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ASSESSING MARKET ATTRACTIVENESS OF INDIVIDUAL CONSUMERS SECTOR FOR HARD COAL PRODUCERS

Abstract. The paper presents the construction of a method used for detailed survey of individual consumers market attractiveness, which in the author's opinion could become a basis for creating marketing strategies of coal mines in Poland. In the construction of this method the relationship marketing idea was used and the analytical process presented was based on multidimensional comparison analysis and expert analysis tools. To illustrate the proposed method the paper contains an example based on a survey of the individual consumers sector.

Keywords: marketing, market attractiveness, individual consumers, capacity of market, mining company

OCENA ATRAKCYJNOŚCI RYNKU ODBIORCÓW INDYWIDUALNYCH DLA PRODUCENTA WĘGLA KAMIENNEGO

Streszczenie. W pracy przedstawiono metodę kompleksowego badania atrakcyjności rynkowej odbiorców indywidualnych, która zdaniem autora może stać się podstawą do opracowywania strategii rynkowych kopalń węgla kamiennego w Polsce. W konstruowaniu metody zastosowano zasady marketingu relacyjnego, a przedstawiony proces analityczny oparto na wielowymiarowej analizie porównawczej i narzędziach analizy eksperckiej. Zastosowanie proponowanej metody badawczej zilustrowano przykładem analitycznym.

Słowa kluczowe: marketing, atrakcyjność rynkowa, odbiorcy indywidualni, pojemność rynku, przedsiębiorstwo

1. Introduction

Growing supply of industrial products observed for the past few decades, increasing globalization and the resultant competition forced many companies to undertake actions aimed at defending their market positions. To this end two lines of action were developed: restructuring and intensification of marketing activities.

Changes within a company involve mostly technical, financial and organisational restructuring (described in numerous publications). Its goal is to increase effectiveness and create clear organisational structure allowing for reliable and fast exchange of information. The result of such changes can be summarized as increasing effectiveness of managing the company's mineral reserves.

The second approach is directed towards a deep penetration of the market and a thorough search for an attractive customer group. A properly targeted marketing results in increased sales, whereas full control over marketing expenses ensures increase in profitability of the enterprise.

Within the group of market-related activities competition forced companies to change the philosophy in the way they operated from the initial manufacture-sell (transactional) to relationship.

The situation depicted above has been, for the past twenty five-odd years, valid for Poland as well. Many branches of industry managed to make up for the decades of neglect relatively quickly. There are some, however, where the defunct manufacture-sell way of managerial thinking still prevails. One of them is mining, hard coal mining in particular. In so far as the sector has since 1992 been subject to wide-spread restructuring (internal change), its marketing activities still need to be intensified and broadened. A survey conducted in 2014 showed that application of modern marketing concepts in mining companies¹ still remained at a very low level. This proved the necessity to raise and tackle this problem.

Taking into account the promising results of the reforms conducted in the mining sector, further in the paper the author proposes a research algorithm which is in line with the concept of relationship marketing and may serve mining companies as an additional tool allowing for detailed analysis of one of their largest customer group – individual customers sector. Within the algorithm, focusing particularly on the segmentation (grouping) stage, a system for conducting an assessment of market attractiveness of this customer group was proposed.

¹ Magda R., Bogacz P., Franik T., Celej M., Migza M.: Regional differences In demand for coal as a basis for development of a product distribution model for mining companies in the individual customers segment. "Archives of Mining Sciences", Vol. 59, No. 3, 2014, p. 761.

2. Literature studies

The issue of assessing market attractiveness of customers for their suppliers is one of the newest problems of marketing methodology.

According to the latest and most comprehensive definition given by Huttinger, Schiele and Veldman² market attractiveness means “A set of multicriterion characteristics depicting a customer, which provide information on sales volume that could possibly be reached in business contacts with this company”.

A large share of the effort at defining the idea of market attractiveness comes from Polish economists. Let's quote definitions given by Chadam and Pastuszek³: “A set of variables characterizing the customer from the point of view of his buying potential” and by Łopacińska and Mazurkiewicz⁴: “A measure to what extent a customer meets the needs of supplier (high sales volumes, high mark-up or sales volume low as yet but high potential)”.

The need to assess market attractiveness of consumers for their suppliers is one of the principal elements of relationship marketing. Together with value marketing the concept is one of the most recently added to marketing activities of companies. Because of its links to the process of market attractiveness assessment, basic principles of relationship marketing were given below.

The concept of relationship marketing revolutionized the way market was viewed and the supplier's position in contacts with customers built. With development of information society and the so called knowledge-based economy it turned out that proposed by Culliton in 1948 and further enhanced by Borden⁵ concept of transaction marketing did not fully describe the essence of building solid and profitable ties with customers. This led to invention of the concept of relationship marketing, also called partnership marketing.

Gronroos, who is considered its creator, defines it as: “A profitable structure, maintaining and developing ties with customers and other partners while fulfilling the goals of both sides through exchange of values and meeting obligations”⁶.

The concept found its first application in the service industry, but was adapted to the

² Huttinger L., Schiele H., Feldman J.: The drivers of customer attractiveness, supplier satisfaction and preferred customer status: A literature review. “Industrial Marketing Management”, Vol. 41, No. 8, 2012, p. 1194.

³ Chadam J., Pastuszek Z.: Marketing aspects of knowledge-based management in groups of companies: case of Poland. “Industrial Management & Data Systems”, Vol. 105, No. 3-4, 2005, p. 459.

⁴ Łopacińska L., Mazurkiewicz A.: Integrated evaluation model strengthening effective management of strategic research programmes. “Proceedings of the 12th European on Research Methodology for Business and Management Studies”, 2013, p. 202.

⁵ Borden N.H.: The concept of the marketing mix. “Journal of Advertising Research”, Vol. 4, No. 2, 1964, p. 7; Borden N.H.: Marketing management – analysis, planning and control. “Journal of Marketing”, Vol. 37, No. 1, 1973.

⁶ Gronroos C.: Designing a long-range marketing strategy for services. “Long Range Planning”, Vol. 13, No. 2, 1980, p. 36; Gronroos C.: An applied service marketing theory. “European Journal of Marketing”, Vol. 16, No. 7, 1982, p. 30.

specifics of the manufacturing industry already in 1983 (by IBM)⁷. Development of relationship marketing theory led to broadening of the definition of the concept to encompass the phrase: “Understanding and anticipation of customers' needs, integration of resources, means and actions of the company to profitably and effectively provide products and services in a manner which is more efficient than that of the competition”⁸, as well as the final 5I's (Identification, Individualization, Interaction, Integration, Integrity)⁹.

Within relationship marketing three main sub-processes (stages) can be identified, as is schematically shown in Figure 1.

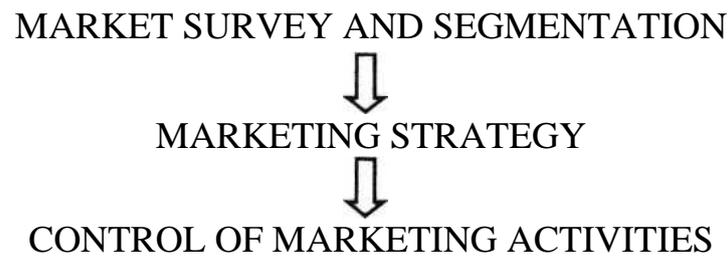


Fig. 1. The process of relationship marketing
Source: Developed by author.

By using market research, segmenting it into profitable sectors (objects), developing differentiated marketing strategies and controlling the effectiveness of the activities (Fig. 1), relationship marketing enables to create long-lasting and profitable relationships with customers.

According to this approach the customer is asked to specify his needs while at the same time his market attractiveness for the company is assessed. The findings are used to construct a differentiated system of marketing (targeted at sectors, customer groups) and after its introduction controls are used to measure its effectiveness.

3. Methodology

The principal and fundamental element of the proposed measurement method is the establishment of fundamentals, definitions and conditions of use. Implementation of the above indications resulted in a proposal of a measurement market attractiveness based on effective demand, which is the demand for coal in the segment of individual customers segment in real

⁷ Anton J.: The past, present and future of customer access centers. “International Journal of Service Industry Management”, Vol. 11, No. 2, 2010, p. 120.

⁸ Morgan R.M., Hunt S.D.: The commitment-trust theory of relationship marketing. “Journal of Marketing”, Vol. 58, No. 3, 1994, p. 20.

⁹ Morgan R.M., Hunt S.D.: Relationship-based competitive advantage: The role of relationship marketing in marketing strategy. “Journal of Business Research”, Vol. 46, No. 3, 1999, p. 281.

time expressed in a numeric manner. It should be noted that the following methodology can also be used for calculating the potential demand, which, however, shall be presented in other scientific articles. It was also assumed that this method may be used not only for the purpose of preparation of the mining company's strategy, but also its implementation, supervision and, if necessary, implementation of corrective measures – basically, within the scope of operational works. With usefulness and ease of use of the method in mind, author opted to use input data with a high level of availability, published on-line, and updated at least once a year. Thus, the calculations were performed based on figures derived from public analysis of the Polish Central Statistical Office (GUS) and collected by mining companies.

The main indicator author propose in order to determine the demand in different regions of Poland using the proposed method is market capacity. According to the methodology of relationship marketing, market capacity can be defined as quantitative and valuable. Quantitative capacity is defined as the amount of particular type of products sold in a particular market (to consumers comprising this market) in a given period of time. Valuable capacity refers to the value of these products¹⁰. Proceeding from the above definitions, quantitative capacity may be determined by way of calculating these ratios as the product of the number of consumers comprising the market in a given time and the amount of products purchased by them in that time period. In order to calculate the valuable capacity, the quantitative capacity value must be multiplied by the selling price of the product on the market at this time.

Applying the above definitions to the situation prevailing in the market of coal mining in Poland, while also taking into account the methodological assumptions presented above, it was concluded that the quantitative and valuable market capacity indicator shall be calculated based on the input data collected under the Local Data Bank of the Central Statistical Office (hereinafter referred to as LDB CSO).

Before proceeding to description of the various components of market capacity indicators, author would like to point out that the terms: “individual customer”, “household” and “inhabited dwelling” are used interchangeably in the remaining part of the article. As mentioned earlier, the concept of “individual customer” is a term used by the mining companies to describe household coal buyers. The following proposals followed the logical assumption that households inhabit dwellings, which thus results in full interchangeability of the two categories in relation to the same subject matter. In order to fully confirm this assumption, Pearson's correlation analysis was performed of the number of inhabited dwellings and households in each province of Poland using data collected during Census of 2002¹¹, which marked the last time the CSO collected parallel data for households and dwellings. The correlation coefficient obtained on the basis of these calculations reached the

¹⁰ Mruk H.: Marketing research In the European space. “Argumenta Oeconomica”, Vol. 20, No. 1, 2008.

¹¹ Narodowy Spis Powszechny 2002 – wyniki (2002). GUS.

http://stat.gov.pl/cps/rde/xbcr/gus/raport_z_wynikow_nsp_ludnosci_i_mieszkan_2002.pdf (25.05.2017).

level of 0.9997. This result fully confirms the thesis about the interchangeability of the figures collected by LDB CSO for dwellings and for households.

Author propose two categories of dwellings defined by the Central Statistical Office¹² to be considered as building units of the individual customers market: inhabited dwellings with an individual energy source powered by solid fuel and inhabited dwellings equipped with room furnace powered by solid fuel. As demonstrated by the authors' analyses carried out in the LDB CSO, the sum of these two (fully accessible and updated annually) categories lists all households in Poland using solid fuel for heating their homes. It was observed that the solid fuel used by 98% of these households was coal and the remaining 2% used alternative fuels, which could be used interchangeably with coal to power the furnaces¹³. Heating devices used in the above housing categories are mainly central heating furnaces, that is, individual furnaces used to heat an entire building using central heating installation. The other category of devices comprises room furnaces located in different rooms of the house to heat each of them separately. It follows that one household may use a single central heating furnace or more in the case of room furnaces, depending on the number of rooms in their homes.

To calculate the quantitative and valuable market capacity for the individual customers segment, we must also use the information about the average consumption of coal per consumption unit, which in this case is the household (precisely the heating device it uses). This type of data for households using central heating furnaces and room furnaces is published by LDB CSO and updated on an annual basis. Determination of valuable capacity requires the use of data on coal prices for individual customers (households). This type of data is also collected by LDB CSO as the average price in PLN per ton of coal sold by depot companies. Analysis of the availability and comprehensiveness of the data necessary for measurements enabled the authors to develop mathematical formulas used to calculate the quantitative market capacity indicator for the individual customers segment. This indicator should adopt a structure, which combines the capacity resulting from the use of central heating furnaces and room furnaces. This indicator can be expressed by the following formula (1):

$$P_I = N_{pco} \cdot U_{pco} + N_{pi} \cdot U_{pi} \quad (1)$$

where:

P_I – quantitative capacity of a given market in a given year, thousand Mg,

N_{pco} – number of inhabited dwellings with an individual energy source powered by solid fuel present on the market in a given year,

¹² Zużycie paliw i nośników energii w 2015 roku (2016). GUS. <http://stat.gov.pl/obszary-tematyczne/srodowisko-energia/energia/zuzycie-paliw-i-nosnikow-energii-w-2015-roku,6,10.html> (10.06.2017).

¹³ Zużycie energii w gospodarstwach domowych w 2012 roku (2013). GUS. <http://stat.gov.pl/obszary-tematyczne/srodowisko-energia/energia/zuzycie-energii-w-gospodarstwach-domowych-w-2012-r-,2,2.html> (10.06.2017).

U_{pco} – average coal consumption in a given market in a given year per single inhabited dwelling with an individual energy source powered by solid fuel, thousand Mg/y,

N_{pi} – number of inhabited dwellings equipped with furnaces powered by solid fuel in a given market in a given year,

U_{pi} – average coal consumption in a given market in a given year per single inhabited dwelling equipped with furnace powered by solid fuel, thousand Mg/y.

Given the above, the rate of quantitative market capacity of the individual customers segment will adopt the system described by the following formula (2):

$$P_W = (N_{pco} \cdot U_{pco} + N_{pi} \cdot U_{pi}) \cdot c \quad (2)$$

where:

- P_W – quantitative capacity of a given market in a given year, thousand Mg/y,
- c – average price of a ton of coal sold by coal depot companies in a given market in a given year, PLN/Mg.

The relationship between the valuable capacity value and the quantitative capacity can be described by the following formula (3):

$$P_W = P_I \cdot c \quad (3)$$

The final stage of methodological assumptions involved verification, allowing to determine the level of detail of regional data, and thus the results, based on which the subsequent assumption of the method, that is the differences in the level of demand in different parts of Poland, may be determined. In the course of analyses conducted by LDB CSO, it was determined that the data needed for the calculation of quantitative and valuable market capacity are collected at the district level. By combining this issue with the mining companies' need for deeper analysis of the geographical market capacity, resulting in turn from the need of the best marketing service, it was concluded that the district level is a sufficient for data collection and market analysis performer by mining companies. Starting with this proposal, it was possible to calculate the market capacity not only at the national level, but also for provinces or districts. This significant opportunity to show data in different geographical sections is reflected in Section 4, which presents some of the results of analysis.

4. Research results

On the basis on the measurement methodology presented in section 3 and using the data from the year 2014, the quantitative and valuable capacity, and therefore demand and market attractiveness, was measured in the segment of individual customers in Poland, though application of various geographical sections. The limited volume of this article does not allow

author to show all of the results, so the results of calculations are presented in two geographical sections:

- quantitative and valuable market capacity for Poland as a whole,
- quantitative and valuable market capacity for individual provinces.

Decision to present the demand level Poland as a whole arose from the desire to show the demand for coal in the entire individual customers segment, which, in author's opinion, should be considered as fundamental information in terms of strategy (decision-making) for the evaluation of this customer segment and potential effectiveness of its service by the mining company. Focusing on individual provinces intended to show regional differences in demand for coal in different parts of Poland, as well as illustrate quantity-value changes arising from differences in selling prices of this product. Presenting valuable market capacity of districts was primarily intended to demonstrate the possibility of calculating demand levels in such geographical section, which, in author's opinion, should be a cause for special interest of mining companies in this type of analysis due to the district-based activities of coal depots (as demonstrated by Bogacz¹⁴).

Following the above assumptions, the quantitative and valuable capacity was first calculated for the entire individual customer segment of coal in Poland, using formulas (1) and (2). The results of these calculations are shown in Table 1, both as total values and broken down by central heating and room furnaces.

Table 1

Quantitative and valuable market capacity of individual customers segment for coal in Poland in 2014

Quantitative capacity [thousand Mg]			Valuable capacity [thousand PLN]		
C.H. Furnaces	Room Furnaces	Total	C.H. Furnaces	Room Furnaces	Total
18 615,1	1782,0	20 397,1	13 776 849,4	1 318 840,4	15 095 689,8

Source: Developed by author.

The results of the analysis indicate that the total level of effective demand for coal in Poland in 2014 closed at the level of over 20,4 million tons (Tab. 1). Taking into account the selling price yielded a value of just over 15.1 billion PLN (Tab. 1). These two figures show in a straightforward and clear manner the attractiveness of the individual customers to the mining companies. On this basis, it was possible to determine whether or not this part of the Polish market is strategically interesting. The results quite significantly differ from the values obtained by other methods in studies conducted by other research teams, who primarily focus

¹⁴ Bogacz P.: Analyse of the market size as a method of demand measurement for hard coal in the Segment of Individual Customers in Poland. "Mineral Engineering Society", Vol. 32, No. 2, 2016; Bogacz P.: Market capacity of coal for heating and its regional differentiation as a basis for making directions of marketing activities of mining companies in a segment of individual customers. "Mineral Resources Management", Vol. 32, No. 2, 2016, p. 95.

The results shown in Figures 2 and 3 show different levels of demand for coal in different provinces in the group of individual customers in 2014. Greater aggregation of demand can be noted in the central and southern part of the Poland, with particular reference to Masovia and Silesia. Referring to the results of research, one should further note the higher attractiveness of the northern Polish provinces within the qualitative (Fig. 3) in relation to the quantitative system (Fig. 2). This follows directly from higher prices of coal sold by depots in this part of the country, related directly to the higher costs of transport from the region of Upper Silesia. If we take into account the increasing amount of coal imported into Poland, mostly imported by sea (which in the opinion of the author will contribute to lowering the price of coal in the north of the country in the future), due to the relatively small quantitative capacity of the northern provinces (Fig. 2), their potential for loss to imported coal should not decide, at least in the short term, of the loss of competitiveness of Polish coal in the segment of individual consumers as a whole.

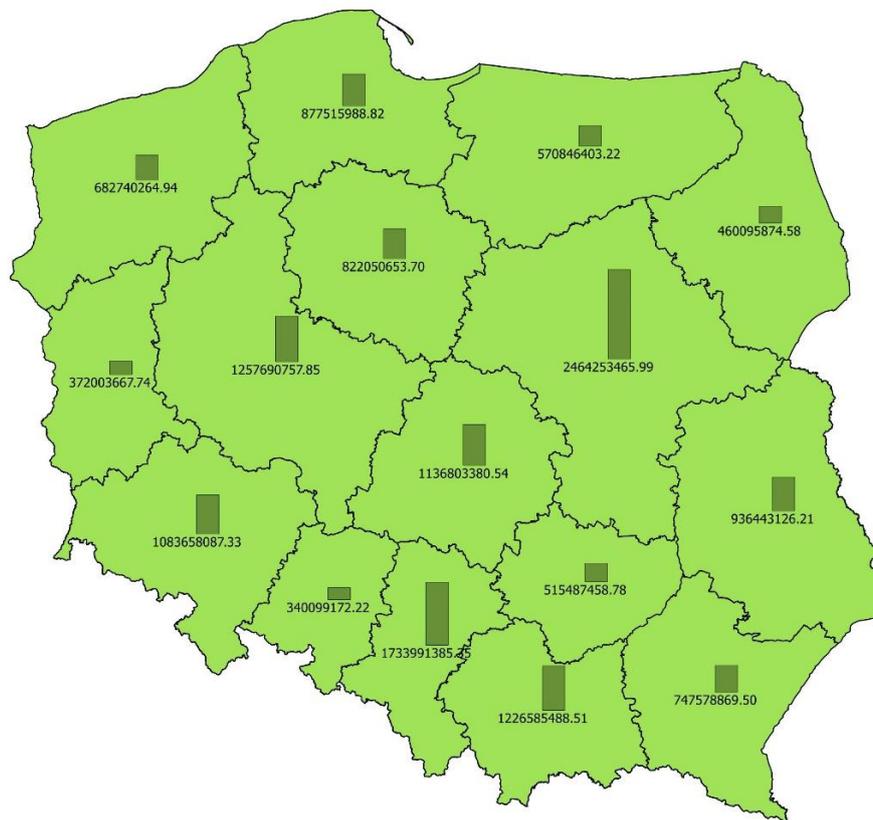


Fig. 3. Valuable capacity of individual customers segment for coal at the level of provinces in 2014 (thousand PLN)

Source: Developed by author.

The decidedly more important issue is the fact of possessing such knowledge in numerical system, which is fully reflected by the presented methodology, as well as its use for the best

organization of the distribution strategy of products and their promotion by the mining companies or their trading partners in these regions.

5. Conclusions

Results of analysis presented in this article have a number of interesting and important applications for mining companies in terms of the marketing situation in the segment of individual customers in Poland and the way of managing this part of the market. By proposing a useful and practical methodology for the study of differentiation of demand in the individual customers segment taking the best possible advantage of infrastructure already in place and taking into account present and future EU legislation, the mining companies are able to determine the directions and types of effective market activities in this segment of the market. The most important conclusions of this publication may be summarized as follows:

- activities of mining companies in the field of marketing based on the relationship marketing principle should be based on a system of market research (analysis of quantitative and valuable capacity and its regional differentiation) and a strategy of differential market impact. It is also a key element in terms of the increasing competitiveness of foreign coal imported into Poland,
- calculation of the level of attractiveness in the individual customer sector should be performed based on the quantitative capacity indicators, as well as valuable market capacity, determination of which is possible based on the proposed formulas filled with data collected for households on an annual basis by the Polish Central Statistical Office. Their highest attainable level of detail has been defined by author as a the provinces level,
- calculation of the capacity of individual customers segment in Poland for 2014 based on the proposed methodology yielded a level of 20,4 million tons, which translates into more than 15.1 billion PLN. These values are the result of coal combustion in central heating furnaces, which use about 85% of the fuel sold to individual customers,
- studies of differentiation in the quantitative and valuable capacity of the individual customers segment showed the highest levels of demand in the regions of central and southern Poland, with particular emphasis on the Silesian and Masovian provinces. Referring to the results of research, the higher level of attractiveness of the northern provinces of Poland in terms of quality to quantity ratio should further be noted. This follows directly from higher prices of coal sold by depots in this part of the country.

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