotechnology Programme – FinNano [Koponen et al. 2008]; Competence Centre Programme – CC [Arnold et al. 2008]; Premium Automotive Research and Development Programme – PARD [Henry et al. 2008]; PINTA – Clean Surface Technology Programme [TEKES 2006]; Voucher for Innovation [Polish Agency for Enterprise Development 2010] and Programme for Interdisciplinary Materials Research Consortia [Jakobsen et al. 2002]. Within these strategic research programmes, the author examined the following aspects:

- the criteria used in the evaluation process of the research projects within the programmes mentioned;
- the comparison of the evaluation criteria in different types of the evaluation *(ex-ante, on-going, mid-term, ex-post)*;
- the consideration of the single-level or multi-level evaluation approach;

- the connection and the dependence between the formal and the factual evaluations.

The author examined the evaluation approach with relation to more than 100 research projects undertaken in strategic research programmes.

3. Findings

The findings from the case studies reveal that the evaluation approach of research projects undertaken in analysed strategic research programmes is usually multi-level, however the precise division and the dependence between the formal and the factual evaluations were not observed (see Table 2).

Table 2. Diversification of the evaluation criteria taken into consideration – case studies examples

Programme (acronym)	Evaluation criteria					
	Formal evaluation		Factual evaluation			
	Efficiency	Cost-effectiveness	Novelty	Relevance	Impact	Sustainability
Ex-ante evaluation						
CREST		X	X	X	X	
ATP	X		X		X	
ERATO	X			X		
PW-004	X	X	X	X	X	
On-going evaluation						
h2EA	X	X		X	X	
Hydraulic...	X		X		X	
ERATO	X		X	X	X	
PW-004	X				X	
Mid-term evaluation						
FinNano	X		X	X	X	
CC	X		X		X	
PARD	X	X			X	
Ex-post evaluation						
PINTA	X	X		X	X	
Voucher...	X				X	X
Interdisciplinary...	X	X	X		X	X
PW-004			X	X	X	X

Source: authors.

Ex-ante evaluation. In the case studies analysed, the two-level approach is retained. The assessment starts with the strategic criteria (relevance, novelty, impact) and is followed by the formal criteria (efficiency, cost-effectiveness). The criteria of the factual assessment of the research projects mostly concerned the verification of the novelty (CREST, ATP, PW-004) and the relevance (CREST, ERATO, PW-004) of the planned results and their impact (CREST, ATP, ERATO, PW-004) on the potential beneficiaries (unfortunately, without the precise assessment of the commercial potential aspect), however the methods for the precise measurement of the novelty level of the results were not indicated. None of the studies considered the aspect of sustainability (even the potential one) of the results developed in the projects, even though there is a significant growth in the literature on the topic of what happens with the results once the projects are terminated [Pezzey 1992; Lodl 2002; Scheirer 2005; Savaya et al. 2008; Bazhanov 2011; Savaya 2012]. With regards to the criteria belonging to the formal evaluation, in most case studies the possibility to achieve the planned results (ATP, ERATO, PW-004) was examined, whereas the cost-effectiveness was evaluated only in two cases (CREST, PW-004).

Although the two-level approach of the evaluation process was retained, there was no connection and dependence between the criteria of two types of the evaluation. The criteria were examined one after another without the linkages between them taking into consideration.

On-going evaluation. The multi-level structure of the evaluation was retained, however the verification of the selected aspects was not systematised. During the realisation of the research projects, the evaluators mainly concentrated on the examination of the aspects of efficiency of tasks undertaken (h2EA, Hydraulic..., ERATO, PW-004) and the impact of the results on potential beneficiaries. The aspect of cost-effectiveness was taken into consideration only in one case (h2EA). The findings reveal that the aspect of efficiency of activities conducted is very important for the executors of strategic research programmes, however they do not evaluate the cost-effectiveness of tasks undertaken. The final positive result of the complex evaluation process did not depend on the fully positive result of the factual evaluation. What if the development of any product is not cost-effective at all? Do the executors decide to continue the tasks after all because they were planned before the start of the programme?

With regards to the criteria suitable for the factual evaluation, the relevance of the subject-matter of the projects with the strategic national documents was evaluated in two cases (h2EA, ERATO), whereas the relevance of the subject-matter of the research projects with the foresight programmes' results was not observed. Moreover, the assessment of sustainability was

again omitted. What is more, the impact of the projects on the economy was still important for the executors (h2EA, Hydraulic..., ERATO, PW-004). It was examined in all case studies.

Mid-term evaluation. The findings on the mid-term evaluation are almost the same as in the case of the on-going evaluation. The executors were interested in obtaining information on the level of the efficiency of tasks undertaken (FinNano, CC, PARD), the impact of the projects on the economy (FinNano, CC, PARD), the relevance of the subject of the projects with the national strategies (FinNano) and if the products are original in comparison with those that already exist on the market (FinNano, CC). However, there were no assessments on potential sustainability of the products.

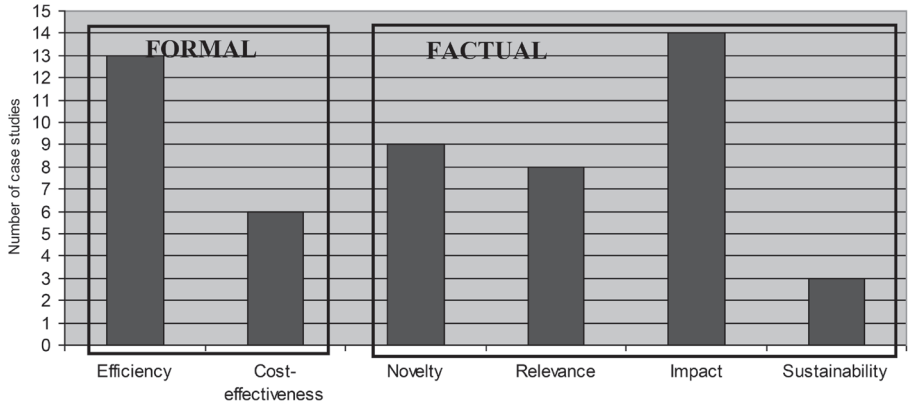
Ex-post evaluation. This kind of evaluation mostly concerned the verification of the aspects of efficiency of tasks, the impact of the projects on the economy (PINTA, Voucher..., Interdisciplinary..., PW-004) and the novelty of the results (Interdisciplinary..., PW-004). At last, the aspect of sustainability of the products was examined, whereas the financial aspects were not examined in any case.

4. Discussion

The usage of evaluation criteria that were examined in this study varied considerably. First of all, after having analysed the case studies, the author states that there is a lack of the precise division between two levels of evaluation (formal evaluation and factual evaluation stated above). There is a kind of disorder in the evaluation process due to the mixture of the evaluation criteria and the lack of the assessment of the important ones. There are some strategic research programmes (CREST, FinNano, Voucher...) in which the sequence in the evaluation is retained, starting from the criteria of the factual evaluation followed by the assessment of the aspects adequate for the formal evaluation. The reason of the lack of the sequence in the evaluation process can be the fact that there is no complex evaluation approach that would enable the assessment of all important aspects of the research projects undertaken within strategic research programmes, both for the beneficiaries and the executors. The authors propose to use a complex multi-level evaluation approach would help both the executors of the programmes and the founders as well. Thanks to the usage of such an approach, all indispensable criteria for the project assessment would be taken into consideration.

With regards to the case studies analysed, it turned out that the cost-effectiveness criterion was taken into account only in the 6 cases (out of 15) (see Figure 1).

Figure 1. The evaluation criteria identified in the case studies analysis

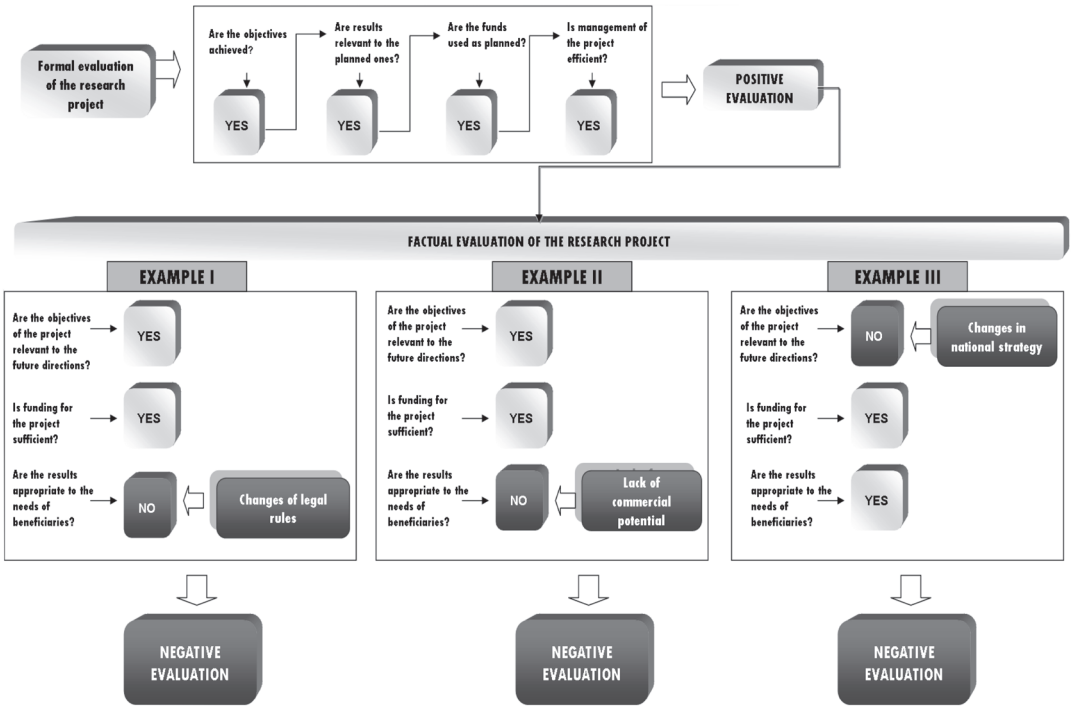


Source: authors.

The similar situation could be observed in the case of the sustainability criterion, which was analysed only in 3 cases only. This was taken into consideration only in the *ex-post* evaluation, whereas at the previous stages it should have been verified. The lack of the examination of the aspects mentioned, made it impossible to decide whether the projects were cost-effective and their products sustainable. The use of the proposed complex multi-level evaluation approach would not allow for omission of any of the necessary criteria.

Why is this multi-level evaluation approach again so essential? The very important aspect for the conduction of a multi-level evaluation of the project is that, although the formal evaluation is positive (which usually takes place), the factual evaluation can, however, be negative. The multi-level evaluation approach enables to assess not only the progress of the research project, but above all, the compatibility of the project results with the market and society needs (see Figure 2.).

Figure 2. Multi-level evaluation of the research project in strategic research programme



Source: authors.

Figure 2. presents three examples where the formal evaluation is positive, whereas the factual evaluation turns out to be negative. The first example of the negative factual evaluation of the project refers to the situation in which the lack of appropriateness of the project to the needs of beneficiaries is discovered. Despite the fact that, when the project was launched, its subject-matter was appropriate to the market needs, after some time the situation has changed, e.g. due to changes of legal rules. For instance, some years ago the asbestic tile was a very popular material for roofing which led to a growing demand for such a product. However, in the meantime, the legal rules came into effect and forbade the use of any structural materials containing asbestos, so that at this moment any research projects directed at the development or the usage of such materials do not have any practical application [Commission Directive 1999/77/EC; Kazan-Allen 2003; Marbbn 2009; Traill 2011]. The lapse

of time has a very significant meaning in the case of the realisation of strategic research programmes, as such programmes are long-term, e.g. in Japan the ERATO programme started in 1981 and it has lasted till now (Japan Science and Technology Agency, 2011). The long-terminality causes that the executors of research projects are "exposed" to changes of legal rules or changes of beneficiaries' interests.

The second example of the negative factual evaluation of the project refers to the lack of appropriateness of the results planned to be achieved in the project to the needs of beneficiaries, which stems from the fact that there is a lack of a commercial need for such results. Despite the fact that, when the strategic research programme was launched, there was a demand for such solutions, after some time in the realisation of the project, other, more innovative and economically attractive for beneficiaries solutions appeared on the market.

The third example refers to the situation in which the content of the research project is not relevant to the strategic directions of a country (e.g. due to political changes), so that there is a lack of perspectives for further development of the solutions. Changes in vocational education can be given as an example. Taking into consideration changes on the labour market some of the professions are crossed out, e.g. geophysicist technician or meteorologist technician. Those professions were of interest to students some years ago, but at this moment there is no demand for them anymore [Decree of the Ministry of National Education on the classification of professions in vocational education, 2011]. Instead, new professions are proposed to be taught, e.g. a technician for sterilisation of medical instruments.

By presenting these three examples, the author wants to prove that the multi-level evaluation approach enables to discover any anomalies in the realisation of the research projects undertaken within strategic research programmes.

The next aspect is what the executors of strategic research programmes should do if, after the conduction of the multi-level evaluation, they discover that the continuation of the research projects within a strategic research programme makes the practical application of the results impossible.

In the case of the lack of factual appropriateness of the project to the market needs, the strategic directions of a country or foresight directions, the author states that there is a strong need to introduce changes to the programme, however the literature review reveals that in most strategic research programmes transfer of funds is possible, but only in a very narrow scope – up to 15% of funds between research projects. Apart from that, it is possible to transfer funds between budget categories. In such situations, the executors of strategic research programmes treat, as a main criterion for the termination of the projects, the formal assessment of the allocation of funding complying

with the project application. The real implementation of a product in economy is the secondary aspect. Funds that have already been allocated to one research task cannot be changed, which means that the products that are no longer attractive for the beneficiaries are still being developed. The conduction of the multi-level evaluation enables to prevent the development of the ineffective products, without any commercial potential.

The proposed complex multi-level evaluation approach is currently applied in a Polish national strategic research programme "Innovative Systems of Technical Support for Sustainable Development of Economy" (budget of $20M), undertaken in 2010–2014 and coordinated by the Institute for Sustainable Technologies – National Research Institute (ITeE-PIB). The evaluation process covers 60 research projects in following thematic areas:

- systems of knowledge transformation, advanced technologies transfer and commercialisation of innovative solutions;
- advanced technologies supporting production and maintenance processes of technical objects;
- test apparatus and unique technical devices;
- systems and methods for the rationalisation of the use of the resources;
- systems of diagnosis and safe maintenance of technical objects.

It was assumed that the evaluation process is led according to the original evaluation approach presented in the paper: the conduction of the formal evaluation and the factual evaluation.

The first step is related to the formal verification of each project with the work efficiency and the cost-effectiveness criteria taken into consideration. This step is important for the executors of the project, who want to fulfill all financial and formal assumptions planned at the beginning phase of the project. The next step (factual evaluation) is the most important for the executors and the founders as it indicates if the content of the project still meets the needs of beneficiaries. The factual evaluation especially takes into consideration the assessment of the levels of: commercial potential, implementation maturity and innovativeness of the technical solutions [Łopacińska 2011]. These three important aspects are analysed with the use of special tools developed in the ITeE-PIB with the participation of authors. Based on the evaluation conducted with the formal and factual criteria taken into consideration, the last step of the evaluation process enables to indicate which of the projects are prospective or non-perspective based on the criteria used in formal and factual evaluations. Moreover, this step helps to make a decision, which further actions need to be done to ensure high quality of a programme through the elimination of "weak" projects and the focusing on "strong" ones.

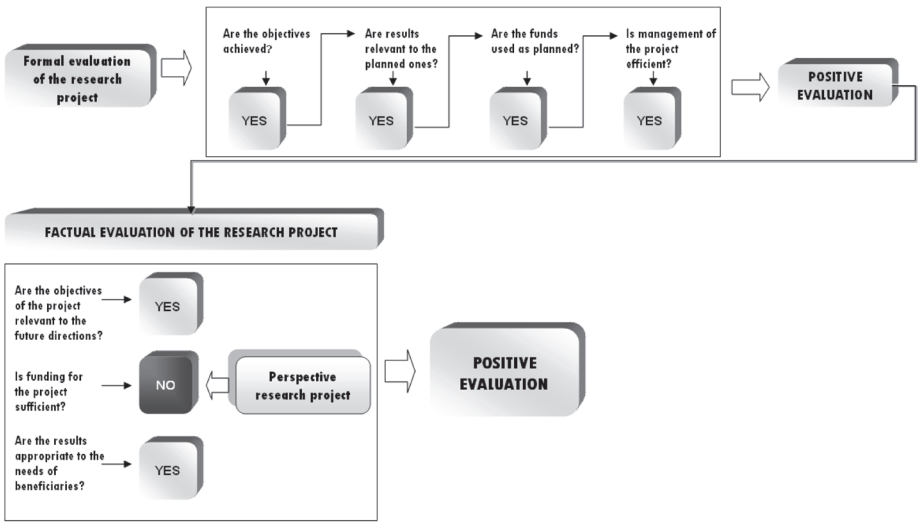
5. Recommendations and conclusions

This review has some important implications for several groups of stakeholders who are interested in effective funding and efficient realisation of strategic research programmes and decide to conduct the multi-level evaluation of the research projects.

For the executors several recommendations can be offered to increase the level of the realisation of strategic programmes:

- not to fear to claim that there is a strong need to introduce changes in the programme with regards to the factual aspects (when some research projects do not have any future);
- to continue the realisation of the research projects whose realisation does not fully comply with what was planned (see Figure 3), e.g. the results of the project are not relevant to the planned ones, which comes from the fact that the amount of funds indicated in the project application is not sufficient, but the project is realised correctly from a strategic point of view, e.g. the project aims at developing innovative and competitive technological solutions. In such a case, the author recommends to transfer to such projects parts of funds from other projects in which e.g. costs of the development of solutions are lower than it was assumed;

Figure 3. Positive factual evaluation of the research project in spite of the partial incorrectness of the realisation of the project



Source: authors.

- to examine current needs of the market with the commercial potential of the products [Łopacińska 2011], their level of implementation maturity [Mazurkiewicz et al. 2010], competitiveness and innovativeness taken into consideration;
- to use "good practices" and to avoid "bad practices" from the realisation of strategic research programmes to launch new programmes.
- Funding institutions which are interested in effective allocation of funds can increase their policy by doing the following:
- encouraging the executors of strategic research programmes to apply the multi-level evaluation approach towards the research projects in order to achieve most suitable results;
- enabling transfer of funds between research projects in strategic research programmes to ensure better final results;
- cutting down on financing of the negatively evaluated research projects and transferring their funds for the creation of more perspective research projects or the projects already realised, but with greater implementation probability;
- ensuring that the actual competitive products and not only the reports indicating that the tasks planned were realised are presented.
- The evaluation of the research projects undertaken in strategic research programmes should not be a simple summing of the results of the formal and factual evaluations. It is a kind of evaluation which verifies, above all, the real relevance of the projects with the needs of the surrounding and national policy, therefore it should lead to the conduction of a complex evaluation and, if necessary, to the introduction of indispensable changes in the programme, consisting for example in the elimination of research projects which do not bring scientific effects or financial support for the solutions expected on the market.

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Funding

This work was supported by the Institute for Sustainable Technologies – National Research Institute in Radom (Poland) within the 'Innovative Technical Support Systems for Sustainable Economic Development' Strategic Research Programme [grant number POIG.01.01.02-14-034/09-03].

Przedsiębiorczość i Zarządzanie
Wydawnictwo SAN – ISSN 1733-2486
Tom XIV, Zeszyt 7, ss. 129–138

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The identity and demarcation of management in family of social sciences

Abstract: The objectives of the paper is presentation of chosen problems of identity of management. The author tried to answer the question about demarcation of management from other social sciences. In conclusion author that management like most of the social sciences has blurred boundaries and demarcation from other social sciences cannot be very precise. Blurred boundaries of management science give rise to certain institutional problems, but are also a source of creative solutions. Thus, the author is in favour of the approach of a weak distinction, which allows us to examine problems that are also a subject of other disciplines, and to use methods and research perspectives drawn from different sciences.

Key-words: identity of management, management as a science, demarcation of management, boundaries of management.

Introduction

Scientific identity is one answer to the question of identification: what are the characteristics of our discipline, and who are we – researchers of organisation and management? Using the terminology drawn from our tool kit, we can ask a question about the mission of management science. As with any metaphor, using a term like 'mission' with reference to management emphasises certain threads, and conceals others. The mission of science is its cognitive and practical role. However, contrary to the organisational mission, the mission of science is not an intentional construction of individuals or social groups. Science is a collective work by researchers and recipients that de-

velops spontaneously as a part of social and cognitive processes in a historical time. Still, this does not change the key question about the significance of the given discipline [Sułkowski 2012].

The objectives of the paper is presentation of chosen problems of identity of management. The author tried to answer the question about demarcation of management from other social sciences. In conclusion author that management like most of the social sciences has blurred boundaries and demarcation from other social sciences cannot be very precise.

Orientations of management

The mission and identity of management science is not universal and timeless – it is a social construct which undergoes historical changes. The evolution of the mission and identity of our science has taken place in relation to other sciences. Management science, at different stages of its development, has used the ideas, scientific perspectives and methodologies of many other fields and disciplines. Examples include notions, concepts and methods borrowed from the natural sciences, technical sciences, economics and humanities. The oldest source of inspiration are the technical sciences [Martyniak 1996, p. 9]. In this current, organisation is presented materially and subject to optimisation processes through the management system. Objectivist and pragmatic points of view dominate, while the methodology is based on the processes of planning, monitoring and controlling. The representatives of this classical school of management are F.W. Taylor, H.L. Gantt and F. and L. Gilberth. Another area of influence on management science is related to economics. The economic perspective of an organisation and management suggests adopting the angle of entrepreneurship science, the classical version of which combines a limited rationalism approach, *homo oeconomicus* with a market orientation and a striving for the profitability of economic activities. The deductive perspective adopted from economics is combined with the preference for statistical methods. A. Marshall, J.O. McKinsey, E. Kosiol and W. Baumol can be considered representatives of this approach. It is hard not to notice the development of management science's fascination with the natural sciences. This influence resulted mainly from the assimilation of neopositivist and later systemic concepts. The push for monism in the sciences was manifested in the establishment of the ideal of objective, verifiable knowledge which is discovered with the use of scientific method. Neopositivist thinking did not create its own management school, although it had the key influence on engineering and economic currents, or even the sociological one. The systemic

school can be treated as a continuation of the neopositivist current, as it also adopts the assumptions of a scientific unity and the universal character of scientific methods. K.E. Boulding and R.L. Ackoff [Boulding 1956, Ackoff 1973] can be seen as the main representative of this approach. A new current, stemming from the natural sciences, or to be more precise, the Darwinian paradigm, is neoevolutionism in management, combining the perspective of behavioural economics with evolutionary psychology. The influence of the humanities included sociological and psychological thinking. According to the dominant view, an organisation and management are psychosocial processes of an inter-subjective character, which can be viewed from different cognitive perspectives with the use of numerous research methods. The representatives of this current of management science are M. Weber, E. Mayo, P. Selznic and M. Crozier (Table 1) [Weber 1946, Mayo 1933, Selznic 1957, Crozier 1967].

Table 1. The influence of other areas and fields on management science

Criterion	Technical sciences	Economics	Natural sciences	Humanities
Subject	An organisation – material perspective Management – a material and practical process	An organisation – symbolic perspective Management – an economic process	An organisation – material perspective Management – a material and information process	An organisation – functional perspective Management – a social process
Research point of view	Objectivism, pragmatism	Objectivism, verificationism, functionalism	Objectivism, verificationism	Intersubjectivism Functionalism or symbolic interactionism
Methodology	Inductive, methods of planning, monitoring and controlling	Deductive, statistical analysis methods	Inductive, paraexperimental methods, mathematisation of research	Inductive, deductive and constructivist methods of social research
Examples of problems	1. Optimisation of the work process 2. Implementation of technology	1. Market activity of an enterprise 2. Microeconomic understanding of an enterprise	1. Systemic image of an organisation 2. Evolutionary conditions of management and leadership	1. Social processes in organisations 2. Power in organisations
Examples of researchers	F.W. Taylor, H.L. Gantt, F. i L. Gilberth M.P. Follet	A. Marshall, J.O. McKinsey, E. Kosiol, W. Baumom	K.E. Boulding R.L. Ackoff	M. Weber, E. Mayo P. Selznic M. Crozier

Source: own work with the use of L.J. Krzyżanowski, *O podstawach kierowania organizacjami inaczej*, PWN, Warszawa 1999, pp. 107–109, M.J. Hatch, *Teoria organizacji*, PWN, Warszawa 2002, p. 22.

The most important argument for drawing inspiration and combining approaches from different sciences is in the striving for the integration of scientific problems and methods. The order of scientific areas, fields and disciplines is a kind of social and academic convention, while numerous research problems are located on the boundaries between different disciplines. Thus, epistemological and methodological inspirations drawn from other areas of science can lead to new scientific solutions, which are not visible from the perspective of a representative of one discipline. Such interdisciplinary inspirations include, for example, the issues of a systemic theory of organising or neoevolutionism in management.

Using the potential of other fields of science in management is a creative tool, as long as the criteria for reflectiveness and distance are adhered to. Reflectiveness means that the notions, concepts and methods transferred to our discipline are adopted to the specificity of management science [Weick 1999, pp. 797–806]. It is also important not to transfer them mechanically, or even worse, in an oversimplified way. What is important, is to understand the transferred perspective and methodology, which is usually related to the specificity of sciences other than management. This means that a number of notions cannot be used literally, but form a kind of metaphor, which should be treated with reserve. Researchers need to be aware of the metaphoric and limited character of the ways of getting to know an organisation and management. The belief that a scientific point of view and methods can be transferred literally and thoughtlessly to management leads to an exhausting of the possibilities of the given metaphor and cognitive perspective. The error of hypostasis has already been repeated a number of times in management science, for example in the approaches of systemic, engineering and cultural functionalism. Metaphors were treated literally as real descriptions of reality, and with time they became empty and one-sided. Only when they are treated figuratively and with reserve, reflexively and critically, as one possible point of view, can they be cognitively useful [Morgan 1997].

Demarcation of management science

The described influences of different areas, fields and disciplines on management science make up an image of interdisciplinary science that, in order to build its own identity, should identify the areas of its cognitive separateness from other disciplines. The problem of demarcation concerns the cognitive basis of all sciences, especially the social sciences. It can be interpreted as a question of marking out relatively clear and permanent boundaries between different sciences. In the case of management science, drawing borders is es-

pecially difficult and separates it from economics, sociology, social psychology and other scientific fields and disciplines, which results in numerous unsolved environmental discussions.

In view of the demarcation of management science, one can distinguish two contradictory approaches. The first is related to a call for total and clear separation from other sciences, and I would call this a strong distinction of management science. The second approach, defined as a position of weak distinction, is based on the assumption of inseparability of a number of issues concerning management science from other social sciences, the humanities or even technical sciences.

When attempting to reconstruct the way of thinking related to the demarcation of management science, one has to refer to arguments of ontological, epistemological, methodological and institutional characters. The ontological argument is the assumption that there is a level of organisational and managerial processes, which is by nature different from other spheres of the functioning of reality. It seems that the assumption may be right, at least at the current stage of science development, if we want to point to differences between the natural and social world. However, if we narrow the discussion to the area of social sciences, a problem arises. In the social sphere, we deal with reflexive subjects that shape reality. Communication, cooperation between people, exercising power and making decisions are a few examples of processes taking place in the social world, which are universal to the extent that they do not only fit one of the historically shaped social sciences. All these processes can be found in management science, as well as economics, sociology and anthropology. Thus, it is difficult to find an unambiguously ontological basis for distinguishing our science based on the nature of reality.

The argument of epistemological nature here is a statement of the fundamental separateness of management science from other sciences, from the point of view of the study subject. Similarly to ontology, it is easy to find the basic differences between the spheres of social and natural sciences in epistemology. Thus, social sciences differ from natural sciences in terms of the study subject and relations, the position and orientation of researchers and heuristics This demarcation is quite clear, but still a number of social researchers silently accept the cognitive ideals drawn from natural sciences. In the case of management science, this leads to the development of a scientific approach, which results in numerous contradictions. One of the problematic issues is diversifying the epistemological criteria between different social sciences, and the conclusion is that although one can point to certain differences of an epistemological nature, many social sciences still have common and mutually overlapping research fields.

It is difficult to find an unambiguous, crystallised study of management science which is fundamentally different from other sciences. Unfortunately, a trivial notion suggesting itself that the point is research on 'managerial processes' does not offer a disjunctive division of our discipline from other social sciences. According to the definition adopted for the English and Polish term 'management', it can be applied to both people and most types of organisations and social groups, so also countries, regions or political parties. Management, as already mentioned in the previous chapter, can be understood in a number of ways, including the process of making decisions, exercising power or the rationalisation of activities.

The methodological argument is looking for unique methods created within a given discipline and appropriate mostly from the point of view of its study subject and the research perspective used. However, according to A. K. Koźmiński, management science is characterised by 'methodological underdevelopment' [Koźmiński 2006]. It borrows and develops methods and techniques from other sciences but does not create its own, characteristic research method. Thus, it can be poly-methodological and interdisciplinary, but it is difficult to see a clear demarcation of the methods used in management science and other social sciences.

Finally, the institutional argument is the belief that management science is separate, as it has developed its own academic institutions that are a social reflection of the development level of a scientific discipline. Whilst it is true that numerous business schools have opened, resulting in a large number of students and graduates of management programmes, and that the growth of publications and development of teaching staff specialising in management is very rapid, if we try to look closer at the identity of both theoreticians and practitioners of management we can see that it is blurred. On the one hand, there is an inflow of specialists in different fields, who focus on the problems of management – usually on the borderline between different disciplines – while on the other, there is no social reproduction in the academic environment of management science, especially in Poland. Management specialists often hold degrees in economics, sociology, psychology or even philosophy, mathematics or anthropology, but not in management science. What is characteristic of this lack is the fact that the profession of a specialist in management science has no appropriate name, unlike in the case of specialists in other fields of study. We can find economists, sociologists, psychologists, philosophers or anthropologists, but there are no 'managerialists'. The practical aspect of this education which results in a manager, a businessman or an entrepreneurship is not the same as a scientist. A researcher specialising in management science would not use any of those terms. Also, the professional identity is softened by the per-

formance of different, often remote functions in organisations. Accountants, financial advisers, marketing specialists, PR specialists, personnel officers are only a few examples of professional groups coming from the management science, but being to a large extent separate in terms of identity.

Problems with the institutional definition of the boundaries of management science are also reflected in questions of scientific policy. In the Polish environment, there have been some famous disputes over acknowledging the degree of *doktor habilitowany* which, according to some members of the academic collective, does not belong to certain disciplines. However, it seems that all these institutional problems are only a consequence of an inherent feature of management science, which is the overlapping of its study subject, the methods used and the research perspective with other sciences. Thus, we are not able to reverse the problem and specify the subject and place of management science in the institutional sense, leaving blurred epistemological categories. This would entail impoverishing management science by leaving only its characteristic problems, such as those related solely to making rational managerial decisions in enterprises. The seemingly 'marginal' issues, which overlap with other sciences, would be rejected. However, in practice, there are many more marginal issues than those at the core, and it is on the boundary of scientific disciplines where creative solutions are located. So what can be done about the real, serious problems related to the institutional evaluation of the output of people and scientific units? It seems that the criterion for the quality of work should prevail over the criterion of disciplinary purity. An effective system of parametrisation of units and providing opportunities to perform interdisciplinary evaluation of scientific output, should contribute to the improvement of the scientific evaluation.

Table 2. Strong vs. weak distinctions of management science

Criterion	A strong distinction of management science	A weak distinction of management science
Ontological	The world of organisations and management is separate from the social and economic spheres	The world of organisation and managements is inseparably related to the social and economic spheres
Epistemological	Cognitive categories specific to organisations and management	Cognitive categories shared with other social sciences
Methodological	Methods characteristic of management science	Methods drawn from social sciences
Institutional	A strong academic and professional identity, clearly separate from other sciences	Interdisciplinary academic and professional identity, pointing to certain differences of management science, but issues and competences of management science also clearly overlapping with other social sciences

Source: own work.

From the point of view of arguments of a cognitive (ontological, epistemological and methodological) and institutional nature, it seems that the approach of a weak distinction of management science is more justified. It means that a number of significant problems are equally important from the point of view of other sciences, while the methodology and research perspective of management science is very interdisciplinary.

'Management' is a separate scientific discipline, having a specific subject, methods and institutional form. However, it is worth noting that, from the theoretical point of view, it is a discipline *in statu nascendi*. It can also be said that management, similarly to other social sciences, has 'blurred boundaries'. A designed area of management can have a more rigid demarcation from other sciences, but the examination of practice and theory reveals a much broader range of problems common to management and a number of other social sciences as well. This is why I propose understanding the area of management science in a liberal way, as a sphere of scientific, economic and social practices, dealt with by people considering themselves practitioners or theoreticians of management. Critical assessment of the output produced with the use of cognitive perspectives of different sciences seems to be more important than the marking out of strict boundaries.

Conclusions

In summary, the problem of demarcation in management can be solved by defining the specific character of the study subject, its partial disjunction from other disciplines and institutional unity, and the separateness of this science. Management science studies organise human activity, taking into consideration the socio-economic aspects. The core of management related to the world of organisation has been outlined, but the debatable part is its periphery, which is unavoidable in the case of any social science. The theory of organisation and management draws from a number of scientific fields, and its strength lies in its diversity [Masłyk-Musiał 2010, p. 15]. The sub-disciplines of management follow different directions. Some have engineering inspirations (production and quality management, logistics), others are related to economics (managerial accounting, operational research), and some to humanities (human resources management, organisational culture). Thus, management includes two (technical and economic or humanist) or even multiple areas of focus on the examined issues. Perhaps it is a permanent feature of the discipline, worth developing by moving towards epistemological pluralism. Management science is a field of the borderline and many tensions (f.ex. Be-

tween neopositivistic vs. alternatives paradigms) [Sułkowski 2004]. It combines problems, ideas, cognitive perspectives and methodologies of numerous sciences. It does not offer one, coherent image of an organisation and management as it used to be, but allows one to see the complexity and significance of issues undertaken by this science. It seems that an open approach to the epistemology of management makes it possible to use different, sometimes even contradictory or incommensurable ideas and concepts that enrich our knowledge about the word of organisation. Having a lodestar in the form of the core of management science, we should not narrow the discourse on the borderlines. Furthermore, it seems that there is often no epistemological answer to the question of whether a specific problem belongs to a given field or discipline of a social science. It is only a historically and culturally relative convention. Blurred boundaries of management science give rise to certain institutional problems, but are also a source of creative solutions. Thus, I am in favour of the approach of a weak distinction, which allows us to examine problems that are also a subject of other disciplines, and to use methods and research perspectives drawn from different sciences.

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Przedsiębiorczość i Zarządzanie
Wydawnictwo SAN – ISSN 1733-2486
Tom XIV, Zeszyt 7, ss. 139–159

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Logistic customer service in online sales of FMCG using the example of retail chains

Abstract: This article is dedicated to the increasing role and importance of online sales of fast-moving consumer goods (FMCG), and to a definition of the concepts of e-customer and e-consumer. The material demonstrates the logistic customer service processes in FMCG e-sales which affect satisfaction with the service and customer satisfaction in general. The present text contains a detailed analysis of the factors determining the proliferation of electronic distribution channels for fast-moving consumer goods. It presents the criteria and constituent processes determining the optimum level of logistic customer service in e-sales of FMCG. This is the background for an outline of the technical conditions which must be met for effective online sales in the case of fast-moving consumer goods.

Key-words: logistic customer service, FMCG e-commerce, e-customer, e-consumer.

Introduction

The 21st century is the age of information, the spreading use of information technology and online services, which define an organisation's functioning in the market space. At the end of 2012 there were around 2 billion people in the world using the internet. At the beginning of 2000 there were only 350,000. On average, 33% of people in the world have access to the internet. In Europe this figure is approximately 61%. In Poland it stands at around 62% [Królewski, Sala 2013, p. 33]. Of particular interest in market recognition terms is the field of online existence and activity in accordance with the info flow of companies and their customers.

Entrepreneurs operating on highly competitive markets aiming for constant development are forced to carefully observe and react to all events and processes which occur in a multi-dimensional space. This is significant in particular due to the fact that customers [Sułkowski 2012] are increasingly keen to take advantage of the opportunities provided by the internet not only in the field of communication, but more and more in purchase transactions. Contemporary access to information via the internet has thus resulted in the existence and expansion of commercial entities being more dependent than ever on the methods and forms of maintaining contact with customers.

Poland is seeing a very dynamic increase in revenue from e-commerce, as stresses by many reports from a variety of research sources. The eCommerce Index survey conducted by CubeRoot among online shops shows that in 2011 the value of the Polish e-commerce market increased by 32% to reach 18 bn PLN. Similar figures were found by the Forrester Research Centre for Retail Research, whose work indicated that Poland is in first place in Europe with regard to its e-commerce growth dynamic. European Online Retail Forecast: 2011 to 2016 forecasts an increase in sales in e-shops on Europe's 17 main markets from EUR96.706m in 2011 to EUR171m in 2016 [Królewski, Sala 2013, pp. 46–47].

Entrepreneurs are increasingly using the internet not merely to attract the attention of potentially interested customers, but mainly to gain the favour of actual buying customers to make them loyal partners in business rather than just parties or participants. In the case of businesses involved in sales, it is worth analysing the process of customer contact management carried out by retail chains operating mainly within the field of FMCG. The internet-based information and communication formula applied by them in the form of the e-shop represents the info trend of using modern technical and technological solutions. A particularly interesting aspect in this area is that these companies operating in the form of multi-form organisational structures as relevant to customer requirements adapt the solutions of logistic customer service.

The transaction processes in each phase require logistical process adapted according to the needs of customers. Proper logistic service as an element of a transaction plays an extremely important role in the process of managing customer loyalty.

The aim of the present article is to show how info solution-based logistic customer service supports online FMCG sales transaction processes, on the basis of retail chains.

It has become entirely natural for sellers to expand from the real into the virtual world. Functioning between the worlds is a response to the reported needs of the market and is in line with the „info" trend [Królewski, Sala 2013, pp. 32–52].

The retail chains present in Poland are also part of this trend. Before an analysis is presented of the info-based logistic customer service in online sales of FMCG based on retail chains, a review is presented below of terms connected with the contemporary customer / consumer, arising from the technical and technological transformations in the economy and the changes affecting commercial companies themselves as a result of the trends of adoption of information technology and online services.

The customer/consumer in the trend of new challenges

For the requirements of this article, definitions are presented for concepts enabling the nature of the considerations to be settled. Specifically, the differences between the terms customer and e-customer, consumer and e-consumer, are presented as these form the criteria basis for categorising individual actions in the customer service processes.

The literature on the subject includes many definitions of the word **customer**. This term can be categorised according to whether the subject is alive - living individuals (people), non-living (company institutions), It can also refer to a legal form, like the location, role and significance in the market exchange processes.[1] Particularly useful in the context of the present article is a classification of customers by degree of realness of the market on which the transactions they participate happen (the real or virtual market), which enables qualification of customers participating in real market transactions as well as those participating inn exchange processes on virtual markets. We define the latter as **e-customers**. The addition of „e" indicates that the customer makes the transactions in the virtual world [Kolasińska- Morawska 2012, p. 108].

Differentiating customers from e-customers allows businesses to set a reference point not only for the method of communicating with such a customer, but also a point for processing the transaction itself. This also means it is necessary to adapt the business to the environment in which the customer operates, in this case the virtual world. Existence in such a world means that the use of internet-based modern technical and technological solutions is becoming the norm in the operations of companies trading FMCG. These entities not only make use of the net as an information space by placing advertising, showcases and information pages there, but above all use the internet in the most interactive and transactional form – as an e-shop.

1. K. Mazurek- Łopacińska thus describes "the customer is a person or institution to who the seller addresses his offer, and who enters into a purchase/sale transaction of goods or services" [Mazurek-Łopacińska 2002, p. 204]. Meanwhile D. Kempny stresses that "a customer is a physical or legal person purchasing goods or a product intended for sale and becoming its owner after paying" [Kempny 2008, p. 15].

If we go a step further in the analysis of changes in the purchase/consumption process which affect the product which is the subject of the transaction process, in other words after the purchase stage, then we obtain the next stage of the process, which is connected with the use/consumption of the given product.

The word **consumption**[2] itself is a category classed as real processes (physical, material). Regulatory processes also take place in the field of consumption and individual acts of this, as mental operations connected with information, calculation and consumer decision making, although the material and physical aspects are dominant in the behaviour of subjects of consumption [Kieżel 2010, p. 11]. The subject of those consumer processes is the consumer.

A **consumer** is any person[3], who feels the need to consume or purchase (or to acquire a product in another way) and thus satisfies the need which is felt (consumes or uses the product). He participates in all three stages of the consumption process (cycle), namely the pre-purchase, purchase and post-purchase stages [Solomon, Bamossy, Askegaar 1999, p. 9].

An **e-consumer** is a physical person who displays and satisfies consumer needs with the aid of products (goods and services) bought on the internet [Jaciow, Wolny 2011, p. 10]. The distinguishing feature of the e-consumer is that this entity satisfies its needs thanks to products purchased on the internet or participation in the service provided [Szopiński 2012]. The coining of such a detailed term reflects the fundamental role played by the internet in the transaction and consumption process as both an instrument and a medium.

Consumer behaviour (also consumption behaviour) should be treated as one of the elements of general human behaviour [Jachnis 2007, pp. 21–22]. Consumer behaviour covers mental and physical actions (behaviour),combining them with motives and causes,of individuals and small groups, concerning orientation, purchase, use, keeping and disposing of a product (the consumption cycle) and household production (DIY), enabling the consumer to function and to realise his goals and materialise values, and thus achieve satisfaction and prosperity, taking into consideration short- and long-term effects and the individual and social consequences [Antonides, W.F. van Raaij 2003, p. 24]. It can thus be stated that a consumer's behaviour is the result of his relations with the surroundings in various aspects [Rudnicki 2012]. Its course is affected by a range of factors, including external ones in his surroundings and internal factors within the consumer himself.

The birth of the Internet sparked off a revolution in many areas of life. The world has become closer to people, within arm's reach and available at the click of a mouse. The internet has shifted the centre of gravity in the commercial and retail space, moving it away from companies and towards

2. The word **consumption** comes from the Latin consumo, consumptio meaning to eat or use up.
3. In Polish literature the term "consumer" is usually used to refer to an individual.

consumers. Now it is the consumer who is the nucleus of commerce, with e-entities orbiting around him. Easy access to information and comparability and transparency of offers mean that the consumer willingly makes use of the tools available to him and can choose those which best satisfy his needs [Cichoń et al 2013, p. 373]. An analysis of online activity shows that in 2011 there were 17 million internet users in Poland, amounting to 55% of people over 15 years of age. In 2012 the number of e-shoppers, those Internet users who buy online, stood at15 million people[4].

The „info" trend along with the adoption of the information technology, telephones and globalisation of the market have revolutionised the sphere of consumption, giving birth to the e-consumer. E-consumers' acquisitive behaviour results in decisions in the field of distribution processes of the representation of sales units which can function in multi-dimensional sales space in both the physical and virtual worlds. Retail chains in the FMCG branch form a representation of the transformation processes interweaving with the virtualisation of actions in the preparation of offers as well logistic customer service of e-consumers.

Online sales transactions

The information age has meant that more and more often the distribution of goods and services is not only supported by modern IT solutions, but the entire process is based on digital technology [Kolasińska-Morawska 2012, p. 108]. The value of retail sales in Poland is estimated by PMR at 17.9bn PLN and is increasing by between 10 and 20% annually. By 2014 e-trade in our country is set to reach a level of 26.6bn PLN [Mazurkiewicz 2012]. The process of purchasing everyday goods using the internet is a phenomenon which is becoming increasingly popular due to the savings in time and costs for both the shops and their customers. In 2012, Poles spent over EUR5bn on online shopping. The Polish e-commerce market is considered one of the fastest developing in Europe [Sułkowski, Morawski 2012].

Table 1. Online shopping in Poland (%)

Year	Population shopping online
2005	7
2006	12
2007	16
2008	18

4. Information based on the Geminus report 2012, Net Track report 2012.

2009	23
2010	28
2011	33
2012	39

Source: Poland – Broadband Market Insights 2013, p. 6.

Operating in the virtual world is nowadays becoming something obvious. The lack of territorial, temporal and communication limitations means that the customer is no longer required to be physically present at the retail premises for the transaction process to succeed. The e-consumer can shop from practically anywhere. All that matters is internet access. The shopping form can include buying from auction platforms such as www.allegro.pl, shopping groups and online shops [E-nnovation Programme Committee Report 2012]. In the case of online shops, this can include those which function exclusively on the internet, as well as those which treat their functioning in the virtual world as an extension of the market depending on the business model adopted [Kaznowski 2007, p. 54]. The latter type of business, the mixed Clicks and Mortar model, is represented by retail companies offering FMCG. According to a survey conducted in 2011 by Millward Brown SMG/KRC, the share of e-grocers in Poland's food sales stood at 0.1-0.2 %. Over the next 5–6 years, this share is forecast to rise to 1.5%, with its value exceeding 1.5bn zł per year.

Among the market players operating in Poland beyond the basic real world form as e-shops are the chains E.Leclerc (Hipernet24.pl), Piotr i Paweł (e-piotrpawel.pl), Alma (alma24.pl), and Auchan (AuchanDirect.pl). In 2012 this group was joined by Tesco, which opened its first online shop for e-sales.

Tesco's e-shop service is currently available in all the largest cities in Poland, reaching 20% of the country. The customer/e-consumer begins the purchase process the moment he enters the shop's website www.tesco.pl. On entering the purchase section he logs onto the virtual shop (email, password). The customer can place an order using stationary or mobile devices via the page www.tesco.pl/ezakupy. The virtual shop stocks nearly 18,000 different items at the same prices as in the physical shop. The range on offer includes fresh items such as bread, fruit, vegetables and cold meats, as well as household products, drinks, household chemicals and care products and many more. Each product selected is stored in a virtual basket. After selecting the products, the customer's next step in the order process is to specify the type and time of delivery or collection of the order, and the payment method. After placing the order, all that remains is to wait for the chosen products to arrive.

Logistic customer service

Due to the para-personal contact with the seller, the transaction process in the virtual world necessitates efficiency in the fields of communication, payment, processing orders and the technical modality of the IT systems adapted to the needs and behaviour of e-customers.

Satisfying communication, making reference to the emotions which accompany shopping, is treated as a base qualifier requiring the creation of a user friendly website containing full information on the offer, genuine use of communicators, emails, order forms, autoresponders, text gateways and live chat. Such varied forms of contact result in the customer beginning to treat them as natural forms of communication with the seller. The remaining elements of the transaction, including the service provider in the transaction require effective action in the field of logistics.

The process of online sales services involves the following actions in the logistics sphere - accepting orders, contacts and information service, internal servicing of the order, preparation and issue of the ordered product, delivery of the product, servicing of payment and returning or refunding taking into consideration the packaging.

In customer service, meanwhile, the company takes into account a range of elements which support the key product or service, and the customer considers the entire offer and its value when making a decision [Pawłowska, Witkowska, Nieżurawski 2010]. To ensure customers a high level of service, the key role of logistics in the process of delivering orders should be kept in mind. It is the customers and their increasing demands which make a company improve its logistics systems. In times of enormous competition, when many organisations are offering products of comparable quality at similar prices, and promoting them in similar ways, one thing which can clearly and permanently differentiate an offer from the competition is perfectly organised customer service. This is something which could become a marketing weapon, attracting customers to a given company and its products.

Customer service is a resultant of the functioning of the entire logistics system. If this system works efficiently, and the service offered along with the product meets customers' expectations, then they are happy, and those who are most satisfied are more likely to make use of the company's offer again. This demonstrates a certain simple truth. Namely, sales increase because of buyers, and successful companies are those which have the most customers and can retain them.

Logistic service standards here mainly include access to the product from supplies, operational capability to ensure access to the product, per-

fectly processed orders, post-sales standards and service policy according to accepted standards. Normalisation of individual elements of customer service during the transaction process should be quantitative in nature, reflect the actual needs of the customer and be formulated in such a way that the entire process can be modified easily.

The logistics of shops operating in the virtual world is thus fixed in management in the areas of storing, packing and transporting packages. These three fields affect the customer service process. All it takes is for one of these areas to be lacking and this affects the customer's choice of shop, the course of the transaction itself, relations with the surroundings and all these together affect the shop's image.

In the case of online retailers, stock management may take on one of the following forms: classic warehousing with supplies of stock or just-in-time, with the product composed at the moment the order is placed, then reaching the shop and finally the customer. The dropshipping formula as a symbiotic cooperation with suppliers (providing products directly to the consumers) or fulfilment (where specialised external companies are used to take on the basic warehousing functions from the shop) are rarely used.

Preparation of the deliveries is the second fundamental area in the logistical servicing of a transaction. Actions carried out in this field mainly concern packing of deliveries in such a way as to take into consideration the physical and chemical properties of the goods, transport conditions especially stacking in vehicles which could contribute to damage to the transport packaging and including information about the goods being carried on the packaging. Proper packing affects the efficiency of the delivery, as the package which reaches the customer should not bear any signs of damage.

The transport of goods in the form of parcels is the last area of logistic customer service. Deliveries can be made by retail institutions using their own transport fleets, supervised transport fleets or, most commonly, using courier firms. An important aspect in the completion of these actions is the use of electronic tools for planning routes, adapting vehicles for the goods transported, and the use of operational capabilities in the field of making deliveries including the product transport time (the time passing from the moment when a delivery is placed on the vehicle to the moment it is delivered to its target and unloaded) and the time of delivery of an order to the customer (transport time until the unloaded goods are delivered from their destination when they are to be taken to the customer's door).

And referring here to the Tesco chain as a representative of the chains offering FMCG, the processes of logistic customer service involve all the components of the transaction process. So finalisation of the elec-

tronic order covers the final step connected with the typology of the order collection process. The customer can choose to have the delivery made to an indicated address, or to collect it personally.

The order placed online is sent to the order zone where employees of the shop dedicated to servicing orders move amongst the shelves collecting products according to the customer's order list. Each product which is placed in the appropriate bucket in the order basket is recorded by the system. The packed order is thus ready for collection. In the case of deliveries to the collection point, a dedicated transport fleet delivers the orders between 10am and 10pm every day of the week. The time window of the delivery is decided by the customer when placing the order. The customer pays for the purchases online when placing the order (by payment card or e-transfer) or by payment card on collection using the mobile terminal which the courier always has with him. The cost of delivering the goods, depending on the time and place of delivery, varies from 98 grosze to 9.98 zł.

When the customer decides to collect the order in person, he selects the „Order and Collect" option. This form is intended firstly to give the customer a feeling of comfort and convenience when shopping without entering an actual shop, but also helps eliminate costs. The customer can collect the purchases ordered the day after the order is placed, within a previously selected two hour time frame at a selected shop. To make the collection process more efficient, special parking areas are marked out at the shops, where staff load the products into the customer's car. Collection of the purchases takes no more than about 5 minutes.

The procedure of online sales is conducive to the automation of processes relating to the transaction - in electronic payment, delivery option forms, warehouse stock management, creation of dispatch labels, email communication and automation of commentaries, an example of which is the Tesco e-shop, in line with the trend towards efficiency management in distribution systems [Frankowska, Jedliński 2011]. The advantages to be reaped from process automation are here synchronised with the standardisation of customer service processes.

Summary

Technical and technological progress [Grossmann, Helpman 1995; Wakelin 1997] in the 21st century is also visible in the activities of retail chains. Taking advantage of technical progress in using the internet in the formula of e-shop operations is reflected in innovative solutions in the field of logistic customer

service. Here technologies based on IT systems[5] support both the process of communicating with the customer and streamlining the process of product circulation. The analysis conducted into the use of e-sales of FMCG indicates that electronic distribution channels will increase in importance compared to traditional channels. The advantages and convenience for e-customers resulting from online sales, combined with a high level of logistic customer service, means that electronic channels in FMCG will dominate in years to come.

5. IT is defined as acquisition, storage and presentation and transmission in all possible forms, in other words using a combination of computer hardware, software and microelectronics and telecommunications [Lukas 1998, p. 18].

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Przedsiębiorczość i Zarządzanie
Wydawnictwo SAN – ISSN 1733-2486
Tom XIV, Zeszyt 7, ss. 151–160

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E-Logistics tools in distribution channels

Abstract: This article is presents the increasing role and importance of information and communication technologies (ICT) in logistics management and management of distribution channels. Starting from definition of e-Logistics through presentation of new way how IT systems are used by logistics companies (cloud computing model) author try to emphasize how
e-Logistics affects the competitive advantage of logistics companies. The material also demonstrates how properly used modern on-line logistics tools and Internet can increase level of customer service and overall customer satisfaction. The presented text contains description of common e-Logistics tools as electronic platforms, repositories and data warehouses that help participants of distribution channels to effectively organize their processes. As good example of e-Logistics system Electronic Logistics Platform (EPL) invented and developed by Institute of Logistics and Warehousing is presented in this article.

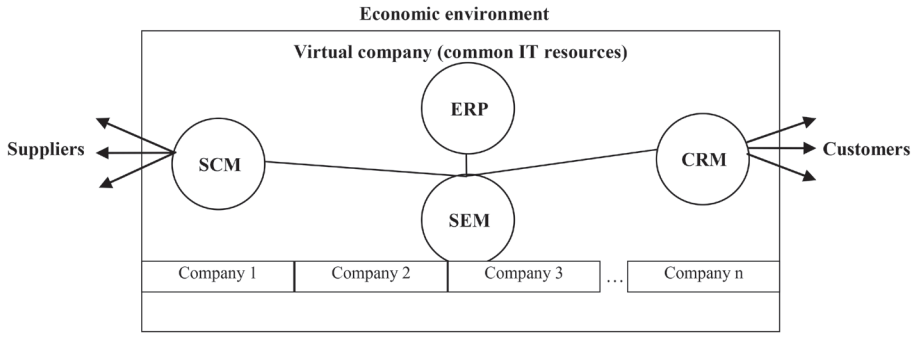
Key-words: E-Logistics, virtualization, distribution, ICT in logistics, cloud computing.

Today's logistics management, customer service in logistics and distribution channels management base on virtualization and usage of modern information and communication solutions with particular emphasis on the Internet. The primary objective of this paper is to identify and describe the relationship between the availability of information and communication technologies (ICT) and logistics management virtualization within distribution channels and customer service for logistics companies. Virtualization can be treated as effective way of doing business and the usage of networks and computer systems for this purpose [Sułkowski, Morawski 2012]. Virtualization creates the possibility of the existence and operation at any time and place by which an organization can, by electronic means of communication and multimedia systems, at any location present their products and provide services [Knosala 2002, p. 78].

In such case organizational processes are geared to meet the needs of virtual. To enable the organization to create such values it must move from the physical value chain to so-called virtual value chain [Perechuda 1998]. As part of the process approach is also a perception of virtual organization by some authors as the creative use of information technology, especially as an organization conducting business using the Internet. Nowadays information technology began to be treated rather as a necessary tool but not the essence of such an organization [Brzozowski 2010, p. 40].

This article also presents a computer model of the directions for development of logistics companies in the area of customer service with particular emphasis on the use of innovative technology as cloud computing. In particular SaaS model (Software as a Service). Key role in the virtualization of logistics plays information technology (systems, applications) and Internet. All these on-line tools are commonly called e-Logistics. It is assumed that e-Logistics involves the use of ICT (Information and Communication Technology) systems and tools and the Internet as the main medium of communication to support logistics processes. It involves the coordination and integration of logistics activities via Internet. In such approach between the links of supply chain only information about the product is transmitted: where, in what quantity and when it is needed. Information about the status of the order is available on the Internet which brings significant savings. For example by eliminating the need for telephone service customer queries and at the same time raises the level of the customer service process due to the fact that the information is available immediately at the time and place that is convenient for the customer.

Figure 1. IT systems and tools used in virtual company

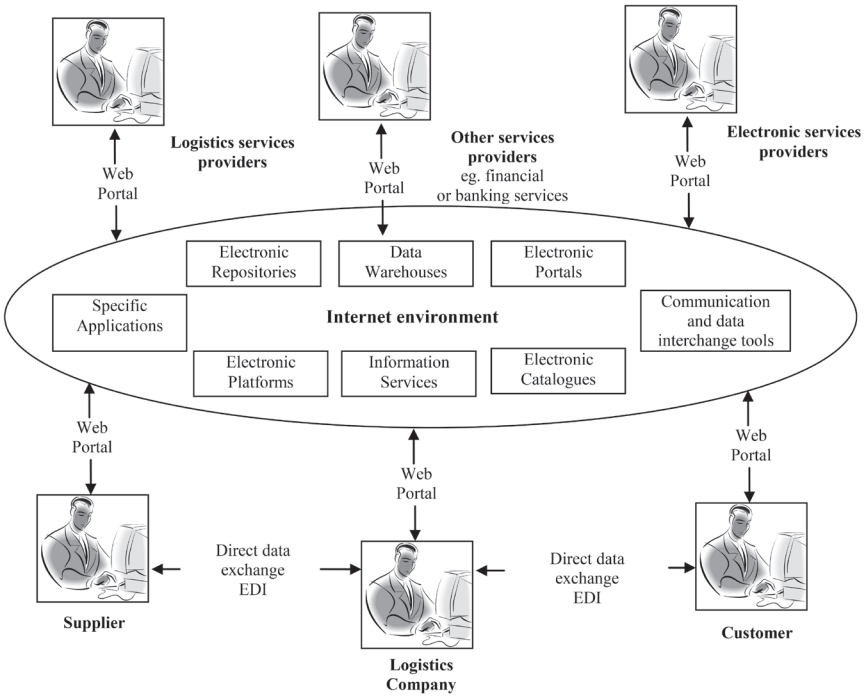


Source: P. Sadza, *Wpływ technologii informatycznych na strategię konkurencyjną przedsiębiorstwa,* Wyd. SGH, Warszawa 2001.

With advanced IT solutions in the field of electronic data exchange, information on the status of execution of the order can be automatically sent to the customer and presented in the form of information in the system. The process of e-Logistics can be handled by traditional logistics companies and the leading logistics operators known as 4PL. The most commonly used collaborative tools in virtual space of e-Logistics include:

- web portals and electronic platform (website),
- electronic catalogues and repositories,
- data warehouses and information services,
- quote, transactional and purchasing systems,
- systems and communication tools,
- systems and software, eg. applications for planning supply chains, dictionaries, digital maps, e-Learning systems, online banking systems.

Figure 2. Complex functional environment and tools of e-Logistics



Source: D. Kisperska-Moroń, S. Krzyżniak, *Logistyka,* Biblioteka Logistyka, Poznań 2009, p. 423.

The constant pursuit of logistics companies to achieve a competitive advantage, high level of customer service and continuous improvement of financial performance and operational efficiency results in dynamic growth

of interest in electronic tools for e-Logistics. Electronic data interchange and use of e-Logistics became a real way of improving the planning and allocation of the flow of goods in transport corridors, increasing the capacity and level of utilization of the infrastructure nodes cargo logistics (ports, logistics centers), rationalization of decision-making in logistics infrastructure, better use of intermodal transport and a significant improvement in customer service levels in logistics due to the possibility of ongoing monitoring of commissioned services. By using e-Logistics tools interactive collaboration between partners within supply chains include:

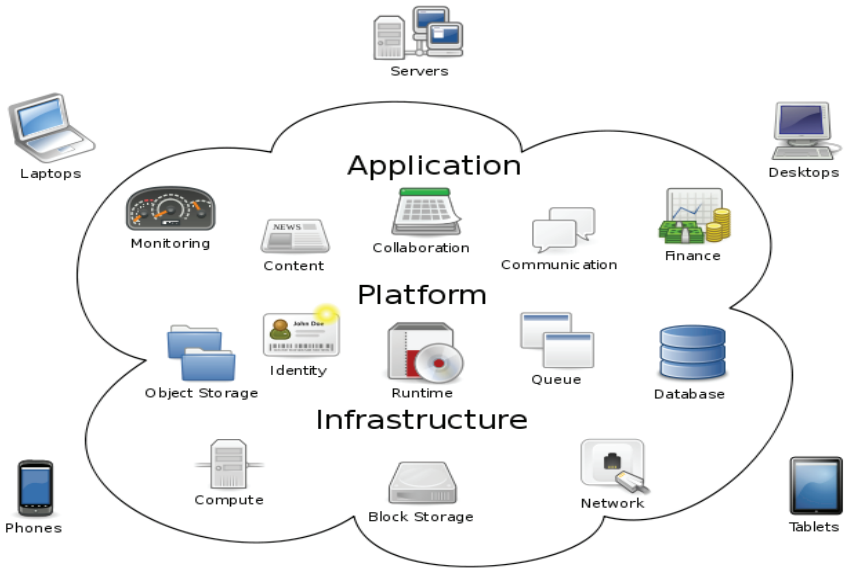
- modelling of the supply chain - creation of process maps, description of the resources of the chain, product definition,
- planning and demand forecasting,
- planning and allocation of supply chain network – making plans supply synchronization operations for the entire chain, techniques, balancing demand and supply, separation techniques and replenishment scenarios or different tactics supply (switching supplier to customer),
- planning of production and distribution – creating schedules and defining detailed mechanisms of response to changes in demand, generate production plans at the condition of the chain resource optimization, capacity planning and material requirements, schedule visualization and planograms using Gantt charts, scheduling backlog of pending orders in the interaction with the network distribution and sales,
- the access control – controlling the possibility of delivery by registered demand (control matching supply to demand), check availability: materials, production capacity, storage, transport, control of product availability anywhere in the supply chain.

Dynamically developing possibilities of interactive cooperation between partners, electronic data exchange and access to global information resources led to a noticeable change in the business models of companies. The possibility of dynamic planning and control (7/24/365) triggered another wave of interest in the area of logistics outsourcing. Many companies shifted its primary area of operations (called core business) to supply management of subcontractors, electronically tracking the order processing and customer service. Electronic access to multiple logistic data possible by e-Logistics, directs the attention of managers to service niche areas of the market, enabling precise management of the size and timing of deliveries to locations distant, sparsely populated areas, as well as areas of high saturation of competing products or a low level of customer service. Electronic integration of the planning and organization of logistics channels, coordination and management of

subcontractors became the basis of the next stage of development of logistics outsourcing defined as 5PL (5th Party Logistics). In addition E-Logistics has also created opportunities to optimize return product streams (reverse logistics) and management of returnable packaging, recycling system and waste management. With tools e-Logistics companies can more easily gain a competitive advantage because of precise maintenance and after-sales processes.

A very promising solution for logistics companies, especially for start-up entrepreneurs (start-up) is cloud computing. It becomes rapidly popular since 2007. Cloud computing allows companies to use information systems without having to invest in IT infrastructure, software, licenses and specific know-how which stays and is developed at supplier side. An example of CRM (Customer Relationship Management) application available in the cloud computing model on the basis of services available online via the Internet is Salesforce.com. It acts as a typical SaaS (Software as a Service) application in the cloud since 1999 [Mateos, , Rosenberg 2011, p. 70].

Figure 3. Cloud computing model environment



Source: http://computer.howstuffworks.com (10.12.13)

Virtualization of logistic processes using tools e-Logistics is based on ICT infrastructure, information systems implemented within companies and the global Internet. Traditional implementation model, so-called "on-premises" assuming need to be invested by the company in the full IT infrastructure, IT

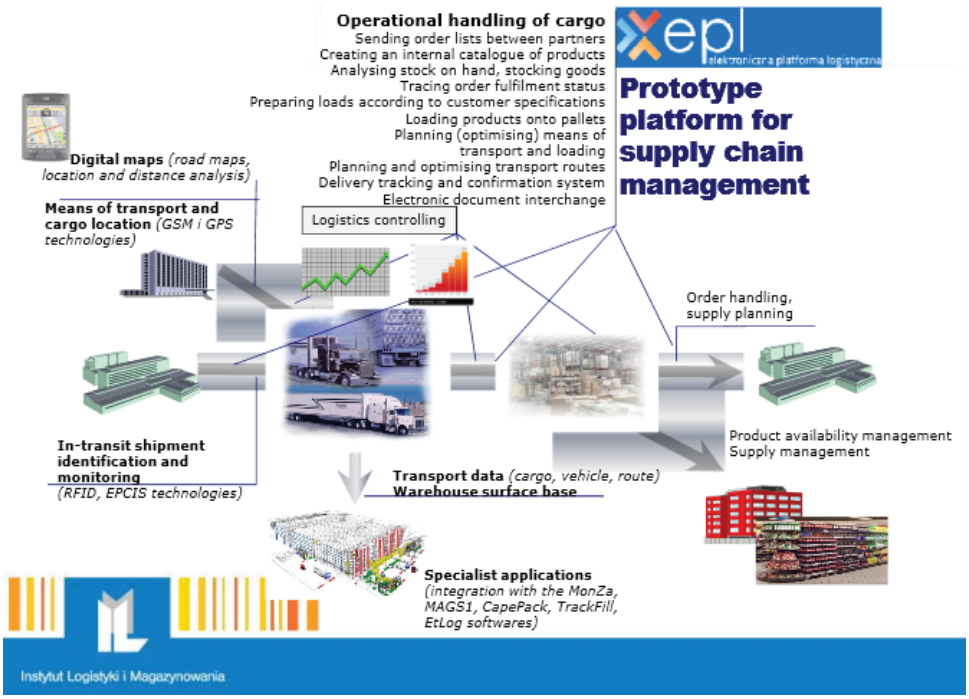
systems and their maintenance. Another implementation model which base on IT outsourcing assuming that part or all of the tasks related to IT is passed to an external entity. Latest implementation model based on cloud computing technology assume that all IT resources (hardware, software, licenses) are treated as services. Cloud computing model still don't have clear definition. Specialists arbitrarily define this concept emphasizing the different possibilities offered by cloud computing. According to the most widespread and now recognized as the prevailing definition of the American National Institute of Standards and Technology, cloud computing is this model of access to a pool of shared resources processing data that can be dynamically distributed and made available on the network on demand with minimal supplier contribution [http://csrc.nist.gov/publications/nistpubs/800-145/SP800-145.pdf]. The definition of the data model referred to as cloud "Cloud" consists of three main areas: the five essential characteristics of cloud computing, cloud service three models and four deployment models of cloud. Basic characteristics of IT services in the cloud computing model:

1. automatic service available on request - company can get online services, unilaterally reserve computing resources, such as time server utilization or memory capacity automatically according to demand without human intervention,
2. service over the network - the resources are available and configurable by the network (usually the Internet or a dedicated private network) and available through a variety of devices, such as laptops, desktops, tablets, PDA / MDA and mobile phones,
3. resources pool dynamically allocated within the service - provider computational resources (virtual and physical) are dynamically allocated to users services relative to the current demand. Service user has no knowledge of where resources are located service provider (network access), but may be able to determine the location of a higher level of abstraction (eg. country, region or specific data processing centre),
4. flexibility of service - IT resources can be flexibly allocated and assigned online at the user's request depending on company's needs. From the user's perspective of IT resources made available by the service provider are somewhat limitless (freely scalable) and can be used in any quantity and at any time,
5. measuring the level of service provided - cloud computing systems automatically control and optimize the use of IT resources. Resource use can be monitored, controlled and reported to ensure transparency in the context of mutual settlements on both sides (user and provider).

Very interesting ICT solution accessible via the Internet that supports vir-

tualization processes of logistics operations and allows the creation of virtual enterprises in the area of logistics is a prototype electronic supply chain management platform called EPL (Electronic Logistics Platform). To meet the needs of logistics companies (especially SMEs) Institute of Logistics and Warehousing (ILiM) in Poznan created within the framework of research and development projects and provided an Electronic Logistics Platform (EPL). It is an online environment of cooperation and joint management of the supply chain, which enables entrepreneurs to define roles in the chain - such as suppliers, customers, logistics provider, carrier by using a number of operational functions. Functions including accepting and confirming orders, planning transport routes and the selection of vehicles, tracking deliveries.

Figure 4. General scheme of the EPL operational environment



Source: http://www.transbaltic.eu (10.12.2013).

EPL is classic example of the delivery of the e-Logistics. It is a system of electronic support cooperation partners including the wider context of community service logistics by providing mechanisms for creating and managing clusters logistics, access to knowledge base logistics and videoconferencing distributed among many partners at the same time. Organization of the operational functions of the EPP platform largely subordinated to the logic of

logistics service processes the order. The basis for handling the flow of products and goods is a lot of basic data collected in:

- global database of products identified by the GS1 standards and created the platform EPL internal product catalogue supported by the company,
- suppliers, contractors directory associated with the database of companies registered in the EPL (including customers and logistics service providers),
- database of logistics services,
- logistics resource database which is the parametric description of the storage infrastructure, transport fleet, IT systems, etc.,
- dictionaries, packaging, media storage, transport units.

Electronic Logistics Platform supports the sequence of actions from an order by the customer to confirm receipt of the products ordered. Many alternative solutions, the introduction of contracts (eg. data entry through prepared electronic form, import data from a database or enterprise data sheet) creates software flexibility of EPL. EPL platform is scalable integration tool for any supply chain to be used in particular in distribution channels. Each partner can simultaneously act as a client and supplier to another recipient and the provider of logistics services can also be a customer placed orders to suppliers. This creates a unique flexibility of the online environment, tailored to the needs of entrepreneurs. Taking into account the simultaneous opportunity to work with many customers and suppliers and subcontractors (logistics operators, carriers), platform EPL is a tool for the integration of multiple chains of the supply network. The concept of online collaboration environment of enterprises in the supply chain was based on many years of experience of specialists of the Institute of Logistics and Warehousing in the implementation of projects related to the integration of the supply operation, co-production, distribution and supply chain outsourcing. The functionality of the platform is to reduce operating costs in logistics management company. Using such cloud solution as EPL is helps logistics companies (especially SMEs) to switch from capital investment (CAPEX) in expensive IT systems to operational expenses (OPEX) by using software platform primarily as a service via web browser. Logistics companies are increasingly using e-Logistics tools, integration services, and planning based on electronic data strings, seeing the benefits of [Sułkowski 2012]:

- the global reach of sourcing, collaboration and sales,
- flexible and rapid action, better allocation of inventory and supply capacity,
- standardization of data and precise interaction,
- higher competitiveness of the product,
- higher level of customer service and possibility of tracking and control,

- access to information and more accurate demand forecasting,
- better planning of supply and use of resources,
- many opportunities to reduce operating costs [Śliwczyński 2007].

Summary

Technical and technological progress in the area of information and communication technologies (ICT) affects organization of logistics management processes and the level of customer service in distribution channels. Last decade is a period of very strong growth of information and communication technologies, computerization and availability of Internet. Information technology (IT) nowadays provide set of tools that support the operation of logistics companies. Efficient use of the tools and facilities in the area of information technology has become a prerequisite for the operation of logistics companies in a competitive market. According to statistical yearbook 96% of Polish companies declare to have Internet access (92% in SME sector). Moreover it looks like e-Logistics provide set of on-line IT tools that becomes necessary to achieve success in today's global world. Cloud computing technology fits into this scenario as kind of enabler which helps logistics companies to join global alliances and cooperate on-line with remote partners. It is also worth to mention about LOGICAL [http://www.project-logical.eu, 19.12.2013] which is European Union Project for integration of cloud computing technology into the daily routines of operators and infrastructure providers in logistics. Software as a service model let small and medium logistics companies to cooperate and even compete with logistics enterprises on equal basis. This trend is visible and will proceed in the future as e-Logistics supported by cloud computing technology become more and more popular.

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