ANALYSIS OF THE FLOW OF GOODS IN NEW FORMS OF MULTICHANNEL SALES

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Abstract

New distribution channels have been growing dynamically in recent years as a result of the ever-present Internet, which offers a number of new retail forms that enable communication between individual market participants. The recent growth of trade has been identified chiefly with the dynamic development of e-commerce sales.

The purpose of the article is to define the characteristic features of each new distribution channel and the guidelines referring to the economics of the flow of goods in a logistics system. The conclusions have been based on the analysis of literature and observed business practices.

Today, further growth of commercial exchange is linked to the introduction of new forms of multichannel, crosschannel and omnichannel sales. New distribution channels have not been precisely defined to date. Presently executed undertakings which employ multichannel sales are more or less pioneering pilot projects.

The further functioning of new distribution channels will depend on economic calculations. In these terms, analysing the effectiveness of individual new forms of distribution channels will be of key significance. The term „effectiveness of a distribution channel" is linked to the size of a lot of flowing goods. Classic methods of specifying lot size assume stable conditions of the environment in which a distribution channel works. Today, however, the market situation is unstable and subject to continuous changes which occur very quickly.

Keywords: Distribution channel, multichannel, crosschannel, omnichannel, goods flow, lot sizing

1. *Introduction*

Sales and trade are two similar terms which, however, differ in their essence. It is incorrect to use them interchangeably. Sales is one of the fundamental functional strategies present in nearly all companies. Its purpose is to maximise or, to put it more accurately, optimise company revenues. It concerns production, trade and service companies. Trade is a type of business activity which consists in reselling goods that had previously been purchased. Trade companies are an essential element of a production company's distribution channel (Fechner, Szyszka, 2015).

Distribution channel is one of the most common terms used in logistics. It is defined as a group of mutually linked entities participating in the process of delivering products or services to a user or a consumer. The structure of distribution channels is frequently equated with (or mistaken for) the structure of a distribution network. The structure of a distribution network is composed of all entities present in a trade flow. The structure of distribution channels includes only the entities which take part in the flow of specific goods as part of a distribution network. A structure of distribution channels is developed for every item (or set of items) separately. A distribution channel should be treated as a logistics system. For a distribution channel to work smoothly, close links between all flows occurring therein (logistic - mainly material - and commercial - mainly information-re-

lated - flows) must be established. This dependency proves the actual function of a distribution channel, which is to integrate all flows occurring within a channel. To ensure proper functioning of a distribution channel, all its elements i.e. its constituent entities and their mutual relations must be chosen in the best possible way. A method allowing optimal design of a distribution channel has not been formulated yet. The channels that exist have been developed by trial and error, just as the ones developed today. As a result, solutions applied in practice are extremely varied (Fertsch, 2007; Cyplik et al., 2008).

The authors begin from the simplest optimization model of the flow of goods - economic order quantity. Quite an important limitation of this solution is to focus on optimizing flow only in terms of cooperation between two companies in a supply chain. From the perspective of the research of the project (project No. KSL 1/15, Modelling of economic order quantity in the supply chain, Poznan School of Logistics), the authors decided to investigate the model's cost optimization in the whole supply chain, based on the most reliable methodology in this area - SCOR.

This point of view, the authors compared with omnichannel as a basis for developing a rationalization of cost-flows throughout the supply chain.

2. Stages of development of contemporary logistics

Practical operations logistics is interested in the movement of goods, which has been present since trade started to develop. The practical impact of logistics on the image of the present-day world commenced at the beginning of the 1940s and 1950s of the 20th century. Contemporary logistics started to develop in North America, particularly in the United States, and later moved to other continents. In the context of this article, elements of the greatest significance include the output and achievements of the first, second and fifth stage of development of contemporary logistics (other stages have been omitted on purpose).

The first stage of the evolution of logistics, i.e. the so-called stage of physical distribution, was related to the rapid growth of large retailers – markets and supermarkets, which occurred in the United States in the late forties and early fifties of the 20th century. Physical distribution involves the transport of products, their storage, packing, stock management, location of stocks and warehouses, handling orders and after-sales service from the production of an item to the moment of its delivery to an end customer. This area of logistic activity is related to the domain of trade. In the beginning, logistics dealt with dynamically-growing retail sales handled by large shops.

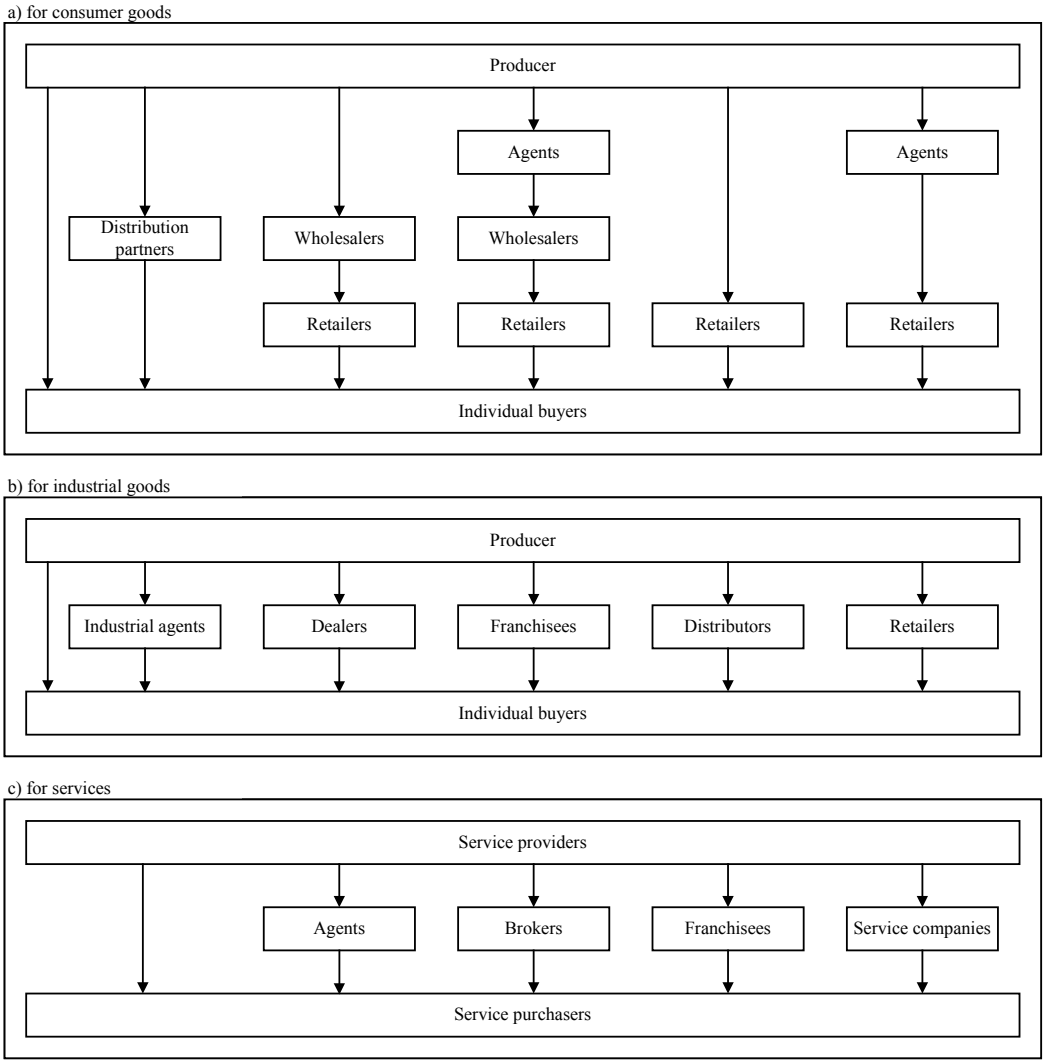
Soon it was found, however, that even the most efficient distribution was unable to ensure products' availability in retail shops, if delays in production or in the delivery of materials hampered access to tradable products. The second stage of development, i.e. the integration stage, commenced. Logistics started to deal with the movement of goods, from procurement to distribution. It required the processing of immense amounts of data. Interest in integrating the flow of goods fortunately coincided with the increased availability of computers. From that moment on, logistic has relied heavily upon IT solutions. One should be aware that it would be impossible to execute the integration stage without massive use of computers assisting companies' operations. It was the first time that the growth of information technology had such a significant impact on the development of logistics.

It happened once again when the global information exchange network, the Internet, was created. The network made searching for suppliers, service providers, sellers and customers much easier. The tasks which had been most difficult to handle, i.e. finding a supplier who would provide an appropriate amount of components of suitable quality, finding a location to store a lot of products, finding a transport operator who would transport goods to a selected place at the best price, or conveying information about a product to a customer, became simple. Supply chains started to transform into logistic networks. In relation to the development of logistic networks, the fifth stage of the development of logistics, i.e. the stage of logistic networks or the e-logistics stage („e" for „electronic", referring to the use of the Internet and other solutions such as mobile technologies) commenced (Fertsch, 2008). The changes taking place in today's trading directly affect the changes in management strategy logistics chains and methods of controlling flows of goods (Żurek, 2015).

3. Classification of classic distribution channels

Standard (classic) distribution channels have been presented in Figure 1, and divided into consumer goods, industrial goods and services. Vertical analysis of these channels shows a great variety of structures of available solutions.

Figure 1 Standard distribution channels



Source: Czubała, 2001

The classification of distribution channels is very complex. On the other hand, identification of individual cases is questionable – it frequently happens that it is difficult to support any of the options as part of a specific criterion. The only clear-cut case is the division into direct and indirect channels. All other classification criteria are to a large extent subjective. Only by comparing distribution channels with each other is it possible to identify correct features of each of them (comparative analysis). With only one channel available, it is difficult to identify its characteristic features. The classification of classic distribution channels providing for the most popular criteria has been shown in Table 1.

Table 1 Classification criteria and types of distribution channels

Classification criterion	Types of channels
involvement of agents	- direct channels - indirect channels
number of indirect levels in a channel	- short channels - long channels
number of agents on individual levels	- narrow channels - broad channels
type of streams	- transactional channels - material channels
scope of cooperation between channel participants	- conventional - vertically integrated - along the entire length - on specific sections
method of coordinating actions of channel participants	- administered - contractual - corporate
channel participants' ownership rights towards entities that comprise the channel	- owned - partly owned - foreign

Source: Czubała, 2001

Initial divisions are the most important classification criterion for types of distribution channels. They allow reaching fundamental conclusions useful for the organisation of a logistic system:

- the shortest distribution channel is composed of two directly linked entities (direct channel), whereas more configurations form direct channels;
- the length of a distribution channel determines product/service type (Figure 1);
- a company's strategy concerning distribution intensity (exclusive, selective or intensive) decides upon the width of a distribution channel.

4. Evolution of trade in Poland after 1989

In the beginning of the economic transformations in Poland, the „traditional channel" prevailed, in which a wholesaler or a distributor was a direct customer of a production company. At that stage, trade in Poland was fragmented, and distribution channels were relatively long, which limited the manufacturer's control over the channel. Back then, manufacturers were channel leaders. Their bargaining power was greater than the trader's. In terms of logistics, the stage was characterised by the obligation to provide services to a large number of small and medium wholesale companies.

The middle of the 1990s of the 20th century witnessed dynamic growth of a new sales channel that the newly-created super- and hypermarkets started to develop. It was called the „modern channel". Its significance increased rapidly, the turnover of shops grew, and the number of newly opened shops surged. This resulted in a situation where commercial chains became leaders, often called distribution channel integrators.

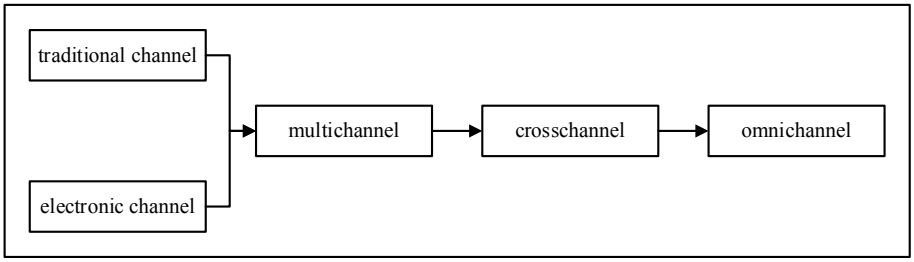
The late 1990s, on the other hand, saw the growth of another form of trade – Internet trade. Many new market players - Internet shops - were established in many countries of the world, including Poland. This growth was obstructed by the stock market crisis in the beginning of the 21st century, which hit Internet shops with its greatest force. Back then, it was obvious, however, that the Internet channel would soon become one of main sales channels, and that its further development was unavoidable.

On the one hand, it became clear that the growth of e-commerce would result in that companies which had so far been operating only in the sphere of traditional trade would start using the new channel. On the other hand, companies that were online started to reconsider and, consequently, decided on operating in traditional trade. The situation at that time might be called multichannel sales (Fechner, Szyszka, 2015).

5. Classification of modern distribution channels

The emergence of new forms of selling, namely multichannel, crosschannel and omnichannel sales, results in attempts towards forming new structures of distribution channels. According to the assumptions presented in the introduction, there is no optimal way of designing such solutions. Undertakings carried out presently in multichannel distribution are subject to the world's oldest technique - trial and error. The evolution of multichannel sales has been presented in Figure 2.

Figure 2 Stages of development of multichannel sales



Source: Fechner, Szyszka, 2015

It is assumed that multichannel sales is a strategy where a company sells products through a traditional channel as well as online. Multichannel sales therefore involves both traditional and electronic sales channels, where customers may return products only via the same channel through which they had purchased it. In multichannel sales, data bases of customers of individual channels are not fully integrated with each other.

Another stage of the development is crosschannel sales. It is treated as a transition between multichannel and omnichannel sales. The solution is generally similar to multichannel sales with one customer data base for the entire company. Products are returned through the channels in which customers had bought them. From a customer's perspective, there is practically no difference between multichannel and crosschannel sales.

Omnichannel sales involves full integration of sales channels and communication channels. A company makes it possible for customers to purchase and return goods in a form which they find most convenient. The omnichannel strategy is therefore most complex and, at the same time, most costly. It is a true example of the philosophy of marketing. It is the customer who decides on the place, time and form or contact with a company; the place time and form of purchase; the time, place and form of delivery and the time, place and form of potential return (Fechner, Szyszka, 2015).

An up-to-date example of the above forms of sales is confirmed by German experiences. Currently several trends in trade logistics can be distinguished, for example, the search for and implementation of customer transactions through various sales channels (management of multi and crosschannels) (Brusch, Stüber, 2013).

The above mentioned characteristics of individual forms of multichannel sales allow formulating a comparative analysis of these concepts as presented in Table 2.

Table 2 Characteristic features of new forms of multichannel sales

classification criterion	multichannel	crosschannel	omnichannel
sale strategy	sale through traditional and electronic channels	sale through traditional and electronic channels	sale through all possible distribution channels
sales channels	- traditional channels - commercial chains - Internet shops (owned, foreign) - call centres	- traditional channels - commercial chains - Internet shops (owned, foreign) - call centres	- traditional channels - commercial chains - Internet shops (owned, foreign) - call centres - mobile commerce - social media
flow of information	data base of customers of individual channels are not fully integrated	one data base of customers for an entire company (integration in terms of communication)	one data base of customers for an entire company (integration in terms of communication)
handling returns	returns are possible only through the channel in which the purchase has been made	returns are possible only through the channel in wich the purchase has been made	returns are possible through any channel (integration in terms of sale)

Source: Own study on the basis of Fechner, Szyszka, 2015

Multichannel sales is characterised by the absence of integration in terms of communication or sales (physical flows of goods) in the distribution channels. Although crosschannel sales liquidate the communication barrier, the circulation of goods remains a problem. Omnichannel sales eliminate the sales barrier (both barriers), which makes it the most effective and efficient solution.

6. Prospects for omnichannel sales

In the academic context, a literature (about omnichannel) search query made by the authors among business management magazines has led to results presented in Table 3.

Table 3 Results of the literature search query of the word „omnichannel" in academic data bases (data base vs. number of articles per year)

	2013	2014	2015	2016	Total
Scopus	3	6	5	1	15
Web of Science	1	3	3	0	7

Source: Own study on the basis of: https://www.scopus.com/ and www.thomsonreuters.com/WebOfScience

As for now, one might formulate a conclusion that there is a visible gap in the knowledge on the most advanced form of multichannel sales – omnichannel sales (scarce publications, lack of solid grounds in terms of terminology and methodology). Articles on the subject published so far focus mainly on two areas: general presentation of the omnichannel idea and possible computer assistance to this solution in practice.

As the „Building the B2B Omni-Channel Platform of the Future" study, carried out on the request of Accenture and hybris software, shows, 52% of customers think that in the next three years at least a half of their purchases will be made via the Internet.[1]

Customers do not care much for using a specific channel. For them, omnichannel sales are simply a satisfying method of shopping. Instead of selling products through several channels simultaneously, sellers should connect all points of contact with customers: sales in a shop, printed catalogue and online sales. Companies which already use the omnichannel approach note higher sales – customers who use many channels are more active, loyal and they spend more money.[2]

The study carried out by Forrester Consulting on the request of Accenture and hybris in Canada, the United States, France, Germany and United Kingdom, proves that:

- 66% of B2B sellers admit that the changing expectations of consumers influence investments in technologies related to the omnichannel strategy, such as the implementation and development of e-commerce platforms or services in the mobile channel,
- 83% of B2B companies agree that the omnichannel strategy is essential for the achievement of long-term success, as it affects the growth of sales and profits,
- 85% of respondents think that investments in technologies will concentrate on the omnichannel strategy.

As the results of the study carried out for Accenture and hybris show, consumer-oriented companies, retailers and wholesalers encounter similar problems during the implementation of omnichannel functions. 44% of respondents believe that integration of back-office system technologies in many channels is the greatest barrier in implementing omnichannel solutions. Furthermore, 42% of suppliers point to problems with access to consumers' data and analytics within the organisation, 40% of them have difficulties with limitations imposed by distribution partners, franchises and wholesale customers, whereas 36% are unable to deal with the conflict between channels inside the organisation. Other challenges include difficulties with implementation (33%) or limited skills of employees (32%).

7. Lot size optimisation in modern supply chains

7.1 Classic approach

The modern concepts of designing distribution channels (and, in a broader context, also supply chains) presented above are a response to the fluctuating needs of customers. One of the elements that shape the competitiveness of a supply chain is the lot size of goods flowing between chain participants. Defining the size of lots and determining their distribution with the purpose to minimise costs and ordering time in a supply chain is described in academic literature as the lot sizing problem (LSP) or the economic lot scheduling problem (ELSP) (Roundy, 1989). It is, beyond any doubt, an extremely difficult and complex issue (Chase et al., 1998), which was usually solved with the economic lot size method. It is a particular case of a model involving constant lot size. In the method, lot size is determined on the basis of economic lot size calculus for which maintenance costs and inventory generation costs are lowest. It is calculated with the following formula (Krzyżaniak, 2008):

$$EWZ = \sqrt{\frac{2 \cdot PP \cdot KU_z}{C \cdot \mu_0}}$$

where:
PP – demand,
KUz – stock replenishment cost,
C – unit purchase price,
μo – stockholding coefficient.

In the event of discrete needs, the method involves the occurrence of „residues" in stock in periods with lower demand. It should be therefore emphasized that in the case of discontinuous and inconsistent needs, the economic order size method is ineffective (Orlicky, 1981).

As it has been stated above, due to the dynamically changing customers' needs and competing through product availability on the market, classic batching methods do not work. It results from the fact that a growing number of supply chain management methods (including distribution channels) are oriented towards improvement through accelerating the flow of goods. Stock does not necessarily have to be where the customer is, but there must be an option to move it quickly to this place (Kolinski, Sliwczynski, 2015). Customers expect continuous availability of products and the possibility to obtain them from any distribution channel. Joint treatment of different distribution channels is another new paradigm in their functioning (Piotrowicz, Cuthbertson, 2014).

New paradigms related to the functioning of distribution channels make us think that more and more frequently it is the information in a supply chain which is of greater value than the product itself. Linking information with the smooth processes of the flow of goods is an element which decides on the chain's market and cost-related success. It might be concluded, therefore, that the batching problem understood as a number of items flowing regularly between business partners is replaced with the availability of goods in a specific situation in time and space.

Thus, it becomes essential to assume a more complex approach to calculating economic lot size flowing between entities in a distribution channel. Literature on the subject describes methods optimising lot size in the occurrence of a number of input parameters. With regard to their suitability in determining lot size in distribution channels, two of them have been selected and described below.

7.2 A model involving cost optimisation of the entire chain

Referring to the SCOR model in a supply chain, three main types of processes responsible for the physical flow of materials are distinguished: source, make and deliver. Due to the scalability of the SCOR model, these terms may also be used to define entities within a distribution channel which specialise in handling specific functions of the chain. H.M. Abdelsalam and M.M. Elassal (Abdelsalam, Elassal, 2014) used this consideration in developing a model involving cost optimisation of the entire supply chain (distribution chain) in the function related to the size of a lot of flowing goods. In the model, total cost of a supply chain (distribution channel) has been presented as a sum of costs incurred by entities handling processes related to distribution, production and procurement:

$$TC(m_1, m_2, k_1, k_2, T) = TC_r + TC_m + TC_s$$

where:
TC – total cost of a supply chain per one unit of material,

m_1 –number of units of raw materials received by the supplier in one stock replenishment cycle,
m_2 –number of units of raw materials received by the producer in one stock replenishment cycle,
k_1 – duration of a stock replenishment cycle executed by a producer,
k_2 – duration of a stock replenishment cycle executed by a distributor,
TC_r – total distributor's cost per unit of material,
TC_m – total producer's cost per unit of material,
TC_s – total supplier's cost per unit of material.

From the perspective of this publication, it is particularly essential to determine the cost of executing distribution processes. The equation presented below allows finding out which factors the authors of the model have taken into account while determining the total distributor's cost per unit of material. The cost is an optimisation criterion in seeking economic lot size:

$$TC_r = \sum_{j=1}^{n_r} \left(\frac{O_{rj}}{T} + \frac{h_{rj} + T\mu_{rj}}{2} + h_{rj} F_{rj} \sigma_{rj} \sqrt{(L_{rj})}\right)$$

where:
O_{rj} – cost of stock replenishment executed by a distributor,
T – average duration of a stock replenishment cycle executed by distributors,
h_{rj} – cost of distributor's holding of a unit of stock in one period,
$T\mu_{rj}$ – average demand in a stock replenishment cycle noted by a distributor,
F_{rj} – safety index for the level of service provided to a customer by a distributor,
σ_{rj} – standard deviation of demand observed by a distributor,
L_{rj} – duration of a stock replenishment cycle executed by a distributor.

The model developed by H.M. Abdelsalam and M.M. Elassal allows broadening the optimisation criterion with processes related to production and procurement. Due to a large number of attempts towards defining distribution channels and to the flexibility of the SCOR model in certain business cases, it seems difficult to clearly separate distribution processes from production- and procurement processes. It therefore seems important to ensure the possibility to get to know the parameters taken into account in the optimisation of the size of the lot of flowing goods as part of these two groups of processes from the supply chain. Formulas presented below allow determining the cost per unit of material incurred by a producer (the first formula) and by a supplier (the second formula):

$$TC_m = \frac{A_m + O_m m_2}{k_2 T} + \frac{h_s k_2 T \mu^2}{2 m_2 Pm} + \frac{h_m T}{2}\left((2 - k_2)\frac{\mu^2}{Pm} + (k_2 - 1)\mu\right) + h_s F_m \sigma \sqrt{\frac{k_1 k_2 T \mu}{P_s} + t_s}$$

where:
A_m – the cost of launching the production of a lot,
O_m – the cost of replenishing the stock of raw materials incurred by a producer,
μ – average demand,
Pm – producer's production speed,
h_m – the cost of producer's holding of stock per unit of finished product,
h_s – the cost of supplier's holding of stock per unit of finished product,
F_m – safety coefficient resulting from customer service level offered by a producer,
σ – standard deviation of demand,
Ps – supplier's production speed,
t_s – duration of the flow of materials between the supplier and the producer,

$$TC_s = \frac{A_s + O_s m_1}{k_1 k_2 T} + \frac{h_0 k_1 k_2 T \mu^2}{2 m_1 Ps} + \frac{h_s k_2 T}{2}\left(\left(\frac{2}{m_2} - k_1\right)\frac{\mu^2}{Ps} + \left(1 - \frac{1}{m_2}\right)\frac{\mu^2}{Pm} + (k_1 - 1)\mu\right) + h_0 F_s \sigma \sqrt{t_0}$$

where:
A_s – the cost of launching the production of a lot incurred by a supplier,
O_s – the cost of replenishing the stock of raw materials incurred by a supplier,

h_0 – the cost of supplier's holding of stock in one period,
F_s – safety coefficient resulting from customer service level offered by a supplier,
t_0 – duration of replenishing the stock of raw materials by a supplier.

The sets of equations presented above allow determining the total unit cost of a distribution channel and supply chain. They assume the occurrence of only one supplier and one producer, and a distribution channel composed of several economic entities. Assuming a limited number of producers and suppliers would allow considerable reduction of possible variants of the flow of goods. Nevertheless, it is not possible to solve the problem by algebra. Computation algorithms such as PSO (Particle Swarm Optimisation) must be applied in this case. The solution described in the publication by R. Eberhart and J. Kennedy (Eberhart, Kennedy, 1995) is based on an observation of how flying birds or shoaling fish behave. The best solution is formulated by means of subsequent iterations (e.g. carried out as part of fluctuating demand resulting from its chance variation) occurring in combinations of possible states of exogenous variables. Each iteration remembers the best solution. The best global solution is the best solution remembered from the ones involved in subsequent iterations.

7.3 The MLSP optimisation model

Classic methods of determining economic lot size allow as little as specifying the volume of the flow of goods between two cooperating links in a supply chain. Due to the fact that supply chains consist of a number of levels (they are frequently formed by many organisations handling flows from the market of raw materials to the customer), it seems reasonable to account for places where stock should be held in calculating lot size. It is particularly important in terms of omnichannels. Integration of different distribution channels which are part of supply chains makes it necessary to provide for the cooperation between a number of entities. A set of methods providing for the structure of a supply chain in determining the size of a lot of flowing goods is defined as MLSP (Multilevel Lot Sizing Problem). A solution from this group was presented by a group of authors: S. van Hoesel, H.E. Romeijn, D. Romero Morales and A.P.M. Wagelmans (van Hoesel et al., 2005) who additionally broadened it with the limitation of production capacity. The solution is called MLSP-CP Multilevel Lot Sizing Problem with Production Capacities). In this case, the formula is as follows:

$$\min \sum_{t=1}^{T} (p_t(y_t) + \sum_{l=1}^{L-1} c_t^l(x_t^l) + \sum_{l=1}^{L-1} h_t^l(I_t^l))$$

where:
T – planning horizon,
L – supply chain level,
t – planning period,
$p_t(y_t)$ – production costs,
$c_t^l(x_t^l)$ – costs of transport between level 1 and 1+1,
$h_t^l(I_t^l)$ – costs of stockholding on level 1 of the supply chain.

The result of this equation is the cost of covering market-generated demand in different variants of the size of a lot of flowing goods. The number of distribution channel levels (entities participating in the flow of goods) and the method of determining transport costs are additional classification criteria. The authors emphasize that the model provides for a situation where only one type of goods flows through the chain, without any processing. Such an assumption, however, does not cause simplification of the calculations, which, in view of limitations resulting from software functions, were made only for three levels of the distribution channel.

The models described above provide for determining an optimal lot size of goods flowing through distribution channels and supply chains exclusively by means of iteration methods. Due to the number of parameters taken into account in determining economic lot size, it is impossible to present one formula for its calculation. The formula for calculating economic lot size presented in point 7.1 provides for merely four parameters. Furthermore, it assumes a simplified situation where values of these parameters are independent of lot size, which in economic practice is not true. The degree of complexity of computing economic lot size presented in the above models reflects the complexity of this issue as part of rules shaped by contemporary forms of distribution channels.

8. Conclusion

The classification of distribution channels allows identifying their characteristic features, analysing

the structure of their functions in channels and taking a closer look at the cooperation of entities involved in them. It also helps companies to design and select their preferred distribution channels (Czubała, 2001).

Table 2 presented in point 5 of the paper describes characteristic features of new forms of multichannel sales. Further on, point 7.1 discusses the issue of the availability of goods in the market and the possibility to acquire them through any distribution channel (customers' demanding attitude). Points 7.2. and 7.3 present practical models for executing these postulates in terms of the cost-effectiveness of the flow of goods in distribution channels. The presented achievements meet the purpose of the article the authors had set.

Thus, new forms of distribution remain undefined. This may be the source of difficulties in putting new application solutions into practice (shaping distribution channels and the goods flowing through them). Practices currently executed are more like pioneering projects lacking role models (benchmarks). It should be, however, clearly emphasized that in business, a lot more is going on in terms of omnichannel sales - there is a multitude of case studies of various companies that attempt at introducing this promising solution to their organisations according to their own ideas.

In summary, as a consequence of the general growth of trade (including the particularly dynamically developing e-commerce) and the emergence of new forms of multichannel sales, the area of distribution logistics has again become an extremely attractive field of interest for practitioners and academics. The future will certainly bring many innovative solutions which will soon appear in this sphere of business activity.

In further research authors intend to check simulation study cost efficiency of omnichannel sales. Analysis will be conducted in terms of different cost parameters. The aim of the research will be to identify determinants of cost omnichannel functioning. The result of this work will be a set of characteristics of the assortment that will be recommended for selling on this type of multi-channel.

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(Endnotes)

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ANALIZA PROTOKA ROBE U NOVIM OBLICIMA VIŠEKANALNE PRODAJE

Sažetak

Proteklih nekoliko godina novi distribucijski kanali bilježe dinamičan rast uslijed sveprisutnoga interneta koji nudi određeni broj novih oblika maloprodaje, a koji omogućavaju komunikaciju između pojedinačnih sudionika na tržištu. Nedavni rast trgovine uglavnom je povezan s dinamičnim razvojem prodaje putem e-trgovine.

Cilj je ovog rada definirati karakteristične odlike svakoga novog distribucijskoga kanala te smjernice koje se odnose na ekonomičnost protoka robe u logističkom sustavu. Zaključci se temelje na analizi literature te opažanjima iz poslovne prakse.

Danas se daljnji rast trgovačke razmjene veže uz uvođenje novih oblika višekanalne, kros-kanalne i omnikanalne prodaje. Novi distribucijski kanali zasad nisu precizno definirani. Postojeći pothvati koji koriste višekanalnu prodaju uglavnom su pionirski pilot projekti.

Daljnje funkcioniranje novih distribucijskih kanala, ovisit će o ekonomskim izračunima. U takvim će uvjetima analiza učinkovitosti pojedinačnih novih oblika distribucijskih kanala biti od ključne važnosti. Pojam „učinkovitost distribucijskog kanala" povezan je s veličinom pošiljke robe u protoku. Klasične metode određivanja veličine pošiljke pretpostavljaju stabilne uvjete okruženja u kojem distribucijski kanal djeluje. Danas je, međutim, tržišna situacija nestabilna i podložna stalnim promjenama koje se odvijaju velikom brzinom.

Ključne riječi: distribucijski kanal, višekanalno, kros-kanalno, omnikanalno, protok robe, određivanje veličine pošiljke