

ORGANIZATION OF COAL DISTRIBUTION IN PGG

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Abstract:

Motivation: The aim of this article is to show how the distribution of hard coal (and energy fuels) is organized in one of the largest coal companies in Europe. The analyzed company merged (1.04.2017) with Katowicki Holding Węglowy to form a new business entity. These actions have changed the organizational structure of the companies.

Problem statement: During the planning of the hard coal distribution the specific nature of the coal industry must be taken into account. First of all, an analysis of the hard coal sales time series reveals a regularity of this phenomenon. The increased consumption of this fuel is clearly marked in the winter. As a result, mining companies are not able to eliminate sales and production seasonality due to natural causes. Therefore, in order to adapt to variable market conditions mining companies must manage production and distribution in order to survive the period of reduced demand, but also to meet the increased demand when needed.

Approach and results: To examine the company's newly established structure a document analysis method was used. This study allowed to clarify the hard coal market in terms of marketing and to divide it on the basis of the coal consumption level. Two groups of customers, i.e. large customers and so-called small customers have been identified. The distribution channels of hard coal have been analyzed, as well as the methods of coal carriage to individual customers. The analysis of documents shows that small customers are the primary recipients of broken coal and small quantities of pea and rice coal. In the case of the coal distribution to small customers the most common solution is merchant participation. The role of the merchant is to reach the largest number of customers and to reduce seasonal fluctuations. The delivery of coal is usually carried out for those buyers by road transport.

Conclusions: The conducted research allowed to clarify the hard coal market in terms of marketing and to divide it based on the level of hard coal consumption. Analysis of coal distribution was carried out in order to enable future modifications of the company's distribution process using geomarketing tools such as for example geocoding, Voronoi polygons, and geoprocessing.

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Introduction

Distribution is a very complex area, thus, it can be a subject of analysis both from the point of view of macroeconomics and microeconomics. In case of macroeconomics it is a broad and holistic point of view, in which distribution means the entire physical flow of material products in economics from the sources that obtain them from nature to their final users and consumers. Whereas, in the latter case, distribution refers only to the process of sale and supply of goods of a specific company, through middlemen to the final purchasers (Skowronek & Sarjusz-Wolski, 2011).

In the subject literature there are many definitions of the term, however, each of them concerns the physical movement of goods. Moreover, it can be noted that the presented definitions of distribution can be divided into two groups, namely:

- Emphasizing connections of distribution with marketing,
- Emphasizing connections of distribution with logistics.

The first group includes Kotler's definition stating that the distribution is a "profit oriented activity including planning, realization and control of the physical flow of materials and final products from the place of their origin to the place of sale" (Kotler, 1994). Thus, distribution is one of instruments of marketing influence on the market. In other words, together with the product, price and promotion it creates an integrated marketing structure aimed at satisfying customers' needs and convincing them to buy the offered products. Due to connections and dependencies of the above marketing instruments the distribution must also be adjusted and change together with them. Its essence is overcoming spatial, time, quantity, assortment and information barriers, separating manufacturers from the final buyers (Czubala, 2001).

In turn, the distribution in the logistic aspect "covers the integrated structure of product and information flows coupled with them" (Blaik, 2017). Also, the above quoted Kotler notices the

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connection of distribution and logistics and draws attention to the tasks of logistics in the case of distribution. Therefore, he states that in the case of distribution, the function of logistics is to coordinate the activity of suppliers, the purchasing department, the marketing department, the participants of distribution channels and customers (Blaik, 2017).

Due to the fact that the distribution is a very broad and complex area it is not possible to unambiguously state which of the above concepts of the distribution essence is relevant. Thus, in practice of solving distribution problems a situational approach is applied, which involves the selection of manners of proceeding and specific solutions depending on conditions in which the actions are conducted. Distribution is an intermediate link between manufacturing and consumption, thus, it should, be in cooperation with other fields of a company, fill in gaps (of time, spatial, quantity, assortment and informative) separating these two spheres. To sum up, the essence of distribution is to adjust the supply to the demand through gathering and delivering goods with utilitarian structure and features, which meet the buyer's demands (Cyplik et al, 2011).

The distribution of goods also regards two major decision making problems. The first one is connected with determining the channels of distribution in a transactional aspect. And the second decision making problem regards the selection of manners of goods transportation and is called the physical distribution or distribution logistics.

The essence of the physical distribution is the flow of final products from the place of their manufacturing to the place of their purchase by final buyers, whereas its target is to provide the clients with products at the lowest possible cost (Czubała, 2001). Therefore, distribution logistics covers storing, transport, sorting and packing of goods as well as taking orders, managing reserves and activities connected with the recipients' service. The efficiency of physical distribution depends on the selection of middlemen and the distribution channel structure (Pisz et al, 2013).

Whereas, distribution channels also referred to as sale, marketing, trade or market channels are defined in many ways. However, from among the existing definitions two basic approaches are distinguished, namely functional and subject ones.

In the functional aspect a distribution channel is a manner and order of joining successive links of a chain (people, institutions) through which the flow of one or more streams connected with marketing activity takes place (Garbarski & Rutkowski, 2000). In other words, it is a chain of successive institutions or people through which products are moved and the accompanying information streams. The functional approach takes into consideration efficiency of the performed distribution activities by specific participants of the channel. In turn, in the subject approach the distribution channel is a set of interdependent subjects, which cooperate in the process of product delivery to the recipients (Kotler, 1994). In this approach one may distinguish: participants, who transfer and receive the title to the moved products, middlemen, who do not take this title over but only support the process of goods and services transfer, and institutions, which provide various services to the channel participants (Ciesielski, 1999).

The process of shaping distribution channels covers decisions connected with the determination of the channel length, the channel width on each level, the selection of relevant channel participants and determining their functions as well as specifying integration connections between particular participants of the channel (Pisz et al, 2013).

The distribution channel structure depends on many various factors, which undoubtedly include: the product features, client's needs and requirements, the level of costs in the distribution channels, the degree of permanent assets with which the company is equipped and employees or the accepted distribution strategy. Thus, when creating distribution channels, first of all the following should be taken into account: the company's potential, clients; expectations and product structure (Bendkowski & Pietrucha-Pacut, 2003). However, also specific analysis of the marketing background and changes occurring in trade, transport, storing or telecommunication should be conducted (Przybyłowski et al , 1998)

Organization of hard coal distribution process in PGG

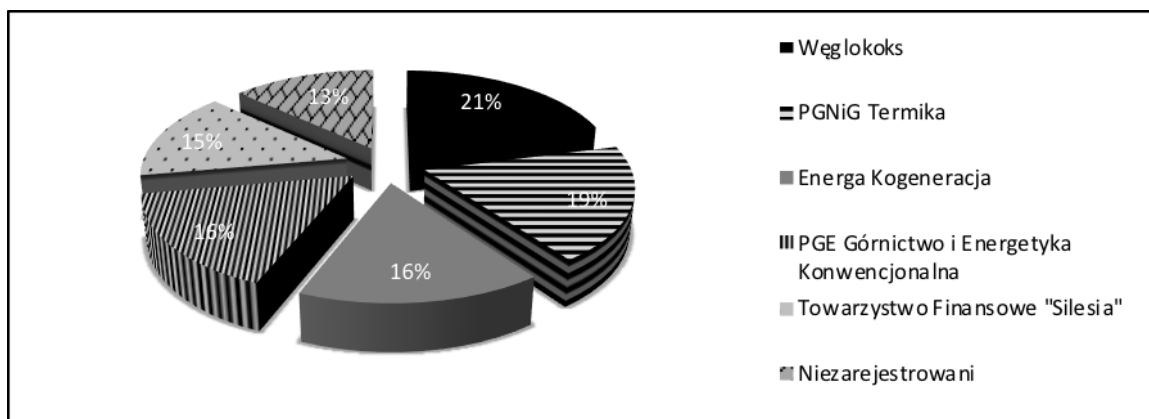
The agreement on the acquisition by WĘGŁOKOKS Rybnicki Okręg Wydobywczy with a registered seat in Katowice of a part of bankrupting the Kompania Węglowa with a registered seat in Katowice signed on 26th April 2016 resulted in a transformation of the company into the Polska Grupa Górnicza

(PGG) Thus, the newly formed company took both the property and liabilities of Kompania Węglowa. The property which was taken over included 11 hard coal mines (Bielszowice, Bolesław Śmiały, Chwałowice, Halemba-Wirek, Jankowice, Marcel, Piast, Pokój, Rydułtowy-Anna, Sośnica, Ziemowit) and 4 facilities (Repair-Manufacturing Facility, Mining Investment Works Facility, Information and Telecommunication Facility, Power Stations Facility). Next, in conformity with the above mentioned agreement, on 1st July 2016 the implementation of the associated model assuming the link of mines started. Therefore, the following were founded:

- KWK ROW (from combined KWK Marcel, KWK Rydułtowy, KWK Jankowice, KWK Chwałowice),
- KWK Ruda (from combined KWK Halemba-Wirek, KWK Pokój, KWK Bielszowice),
- KWK Piast-Ziemowit (from combined KWK Piast, KWK Ziemowit),
- KWK Sośnica,
- KWK Bolesław Śmiały.

In turn, on 1st April 2017 Katowicki Holding Węglowy sold to PGG the following hard coal mines: Mysłowice-Wesoła, Murcki-Staszic, Wieczorek, Wujek and Śląskie Centrum Usług Wspólnych. These actions resulted in changes in the organizational structure of the company, and consequently the manner of management. Figure 1 presents the percentage share of particular shareholders of PGG on 07.06.2017.

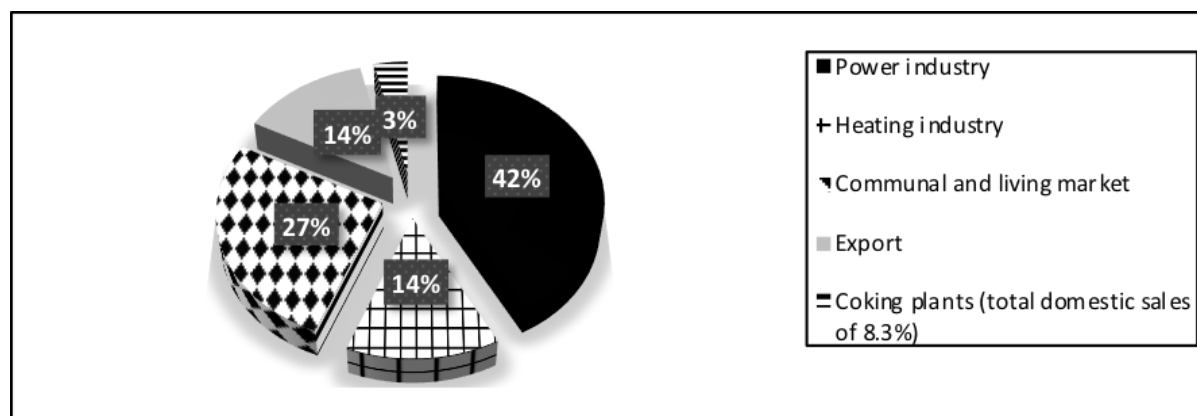
Figure 1: Shareholders of PGG



Source: Authors

The hard coal market of the selected mining company is created by a set of its recipients. The recipients of PGG are mainly large energy production subjects but also the heating industry, clients from the industrial sector, craft, agriculture and households using coal fuel for heating purposes. The market sale structure of PGG on 01.05.2017 is presented in Figure 2.

Figure 2: The coal sale structure of PGG



Source: Strategia PGG w latach 2017-2030 (2017)

Having defined the market its segmentation can be performed. This means a division of recipients on the grounds of some examined feature, e.g. level of consumption (use) of the certain commodity, the recipient's ability to pay or the type of purchased goods. In PGG, two major segments of recipients can be distinguished:

- strategic recipients. This sector includes, first of all, professional power and heating industries
- the remaining so-called small recipients. They are mainly households, manufacturing-trade companies, agricultural farms, gardening, and state administration.

In case of the strategic recipients the sale of coal and energy fuels is carried out on the grounds of many-years and direct contracts between PGG and recipients, for whom the company offers a number of forwarding and logistic facilities. This kind of solution involves the setting of constant price for a longer time period, which is not always beneficial for the coal company. However, the advantage is undoubtedly securing the market for a longer period of time. In turn, the market in the segment of the so-called small recipients of PGG is a very difficult market, especially considering the large competition of natural gas and heating oil. Keeping it requires successive implementation of policy based not only on the adjustments to its requirements but also on promoting new, attractive manners of its functioning. The sale in this segment of recipients is mainly conducted through a network of authorized sellers.

Next, having completed the market segmentation, a distribution strategy should be determined in relation to the particular segments, so, among others, the distribution channels should be specified. In case of PGG there are three types of distribution channels.

The first one is a direct distribution channel. This channel mainly serves strategic clients all over the country. Indirect distribution channels also cover the sale of coal in the company's mines. In order to improve the service of direct sale from the company's mines they introduced a daily limit and a daily limit per 1 means of transport per one contractor (Table 1). A buyer can individually make a purchase for cash or have it purchased by a carrier in which case he has to equip him with a relevant power of attorney, which is available from the company website. Purchase for cash is conducted without the necessity of any notification, on the principle of order coming for loading to the mine scale. The Customer Service Department of the mine conducting loading is responsible for the organization of a cash sale.

In addition, the additional distribution channel is used in the case of the Electronic Coal Auction. Each company with legal personality or natural person conducting business activity on the grounds of an entry in the register of business activity or on the grounds of separate regulations, upon meeting certain requirements determined in regulations of the Electronic Coal Auction of PGG organized by PGG can take part in such an auction. The winner, having agreed the conditions, collects coal from one of mines of PGG.

Moreover, in order to facilitate the access to the company's products and to strengthen its position in the market in comparison to similar products from import, PGG developed its distribution channels and expended its trade offer. In case of the direct channel the company was the first in the Polish market to set up in June 2016 an online shop selling pre-packed coal. Initially this channel sold only pre-packed eco-pea, which could be ordered on pallets consisting of 30 packs 25 kg each. However, a large interest in this form of purchase (in the first month of its existence the online shop sold. 1,800 tones of this type coal, i.e. app. 16%) led to the broadening the assortment of the shop. In 2017 the PGG online shop sold eco-peas on pallets of 750 kg (30*25kg) and in so-called Big Bags of 1,000 kg as well as eco-dusts of 1000 kg volumes (big bags). Additionally, they are planning to broaden the shop's offer for individual customers.

The second channel used for small distribution from PGG mines is an indirect channel. In the case of this channel the middlemen are Authorized Sellers (AS).

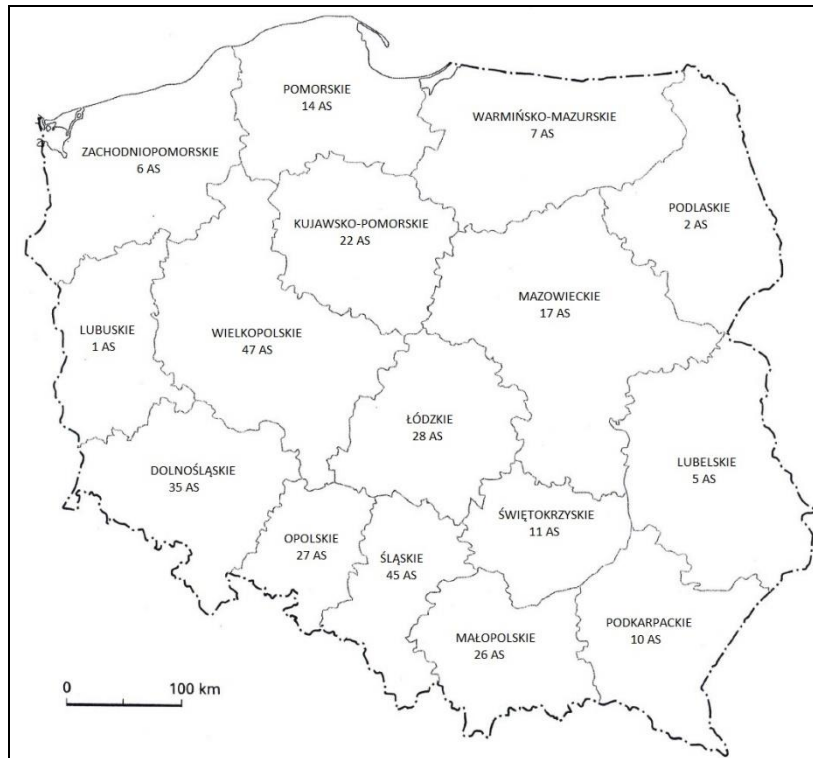
In order to achieve high quality of service, PGG conducts periodic assessment of AS, thus the number of authorized sellers practically changes all the time. On 19.06.2017 PGG has signed contracts with 260 AS, who have 310 coal warehouses all over the country (Figure 3).

Table 1: Limits of coal purchase in specific PGG mines

Mine	Loading Hours	Range	Limit per car: tons once a day, for one contractor, per one means of transport.	Daily limit
KWK Myslowice-Wesola	Loading 1 st shift from 6:00 to 13:00	Lump nuts I pea II nuts II	5 tons 5 tons 8 tons 8 tons	10 tons 10 tons 24 tons 24 tons
KWK Wujek - Ruch Wujek	Loading 1 st and 2 nd shifts from 6:00 to 21:00	Lump nuts nuts II pea pea II	6 tons 6 tons 6 tons 6 tons 6 tons	24 tons 24 tons 24 tons 24 tons 24 tons
KWK Murcki-Staszic	Loading 1 st shift from 6:00 to 13:00	Pea	8 tons	30 tons
KWK Wieczorek	Loading 1 st shift from 6:00 to 13:00	Pea nuts II	8 tons 8 tons	20 tons 20 tons
KWK Sośnica	Loading 1 st shift from 6:00 to 13:00	Nuts Pea	8 tons 8 tons	100 tons 50 tons
KWK Ruda - Ruch Halemba	Purchase from 6:00 to 13:30	Nuts dust pea	8 tons 8 tons 8 tons	50 tons 50 tons 24 tons
KWK ROW – Ruch Jankowice	Sale from 6:00 to 18:00	Lump nuts pea 5-25 dust II Flotoconcentrate	4 tons 5 tons 5 tons 8 tons up to full car loading capacity	32 tons 60 tons 60 tons 32 tons no limit
KWK ROW Ruch Bielszowice	Loading 1 st shift from 6:00 to 13:00	Lump pea nuts	8 tons 8 tons 8 tons	20 tons 20 tons 80 tons
KWK ROW Ruch Chwałowice	Loading 1 st and 2 nd shift from 6:30 to 21:30	Pieklorz-Ecopea nuts dust I pea 20-40 dust II	8 tons 8 tons 8 tons 4 tons 8 tons	90 tons 90 tons no limit 60 tons 100 tons
KWK ROW - Ruch Rydułtowy	Loading 1 st and 2 nd shift from 6:00 to 21:00	Nuts pea, fine mud	4 tons 8 tons 8 tons up to full car loading capacity	100 tons 50 tons 50 tons no limit
KWK ROW – Ruch Marcel	Loading 1 st and 2 nd shift from 6:00 to 21:30	Lump nuts pea Flotokonzentrat dust II	4 tons 8 tons 8 tons no limits 8 tons	32 tons 100 tons 60 tons no limit 32 tons
	Loading 1 st shift from 6:00 to 13:00	nuts II	6 tons	200 tons
KWK Piast -Ziemowit Ruch Piast: Wola	Loading 1 st and 2 nd shift from 6:00 to 21:00	Retopal-Ecopea – bag 25 kg	4,5 tons	50 tons (Pallets EURO)
		Retopal-Ecopea mud	5 tons up to full car loading capacity	50 tons no limit
KWK Piast -Ziemowit – Ruch Piast: Bieruń Zakład Wola and Bieruń	Loading 1 st shift from 6:00 to 13:00	pea 5-25 mud	5 tons up to full car loading capacity	25 ton. no limit
	Loading 1 st and 2 nd shift from 6:00 to 21:20	Lump nuts dust II	5 tons 5 tons 8 tons	50 tons 50 tons 100 tons
KWK Piast- Ziemowit Ruch Ziemowit	Loading 1 st and 2 nd shift from 6:00 to 21:20	lump, nuts Retopal- Ecopea, pea 20-40 dust II dust II	8 tons 8 tons 8 tons 8 tons 8 tons 5 tons	100 tons 100 tons 100 tons 100 tons 100 tons 100 tons

Source: Authors

Figure 3: Map of authorized PGG sellers

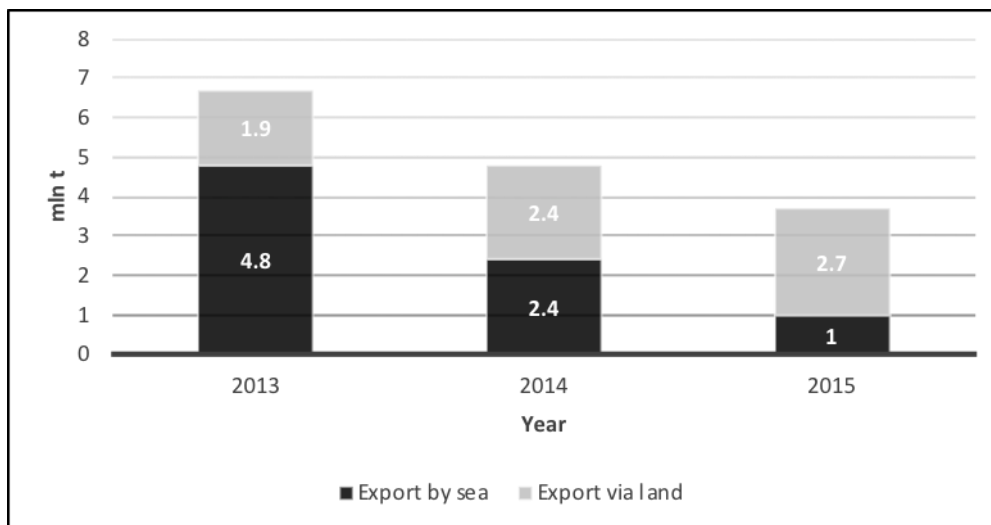


Source: Authors

The last channel used by PGG regards coal export. In this case the transport is conducted through Węglkokoks S.A.

The distribution of coal and power fuel from mines of PGG in the national territory is carried out by means of two transport branches. The first one is railway transport and the second one is road transport. Major recipients of coal by road transport are individual customers and smaller companies located in close neighborhood to fuel warehouses. In the case of export, the distribution of coal and power fuel from the mines of PGG is also carried out by means of two transport branches, i.e. railroad transport and road transport. In previous years the coal from PGG mines was also exported by sea, however, due to too high costs, in recent years the decrease of coal transport by sea was noticed (Figure 4). Thus, in 2016 a decision was taken to stop transporting coal by sea.

Figure 4: Coal export from 11 mines of PGG



Source: Authors

To sum up, there are a few ways to purchase coal and coal fuels from PGG and they are:

- through coal auctions – PGG uses a portal created by the company COIG, enabling public auction for the sale of coal,
- at authorized sellers– PGG
- through individual purchase in the place where the coal is produced, i.e. mines of PGG
- in the online shop of PGG

Conclusion

The occurrence of globalization and increased level of competition forced mining companies to create elaborate and adequate distribution strategies in order to maintain their competitive ability.

When conducting research of the hard coal market seasonal trend can be observed. It affects both the production and coal sales. This seasonal characteristic demonstrates the increase in hard coal consumption in the heating season and its decrease in the summer season. Considering the above, mining companies each year have to manage the production and distribution in such a manner as to survive over the period of lower demand, but also, if needed, to satisfy any increased demand from recipients.

The recipients of PGG are big power industry entities, the heating industry, industrial sector clients, craft, agriculture and households using coal fuels for heating purposes. These recipients can be divided into two segments, namely strategic customers, with whom PGG has concluded long-term direct contracts and the remaining so-called small recipients.

The PGG company uses 3 distribution channels: indirect, direct and export. The direct channel serves strategic clients and small recipients buying coal directly from mines through internet auctions. Moreover, in 2016 the company extended this distribution channel with an online shop offering pre-packed coal. The indirect distribution channel is dedicated to small recipients. The middlemen in this channel are companies called Authorized Sellers. In order to maintain a high quality of service these AS are currently assessed by the company. The coal sale through the last channel, export, is dealt with by one of the company co-owners, namely Węgłokoks. Coal transport to recipients is carried out by means of two transport branches: railway and road transport. Till 2016 the export of coal was also carried out by sea, however, due to high costs this form of transport was abandoned.

The conducted distribution analysis of PGG may be the base for better management of the existing distribution channels. There is a possibility to apply geo-marketing tools to select the most optimum supplier networks. They enable the determination of zones of sale of specific distribution points and the introduction of changes in localizations of particular distributors' locations, including the elimination or transfer of redundant points, as well as the determination of optimum locations for new distributors. Moreover, it is also possible to specify the likelihood of gaining new buyers on the grounds of information about clients and determine the spatial trends of the company's product sale volumes.

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