

## ENTREPRENEURSHIP AS AN OPPORTUNITY OF DEVELOPMENT FOR INDUSTRIAL COMPANIES USING LOGISTICS CENTERS

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**Abstract:** The motivation to take up the subject is a direct link between the stock of spare parts and the system of production capacity. The relationships which exist between the entities, referring to entrepreneurship, constitute a chance for the improvement of the functioning of the enterprise from the executive point of view. The development, which takes place in the area of minimization of stocks using logistics centers, constitutes the source of professional and individual development of people participating in the entrepreneurship process. In the assessment of the entrepreneurship of the entities, the effects of the disturbances may be observed in long, unplanned downtime of the machines and equipment or excessive costs of the maintenance of spare parts stocks. To make this relationship sustainable, it is necessary to search for modern approaches and behavior, which, simultaneously, will allow to reduce the costs of freezing capital and the risk connected with the necessity of possessing them when they are needed. One of solutions of the problem, presented in the paper, is the concept of sharing spare parts stock by a few industrial enterprises using the logistics center, treated as a new entrepreneurial approach, which reflects the process of self-development of the company as well as its employees. The applied concept allows to develop a number of financial and organizational benefits for the users of spare parts, the condition of which is the willingness for cooperation and communication, based on properly adjusted IT system.

**Keywords:** professional development, entrepreneurship, logistics center, stock, spare parts, shared stock, IT system.

### Introduction

Logistics centers are an important constituent of the enterprise growth of many different enterprises, including the industrial ones (Certo and Miller, 2008), whose effective activities are strictly connected with the management of spare parts stocks. The logistics center is defined by W. Rydzkowski as *"a spatial object of a specific functionality, along with infrastructure and organization, in which there are provided some logistics services connected with accepting, storing, distributing and dispensing goods and the accompanying services, provided by the enterprises, which are independent in relation to the sender or the recipient"* (Rydzkowski, 2007). In turn, E. Golemska specifies logistics centers as *"interregional economic units, in which there are coordinated the services of storage and transport on short and long distances, along with the information flow and the system of controlling this activity"* (Golemska, 2002).

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In the activity of logistics centers it is possible to differentiate three basic functions, which are shown in Table 1.

**Table 1. The functions performed by logistics centers (Grzybowska, 2010, Placzek, 2006)**

Logistics	Support	Additional
Storing goods, Orders	Issuing invoices on behalf of the customer	Technical service of means of transport, including the sale of fuels, oils and accessories
Transport	Renting containers, pallets and other transport packaging	The use of reusable packaging in the transport of goods
Returns operations	Customs handling	Food services
Transshipping of consignments	Insurances	Hotel services
Stock management	Information services	Banking facilities
Just in Time Services	IT services	Maintenance of containers and packaging
Finish operations on the product	Logistics consulting	Accounting services

The selected functions of the logistics center, which, among others, are warehousing, storing, and stock management, play an important role in the optimization of spare parts stocks of industrial companies.

### **The characteristics of the spare parts stock**

According to IAS "important spare parts and emergency equipment are qualified to be indicated as tangible fixed assets, if the entity expects to use them longer than for one period. Similarly, if spare parts and equipment connected with the service may be used merely for the individual items of tangible fixed assets, they are included as tangible fixed assets" (Commission Regulation, 2008). Z. Sarjusz-Wolski also refers to this definition. According to him, the stocks of spare parts of maintenance are the kind of materiel, designed for use in the production process, which are not final products sold to customers of the final market (Sarjusz-Wolski, 2002).

While considering the characteristics of the maintenance stocks, these stocks may be divided into two categories, i.e. real wear parts and repairable parts, where:

- real wear parts are spare parts which are not the subject to repair due to economic or technical reasons; in case of failure, there occurs the exchange for a new part and the faulty element is disposed,
- repairable parts, in turn, are the components, which are or can be the subject to repair, technically or economically; in case of failure, such a part is exchanged for a new one, and the broken part is sent to the repair workshop to be fixed (Cohen et al, 1999; Botter et al, 1998).

Another division of spare parts divides them, in turn, depending on the availability, into:

- key parts, which are provided by few suppliers and manufactured on request;
- industrial parts, which possess the feature similar to key parts, however, they differ by the production process, which is significantly easier, simultaneously, bringing about a lower risk of unavailability of parts and greater number of suppliers of these elements;
- standard parts, which, due to their use in all industries, are of a universal kind, and they include minor elements, i.e. light bulbs, screws, studs, seals etc.; they are easily available, therefore, the time of their implementation is the shortest (Jouni et al, 2011).

### **The role of the logistics center in the management of spare parts stocks**

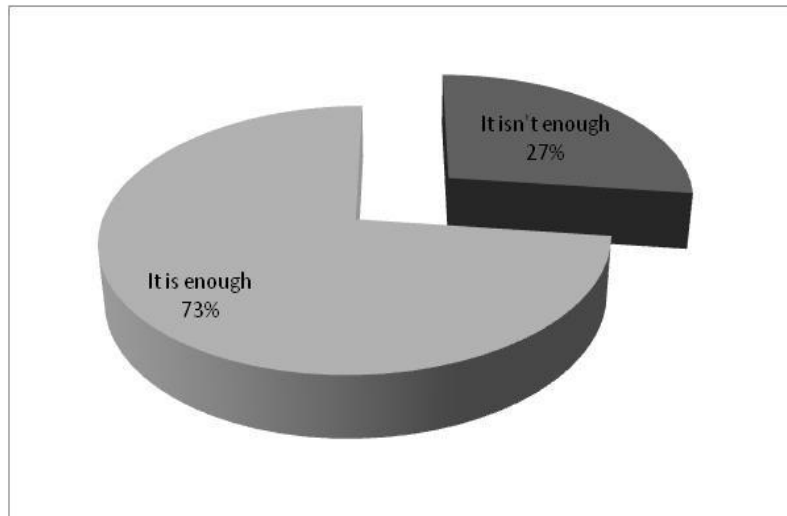
The logistics center, due to its specificity, is particularly useful in storing industrial parts as well as the standard real wear ones. The number of their suppliers and users is significantly larger. Simultaneously, it amounts to better availability of resources and shorter time of the performance of the contract for the spare parts users (Huiskonen, 2001).

As the conducted research showed (Grondys, 2012), lack of availability of spare parts constitutes the fifth most frequent reason of stopover of machines and equipment. The previous positions are occupied only by lack of demand and technical errors. Moreover, stocks of these parts, gathered in these entities previously, do not satisfy every third enterprise being the subject of the research as far as the need for the production maintenance is concerned (Fig.1).

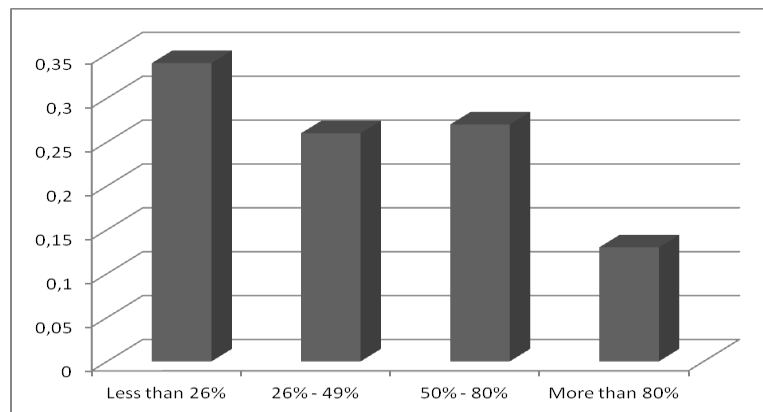
The following were given as frequent reasons of not meeting expectations, mainly connected with lack of some parts, e.g.:

- diversity of machines and diversity of failures,
- non-economic aspect of storing parts,
- economic considerations,
- price of spare parts,
- lack of funds for securing the spare parts stock,
- and high specialization of parts manufactured on request.

The need to transfer some of the stocks is also indicated by the share of the rotating spare parts taken from the warehouse at least once a year in the total stock (Fig.2).



**Figure 1. Satisfying the needs for the maintenance of the spare parts stock**



**Figure 2. The structure of rotating parts in the total value of spare parts in the enterprises under research**

In more than half of the examined industrial companies, the rotating stocks constitute less than 50% of the value of all the spare parts stocks. For every fourth entity, the rotating spare parts stock amounts to 50% - 80% of the total value of the stock. Only a bit more than 10% of the enterprises dispose of the spare parts stock, in which more than 80% of their value concerns the parts which rotate at least once a year.

Therefore, the task of worker of the center is providing industrial companies with such a service, in which temporarily unneeded spare parts will be stored in the main warehouse whereas the needed parts will be supplied on request to a given entity.

Also, the value of the stock item remains indifferent. The decision of maintaining the part of a low value is much easier than in case of expensive elements. Therefore, using the services of the logistics center is recommended for the parts of an average and high value.

While planning the concept of sharing stocks, the task of the logistics center is:

- specifying the appropriate amount of reserves,
- currently keeping the customers informed on the stock,
- preparing the demand,
- coordinating orders from the selected enterprises,
- providing the quality of service,
- coordinating all essential works along with the documentation (Mishra and Pathak, 2006).

The above activities should be systematized in such a way that the redundancy of items is minimized. In turn, each depletion of the item is connected with its order, every time its number falls beyond the assumed safety level in the warehouse.

### **IT support for the concept of sharing the stock**

The effective implementation of the concept of the logistics center of sharing the spare parts stock simultaneously requires fast and reliable ways of sending and processing information. In this situation, an important role is played by coherence and integrity of IT systems of the logistics center and its customers. Exclusively the efficient information flow may provide the cooperating enterprises with the optimization of common stocks with simultaneous providing safety of spare parts availability and production continuity. Moreover, the application of the IT system guarantees the effective system of control of elements and punctual operations of the logistics center for the benefit of the efficient and effective management of spare parts (Venkataraman, 2007). The research conducted in this field confirmed that, along with the increase in the customers' expectations, the logistics centers also increase the requirements towards the IT system (Kott, 2012). The graph presents the level of the fulfillment of expectations of the clients of the logistics center by the applied IT system (Fig.3).

The author's own research allows for the conclusion that 92% of the clients of the logistics centers under research are satisfied with the functioning of the IT center. Only 6% of them clearly indicated the lack of the fulfillment of expectations by this system. They most frequently indicated low functionality of the system as the reason of the above.

The obtained responses indicate that more than half (65.6%) of those questioned think that the data received from the system of the logistics center are complete. However, every fifth client states that the information collected with the help of the system does not meet all the criteria and are incomplete.

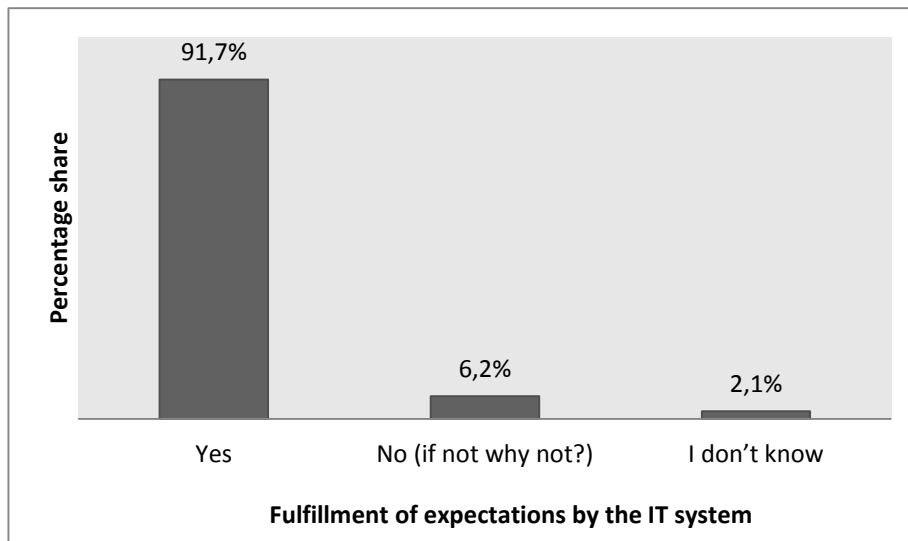


Figure 3. The satisfaction level of the needs of clients of the logistic center by the applied IT system [%]

Table 2. The quality of the information collected in the IT system of the customers of the logistics center

The quality of the information collected in the IT system	Percentage share
Complete	65.6%
Incomplete	18.3%
I don't know	16.1%

In the context of the optimization of stocks, the ECR strategy is particularly significant (Richey et al., 2005). As the authors discussing this issue state, it particularly focuses on four constituents of the activity, which create maximum value added and which, totally, should be carried out by the partners of the value chain: “*supplementing, management of product assortment, promotion, introduction of a new product*” (Ciesielski, 2011). The effective supplementing of stocks consists in guaranteeing the appropriate level of stocks. The promotion refers to strengthening promotional activities the customers respond to in a positive way, as well as excluding promotions which do not bring any effects. The implementation of new goods, among others, amounts to focusing on streamlining the process of supply of the offered goods, ensuring their attractiveness and reducing expenditures concerning these activities (Mindur, 2008, Christie and Honig, 2006).

Using the logistics center combined with the appropriate strategy at the level of information, allows the cooperating enterprises to obtain a number of benefits, i.e.:

- protecting enterprises from some disadvantageous disturbances on the market,
- reducing the effects of low rotation of spare parts for single entities,
- cheaper purchase of elements by means of discounts due to consolidated shopping,
- providing the availability of spare parts in the mode of 24/7,
- providing the continuity of production of enterprises (Nowak (ed.), 2001).

These advantages also constitute relevant justification of the maintained buffer stock and rational managing the stock in cooperation with other clients by means of the logistics center. In such relationship, occasional requirements of the selected users, are of more flexible nature, where rare flow of parts in single entities is replaced with the cumulated use by all the enterprises.

### Conclusions

Due to the performed functions, the services of the logistics center may be used for storing spare parts and providing services to the users. Management of the spare parts stock, shared by enterprises, by means of the logistics center constitutes an effective way to increase the production activity, connected with the reduction of costs of maintaining spare parts and increase in the production capacity, not interrupted by any breakdowns (O'Connor, 2013). The concept of the shared stock is particularly beneficial when the demand for the selected parts is occasional, and their value is high.

The condition of the effective cooperation between the individual enterprises and the logistics center is the integral IT system. It is to provide the appropriate level of service of the selected links of the relationship, connected with the current processing and transferring information on the stock. Spare parts stock management, by means of the logistics center, using the coherent IT system, brings about a range of benefits, among which, the following deserve particular attention: cost reduction, better availability of parts and better level of their optimization. Moreover, enterprises reduce expenditures connected with the purchase and maintenance of spare parts of high value, which is the main manifestation of their new attitude towards the idea of entrepreneurship. The application of new solutions enforces the continuous progress in the field of individual development of the people being in direct relationships since the success of entrepreneurial activities mainly depends on the degree of their knowledge and skills, referring to the support of the system and the whole entrepreneurial process.

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## PRZEDSIĘBIORCZOŚĆ JAKO SZANSA NA ROZWÓJ DLA PRZEDSIĘBIORSTW PRZEMYSŁOWYCH WYKORZYSTUJĄCYCH CENTRA LOGISTYCZNE

**Streszczenie:** Motywacją podjęcia tematu jest bezpośrednia relacja, w jakiej pozostaje magazyn części zamiennych i system wydajności produkcyjnej. Relacje, jakie mają miejsce pomiędzy podmiotami stanowią w ujęciu przedsiębiorczości szanse na poprawę funkcjonowania przedsiębiorstwa od strony wykonawczej. Rozwój, jaki się dokonuje w obszarze minimalizacji zapasów przy wykorzystaniu centr logistycznych stanowi źródło rozwoju zawodowego i osobistego osób uczestniczących w procesie przedsiębiorczości. W ocenie podmiotów, skutki zakłóceń można obserwować w długich nieplanowych przestojach maszyn i urządzeń bądź nadmiernych kosztach utrzymywania zapasów części. W celu zrównoważenia tej relacji należy szukać nowoczesnych podejść i zachowań, które pozwolą jednocześnie zminimalizować koszty mrożenia kapitału i ryzyko związane



z koniecznością ich posiadania, gdy są potrzebne. Jednym z rozwiązań problemu, przedstawionym w referacie, jest koncepcja współdzielenia zapasu części zamiennych przez kilka przedsiębiorstw przemysłowych za pośrednictwem centrum logistycznego traktowana, jako nowe przedsiębiorcze podejście, które odzwierciedla proces samorozwoju firmy jak i jej pracowników. Wykorzystana koncepcja pozwala na wypracowanie wielu korzyści finansowych i organizacyjnych dla użytkowników części, których warunkiem jest chęć współpracy i komunikacji w oparciu o odpowiednio dostosowany system informatyczny.

**Słowa kluczowe:** rozwój zawodowy, przedsiębiorczość, centrum logistyczne, zapas, części zamienne, zapas współdzielony, system informatyczny.

### 创业精神作为关于工业公司的备件管理为例的专业和个人发展机会零件在后勤中心

**摘要：**问题的动机是备件库存和产能的系统之间的直接链接。存在的实体，指的企业家精神，之间的关系构成的运作的企业从行政的角度改进的机会。发展，发生在最大限度减少储存使用物流的区域中心，构成了人民参与的创业过程中的专业和个人发展的源泉。在评估中的实体的创业精神，干扰的影响可能会观察到在机器及设备的长时间意外停机或备件储备的维修费用过高。若要使这种关系可持续，有的需要搜索的现代方法和行为，同时，将允许以减少连接以拥有它们在需要时必要的风险和费用的冻结资金。问题，在文件中，提出的解决办法之一是由几个工业企业利用物流配送中心，作为一种新的创业方法，反映了该公司，以及其员工的自我发展的过程来处理共享备件库存的概念。应用的概念允许开发条件的是为合作意愿财政利益和组织利益的备件，用户的数目和沟通，正确的基础调整了它系统

**关键字：**专业发展、创业精神、物流配送中心、股票、备品备件、共享的库存、IT 系统