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MODERN CHALLENGES TO THE MANAGEMENT OF INNOVATION AND COMPETITIVENESS OF ORGANIZATIONS IN THE FIELD OF MEDICAL SERVICES

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Abstract. The latest realities of development of the medical services sector have highlighted the effectiveness of innovation management as an important factor in the competitiveness of a medical organization. The authors hypothesized that at this stage certain challenges have emerged that have identified a number of problems for managing innovation in the field of medical services. So, they create threats to the competitiveness of organizations that cannot find reliable approaches to managing innovation in real-world conditions. A study of the flow of innovations in the medical field in recent years has confirmed this situation. The main challenges and problems of innovation management at the present stage were formulated at the work and were put forward proposals for their possible solutions.

Keywords: innovation management, management of innovations, competitiveness of medical organizations.

Rezumat. Cele mai recente realități de dezvoltare a sectorului serviciilor medicale au evidențiat eficacitatea managementului inovației ca un factor important în competitivitatea unei organizații medicale. Autorii au emis ipoteza că în acest stadiu au apărut anumite provocări care au identificat o serie de probleme pentru gestionarea inovației în domeniul serviciilor medicale. Deci, ele creează amenințări la adresa competitivității organizațiilor care nu pot găsi abordări fiabile pentru gestionarea inovației în condiții reale. Un studiu al fluxului de inovații în domeniul medical din ultimii ani a confirmat această situație. Principalele provocări și probleme ale managementului inovării în stadiul actual au fost formulate la locul de muncă și au fost prezentate propuneri pentru posibilele soluții.

Cuvinte cheie: managementul inovației, managementul inovațiilor, competitivitatea organizațiilor medicale.

1. Introduction

The relevance of management of innovations in the field of medical services is due to the fact that all over the world the requirements for public health systems are constantly being updated. Developed countries face the challenge of providing a wide range of health services to an aging population with changing health care needs. At the same time, countries with developing health systems are looking for ways and means to ensure maximum access to healthcare for their populations. To solve all these problems, innovative thinking and innovation management based on it are necessary. According to J. Barlow [1], innovations are both the cause and the cure for many health problems - the industry needs them, but they are difficult to manage, in addition, the introduction of new technologies can lead to increased costs.

This aspect, successful innovation management, has acquired particular relevance at the present stage after the avalanche-like appearance and introduction of innovations during the pandemic. Moreover, many innovations are not medical, but are related, for example, to the organization and information support of medical institutions. The period 2020-2023 has taken shape into an absolutely new stage in the development of innovation management, which has not yet been sufficiently understood and highlighted by researchers. The main works on this topic were presented in the period up to 2020.

Accordingly, it was hypothesized that at this stage certain challenges have formed, which have identified a number of problems for innovation management in the field of medical services and pose threats to the competitiveness of organizations that will not be able to find the right approaches to innovation management in real conditions. The study of this aspect, taking into account the latest publications, made it possible to clearly identify, systematize and characterize the challenges and problems of innovation management in the field of medical services at the present stage.

2. Materials and Methods

Methods of scientific research - analysis, synthesis, observation, hypothesis formulation, hypothesis verification, etc.

3. Results

The main problems of innovation management at the present stage of development are identified. Based on the formulated extended classification of innovations in the medical industry, the problems are discussed, the solution of which will ensure an increase in the competitiveness of medical institutions.

3.1 The evolution of types of innovations in the field of medical services

Effective understanding and management of healthcare innovations is important both from the point of view of governments responsible for health policy formation, as well as organizations providing medical services and meeting competing requirements, as well asfrom the point of view of partner industries that supply medicines, tools, devices and other technologies. The concept of innovation used is based primarily on the definition of researchers A.V. Surin and O.P. Molchanova, formulated taking into account the terminology of international standards, according to which "innovation is the result of the implementation of new ideas and knowledge in order to use them in practice to meet certain consumer needs" [2, p. 9].

Researchers at MSU [3, pp. 222-223] have interpreted the concept of "innovations in healthcare". Innovations in the medical industry are defined as "the promotion of new ideas, concepts, services, processes and products aimed at qualitative changes in diagnosis, treatment, education and training, social support, as well as disease prevention and research in this area with long-term goals of improving quality, safety, effectiveness and efficiency."

According to J. Barlow [1], innovation is always associated with the successful commercial application of knowledge. This knowledge can be created locally, or it can be new to the whole world. However, the import of technology new to the market from abroad or the introduction of a new organizational model in a company that mimics existing management models of companies with established reputations are also considered innovations.

Researcher Flessa S. from the National Center for Biotechnology Information, USA, emphasizes that innovation is not the same as discoveryor invention, since the innovation as the more comprehensive process starting with the generation of ideas and ending with the successful acceptance by potential users (adoption) [4].

In recent decades, the typology of innovation in health services has gradually evolved. Recent years have significantly accelerated this process. Thus, in accordance with the classification of the United Nations Cultural and Educational Organization (UNESCO), an innovative medical service may involve the use of various types of innovations, which are classified into four groups:

- innovations in the creation of products and services (grocery);
- process (technological) innovations;
- marketing innovations;
- organizational (organizational and managerial) innovations associated with the introduction of new methods into the work of institutions, building internal and external relations in the structure of activities [5].

From the perspective of innovation management, T. A. Siburina identifies the following types of innovations in the field of healthcare [6]:

- **1. medical technological innovations** related to new methods (methods) and/or protocols for prevention, diagnosis and treatment using known drugs/instruments/equipment or their new combinations:
- **2. organizational innovations**, including effective restructuring of the health care system, improvement of labor organization, as well as improvement of the organizational structure of management.
- **3. economic innovations** that implement new methods of planning, financing, stimulating and analyzing the economic and financial activities of medical institutions;
- **4. information technology innovations** aimed at automating the processes of collecting, processing, and analyzing information flows in the industry or medical institution;
- **5. medical-pharmaceutical, medical-technical innovations**, as a kind of medical technological innovations, they involve the use of new medicines, tools, devices, technical systems that are competitive in price and medical efficiency.

E. Rozhkova adds marketing innovations to this classification, taking into account the UNESCO classification, which include an unusual place of service provision: remote doctor consultations; home health care; increased comfort of stay in a medical institution; inclusion of additional services in the medical service [5]. According to the authors, marketing innovations in the field of medical services can also include research of the target audience before introducing an innovation and the use of various methods for promoting innovations, including PR activities.

Researcher S. Ellerbeck, a representative of the Center for Health and Healthcare, summarizes information on five global innovations in medicine in the last decade that have revolutionary implications for global health. These include - Artificial Intelligence, 3D

printing, Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR) gene-editing technology can potentially transform how diseases are treated, the VR and AR (augmented reality) market is booming worldwide, and both technologies are being used increasingly in healthcare applications. Smart bandage that uses sensors to monitor wound healing [7].

In turn, researcher S. Flessa proposes to classify innovations in medical services by levels - micro-level (at the level of interaction between doctor and patient), meso-level (interaction of medical institutions with various partner organizations, for example, manufacturers of equipment or information support) and mega-level (innovations, globally influencing the medicine) [4].

In the healthcare system, the central link, according to E. V. Rozhkova, should be considered innovations in the field of medical services. On the other hand, not every innovative medical service involves the use of high technology. We can talk, for example, about increased comfort in the provision of medical services - in this case, innovation will be achieved through organizational and marketing innovations [5].

Based on these classifications, we can conclude that innovations in the field of medical services is a broader concept than purely medical innovation, which is important for managing innovation activities in order to increase the competitiveness of medical institutions.

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3.2 Implementation of innovations as an important factor of competitiveness

In accordance with laws and global trends in the development of the medical services market, competition among medical institutions strictly moves from the area of economic or pricing policy to the area of quality of services provided, their uniqueness, conditions of provision, and service support [8].

In countries in the post-Soviet space, with a monopoly state healthcare system, the problem of competition between medical institutions was practically absent. With the transition to a market economy, the emergence of private medical institutions, as well as the development of legislative support for paid medicine, the problem of competition between institutions providing medical services emerged, and in recent decades it has already become quite acute [6]. Although in general the concepts of competition and competitiveness of enterprises and organizations have been considered by scientists for more than two centuries, according to researchers [8, p.12], the problems of competition in medical institutions began to be actively studied only at the beginning of the 21st century.

The competitiveness of the organization, according to Yu.B. Vinslavand V.V. Pekhtereva [9, p.36] and a number of others, is defined as "a property consisting in the ability to withstand competition and compete; produce products with consumer and price parameters that satisfy market consumers and are not inferior to market analogues of other organizations." In turn, A.V. Volnukhin clarifies that "the competitiveness of a medical organization is the ability to provide medical services that are not inferior in price and non-price parameters to other medical organizations occupying the same market segment" [8, p.15].

From the point of view of E.Yu. Kuznetsova, innovation is becoming one of the key factors in ensuring the competitiveness of enterprises and the country's economy as a whole. In other words, innovation is a powerful competitive tool that gives a chance to get ahead of competitors through the development of effective technologies or the release of new products [10].

For medical institutions in market conditions, stable positions in both price and non-price competition are important, one of the competitive advantages of which is the use of innovation. To date, according to A.V. Volnukhin, targeted research on the formation and improvement of the competitiveness of medical organizations through non-price mechanisms is not enough [8, p.12].

There are not enough studies on improving the competitiveness of medical organizations in the medical services market. They are either carried out within the framework of economic aspects and are devoted to marketing and economic issues, or the emphasis is shifted to the area of price competition and material resource management. The following have been poorly studied: 1) aspects of innovation management, human resources and other types of non-price competition, 2) ways to increase the competitiveness of medical institutions, 3) development of mechanisms for increasing competitive advantages [8, p.14].

According to V.Yu. Pashkus and other researchers, after the pandemic, not only the role of innovation in the activities of medical institutions has increased many times, but also the ability of medical organizations to implement innovative developments, effectively apply them and, based on them, improve the level of quality of treatment. Activity in innovation significantly increases the competitive position of a medical institution. The researchers emphasize that the innovation factor must be added to the list of criteria for the competitiveness of organizations providing medical services [11].

However, this criterion is not singled out as a separate one, but is included in the Uniqueness criterion and is formulated as "The uniqueness of the resource potential of a medical institution and the profile of activities it implements, the level of innovative potential and the ability to carry out innovative activities," which, in the authors' opinion, does not fully reflect the role of innovative activity in modern medical services sector.

However, in the work of V.Yu. Pashkusand others emphasize that during the 2020-2021 pandemic. The public has clearly observed that the greatest success is achieved by those medical organizations that actively implement innovations of various types - from medical to information. Therefore, the focus of perception of competitiveness in the field of medical services has now clearly shifted towards the active implementation of innovations [11].

3.3 Features of the current stage of development of innovation management in the medical industry

2020 was marked by a number of shocking events that modified not only processes in the medical field, but also the business processes of many companies and directly affected the lives of ordinary people. To date, analysts from various companies have made attempts to summarize innovations in various socio-economic areas, including in the medical industry, which literally poured in during the pandemic crisis under the pressure of prevailing external circumstances [12-15]. Based on these studies and taking into account the classifications presented above, the following groups of innovations in the medical industry were identified by authors, the emergence of which is typical for the period 2020-2022, Table 1.

Characteristics of innovations in medical services in the period 2020-2022

Table 1

Innovation Group	Brief description		
Global Innovations	5 types including: Artificial Intelligence, 3D printing, Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR) gene-editing technology, VR and AR (augmented reality). Smart bandage that uses sensors to monitor wound healing.		
Technological innovations	9 types including: COVID-19 treatment protocols; digital service News-2; AI-based pneumonia calculators; system for preventing dangerous proximity to COVID-19 carriers; mobile monitoring of COVID-19 outbreaks; disinfection terminals, tunnels and closed-type disinfectors; disinfection robots; rapid testing in public places.		
Organizational Innovations	9 types including: unified laboratory service; CT centers for diagnosing COVID-19; technologies for deploying reserve hospitals;technologies for creating telemedicine centers; telemedicine; video conferencing services; video analytics and institutional monitoring systems; VR systems for employee training; electronic queue management.		
Economic Innovation	1 type - electronic document management systems		
Information technology innovations	16 types including: a unified digital healthcare platform; digital vaccination; recognition of people without protective masks; contactless interactive interfaces; video consultation services; virtual reality services; building communications between employees; neural networks; IVR systems; smart speakers; service and interface chat bots; interactive assistants; mobile audit; recommender systems; Digitalization (digitalization) of sales in pharmacies.		
Product innovation - pharmaceutical and technical	6 types including: new types of anti-Covid vaccines; mRNA technologies for creating vaccines; modernization of protective masks; contactless parcel terminals; 3D printing of personal protective equipment; antibacterial protective films.		
Marketing Innovation	5 types including: target audience research; research; PEST and SWOT analyses; promotion of services on social networks; creating communities on the Internet.		

Source: Developed by authors based on [12-15].

These data from Table 1 confirm the hypothesis about an avalanche of innovations, namely more than 50 areas that have poured into the activities of medical organizations in recent years, as a result of which the industry urgently needs effective management of the processes of their implementation in everyday practice.

3.4 Challenges and problems of innovation management at the present stage

In the post-Covid period, science still lacks a sufficient number of detailed studies that reveal effective mechanisms for managing innovation in medical institutions in the context of the large-scale emergence of innovations of various types, which negatively affects the quality of decisions made and medical services provided.

According to experts, effective algorithms and tools for managing innovation in medical institutions in conditions of limited resources, inflationary processes and risks have not been developed on a scientific and methodological basis. Also, the problems of self-organization of control systems of individual medical institutions have not been sufficiently studied. At the present stage, it is necessary to search for new approaches to organizing and managing innovation in organizations and institutions of the healthcare system. On the one hand, the expansion of the global health architecture has brought significant benefits in recent years, with promising new opportunities emerging for countries in the form of innovative health and digital technology products and approaches that can change the way health data is collected and used [16]. But on the other hand, a whole series of challenges have emerged that have given rise to problems of innovation management. Authors made an attempt to classify modern challenges to innovation management, emerging problems and their possible solutions, Table 2.

Table 2
Modern challenges and problems of innovation management
and possible ways to solve them

Challenges	Problems	Possible solutions
Informational	Lack of information about innovations. Insufficient information about management tools for innovation management.	Formation of a unified information system about innovations. Training managers in innovation management.
Organizational	Insufficient elaboration of mechanisms/algorithms for the innovation management process in a medical institution. Lack of time for managers to independently manage innovations in a high-quality manner.	Development and proposal of mechanisms/algorithms for managing innovations in medical institutions. Organizing time management training for staff.
Personnel	Lack of developed innovation management skills.	Organization of special trainings for personnel.
Marketing	Lack of sufficient knowledge in the field of marketing. Lack of marketing skills.	Inviting external consultants or training in-house specialists

Source: Developed by authors.

For all these reasons the authors consider that the main challenges to innovation management in the medical services industry are aimed at the following areas: information,

organizational, personnel and marketing. When trying to effectively manage innovation, healthcare organizations will definitely face such problems:

- insufficient information about innovations:
- insufficient development of mechanisms/algorithms for the innovation management process in a medical institution;
 - insufficient information about managerial tools for managing innovation;
 - lack of developed innovation management skills;
- lack of time for managers to independently manage innovations in a high-quality manner.

In addition to problems directly related to innovation management, the present time is characterized by the emergence of other management problems that indirectly also affect the effectiveness of innovation management.

According to expert practitioners, in the current world of VUCA (volatility, uncertainty, complexity and ambiguity - instability, uncertainty, complexity and ambiguity), known and familiar management models no longer work.

Reasons for this situation:

- ultra-high rates of change,
- digital transformations,
- new patterns of employee behavior,
- involvement in the work of new generations of employees, significantly different from previous generations [17].

Experts A. Kulik and S. Sychev note that the current situation requires managers to seriously rethink possible approaches to management, since new universal solutions are only just being formed, and the old ones are no longer suitable [17].

The following problems are already beginning to appear in the work of modern managers.

1. Features of working with subordinates from generations Y (millennials) and Z (zoomers). After all, by 2025 they will make up to 70 % of the labor force. At the same time, representatives of these generations have completely different expectations from a career, profession, leader and their own set of values, different from the mentality of leaders.

Therefore, a particularly important aspect is the manager's ability to build constructive communications with employees belonging to these generations. After all, the effectiveness of implementing management decisions, including the introduction of innovations, will subsequently depend on their efforts.

An additional difficulty is establishing communications between representatives of these generations, since their mentalities are also different. In particular, it has been found that managers belonging to the millennial generation often ignore the potential of zoomers, their tendency to experiment, do not devote enough time to explanations and feedback, and impose a rigid style of relationships.

2. The difficulty of managing remote teams and hybrid forms of work. This problem appeared during the pandemic crisis and has remained until now, as this nature of work has developed into a current trend in personnel work. In this situation, the manager needs to ensure constant effective communications between teams, as well as maintain high employee engagement and productivity, despite the remote location. Additionally, there is the problem of a lack of personal communication, which becomes significant for many employees and is aggravated by the lack of skills in written communication, argumentation

and presentation of thoughts and facts. In itself, this method of communication can be innovative for many team members.

3. The problem of constant time pressure for making management decisions. Experts emphasize that it is now impossible to solve one problem for months. The time for making management decisions is often reduced to several days, or even hours. This is caused by the VUCA characteristics that have entered our reality. To remain competitive, businesses are forced to constantly experiment, transform operating models and product lines, and introduce innovations [17].

All these problems need to be resolved in the coming years, because despite progress in many areas of health, according to WHO experts, most tasks related to public health are not being achieved at an insufficient pace, and the pandemic has made progress even more difficult. This explains the need to accelerate the mass adoption of innovations. Through discussion, the authors proposed possible ways to solve the problems that arose, Table 2.As well as according to researchers, the healthcare system of each country needs to revise the criteria for the competitiveness of medical institutions, including taking into account innovative activities [11].

In the field of management, it is assumed that the classic "superior-subordinate" chain should be replaced by a model of distributed, self-organizing teams of employees united by a common goal, vision and values. The leader in such an organization inspires by personal example, puts forward ambitious goals, and creates an environment for the free circulation of opinions and the promotion of ideas. Employees of the organization feel personally responsible for the result and are inspired by a common goal. It is these organizations that will be able to demonstrate high speed of adaptability to changes, innovation and competitiveness in difficult market conditions.

The avalanche-like flow of innovation at the present stage, incomparable quantitatively and qualitatively with previous periods, necessitates the formation of an effective algorithm and tools for managing innovation in medical institutions.

4. Conclusions

The authors hypothesize that recent decades have created a number of significant challenges to the development of the healthcare sector and medical services. Issues of competitiveness of medical organizations and institutions in the emerging industry market have come to the fore. Innovative activity - offering innovations and effectively managing them - is becoming an important competitive advantage of medical institutions.

The latest stage in the development of medicine - the pandemic crisis of 2020 literally brought down an avalanche of innovations in the global healthcare system. The entire world of medicine is faced with the urgent problem of successful and effective innovation management. Even in the post-Covid period, the stable position of a medical institution depends on this. Taking into account the fact that scientific developments in this aspect - innovation management in the field of medical services - were presented mainly before the pandemic, the current circumstances in the global medical system create an urgent need for the formation and justification of an effective algorithm and tools for managing innovation in medical institutions.

The authors specify the main challenges and problems of the current stage of development of innovation management. Ways to solve emerging problems are proposed through discussion.

Conflicts of Interest: The authors declare no conflict of interest.

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