### LARYSA SIVOLAP

Doctor of Economics, Professor Department of the Personnel Management and Enterprise Economics, Donetsk State University of Management; ORCID ID: 0000-0001-5821-7227; e-mail: lara.syvolap@gmail.com

## **ANZHELA BAIRAK**

MPhD of Economics, Senior lecture Department of the Public Administration Donetsk State University of Management; ORCID ID:0000-0002-1360-8440; *e-mail: bairak.a@inbox. dsum.edu.uat* 

#### **IRYNA SOKUR**

Postgraduate student, Faculty of International Economic Relations, Management and Business, Kherson National Technical University; ORCID iD: 0000-0002-1995-1039; e-mail: savinagalina28@gmail.com

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# TECHNOLOGY OF MARKETING AUDIT OF THE MEDICAL SERVICES SECTOR AND DERIVATIVES OF ITS COMPETITIVENESS

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**ABSTRACT** 

The article substantiates the methodological approach to the technology of marketing audit of the medical services sector, based on its non-profit nature and the specific nature of medical services. It was proposed and substantiated the author's approach to the stages of marketing audit of the medical field. It was substantiated author's proposals on the procedure for assessing the risk of derivatives of the competitiveness of the medical services sector of Ukraine as one of the mandatory stages of marketing audit. The methodological approach proposed by the authors on the technology of marketing audit allows to objectively assess the real state of development of the medical services sector, taking into account its non-profit nature, to determine the derivatives of its competitiveness and assess the risks of their implementation in practice.

# **KEYWORDS**

marketing audit, medical services sector, competitiveness derivatives.

# Introduction

The technology of marketing audit is an important component of marketing management of enterprises. The data of audit reports are the basis for the formation and adjustment of the marketing strategy of the enterprise, influencing its profitability. An important place among the stages of marketing audit is the study and assessment of the marketing environment, the results of which affect the strategic and tactical measures. The relevance of marketing audit is growing under uncertainty external environment. In addition, there are specific features of the technology of marketing audit in various fields. Of course, the audit of the services market is different from the audit of the goods market. There are certain features of conducting a marketing audit and determining on its basis the derivatives of the competitiveness of the medical field, given its non-profit nature. In general, the main subject of interest in the audit is the marketing environment and controlled marketing factors, or traditional elements of the marketing mix: product, price, distribution channels and sales promotion. However, the

technology of marketing audit in the field of services must take into account the seven elements of the complex. In addition to the traditional elements, qualified personnel providing the service, the service delivery process itself and the physical atmosphere in which the service is provided are also added. All these components of the marketing complex are the subject of audit technology. A significant role in the technology of auditing in the field of services has interactive marketing, aimed at staff and the quality of service to specific customers in certain market segments. In this aspect, it becomes possible to improve technology marketing audit of non-profit organizations and the results of formation ways to increase their competitiveness.

The aim of the study is to improve the technology of marketing audit of the medical services sector and the formation of derivatives of its competitiveness based on its results. This will allow us to consider the problems of the study in terms of specific features of the object of study.

The methodological basis of the research are the scientific works of many scientists who have made significant contributions to the development of theory and practice of the concept of marketing and research to increase the competitiveness of enterprises in various sectors of the economy. The following well-known scientists have made a significant contribution to the improvement of marketing theory: Aaker D. [1], Drucker P. [5], Kotler F. [8, 9, 10], Keller K. [7, 8], Lamben J.-J. [11], Mintzberg G. [12], Oklander M. [16, 17], Porter M. [19], Pererva P. [18], Chukurna O. [2, 3, 4, 15, 16] etc. Directions for improving the competitiveness of enterprises and the formation of a research base in the field of competitive relations have been developed by such scientists as Porter M. [19], Niekrasova L. [4], Filippova S. [6], Nestorenko T. [13, 14], Nitsenko V. [15] etc.

However, derivatives and areas of competitiveness in the non-profit sector, namely the medical services sector, need further research and evaluation, due to its specific features and challenges related to health care reform in Ukraine and intensified in connection with the COVID-19 pandemic.

**Result of the study.** The analytical basis for conducting a marketing audit of the medical services sector of Ukraine is the statistical data of state statistics on the state of its reform and development. According to the State Statistics Committee of Ukraine, the total number of outpatient clinics gradually increased (Fig. 1).

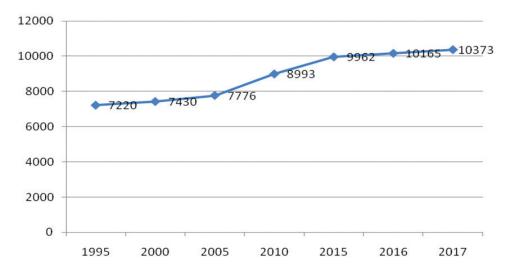


Figure 1 - Dynamics of changes in the number of outpatient clinics in Ukraine [compiled on the basis [20]

According to statistics, the number of outpatient medical facilities in Ukraine has been steadily increasing, especially since 2015, when health care reform was introduced. This process is accompanied by a reduction in the total number of hospitals (Fig. 2).

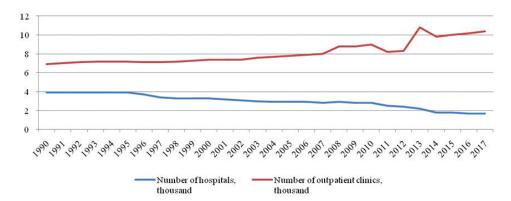


Figure 2 - Dynamics of changes in the ratio of the number of hospitals and outpatient clinics in Ukraine [compiled on the basis [20]

Expenditures on health care in the budget of Ukraine are distributed towards treatment and rehabilitation services, in second place is the financing of medical supplies to outpatients. This funding article came about as a result of the reform of the medical services sector and the creation of the National Health Insurance Fund. The share of the distribution of health care costs is presented in Fig.3.

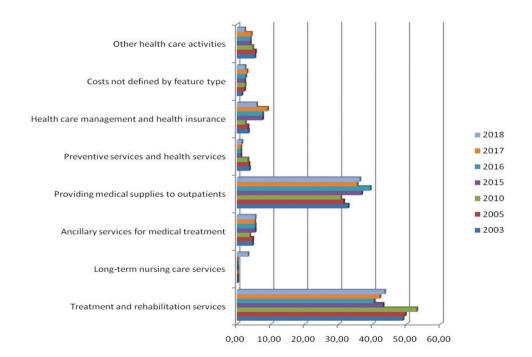


Figure 3 — The share of health care expenditures in the budget of Ukraine for the period from 2003 to 2018 in Ukraine [compiled on the basis of [20]

Considering the dynamics of changes in the number of outpatient clinics in the regions of Ukraine, it becomes obvious that the largest number of institutions is concentrated in large cities with a population of millions, such as Kyiv, Dnipro and Kharkiv (Fig. 4).

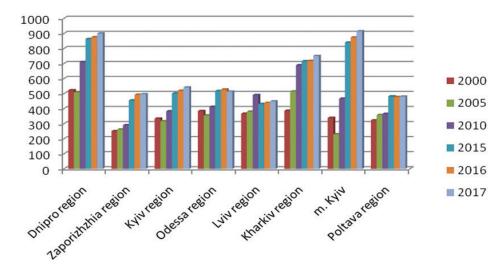


Figure 4 — Dynamics of change in the number of outpatient clinics in the regions of Ukraine [compiled on the basis [20]

If we examine the statistics of the number of children's clinics and children's hospitals in the WHO system, we can see a significant reduction (Fig. 5). Since 2000, their number has almost tripled.

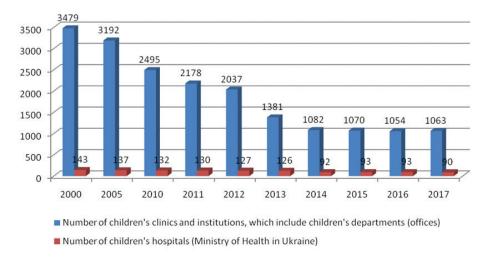


Figure 5 - Dynamics of change of children's polyclinics and children's hospitals in the system of the Ministry of Health in Ukraine [compiled on the basis [20]

Thus, the situation in the field of provision of outpatient facilities to the population indicates a trend in their concentration in large cities and regions with large populations. While maintaining the trend of decreasing the number of children's clinics and children's hospitals in the Ministry of Health. This situation is typical for underdeveloped countries. The next stage of marketing audit technology is a SWOT-analysis of the medical services sector, which is the basis for further assessment of its competitiveness (Table 1).

Table 1. - Summary table of SWOT-analysis of the medical services sector of Ukraine [developed by the authors]

Strengths	Weaknesses	
- availability of highly qualified specialists in the field, many of whom are researchers; - availability of medical directions of all specialties, which allows to provide a full range of medical services; - formation and preservation of a network of scientific medical organizations and university medical science; - regular training of specialists; - symbiosis of university science and specialized medical institutions, which creates grounds for research.	- reforming the medical services sector in the country creates grounds for inaccessibility of medicine for all segments of the population; - reforming the medical field has contributed to the transformation of some areas of the medical field and the destruction of research in these areas; - high rates of migration of highly qualified doctors to other countries; - high competition from private and public medical institutions.	
Opportunities	Threats	
- introduction of scientific innovations in the medical field; - expansion of treatment in the medical field through the introduction of new treatments and obtaining appropriate licenses; - reform of the medical sector created opportunities for the introduction of insurance medicine, which contributed to the expansion of sources of funding for the industry; - funding from the sources of the National Health Insurance Fund provided an opportunity to diversify medical services and create a system of financial motivation of medical institutions and employees of the industry; - the introduction of electronic offices for doctors has made it possible to introduce digital standards in medicine and a system of timely response to first aid.	- intensification of competition in the market of paid medical services; - lack of a single standard for the provision of medical services in the private and public sectors; - reduction of real incomes of the population and lack of free opportunities for the population to receive quality medical services; - availability of free financial resources in the private sector of the medical sector, which creates an imbalance in public medicine and unequal competitive opportunities.	

The results of the SWOT-analysis of the medical industry of Ukraine allowed us to conclude that the most important factors influencing the development of the medical services sector are the following: the presence in the industry of highly qualified specialists, many of whom are researchers; availability of medical directions of all specialties, which allows to provide a full range of medical services; formation and preservation of a network of scientific medical organizations and university medical science; regular professional development of specialists; symbiosis of university science and specialized medical institutions, which creates the basis for research.

In terms of weaknesses, the most important factors influencing the medical services sector of Ukraine are the following: reforming the medical services sector in the country creates grounds for the unavailability of medicine for all segments of the population; the reform of the medical field has contributed to the transformation of some areas of the medical field and the destruction of research in these areas; high rates of migration of highly qualified doctors to other countries; high competition from private and public medical institutions.

The identified strengths and weaknesses of the parties with the help of SWOT-analysis of the medical services sector of Ukraine allowed to identify areas of opportunities and threats. In terms of opportunities, the most important factor that will contribute to the development of the medical sector of Ukraine is the introduction of scientific innovations in the medical field and the expansion of treatment in the medical field through the introduction of new treatments and obtaining licenses. The most important factor influencing the development of Ukraine's medical services sector is the intensification of competition in the market of paid medical services and the lack of a single standard for the provision of medical services in the private and public sectors.

The third stage of marketing audit technology involves the definition and evaluation of competitive positions of the medical services sector of Ukraine in the context of medical segments. In order to determine the competitive positions of institutions of various forms of ownership of the medical services sector of Ukraine, an assessment of its competitiveness was conducted. This approach will ensure the formation of derivatives of the competitiveness of the industry in the context of marketing audit technology.

Assessment of the competitiveness of the medical services sector of Ukraine was carried out using the method of constructing a competitiveness polygon. The competitiveness polygon allows us to assess the level of competitiveness of medical services in competing areas of the medical industry of different forms of ownership and sectors. Competitiveness factors and their evaluation were performed by industry experts and scientists. The direction of the medical services sector with the most competitive medical services will have the largest area of the polygon. The area of the competitiveness polygon is calculated by the formula (1):

$$S_{j} = \frac{1}{2} Sin \frac{360^{\circ}}{n} * (a_{nj} * a_{1j} + \sum_{i=1}^{n-1} a_{ij} * a_{(i+1)j}), (1)$$

where:  $a_{ii}$  - the value of the i-th integrated factor indicator for the j-th enterprise;

n – the number of competitiveness factors that are analyzed.

The results of calculation and construction of the area of the polygon for the three main competing areas of the medical services sector of Ukraine are presented in table.2.

Table 2. The results of the calculation of points for the construction of a polygon of competitiveness of the medical services sector of Ukraine in the context of medical segments [developed by the authors]

Services	Private network family doctor clinics	Public outpatient family doctor at the city clinics	Outpatient primary care at private clinics (Into-Sana, St. Catherine, Odrex, On Klinik, Medical, etc.)	
providing primary medical health care	10	9	10	
organization of outpatient treatment	8	7	10	
Diagnostics (MRI, CT, ultrasound)	10	10	10	
combination of primary, secondary and tertiary care	6	7	5	
medical services family doctors for children			6	
provision of manipulation services for outpatients	10	9	6	

The calculation of the area of the polygon was as follows:

$$\begin{aligned} & \frac{1}{2}Sin\frac{360}{n}^{\circ} \\ & \text{Stotal} = \frac{1}{2}Sin\frac{360}{n}^{\circ} \\ & \text{$*(10*8+8*10+10*6+6*7+7*10+10*10)$} = \sqrt{3}/4*432 = 1,732/4*432 = 186,056 \\ & \frac{1}{2}Sin\frac{360}{n}^{\circ} \\ & \text{$*(9*7+7*10+10*7+7*8+8*9+9*9)$} = \sqrt{3}/4*412 = 1,732/4*412 = 178,396 \\ & \frac{1}{2}Sin\frac{360}{n}^{\circ} \\ & \text{$*(9*7+7*10+10*7+7*8+8*9+9*9)$} = \sqrt{3}/4*376 = 1,732/4*376 = 162,808 \end{aligned}$$

I=Sn/Stotal I1=186,056/127,302=1,462 I2=178,396/127,302=1,401 I3=162,808/127,302=1,279

According to the constructed polygon of competitiveness, the largest area falls on the private network of family doctor's dispensaries. According to the main criteria of competitiveness, the private network of family doctor's outpatient clinics has the greatest advantages over competitors.

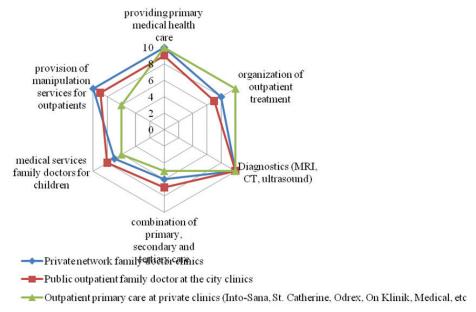


Figure 6 - Polygon of competitiveness of the medical services sector of Ukraine [developed by the authors]

Based on the assessment of the competitiveness of the medical services sector of Ukraine in the context of medical segments, the most competitive sector of medicine is a private network of family doctor's dispensaries. In this medical services sector, the private-public partnership approach has been successfully implemented, which allows for guaranteed attraction of funding through the National Health Service of Ukraine and switching of demand for additional outpatient services provided at the expense of individuals. This approach ensures that this sector of medicine has a significant

competitive position, as it makes it available to most clients while meeting their additional requirements and needs for medical services.

The fourth stage of the technology of marketing audit should be the risk assessment procedure. Traditional technology of marketing audit does not involve the use of methods for assessing the degree of risk of implementation of derivatives of the competitiveness of the industry. Therefore, the author's approach involves the use of methods for assessing the risk of derivatives of the competitiveness of the medical services sector, which will develop the final provisions of their implementation in practice and adjust the strategy of medical institutions.

As a result of author's researches of risk factors of derivatives of competitiveness of the medical services sector of Ukraine, the map of risks which got to a zone of high risk was made (tab. 3.). The distribution of risks is carried out taking into account their priorities - from the most to the least threatening. Factors in the low-risk zone were excluded from further consideration.

Table 3 – Map of risks of realization of derivatives of competitiveness of the medical services sector of Ukraine [developed by authors]

Risk factor priority	Code and name of the risk factor	Risk group	The importance of the factor a, (0-1)	Risk assess- ment in points, (0-10)	Assessment given the importance
1	2	3	5	6	7=5*6
6	1.1. Risk of confidence regarding the market success of innovative and unique medical services	6	0,6	4	2,4
10	1.2. Evaluation of new technologies used in the medical field	5	0,4	4	1,6
7	2.1. Risk of uncertainty regarding the willingness of consumers to switch to the services of other medical sectors		0,6	5	3,0
1	3.1. The risk of overestimating the success of reforming the country's of the medical services sector	3	0,6	6	3,6
5	3.2. Risk of confidence in the pre- sence of foreign contractors willing to work with medical institutions of Ukraine	4	0,3	4	1,2
9	3.3. Reassessment of the expected result from the reform of the medical services sector		5	2,4	
11	3.4. Reassessment of the effective- ness of the development process, in terms of obtaining a quick result	4	0,4	4	1,6
15	3.5. The risk of not understanding that significant innovation is needed to succeed	9	0,2	10	2,0
8	4.1. Underestimation of the level of barriers to entry into medical markets	9	0,4	5	2,0
4	4.2. Underestimation of opportunity organized resistance to new medical services		0,5	5	2,5
2	4.3. Possibility of prior agreement competitors	11	0,5	5	2,5
3	5.1. Risk of need for special equip- ment	6	0,5	6	3.0

13	5.2. The risk of the need for large investments		0,4	5	2,0
14	5.3The risk of the need to introduce new medical services, which should be developed in parallel with the main service	12	0,4	5	2,0
12	6.1. Reassess the possibility of using new technology to reduce production costs	13	0,4	6	2,4
16	6.2. Risk of danger that new services will be "absorbed" by existing services		0,2	2	0,4
	Total				52,6

The weighted average level of risk for each risk group was performed according to the formula (2):

$$V = \frac{1}{n} \sum_{i=1}^{n} B_{i} \cdot W_{i}, \quad (2)$$

*W* – weighted average assessment of the risk group,

Bi – an indicator of the importance of the factor i,

Wi - expert scoring of risk by factor i,

n – the total number of factors in the risk group under consideration.

According to the calculations, it is established that the derivatives of the competitiveness of the of the medical services sector of Ukraine have an average level of overall risk, as the sum of points obtained is 52.6.

Based on the results of the ratio of the importance of a specific risk factor for the medical sector of the country and the expert assessment of the level of risk on it, it is possible to form a risk matrix and present it in the form of table 4.

 $Table \ 4-Matrix \ of \ risks \ of \ derivatives \ of \ competitiveness \ of \ the \ medical \ services \ sector \ of \ Ukraine \ [developed \ by \ the \ authors]$ 

		Risk assessment by factor				
		[0, 1]	[2, 4]	5	[6, 8]	[9, 10]
The importance of the factor	0,8					
	0,6		1.1.,3.1.,4.2., 4.3.,5.1.,			
	0,4	1.2., 3.2.	2.1., 3.3.,3.4.,4.1., 5.2.,5.3., 6.1.			
	0,2	6.2.	3.5.			
	0,1					
	0,05					

As can be seen from the constructed matrix, the largest number of risk factors fell into the zone of medium risk. In part, some of the risks of competitiveness derivatives have fallen into the green zone. This is due to the non-profit nature of the medical services sector and the dependence on funding from the National Health Service of Ukraine, as the main areas of income come from this fund.

In order to assess the impact of risk factors on each other, it is advisable to conduct a study of the density of the correlation between risks. We establish a correlation using the criteria of the importance of risks for the activities and the effectiveness of risk management in the innovation activities of the medical services sector. The bond density is shown in Fig.7. As can be seen from the figure, the correlation is close.

The correlation coefficient is calculated to be r = 0.6457, which indicates that the relationship is tight, it can be concluded that there are causal links between the risks.

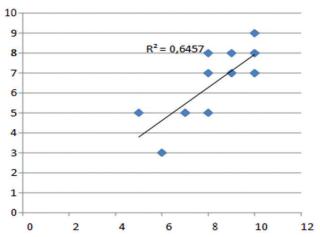


Figure 7 - Correlation of risks that arise as a result of the implementation of derivatives of the competitiveness of the medical services sector [developed by the authors]

# **CONCLUSIONS**

The conducted research allowed to form and substantiate the technology of marketing audit of the medical field, taking into account its specific features of development. The methodical approach to conducting a marketing audit involves the use of four main stages. The first stage involves the collection and analysis of analytical data on the state and prospects of development of the object of study, in our case, the medical field. The second stage of the methodology of marketing audit is related to the SWOT -analysis of the medical industry, based on the results of which further assessment of its competitiveness. The third stage of marketing audit technology involves directly identifying and assessing the competitive position of the medical services sector of Ukraine in the context of medical segments. The fourth stage of the technology of marketing audit is related to the procedure of risk assessment of the derivatives of the competitiveness of the medical industry of Ukraine. The methodological approach proposed by the authors on the technology of marketing audit allows to objectively assess the real state of development of the medical industry, taking into account its non-profit nature, to determine the derivatives of its competitiveness and assess the risks of their implementation in practice.

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# TECHNOLOGIA AUDYTU MARKETINGOWEGO SEKTO-RA USŁUG MEDYCZNYCH I POCHODNE JEGO KONKU-RENCYJNOŚCI

#### STRESZCZENIE

Artykuł uzasadnia podejście metodologiczne do technologii audytu marketingowego sektora usług medycznych, oparte na jego non-profitowym charakterze i specyfice usług medycznych. Zaproponowano i uzasadniono podejście autora do etapów audytu marketingowego dla dziedziny medycznej. Uzasadniono propozycje autora, dotyczące procedury oceny ryzyka pochodnych konkurencyjności sektora usług medycznych Ukrainy, jako jednego z obowiązkowych etapów audytu marketingowego. Zaproponowane przez autorów podejście metodologiczne do technologii audytu marketingowego, pozwala obiektywnie ocenić rzeczywisty stan rozwoju sektora usług medycznych, z uwzględnieniem jego non-profit charakteru, określić pochodne jego konkurencyjności oraz ocenić ryzyko ich wdrożenia w praktyce.

# SŁOWA KLUCZOWE

audyt marketingowy, sektor usług medycznych, pochodne konkurencyjności



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