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Modeling the product line management process at the level of A large pharmaceutical distributor

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Abstract---Background. Socio-economic, geographical, logistic and other features of the Russian pharmaceutical market determine a number of requirements for its wholesale segment. The growth of competition, product saturation and information availability for consumers of the necessary information about the characteristics of goods, their advantages and disadvantages directs the activities of pharmaceutical distributors to search for reserves to increase their competitiveness. One of these areas is the optimization of product line management. Objective. The purpose of the study was to develop a model for managing the assortment policy at the level of a large pharmaceutical distributor, based on the results of analyzing the influence of internal and external factors in the Russian pharmaceutical market and the dynamics of the structure of the product line. Methods. The work used the methods of bibliographic description, content analysis, documentary observation, data copying, SWOT analysis and ABC analysis, the method of expert assessments, modeling. Findings. The SWOT analysis of the operating conditions of a large Russian pharmaceutical distributor revealed a number of external and internal factors affecting economic results. In the study using ABC analysis of the dynamics of the structure of the product line, the economic parameters of product groups were established, their importance in the formation of profits was determined. The obtained data formed the basis of the proposed model for managing the assortment policy at the level of a large pharmaceutical distributor, taking into account the peculiarities of the impact of the external environment and internal conditions of activity. Conclusions. The presented model of assortment policy management contains a sound methodological approach to optimizing product line at the level of a large pharmaceutical distributor. Practical implementation of the

proposed model helps to increase the competitiveness of a pharmaceutical distributor in modern market conditions.

Keywords---medicines, product line, assortment policy, pharmaceutical distributor, pharmaceutical market.

Introduction

The study of the profitability of the assortment of goods and services is becoming increasingly relevant for all sectors of the economy against the backdrop of growing competition, commodity saturation and information availability for consumers of the necessary information about the characteristics of goods, their advantages and disadvantages. For Russian pharmaceutical distributors, this topic is relevant, first of all, due to the specific conditions for the functioning of the pharmaceutical market associated with its territorial scope and high level of government regulation. In addition, one should take into account the dual nature of the consumer properties of drugs. On the one hand, they are a socially significant and highly demanded product that affects human health and quality of life. On the other hand, it is a product of economic activity, the development, production and promotion of which are accompanied by significant financial costs that require reimbursement and profit not only by drug manufacturing organizations, but also by other subjects of the distribution network, including pharmaceutical distributors [1, 2].

Socio-economic, geographical, logistic and other features of the Russian pharmaceutical market determine a number of requirements for its wholesale segment, including the formation of a powerful network of commercial organizations specializing in pharmaceutical distribution. Currently, the concentration of entities in the wholesale segment of the domestic pharmaceutical market is one of the highest. This situation often leads to contradictions and the struggle between competitors to increase their market share. The main tools used by pharmaceutical distributors to maintain their place in the market are a wide range of products and services offered, additional services for customers, the availability of sales personnel for personal sales, and a reduction in costs when working with pharmaceutical stocks [3].

The realities of today are forcing pharmaceutical distributors to resist actions to restrict their functions by other market participants [4]. Thus, drug manufacturing organizations tend to use them only as logistics operators, while reducing the distribution business margin in their favor, and large pharmacy chains in the retail segment of the market try to work with the largest manufacturing organizations directly, thereby reducing distributor turnover.

Federal Law of the Russian Federation of 28.12.2009 № 381-FZ "On the Basics of State Regulation of Trade Activities in the Russian Federation" established that wholesale trade is a type of trade activity associated with the acquisition and sale of goods for use in entrepreneurial activities (including for resale) or for other purposes not related to personal, family, household and other similar use [5]. In accordance with the federal law of the Russian Federation dated 12.04.2010 No.

61-FZ "On the Circulation of Medicines", a pharmaceutical distributor is understood as an organization engaged in the wholesale trade of medicines, their storage, transportation in accordance with the established requirements [6].

The content of distribution activities follows from the above institutional provisions. The content of wholesale trade in the field of drug supply is the ability to actively regulate regional and sectoral markets through the accumulation and movement of goods. Wholesale trade organizations are called upon to improve the distribution of goods, to develop centralized and decentralized supplies of goods. The most important task of the wholesale trade is to regulate the supply of goods in accordance with demand. The objective possibility of successfully solving this problem is due to the intermediate position of wholesale trade, since a significant part of commodity resources is concentrated in it [7, 8].

Optimizing the activities of pharmaceutical distributors is an indispensable condition for the functioning of such a direction of pharmaceutical safety in our country as providing the retail pharmacy network with a sufficient range of drugs and other pharmaceutical goods in width and depth in order to maintain the socially necessary level of their consumption by the population [8, 10, 11, 12].

All of the above indicates that the activities of pharmaceutical distributors tend to become more complex, therefore, it is necessary to search for new ways to increase their profitability, in particular, through optimization of the assortment policy. Thus, the purpose of our study was to develop a model for managing assortment policy at the level of a large pharmaceutical distributor, based on the results of analyzing the influence of internal and external factors in the conditions of the Russian pharmaceutical market and the dynamics of the structure of the product line.

References review

The conducted patent search showed that in the structure of scientific problems of marketing, a large number of works of foreign and domestic scientists are devoted to the management of assortment policy. The works of F. Kotler and G. Armstrong [13], L.A. Zhigun [14], S.N. Diyanova and N.I. Denisova [15], L.V. Andreeva, N.G. Apresova and T.A. Andronova [16], A.Yu. Yudanov, E.A. Volskoy, A.A. Ishmukhametova, M.N. Denisova [17], D.I. Leonova [18], T.I. Kabakova, V.L. Adzhienko, A.A. Umirova [19], O.V. Krylova, T.M. Litvinova, L.I. Babaskina, D.V. Babaskina, O.V. Savinova [20]. Content analysis of scientific papers showed the general theoretical focus of research on the processes of managing the product line. At the same time, no applied research based on the specific economic performance of large pharmaceutical distributors has been published over the past ten years.

Methods

Using the methods of bibliographic analysis and content analysis, we analyzed the legislative acts of the Russian Federation regulating distribution activities and scientific works of foreign and domestic scientists on the topic of scientific work.

The methods of documentary observation and data copying were used to analyze the economic results of the activities of a large Russian pharmaceutical distributor, selected as an experimental base for the study.

SWOT analysis was used to study the factors describing the object of research into four categories: Strengths, Weaknesses, Opportunities, Threats. In this case, "strengths" and "weaknesses" are factors of the internal environment of the studied object (that is, those that the object itself is able to influence), and "opportunities" and "threats" are factors of the external environment (that is, those that can affect an object from the outside and by the object itself, at the same time, are not controlled).

The method of expert assessments was used when processing the results of the SWOT analysis.

The ABC analysis method was used to study the structure and properties of the product line of a pharmaceutical distributor.

As an experimental base for the study of the profitability of the product line, one of the largest Russian pharmaceutical distributors was chosen, which in 2020 entered the rating of the 100 most expensive companies in Russia, taking 77th place in terms of capitalization (375,7 million US dollars). According to the Ministry of Economic Development of Russia in 2015, this pharmaceutical distributor was included in the list of 199 strategic commercial organizations of our country, the profit of which forms more than 70% of the total national income, and the number of employees is more than 20% of the total number of workers employed in the economy [21]. In accordance with the ethical standards for the use of commercial information, hereinafter, the large Russian pharmaceutical distributor, investigated in this work, will be referred to as the COMPANY.

Results

In order to study the influence of external and internal factors on the economic activity of the COMPANY, a SWOT-analysis matrix of "strengths" and "weaknesses", "opportunities" and "threats" was formed that determine the conditions for its activities in the realities of the Russian pharmaceutical market (Table 1).

Table 1. COMPANY SWOT Analysis Matrix

Strengths	Weaknesses
1S – A wide network of branches and representative offices in Russia and abroad	1W – High degree of centralization of activity management
2S – Well-established partnerships with pharmaceutical suppliers	2W – Inventory maintenance costs
3S – High customer loyalty	3W – Lack of ability to work with all clients
4S – High level of services provided to clients	4W – Lack of flexible pricing mechanisms

5S – Wide product line	5W – Shipping costs for delivering goods to customers
6S – Diversification of activities (development of own production facilities and pharmacy network)	6W – Deficiency of highly qualified personnel
Threats	Opportunities
1T – Increased competition and lower selling prices and profits	1O – Displaying competitive advantages and growing market share
2T – Rising prices for raw materials, logistics and other services	2O – Development of information technologies for managing commodity flows
3T – Strengthening the regulatory role of the state towards increasing the social responsibility of business	3O – Receiving stable profits through active participation in preferential drug provision programs for citizens
4T – The fall in the solvency of some clients, due to the consequences of the economic crisis	4O – Growth in the number of final consumers of pharmaceutical goods and services due to an aging population
5T – Low medical culture of the population and the awareness of doctors about new pharmaceutical products	5O – Use of modern technologies to promote goods and services

Further, all combinations of “strengths” and “weaknesses” with “opportunities” and “threats” were analyzed, while verbal judgments of experts were converted into numerical values on a five-point scale of assessments (the relationship is more significant with a higher assessment). As experts, the leading specialists of the COMPANY were involved in the amount of 17 people with work experience, including 2 doctors and 4 candidates of pharmaceutical sciences (35,3%). The generalized opinions of experts (Table 2) made it possible to obtain the numerical values of the combination of all “strengths”/“weaknesses” with “threats”/“opportunities”.

Table 2. Numerical values of experts' opinions on assessing the significance of the bundles of “strengths”/“weaknesses” with “threats”/“opportunities”

SWOT-analysis elements		Strengths						Weaknesses						Σ
		1S	2S	3S	4S	5S	6S	1W	2W	3W	4W	5W	6W	
Threats	1T	2	5	2	2	2	3	3	5	4	4	3	4	39
	2T	3	5	3	4	5	4	4	5	5	5	5	2	50
	3T	4	5	5	4	5	5	5	5	5	4	1	1	49
	4T	3	2	4	1	4	3	3	3	3	3	1	1	31
	5T	4	3	4	3	4	4	4	4	4	2	1	2	39
Opportunities	1O	4	2	1	5	3	2	4	4	2	3	4	4	38

	20	5	4	5	5	5	5	4	4	5	3	3	2	50
	30	3	2	1	2	4	3	2	2	3	1	2	1	26
	40	4	3	3	3	3	2	3	2	3	3	4	4	37
	50	3	1	2	1	3	1	2	5	2	2	1	5	28
Σ		35	32	30	30	38	32	34	39	36	30	25	26	-

From the obtained numerical results of the expert assessment of the significance of the bundles of external and internal factors, a list of problems influencing the current state and future development of the COMPANY was formed.

According to the generalized opinions of experts, it can be concluded that the greatest influence on the “strengths” and “weaknesses” is exerted by such “threats” and “opportunities” as:

- **2T** – Rising prices for raw materials, logistics and other services, the significance of the bundle = 50;
- **3T** – Strengthening the regulatory role of the state towards increasing the social responsibility of business, the significance of the link = 49;
- **20** – Development of information technologies for managing commodity flows, the significance of the link = 50;
- **10** – Display of competitive advantages and growth of market share, the significance of the link = 38.

At the same time, "threats" and "opportunities" are significantly influenced by such "strengths" and "weaknesses" as:

- **5S** – A wide range of products, the significance of the bundle = 38;
- **1S** – A wide network of branches and representative offices in Russia and abroad, the significance of the link = 35;
- **2W** – Inventory costs, linkage significance = 39;
- **3W** – Lack of ability to work with all clients, the significance of the link = 36.

Thus, the directions of activity of the COMPANY were highlighted, which deserve attention in order to strengthen its position in the pharmaceutical market.

Assortment policy is an activity to form a list of goods that are most preferable for successful work in the market and ensure the economic efficiency of the organization as a whole [22, 23]. The purpose of the assortment policy is to form the product line of the organization in order to solve its strategic market goals, depending

on the current and future needs of the market. The assortment policy is especially significant in a tough competitive environment. Leadership in the competition for the client is gained by the one who is most competent in the assortment policy, owns the methods of its implementation and can manage it as efficiently as possible.

The total number of stock keeping units (SKU) of the COMPANY as of 01.01.2020 amounted to about 19,7 thousand items. In terms of the number of trade names, the leading assortment group "Medicines and Pharmaceutical Substances", which had a share of about 44% or 8,7 thousand SKU. The share of "Parapharmaceutical products for health, hygiene and beauty" was 38%, or about 7,5 thousand SKU. "Medical devices, dietary supplements" accounted for about 18% or 3,5 thousand SKU.

In order to find ways to manage the assortment policy at the level of a large pharmaceutical distributor using ABC analysis, methods of documentary observation and copying of data, a study of the structure and consumer properties of the COMPANY'S product line was carried out.

During the ABC analysis of turnover, the following criteria were set:

- group A: included goods, the total contribution of which to the turnover of the COMPANY was about 81%;
- group B: included goods with a share of about 10% of the total contribution to turnover;
- group C: included all other goods with a share of 9% of the total contribution to turnover.

According to the results of the analysis, it was found that group A includes 11% of the total number of SKUs (2169 items), group B - 10% (1972 items), and group C - the remaining 79% of SKUs (15580 items).

The results of the ABC analysis of the product line of the investigated COMPANY in natural and relative terms are presented in Table 3.

Table 3. Results of ABC analysis of the COMPANY'S product line in natural and relative terms

ABC analysis parameters	Product line groups			Total
	A	B	C	
Natural indicators				
Number of SKUs	2163	1972	15580	19721
Turnover, million rubles	75438,47	9313,91	10244,73	94997,11
Cost, mln rubles	69578,99	8433,99	7636,79	85649,77
Gross income, RUB mln	5859,48	879,92	2607,94	9347,34
Total costs, million rubles	3236,27	655,77	900,98	4793,02
Profit, RUB mln	2623,21	224,15	1706,96	4554,32

Relative indicators				
Share in turnover, %	81	10	9	100
Share in the total number of SKUs, %	11	10	79	100
Relative markup, %	6	8	13	9,0*
Share of costs in prime cost, %	5	8	12	8,3*
Operating profitability, %	1,1	0,4	0,9	0,8*

* – average

The data obtained during the ABC analysis of the product line became the basis for the development of a conceptual model for managing the assortment policy in order to maintain the level and strengthen the economic position of pharmaceutical distributors in the domestic pharmaceutical market.

In order to form and manage the optimal product line at the level of a large pharmaceutical distributor, we have proposed a graphical model of this activity aimed at obtaining maximum operating profit. (Figure 1).

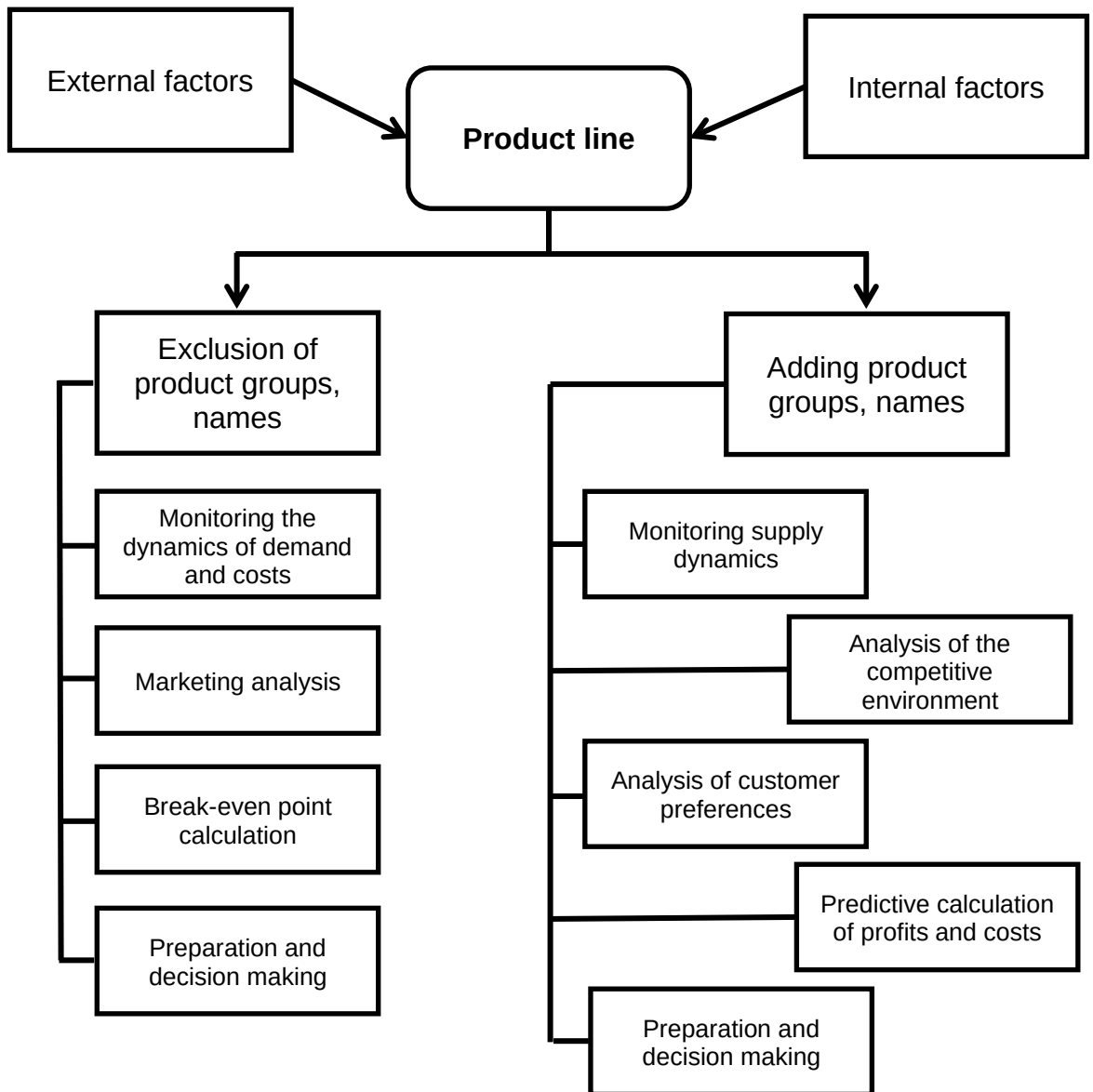


Figure 1. Assortment policy management model at the level of a large pharmaceutical distributor

The analyzed experience of a large pharmaceutical distributor shows that in order to increase the absolute size of profits, the assortment must be constantly rotated: the assortment should be replenished with new product groups and goods, as well as the economically justified exclusion of certain names of goods.

Discussion

The results of the SWOT analysis showed that the activities of the pharmaceutical

distributor are significantly influenced by the factors of the external and internal environment, the dynamics of which should be continuously monitored. It is advisable to include the following external factors: high volatility of the cost of raw materials, supplies and logistics and other services; state regulation of the pharmaceutical sector, aimed at enhancing the social responsibility of the pharmaceutical business through the regulation of prices for vital and essential medicines; free drug provision for certain categories of citizens eligible for state social assistance; digitalization of commodity flow management; increased competition to create advantages and increase its market share [24].

Internal factors include such as a wide product range, the availability of which entails significant costs for its storage in stocks, as well as a wide network of branches and representative offices in Russia and abroad, which greatly complicates the management of the pharmaceutical distributor as a whole.

To exclude product groups and individual names of goods from the assortment, the presented model of assortment policy management involves constant monitoring of the profitability of the assortment, the dynamics of its demand and costs. The use of marketing analysis methods: ABC analysis, XYZ analysis and others, makes it possible to have a relatively simple scientific toolkit for studying the structure and properties of a product range in terms of its profitability. Further, for product groups and individual items that showed negative dynamics of demand and profit, the break-even point is determined in physical terms formula (1) and monetary terms formula (2) [25]:

$$CVP_1 = \frac{TFC}{P - AVC}, \quad (1)$$

where: CVP_1 (cost volume profit) – break-even point in kind; TFC (total fixed cost) – fixed costs; P (price) – selling price; AVC (average variable cost) – variable costs per unit.

$$CVP_2 = \frac{TR \times TFC}{TR - TVC}, \quad (2)$$

where: CVP_2 (cost volume profit) – monetary break-even point; TR (total revenue) – revenue (income); TVC (total variable cost) – variable costs.

Based on the calculations of break-even points, the management of the organization makes an informed decision to exclude a product group or a separate name from the product range of a pharmaceutical distributor.

According to the presented model, the replenishment of the product range is based on monitoring the dynamics of the supply of pharmaceutical products (introducing new and generic drugs, medical devices, parapharmaceuticals to the market), analyzing the actions of competitors and the response of the customer environment to the emergence of new pharmaceutical products. Based on the data obtained, the forecast of the possible profit and costs is carried out, after which a decision is made to enter the goods into the distributor's assortment.

Conclusion

An analysis of the literature on the organization of drug supply for the population and the institutional requirements governing the wholesale of pharmaceuticals on the Russian pharmaceutical market revealed the presence of social, medico-demographic, climatic, logistical and other factors that have a significant impact on the economic performance of pharmaceutical distributors. One of the most important conditions for maintaining the high competitiveness of a pharmaceutical distributor in the market is the existence of a sound assortment policy.

The assortment policy management model developed based on the results of the presented study contains a sound methodological approach to optimizing the product line at the level of a large pharmaceutical distributor. The practical implementation of the proposed model, in our opinion, will help to increase the competitiveness of a pharmaceutical distributor in the current market conditions.

The presented study opens up prospects for further scientific search for ways to improve the drug supply system in the wholesale trade, aimed at solving problems to preserve and improve the health of the population.

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