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B2B SEGMENTATION AS A TOOL FOR MARKETING AND LOGISTIC STRATEGY FORMULATION

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Abstract. This article deals with the B2B market segmentation as the tool for formulation of the marketing and logistical strategy. An empirical study on the market of secondary cardboard packaging represents the research approach carried out by personal and electronic questioning in order to determine customers´ expectations, demands, preferences and characteristics, results in the processing by the factor and cluster analysis, discovered and designed segments and their profiles. The research focused on existing and potential customers was primarily motivated by finding ways to discover new opportunities in value creation for specific segments on stagnant market. The important part of the study is the confirmation or refusing of hypotheses concerning the behavior of created B2B segments.

JEL Clasification: M31, M21.
Keywords: market segmentation, B2B market, corrugated cardboard, marketing strategy, logistic strategy
Reikšminiai žodžiai: rinkos segmentavimas, verslas verslui rinka, rinkodaros strategija, logistikos strategija.

1. Introduction

Significant position on secondary manipulation and transport packaging is held by cardboard packages. According to the Corrugated Packaging Alliance 2010[1] this material offers many advantages: it can be formed into any shape of package, the system of cardboard packaging design is supported by SW which enables the design of packages according to individual needs of B2B, cardboard is one of the cheapest material, it has exceptional protective attributes, the packages are also easily usable for advertising and because of the fact, that it is made from 80% of recycled paper, it is also acceptable from sustainable development viewpoint. The cardboard industry is one of the important packaging segments. In Europe the volume of produced cardboard reached 42 561 millions km^2 and since 2007 sustainably grew. The segment is very sensitive to crisis. The decline of industrial production during economical crisis in 2008-2009 meant almost 5% shrinking especially as a result of lowered amount of transported goods. The decisive share, over 40% of corrugated cardboard are processed at the transport and handling package.

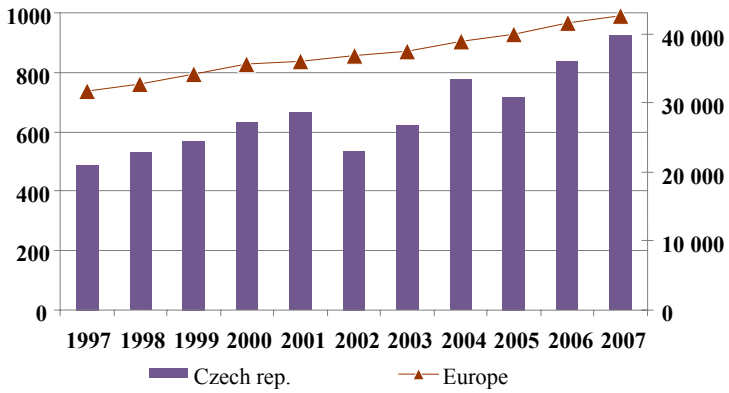

Fig. 1. Development of corrugated cardboard production (FEFCO Annual Statistics 2009)

Forecast of the corrugated cardboard demand indicate in last year the market stagnation in Europe, USA and Japan Manufacturers are faced with rising costs of the customers servicing without the adequate sales growth. The chance can be seen in the export-orientation, increasing the offering products value to customers and differentiating services to different market segments.

The main objective of this research is to verify the possibility of B2B market segmentation to find the typical segments of a specific and significant industrial market as the basis for the implementation of differentiated strategies. The important part of the study is the confirmation or refusing of hypotheses concerning the behavior of

[1] European Federation of Corrugated Board Manufacturers

created B2B segments. The research focused not only on exiting, but especially on the potential customers had been motivated by finding ways how to find other opportunities in a stagnant market.

2. B2B market segmentation

Regarding consumer needs, demands and behavior, it is rare to find only one type of customer. On the B2B market we are often confronted with the fact, that every customer is unique. It is financially and time wise ineffective to develop specially tailored offers for every single customer. For the variety of tasks connected to marketing management it is useful to assort customers to certain market segments (Kotler, Keller 2009; Lošťáková 2005).

Marketing segmentation based on customers´ needs is the process of dividing the market into customer segments in the way that needs, demands and customer behavior are similar within segment and distinguishable with comparison with other segments. Segmentation is appropriate for those markets where it is essential to combine individual customers or consumers into larger buying "units" to ensure marketing activity both cost-effective and manageable (McDonald, Dunbar 2004).

The segmentation process usually needs, according to literature (Kotler 2009; Koudelka 2004; Hague2004), following steps:

1. Identification of segmentation variables appropriate for the given market
2. Uncovering the segments and
3. Assembly of segments profile.

Segmentation variables represent the criteria which influence the behavior of buying companies in some way, and are also in the frame of their behavior significantly different. Not all criteria stated in literature (Jain 2004; Richterová 2002) are suitable for segmentation on B2B markets. According to (Lošťáková 2005) these criteria can be split into so called firmographic variables such as end use segment or customers´ company size, situational variables such as preferred benefits and production variables such as customers´ sales volume or competitive position of customer. The pioneers of B2B market segmentation (Shapiro, Bonoma 1984) have recommended to carry the segmentation out on the level of macro-segments by using general (firmographic) customer characteristics as well as on the level of micro-segments. (Wind, Cardozzo 1974) suggested industrial market segmentation based on broad two-step classifications of macro-segmentation and micro-segmentation. This model is one the most common methods applied in industrial markets today.

Marketing research is the tool of choice for obtaining the information necessary for implementation of stated approach. The most widely used method of primary data gathering is personal, phone, written or electronic questioning using premade questionnaire. An overview and classification of segmentation methods and techniques described Wedel and Kamakura2000.

While uncovering the segments using inductive or deductive segmentation approach, it is necessary to find criteria by which the given market could be segmented

and which are based on the usage of statistical methods such as factor and cluster analysis (Aaker et.al 2000). The point of factor analysis is to reduce the vast number of variables into few variables called factors. Factor loading represent the correlation between factor and specific variable which was discovered during customer questioning.

These factors can be used as entry segmentation variables. The core of the cluster analysis is the creation of clusters of observations, which are similar in the some way in certain variables. In determining the similarity, the cluster analysis uses complex of statistical methods, giving results in the form of segments. Other result is the dendrogram, which describes the similarity of respondents graphically. Cluster analysis can be carried out using for example the SPSS software.

On the uncovering of segments builds the creation of segment profiles, describing for example typical firmographic characteristics, segment size, buying behaviors and further possible development of segment.

3. Finding results of the research of the corrugated cardboard market

The starting point for the market analysis was to identify potential customers for the supply of products from corrugated cardboard. The source of information were the corrugated cardboard packaging producer dealers information and general databases, were addresses and basic characteristics of potential customers, where searched according to FEFCO classification. The aim was to cover all applications of these packages according to the classification used in Table. 1.

Table 1.FEFCO classification

FEFCO classification	frequency
Food products (F)	49
Fresh food, agricultural products (A)	34
Beverage (B)	12
Tobacco product (NFC)	3
Textile, clothing, leather goods (CD)	22
Furniture, products from wood (CD)	23
Paper, printed materials (NFC)	4
Chemicals (I)	27
Cosmetics products (NFC)	13
Rubber products (I)	11
Ceramics, glass goods and other nonmetal goods (CD)	52
Metals, metal products (I)	38
Machines, machine equipment (I)	34
Electrical machines, equipment and accessories (I)	34

FEFCO classification	frequency
Radio, TV, communication equipment (CD)	9
Home appliance (CD)	7
Transport equipment (I)	13
Fine instruments, photo technique, clock (CD)	5
Other industrial products (O)	59
Sport goods, toys (CD)	6
Elements of logistics system (O)	10
Corrugated cardboard producers (O)	20
Others (O)	69
Summary	554

Further basis for questionnaire assembly was the qualitative questioning of business representatives and purchasing managers of customers, who provided the picture of purchasing decision process on the market of secondary packaging. The designed questionnaire was modified according to the pilot study on the existing customers. 100 competed questionnaires were returned, i.e. 18%. Another 126 respondents returned questionnaires with answer, that they do not use corrugated cardboard. The total return reached 40.8%.

The questionnaire included questions, which were formulated to help uncover fitting segmentation variables, in 5 blocks:

1. General Characteristics of respondents, belonging to the cluster adjusted according to FEFCO classification (A Agriculture and Fresh Food, B Beverages, CD Durable customer products, F Food and Edibles, I Industrial products, NFC Non-food products, O Other) with the largest cluster I, and the size of company turnover in Euro, were 37% of firms were companies with average with average $586.3.10^6$ Euro per year and variance $295.0.10^6$ Euro.
2. Identification of requirements for corrugated cardboard. Authors evaluated the significance of the fiction of packaging requirements (division of 100 points) was the most important price 45.2, 27.3 in the order quality, ease of handling 14.1, impact on the environment 8.2, finish packaging 2.7, originality 2.1 and 0.7 points for other factors.
3. The required level of service. Authors evaluated the frequency of deliveries required. In 27% of orders are preferred weekly, 21% monthly. It is also apparent reluctance to order for a longer period. Nearly70% of respondents required delivery date 5 days less, 28% of them 28 hours. The answer on question which is the optimal size of orders is difficult to assess because it depends on many factors. Yet 30% of respondents considered the optimum size of the order of 1000 to 5000 and another 35% to 1,000 units.
4. The issue of selecting and collaboration with packaging suppliers. The most important selection criteria include the reliability of 25.4, the delivery time

20.8, the flexibility in the delivery time 16.2, the payment of invoices 10.1 and other. In the supplementary questions, respondents reported the degree of centralization of buying process, when the companies with multiple slave units occurs in 37% of cases some degree of centralization, then 55% of the concluding of long term contracts with suppliers an only 7% of the contracts on more than one year and only 40% respondents working with more one supplier. Most of the customers, almost 50%, does not require consultation on design and has no interest in cooperation in this area. 36% of them consult only their own required changes. In deciding about the package were examined buying groups. It turned out that the majority decisions are results of the team with 50% of sales and logistics and 13% of production personnel.

5. Assortment of packages purchased. 27% buy the 5 variants, 24% 6-10 variants and 28% buying more than 20 types of packaging. Requirements for packaging at 87% of respondents chase in periods one year longer. Representation of corrugated cardboard in the total number of packages varies depending on whether they are the primary, group or shipping containers. For primary packaging, their representation is very low, at 52% of businesses it is less than 10%. A similar situation exists for group packages. A significant proportion to cardboard packaging is for transport packaging, in 23% of cases are up 75%.

3.1. B2B market segmentation

An important part of the research was the B2B market segmentation of products from corrugated cardboard. Post-hoc segmentation approach (Wedel,Kamakura 2004) was used. As a tool of factor analysis was used SPSS software, namely the method of the main factors. After the first experiment in which was used a full range of segmentation factors, there were gradually identified 7 major components which were evaluated by means of stress factors (in the tables are the values above 0.3 in absolute value).

Table 2. Factor components of "Ordering"

Long term contract	No of package variants	Min. payment term	Manuf. to stock MTO	revenue $0{,}04.10^{-6}$ mil.EUR	Quality	Lead time	Suppliers choice management	Optimal lead time	Orders frequency
0,636	0,557	0,521	0,448	0,383	0,338	-0,324	-0,573	-0,593	-0,798

Great extent on this factor involved in long term contract business and a number of types of packaging. In the negative sense, has the length of delivery times and frequency of orders. In this case it means that the firm with a high value of this factor will be ordering more with shorter lead times, which correspond to the frequently used the short-term and operational orders.

Table 3. Factor components of "User friendly package"

Easy manipulation	Manuf. to stock MTO	Suppliers choice managemen t	Orders reliability	Quality
0,674	0,425	0,332	-0,681	-0,757

The second factor is mostly determined by the requirement for ease handling containers. On the contrary, the quality and reliability in delivery performance are compared with each other the negative

Table 4. Factor components of "Ecology first"

Environmental friendliness	Order size	Optimal lead time	Manuf. to stock MTO	No of pack-age variants	price
0,624	0,356	0,317	-0,334	-0,377	-0,671

Eco-friendly with less emphasis on price in a key for the third factor interpreting.

Table 5. Factor components of "payment terms"

payment term	Minimal payment term	Price	critical situations solution	Lead time flexibility
0,757	0,527	0,333	-0,363	-0,483

The most important variable in this case is the length of payment term. With increasing of its importance the value of this factor growths.

Table 6. Factor components of "Anytime at a reasonable price"

Lead time flexibility	Price	Environmental friendliness	Order size	Lead time	Easy ma-nipulation
0,621	0,494	0,309	-0,361	-0,437	-0,441

To determine the fifth factor is the strongest variable flexible delivery times and price are negative due to easy manipulation

Table 7. Factor components of "Large and independent"

Revenue EUR	Order size	Critical situations solution	Consultation
0,603	0,443	0,442	-0,562

Size of company by turnover makes up the largest part of the factor number 6. You can also suggest little support for the consultation to optimize packaging

Table 8. Factor components of "Other services"

Order size	Orders reliability	Suppliers choice management	Lead time
0,408	0,378	0,333	-0,369

In this case, variables are not significantly different. For the actual creation of customer segments all methods available have been tested, but results did differ significantly. Presented results were obtained using cluster analysis method known as Ward method. For all methods the same cluster of three largest companies was created. Therefore, the future course of this cluster has been expelled and was evaluated separately. The results were illustrated by the dendrogram and computer tables. To illustrate the types of analysis outcome a dendrogram in Figure 2 is used.

Apart from companies that were excluded from the analysis before its starting point, the minimum number of meaningful segments was two. If we increase the number of segments to 3, the first cluster broke up to the new segments 1 and 3. Upon further increase by 1, from the second segment new segment number 4 arises. The share of this new cluster is only 12.8%, which is an acceptable limit from the manufacturers' point of view. Upon further increase the number of segments created from the third segment 5 forms with share 11.6% and then again from the third cluster, the sixth cluster. In this case, three out of six clusters have share less than 12%. It appears that the model containing four segments is appropriate. The size of each segment is Tab. 10

Table 8.

Segment	1	2	3	4
Share	32,6 %	20,9 %	33,7 %	12,8 %

3.2. Basic characteristics of customers segments

Segment No. 1 – "Followers of world trends"

Respondents in this segment tend to the position of "ecology first" and "user-friendly packaging." They are therefore willing to pay more for environmentally friendly packaging which will be easily manipulated. Trend "Anytime at a reasonable price" reaches strong negative values, which can be explained as the willingness to accept less flexibility in delivery times. Variations of all these factors is huge, probably the segment also includes companies that always does not decide in the same way. The name comes from the fact that the described behavior corresponds to the world trends.

Segment 2 – "Unassuming consumers"

Segment 2 is defined primarily by negative values in the tendency to "user-friendly packaging," "big and independent" and "ecology first." Thus, we can deduce that it is rather a medium-sized business that requires standard packages without much added value. This is supported by a positive factor score "normal requirements."

Segment 3 – "Planning customers"

Decisive factors are in this case "Ordering and "Anytime at a reasonable price." Enterprises in this segment seek long-term reliability of linked contracts and fast delivery in the case of an unexpected situation. Cooperative seeks to secure a good price.

Segment 4 – "The impact buyers"

The fourth segment as a percentage of least and is most strongly profiled. There is promoted most emphatically factor "payment terms and a large negative value reached "Ordering." We assume that they are businesses that are reluctant to attach a long-term contract and the contract with long payment time.

6. Conclusions

Presented sample of specific B2B corrugated cardboard market segmentation shows the implementation of modern methods of cluster analysis in formulating appropriate marketing and logistics strategies. Knowledge of the segment is essential for implementation of such methods. These methods are nevertheless only scarcely used in praxis on B2B markets in Czech Republic.

The second objective of the study was to confirm or refuse these hypotheses concerning the behavior of B2B market segments:

1. Price is an important factor in choosing a container made from corrugated cardboard
2. Companies that place a strong emphasis on price, they have fewer requirements for service
3. Enterprises, in which is centrally managed vendor selection, concluded long term supply contracts with suppliers
4. Businesses entering into long term contracts with suppliers have higher requirements for service.
5. Expected development in enterprises of packaging in the next # years will vary.
6. Enterprises are interested in the consultants services to optimize the functions of packaging.

Results of the analysis confirmed some general assumptions about the behavior of the B2B marketplace. When selecting a package, price received 45.2 points. Prerequisite:" Price is an important factor in the selection o package made from corrugated cardboard" may be regarded as confirmed. The answer to the next statement: "Companies which place great emphasis on price, they have fewer requirements for

services," provide us directly the implementation of segmentation. Low requirements consumer segments, and random shoppers, which is governed by the price of packages mostly, also have much lower requirements for services from the supplier, and this assumption is again confirmed. Enterprises, which are centrally managed vendor selection, contracted suppliers on long term basis. Approximately 64% of enterprises that implement some form of central supplier selection, concludes long-term contracts. As a total, it is 24% of the number of cases. This assumption was confirmed only partially. The assumption that firms that enter long term contracts with supplier have higher service requirements is not sufficiently validated. Although long-term contracts are concluded in half of followers of world trends and planning customers more, but for neither of the segments the value of this factor is not strong. The research was oriented to test respondents' opinions on further development of the market too, whether it will be a decrease in the number of models and more economical design, increasing demand for package sales promotion, whether the package will be considered only as a source of additional costs and whether it will be enforced to more ecological packaging. The views of respondents in this area were very different. Finally, we can confirm the interest of the consultant services to optimize packaging in the process of awarding contracts. We recommend to utilize the results to formulate differentiated marketing strategy aimed on certain segments and to implement it in practice.

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VERSLO VERSLUI SEGMENTAVIMAS KAIP RINKODAROS PRIEMONĖ IR LOGISTIKOS STRATEGIJOS KŪRIMAS

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Santrauka. Empirinis antrinio įpakavimo rinkos tyrimas atspindi požiūrį, grindžiamą asmenine bei elektronine apklausa, siekiant nustatyti vartotojų lūkesčius, paklausą, preferencijas ir požymius faktorinės ir klasterinės analizės pagrindu. Šis tyrimas rėmėsi esamais ir potencialiais klientais, ir juo iš pradžių siekta nustatyti naujas vertės kūrimo galimybes specifiniuose stagnuojančios rinkos segmentuose, patikrinti sukurtų verslo verslui segmentų elgsenos hipotezes.

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