MultiScience - XXX. microCAD International Multidisciplinary Scientific Conference
University of Miskolc, Hungary, 21-22 April 2016, ISBN 978-963-358-113-1

PROCESS OF WAREHOUSING ON E-COMMERCE MARKET

Beata Skowron- Grabowska[1], Katarzyna Sukiennik[2], Katarzyna Grondys[3], Jarosław Jasiński[4]

Prof[1], PhD[234]

Czestochowa University of Technology, Faculty of Management

Abstract: In the herein paper, the subject matter associated with the process of warehousing on the e-commerce market is described. The content has been concentrated on analysing the e-commerce sector in Poland on the basis of the most popular sectors of the market. In contemporary times, availing of such solutions is necessary with the aim of modernizing the processes of the supply chain. Warehousing in enterprises of an e-commerce nature is a significant element of their functioning on the market. The analysis of the dynamically growing services market of e-commerce was adopted as the principal aim of the herein paper on the basis of the processes of warehousing. A modern approach to warehousing facilitates the minimization of the costs of running business activities.

Key words: warehousing, e-commerce, enterprises.

Introduction

The intensively progressing process of globalization is first and foremost conditioned by the new opportunities and innovations that result from the functioning of the Internet. This constitutes an increasingly frequent and key tool in the development of a multitude of types of enterprises, including Polish ones [1]. A very noticeable role has also been played by the area of purchases [2]. Traditional trade is being gradually ousted by electronic trade, which constitutes for an increasing level of share in the global trade of goods and services. "E-commerce is one of the main drivers of a more prosperous and competitive Europe, with a significant potential for contributing to economic growth and employment" [3]. The main component of electronic trade is that of online shops whose number is systematically growing year on year.

An inherent issue of electronic trade is the process of distribution and warehousing of goods that also accompanies traditional sales. The frequency of the emergence of online shops is first and foremost the result of multiple benefits that come with operating on the virtual market. One of these is above all else the lack of necessity to own a warehouse. Furthermore, firms try to operate in accordance with the Just-in-Time system that envisages the possession of the least amount of warehouse stocks. Attempts to restrict them are associated with the desire to reduce costs, however there are no possibilities to eliminate them completely. The flow of material goods within the framework of the logistics chain is not of a constant nature, but which first and foremost results from the geographical and time restrictions [4]. Hence, in spite of the fact that owning a warehouse is not necessary in the case of an online shop, availing of its surface area as a temporary place for storing goods appears to be an intrinsic process in the servicing of the electronic supply chain.

1.Warehousing in sales process

DOI: 10.26649/musci.2016.042

The traditional model of the warehouse economy envisages the possession of a warehouse, in which stocks and/or finished goods are to be found that are subsequently offered on the global market and sold. In this model, a trading enterprise acquires goods from the supplier in order to become owners of the aforesaid goods and subsequently sell and dispatch them to the client. The process of warehousing takes place between the receipt of goods from the supplier and their dispatchment to the client [5]. In order for this process to be realized, there is a requirement to have your own or a rented place to store goods.
At the level of wholesale trade, two fundamental forms of storage are distinguished as follows:

- "wholesale warehouse, the so-called warehouse trading, in which goods from the supplier are stored at the wholesale level and subjected to processing for trading, as well as sorting or assembling, and subsequently delivered to the clients;
- supplies warehouse, the so-called transit trading, in which goods from the supplier (producer, importer) are transported to the client with the omission of the wholesale warehouses, but with the intermediation of wholesale trade" [6].

Possessing your own warehouse area is particularly commonplace among online shops in which with regard to the high level of daily trade quantitatively speaking, it is required to have a high level of availability of products "at arm's length". The decision to have your own warehouse is conditioned by a multitude of factors [7]. Entrepreneurs first and foremost during the process of counting the costs of maintaining a warehouse must remember not only about the variable costs, but also about the costs of ensuring an appropriate warehouse infrastructure, as well as the costs associated with the physical possession of goods. Moreover, one of the most important issues is also the specification of the number of warehouses that shall ensure the appropriate level of service for the clients. If the attribute of the shop is the time of delivery of goods, then the possession of one warehouse for the whole country of Poland may turn out to be insufficient.

2.Analysis of e-commerce market

Understanding the functioning of warehouse logistics in terms of Internet trading simultaneously requires analysis of the specifics of the e-commerce sector. The numerical data published in this sphere indicates the significant flow of goods that requires the appropriate warehouse facilities.
According to the latest report prepared by the foundation E-commerce Europe, out of 7.358 billion people, 4.164 billion of them (56%) have access to the Internet, while 1.036 billion of them (14%) do shopping on the Internet. The value of the Polish e-commerce market is evaluated at almost 29 billion PLN, while over 60 % of Polish internauts make purchases online [8].
In the case of Poland, purchases online are made by 9.7 million people, which constitutes 25% of the population of the country [9]. By analysing the afore-mentioned data (Fig. 1) the value of sales in two of the most popular sectors of e-commerce is presented, namely B2C and C2C.

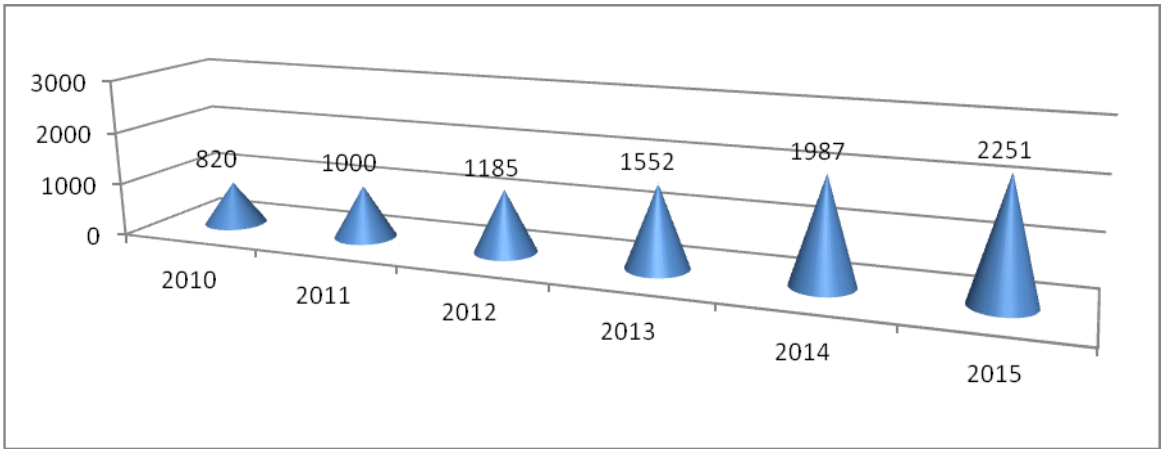

Fig. 1. Growth of sales value in sectors of B2C and C2C in billions of USD [10]

In Fig. 1, the dynamic growth of sales value for the period of 2010-2015 has been presented. According to the data for the year 2010, the value of the market amounted to 820 billion dollars, while in the following years this value rose consistently. The value in 2011 was at the level of 1,000 billion dollars, whereas following 2012 this value was exceeded. In 2013, the level of 1,500 million dollars was further exceeded. The data from the report for the year 2015 is mere estimates, however their level exceeded 2,250 million dollars. The market of e-commerce illustrates dynamic growth with regard to the increasing availability of products.

A significant element in the growth of value in the particular years is the popularity of the products offered in a given sector. Hence, in Fig. 2 a division of the sectors according to the types of products has been presented.

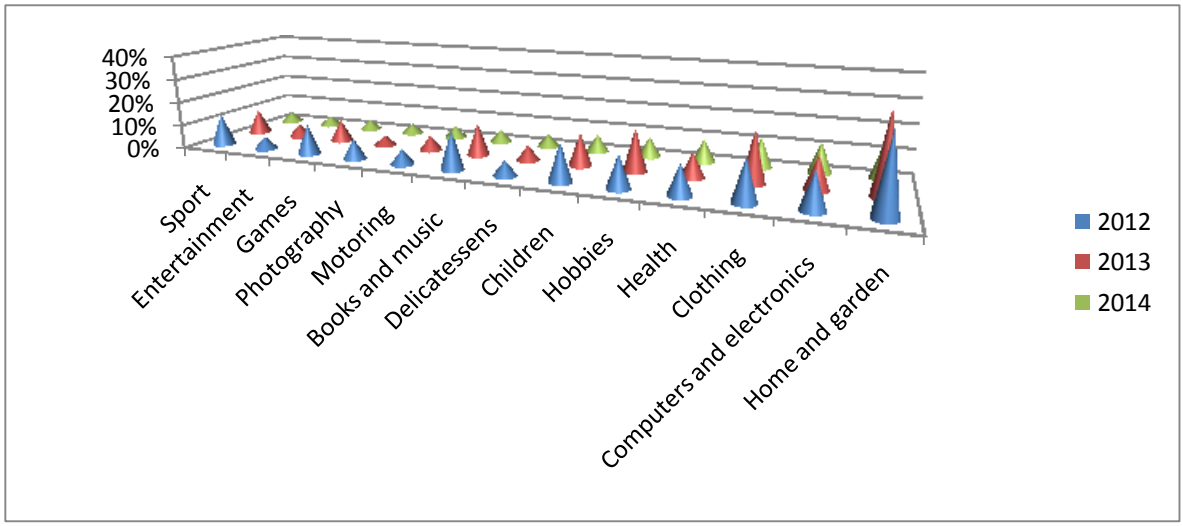

Fig. 2. Share of e-commerce sector according to types of products offered [10]

On the basis of Fig. 2, it is possible to observe what percentage share the particular products indicated in 2012. The greatest level of interest in the years 2012-2014 was enjoyed by the products from the sector of home and garden, which certifies to the preferences of clients. In the particular years, the percentage share decreased with regard to the increased interest in online shops.

The growing interest in the utilization of online shops has an impact on the necessity to possess an assortment with the aim of a fast reaction to the order of a client. The processes

emerging on the market and the activities of competitors frequently pose new challenges to entrepreneurs which they must meet in order to function on the market [11]. Hence, the warehousing of products is significant for the functioning of the online shops. Attention to the relations with the client requires the possession of warehouses by all online shops. The differences merely result from the size of the warehouses. Fig. 3 presents the warehouse area.

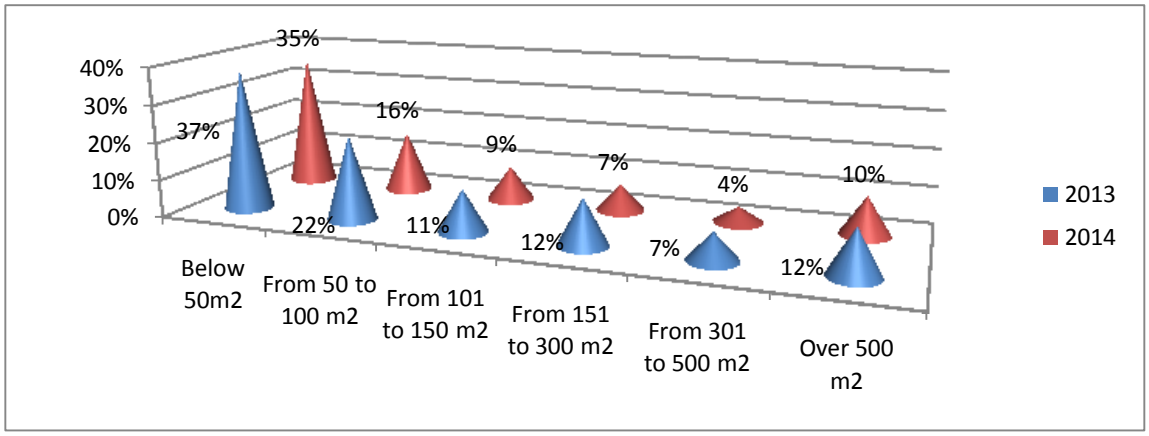

Fig. 3. Surface area of warehouses of online shops in 2013-2014 [10]

Fig. 3 illustrates the percentage structure of possession of warehouses among online shops. It is possible to note that a slight drop in terms of the possession of warehouses is prevalent due to the high costs of warehousing. Every entrepreneur that wants to minimize costs must reduce the products stored in warehouses. The most frequently stored product is the one for which there is the highest demand. Possessing this product in the warehouse shortens the waiting time for the client. The product for which there is low demand is usually not stored, unless there was demand for it previously and the whole stocks have not been sold out.

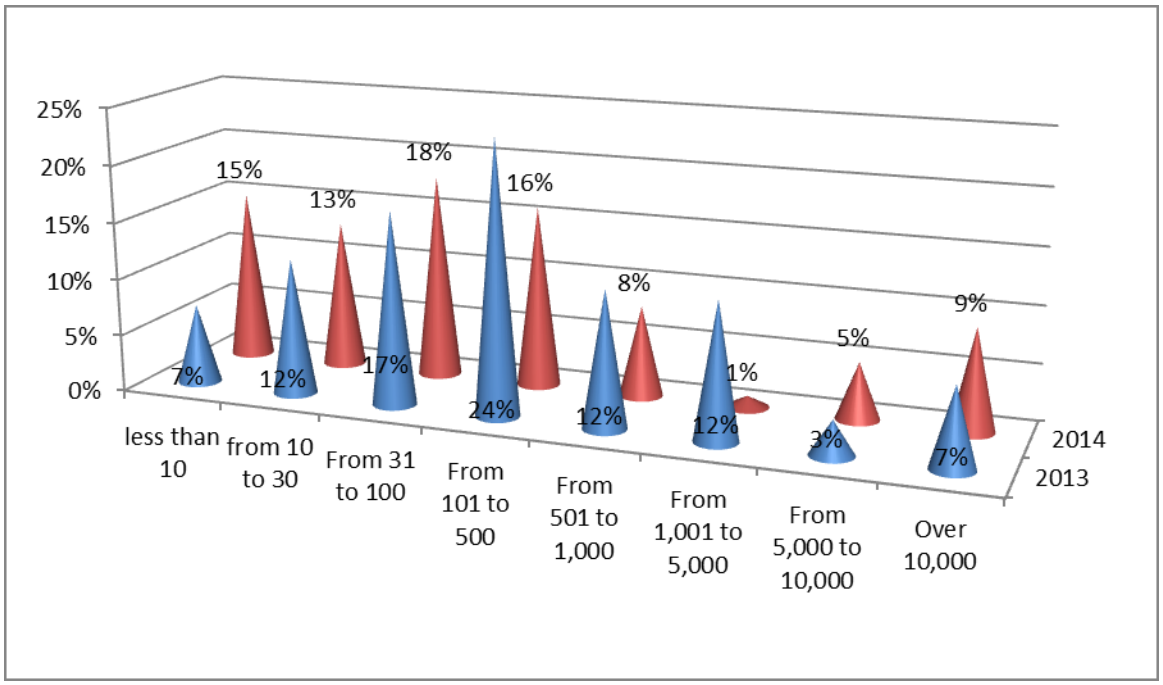

Fig. 4. Average monthly amount of sales of products in 2013-2014 [10]

On the basis of Fig. 4, it is possible to state that the number of products sold is significant in terms of the possession of a warehouse due to the variety of the offer. The greater the sales, the greater the need to possess a product with the aim of satisfying the client. In the years under analysis, the highest coefficient of sales was illustrated by products of up to 500 items per month. According to the data on Fig. 4, online shops in 2013 most frequently sold between 101 and 500 units of a product on a monthly basis. In 2014, online shops most frequently sold between 31 and 100 products per month. The quantity of products sold has an impact on the revenues of the Internet enterprises.

3.Functioning of process of warehousing in online shop - case study [12]

The ways of keeping stocks created during the realization of electronic trade are possible to observe on the basis of the example of large companies commencing their business activities online.

The entity under analysis is the largest online shop operating in Poland since 1999. After 6 years, the firm began sales in stationary shops too. In their offer, apart from books the entity also possesses films, games, music, electronics, toys, while also e-books of a combined total of almost 500,000 SKU. The number of points of free receipt of goods enumerates 407 all over Poland.

Due to the costs generated, the firm does not have a complete assortment on offer in the warehouse. Only goods for which the demand is very high are stored. The remaining goods are to be found in the stores of the suppliers, with whom the firm is in constant cooperation.

The process of warehousing commences at the moment when wholesalers send the ordered goods to the warehouse of the online shop, from where they are forwarded to the client. In the case of the goods of a low turnover, the flow of goods takes place only following an

order. This causes a decisive extension of the timescale of delivery, which in some cases may come up to even 40 days.
Every warehouse of a firm is equipped with racks and shelves that are identified by a unique barcode. The goods in the warehouse are designated to permanent positions in the warehouse, whereby the barcodes facilitate the specification of where the desired product is located and enters information into the system of the fact that a given product was taken from the warehouse for dispatchment.
In addition, the automation of the processes of transportation inside the warehouse with the aid of conveyor belts has been implemented, whose installation increased the flexibility of the realization of tasks. The system of packing and dispatching orders has been put in order by means of the implementation of multimedia kiosks, which in turn accelerated the processes of packing packages. Every order from the moment of implementing the kiosks has a separate barcode that enables the packing of the package in the IT system and detects possible non-conformities earlier. Simultaneously, the address for dispatching and other required data is printed together with the code.
Such a system of warehousing, packing and dispatching packages to the final client results in the total time of the service being reduced by almost half. Furthermore, a large amount of errors has been eliminated. The system of "Put to light" [13] has also been implemented, whose task is to accelerate the actions of completing orders in the case whereby several products of the same type are sent at the same time (Fig.5).

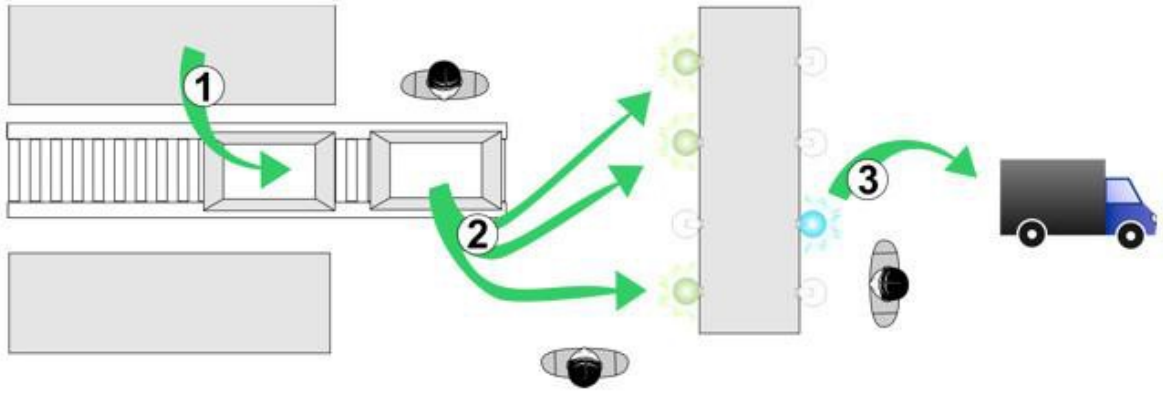

Fig. 5. Principle of operations of "Put to light" [14]

In Fig. 5, the principle of the operations of this system in the warehouse of the entity under analysis has been presented. During the completion of the orders, a greater number of products of the same type (no. 1) is sent by conveyor belt. Another employee takes a basket of products from the conveyor belt and puts aside singular items in the place illuminated in the completion press. This becomes illuminated at the moment when the employee scans the barcode of the given SKU. Putting the product aside must be connected with the light going off by pressing the button (no. 2). The final stage is taking the items for dispatchment by the people managing the transportation on the other side of the completion press. When the light comes on, this informs the employee that the given order has now been completed (no. 3).

Conclusions

By way of summary, it is necessary to note that the process of warehousing in enterprises is a very significant element of their functioning. Online shops should also possess the

appropriate warehouse area in order to be competitive in this sector. The possibility of sales of various types of assortments facilitates the increase of revenue, however it is also necessary to minimize the costs of warehousing. Stockpiling products depending on the necessity of their possession at a given moment facilitates the more rapid realization of transactions. By analysing the way in which products are stored and which processes serve this purpose, it is possible to state that the warehouse of the entity under analysis has a well-developed system, while also the appropriate equipment and one of the most modern technologies of storing products in Poland in the case of online shops. Despite the fact that an enterprise could avail of an external warehouse, a more profitable solution is to possess your own storage point. In this paper, the significant elements that have an impact on the application of the given solutions in the process of warehousing on the market of e-commerce have been presented.

Bibliography:

[1] Gostomski E., Michałowski T., Rola Internetu w handlu międzynarodowym, Contemporary Economy Vol. 5 Issue 3 (2014) 11-25, pp. 17

[2] Brendzel-Skowera K., Turek T., The Prospects of E-commerce in Poland, International Conference on Communication, Management and Information Technology (ICCMIT 2015), Praga, Czechy 2015, pp. 1115.

[3] http://ec.europa.eu/internal_market/e-commerce/docs/parcel-delivery/131216_roadmap_en.pdf, pp.2.

[4] Kozerska M., Logistics Support Area of E-commerce, Zeszyty Naukowe Politechniki Śląskiej. Organizacja i Zarządzanie nr 1905/2014, pp. 51.

[5] Dudziński Z., Vademecum organizacji gospodarki magazynowej. Ośrodek Doradztwa i Doskonalenia Kadr Sp. z o.o.. Gdańsk 2008, pp. 11.

[6] Zabłocka I., Sklepy internetowe jako nowoczesna forma sprzedaży, http://webcache.googleusercontent.com/search?q=cache:_joKQc9RNjwJ:wsbia.edu.pl/wwwpliki/kolonaukowe/Artykul_Zab%25C5%2582ockaSklepy%2520internetowe%2520jako%2520nowoczesna%2520forma%2520sprzeda%25C5%25BCy.doc+&cd=1&hl=pl&ct=clnk&gl=pl, pp. 11.

[7] Kadłubek M., The Selected Areas of E-logistics in Polish E-commerce, Procedia Computer Science, Vol.65, 2015, pp.1059.

[8] Raport Interaktywnie.com: E-commerce. Ranking sklepów internetowych 2014, http://interaktywnie.com/biznes/artykuly/raporty-interaktywnie-com/raport-interaktywnie-com-e-commerce-ranking-sklepow-internetowych-2014-249602.

[9] Global B2C E-commerce Report 2014, http://www.ecommerce-europe.eu/global-b2c-e-commerce-report-2014-light/3e8927-ndwud-0uwd0u-ww

[10] „Raport e-commerce STANDARD 2014" oraz „Raport e-commerce STANDARD 2013"

[11] Kott I., Skibińska W., Sukiennik K., Szczepanik T., The use of computer systems tools for supporting innovation companies,[in:] B. Skowron- Grabowska (red.), Logistics and marketing determinants of enterprises management, Vysoka Skola Banska, Ostrava 2015, pp.88

[12] Self-analysis on the basis of the data of the company.

[13] http://www.atop.com.tw/atop/mw/cufiles/files/download_dm/pick_dm/ABLEPick_DM_E.pdf

[14] http://www.amsort.pl/systemy-kompletacji-pick-by-light47put-to-light,282.html