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## **USE OF ECONOMIC COMPONENT IN ASSORTMENT POLICY FORMATION OF PHARMACEUTICAL COMPANIES**

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### **RESUME**

The article deals with the question of forming the optimal structure range of assortment firms, the influence of several factors on the process of drug product range and offered the use of some instruments to achieve economic results of the pharmaceutical companies.

**Keywords:** assortment policy, product portfolio pharmacy drugs – hepatoprotectors, market research and economic analysis.

### **STATEMENT OF THE PROBLEM**

An important element of marketing in business is the management of product range, identifying the kinds and types of commercial products that are in demand in the market and predict changes in time intervals of production and sale of certain products to the changing needs of consumers.

Product policy defines commodity groups and ensures successful operation of the company and its economic performance as a whole, given that the market consist of a certain relationship between the new goods and products in the growth stage, maturity and decline [4].

In addition to sales, the process directly affects the production, financing, logistics, feasibility study, etc. Because the effects of errors in planning range, can be neutralized only future policy sales and advertising efforts. The essence of inventory management is to create products that consumers want to buy and the seller – to offer in the required amount in the desired time and most convenient location.

Hence, planning product range – is an important means of competition in the market for goods and services. The ultimate goal planning – range optimization based on the strategic objectives of the enterprise market. [5].

### **ANALYSIS OF RECENT RESEARCH AND PUBLICATIONS**

Research issues involved in the formation of product lines such domestic and foreign scholars and scientists: Mnushko Z.M., Dihtyarova N.M., Babak A. J., Oh S. H., Witek R. P., Bae S. H., Zheng D., Jung Y., Piscaglia A. C., Petersen B. E., Iwakiri Y., Groszmann R. J. – in pharmacy, as well known marketers: Ksenofontova O.L., Novoselskogo N.A, Yermoschenko M.M., Erohin S.A., Simonov A.P., Dhar R., Wertenbroch K., Xiajun A. , Dorothe'e H. – in the field of commercial enterprise product range [5,7, 9,10,11,12,13].

### **RELEASE OF UNSOLVED ASPECTS OF THE PROBLEM**

Despite the considerable amount of research policy formation assortment of pharmaceutical companies today there is no single vision of the economic component in improving the profitability of the pharmaceutical companies. Complexity, importance and urgency of the problem have still not investigated a number of issues. In particular, little attention is paid to optimizing the use of the range of products to bring to market the drug trade mark to solve economic problems.

### **FORMATION OF ARTICLE PURPOSES**

The purpose of this paper is to investigate the influence of factors on the formation range of medical products (drugs) hepatoprotector actions defining their role in the structure of the general policies of the pharmacy and the achievement of certain financial and economic indicators.

### **THE MAIN MATERIAL RESEARCH**

Problems of optimal range inherent in any market, including pharmaceuticals. Prior to pharmaceutical market faces the task of forming a range of drugs that would meet the needs of the population and contributed to maximizing profits, pharmacy.

The pathology of the hepatobiliary system occupies a leading position among the diseases of the digestive system. According to WHO in the world for more than 2 billion people have trouble with liver disease, and mortality of patients for the last 20 years for this reason doubled [1,3,9].

Incidence causes increase in demand for appropriate direction of the drugs. Formation of the same drug product range is dictated by market and their own needs. The study found that the main range of the domestic market hepatoprotectors formed by agents of foreign production (fig.1).

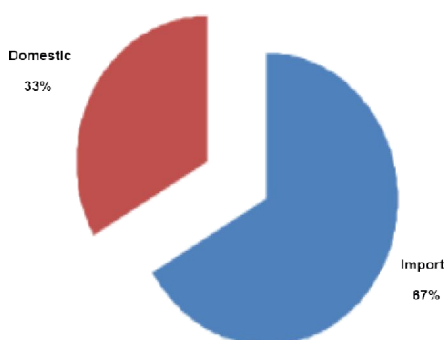


Figure 1. *Percentage of domestic and imported hepatoprotectors registered in Ukraine*

In the process of creating demand on drugs significant role played by a physician, pharmacist or pharmacist, as in the choice of the drugs in a particular clinical situation, in addition to consumer preferences, consider the condition and age of the patient, the adequate ways of writing, etc. Consultation with a specialist. As the pharmaceutical industry has a social orientation, special attention needs product range of drugs based on the solvency of the population.

On the other hand, a pharmacy as commercial establishment, selling drugs and meeting the needs of patients must reach some of their own financial and economic

indicators. Consequently, the required mathematical formulation of the problem of optimizing the range of products sold in the pharmaceutical market of Ukraine [2,7].

In the course of the studies analyzed the structure of a range of pharmacies in Kharkiv defined its completeness, calculated profits from the sale of pharmacy drugs hepatoprotective actions and simulated situation to the change in sales of drugs, financial and economic indicators pharmacy.

Completeness factor range calculated by the ratio of the actual number of species hepatoprotective action of drugs that are commercially available in the pharmacy, the number of varieties of drugs hepatoprotective action provided assortment list [1,5,6,8]. :

$$K_c = \frac{P_a}{P_n}, \quad (1)$$

where:  $K_c$  – completeness rate range;

$P_a$  – actual number of hepatoprotective action of drugs in the pharmacy;

$P_n$  – number of drugs hepatoprotective action assortment list.

The resulting coefficient (0,96) indicates a high fullness range hepatoprotective action of drugs in this pharmacy.

As a pharmacy, fulfilling its mission to exercise a failsafe software drugs population, and be self-supporting and profitable thing to consider in its activities is to analyze the financial and economic performance criteria and product range.

To consider and combine these criteria  $W_j$  can, for example, the formula amounts criteria [2].

$$W = \sum \lambda_j W_j = \lambda_1 W_1 + \lambda_2 W_2 + \lambda_3 W_3 + \dots + \lambda_s W_s \rightarrow \max, \quad (2)$$

where:  $W_j$  – criterions;

$\lambda_j$  – weights of criteria.

To solve this problem it is necessary to solve the problem of choosing the value weights to collect a significant amount of primary data, take the high cost of computing resources. Since one of the requirements of mathematical models – efficiency, a criterion for effective management it is advisable to choose a product policy maximizing profits from sales.

For example, the retail sale of pharmacy three drugs most frequently used in liver disease (table 1), has been shown to range management capabilities of drugs and its economic performance management pharmacy:

1. Enerliv (caps.), «R.P. Sherer GmbH & Co.KG », Germany.
2. Essentiale Forte N (caps.); «Aventis Pharma Deutschland GmbH», Germany.
3. Gepabene (caps.), «Merckle GmbH» / «Ratiopharm International GmbH», Germany.

Table 1

### TRADE TURNOVER INDICATORS OF HEPATORROTECTIVE DRUGS

Indicators	Units measurement	Type of product			
		Enerliv	Essentiale Forte N	Gepabene	Total
Price of the drug ( $s_i$ )	uan	51,20	81,69	79,20	–
Number of implemented agents for specified period ( $q_i$ )	units	83	85	76	–
Sales revenue for a given period	uan	4249,60	6943,65	6019,20	17212,45
Variable costs per 1 drug ( $v_i$ )	uan	4,8	10,4	18,6	-
Fixed costs in the period under review ( $c$ )	uan	–	–	–	1000

According to the above formula (3) expected revenue received from the sale of pharmacy surveyed drugs per month [2]:

$$\Pi = \sum_{i=1}^n [q_i (s_i - v_i)] - c, \quad (3)$$

where: P – realized gain;

$q_i$  – quantity of drugs sold by the specified period;

$s_i$  – price of the drug;

$v_i$  – variable costs per 1 drug;

$c$  – fixed costs in the period.

In this case, the profit was – 13516,45 uan in turnover 17212,45 uan.

Given the fact that no study medication are prescribed, are commercially available and in sufficient volume at the pharmacy (as defined by the coefficient of fullness range) and advertised in various media, allow fluctuations in their trade. These changes, in turn, will influence the financial and economic performance of the retail chain.

Simulating the situation for a given drug and gradually increasing the amount of conditional implementation of each of the drugs at 10%, calculate the possible values of trade and profit from the sale. Established that increasing turnover does not appear directly proportional to performance gains (table 2).

Table 2

**INDICATORS OF TRADE TURNOVER CHANGING BY RANGING M.P. CHANGING IN THE PHARMACY**

<b>№ п/п</b>	<b>Name of DRUGS</b>	<b>Trade/turn (0)</b>	<b>Trade/turn (1)</b>	<b>Trade/turn (2)</b>	<b>Trade/turn (3)</b>	<b>Change T/t %</b>
1	Everliv	17212,45	17622,05			+2,38
2	Essentiale Forte N	17212,45		17947,66		+1,85
3	Gepabene	17212,45			17846,05	+3,68

Attention need to take a different level of variable costs, and the state of consumer demand in this market. The developed model showed that increasing realization Gepabene 10% gives the best value turnover / profit, as shown in table 3.

Table 3

**INDICATORS OF PROFIT CHANGE BY DRUGS RANGE CHANGE IN PHARMACY**

<b>№ п/п</b>	<b>Name of DRUGS</b>	<b>Profit (0)</b>	<b>Profit (1)</b>	<b>Profit (2)</b>	<b>Profit (3)</b>	<b>Change in profit (%)</b>
1	Enerliv	13516,45	13887,65			+2,75
2	Essentiale Forte N	13516,45		14158,06		+4,75
3	Gepabene	13516,45			14399,65	+6,53

Thus, the management of assortment policy refers to a special type of problems solved within the theory of inventory management.

Although the pharmacy is a social enterprise, but it can not afford not to monitor the performance of its activities. Determination of the optimal nomenclature breadth, depth and spivstavlenosti range includes a comprehensive analysis of the factors affecting the quality of customer service and maintaining financial and economic activities of the company.

## **CONCLUSIONS AND PROSPECTS FOR FURTHER RESEARCH**

Past studies have shown the need to manage product policy , not only in large enterprises , but also in medium and small , including individual stores. Formation of the range of drugs should be subordinated to the demands of their respective market segments , trends of development , and meet the challenges of profitability of the pharmaceutical companies. Managing variety of pharmaceutical companies is subject to the laws of economic development in general and requires the use of scientific approaches and can be mathematically justified.

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