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DOI <https://doi.org/10.32782/2522-9680-2026-2-111>**Vladyslav STEPANENKO**

Doctor of Philosophy, Assistant at the Department of the Biosafety and Human Health, National Technical University of Ukraine «Igor Sikorsky Kyiv Polytechnic Institute», Beresteyskyi ave., 37, Kyiv, Ukraine, 03057; Biomedicine and Bioengineering Association, Valentynivska str., 29, office 73, Kharkiv, Ukraine, 61146 (vlad.stepanenko@kpi.ua)

ORCID: 0000-0001-8370-6137**SCOPUS:** 58500331100**Olena OSHYVALOVA**

Doctor of Medical Sciences, Associate Professor, Professor at the Biosafety and Human Health Department, National Technical University of Ukraine «Igor Sikorsky Kyiv Polytechnic Institute», Beresteyskyi ave., 37, Kyiv, Ukraine, 03057; State Institution of Science «Center of Innovative Healthcare Technologies» of the State Administrative Department, Verkhnia str., 5, Kyiv, Ukraine, 01104 (oshivalovaea@gmail.com)

ORCID: 0000-0001-8370-6137**SCOPUS:** 57211138575**Oksana BOHOMOLOVA**

Doctor of Philosophy, Associate Professor at the Translational Medical Bioengineering Department, National Technical University of Ukraine «Igor Sikorsky Kyiv Polytechnic Institute», Beresteyskyi ave., 37, Kyiv, Ukraine, 03057 (bohomoova@iit.kpi.ua)

ORCID: 0000-0001-5249-4565**SCOPUS:** 58127870900

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CONTEMPORARY STRATEGIC ANALYSIS INSTRUMENTS FOR PROSTHETIC AND REHABILITATION CENTERS FUNCTIONING

Relevance. In the context of healthcare reform in Ukraine and wartime challenges, effective management of healthcare institutions has become particularly important. Prosthetic and rehabilitation centers play a key role in restoring patients' functional capacity and social reintegration, especially given the increasing number of people requiring rehabilitation due to injuries and chronic diseases.

The sustainable development of such institutions requires the application of modern strategic management approaches that allow for the analysis of external environmental factors and internal organizational resources. However, the use of structured strategic analysis tools in the management of prosthetic and rehabilitation centers remains insufficiently studied. Therefore, the systematization of modern strategic analysis instruments is an important scientific and practical task.

Objective of the study. The objective of this study is to systematize modern strategic analysis tools (PESTEL, SWOT, Porter's Five Forces, and VRIO) and to determine the possibilities of their integrated application in the management of prosthetic and rehabilitation centers.

Materials and methods. The study is based on the analysis of scientific literature and methodological approaches to strategic management in healthcare. The research methods included analysis, comparison, systematization, and generalization of theoretical sources.

The study also examined the application of strategic analytical models, including PESTEL analysis for macroenvironment evaluation, SWOT analysis for the assessment of internal and external factors, Porter's Five Forces model for the analysis of industry competition, and VRIO analysis for the evaluation of organizational resources.

Results of the study. The conducted analysis showed that the strategic development of prosthetic and rehabilitation centers requires a comprehensive assessment of both external and internal factors. PESTEL analysis allows the identification of political, economic, social, technological, environmental, and legal factors affecting the development of healthcare institutions.

SWOT analysis provides an integrated assessment of strengths and weaknesses of the organization as well as external opportunities and threats. Porter's Five Forces model enables the evaluation of the competitive environment in the healthcare market, while VRIO analysis helps determine the strategic value of organizational resources and competencies.

The combined application of these tools provides a comprehensive understanding of the strategic position of rehabilitation institutions and supports the development of evidence-based managerial decisions.

Conclusions. The application of modern strategic analysis tools is an important prerequisite for the effective development of prosthetic and rehabilitation centers in the conditions of healthcare reform and wartime challenges.

Key words: strategic analysis, strategic management, prosthetic and rehabilitation center, healthcare institutions, management tools, analytical methods.

Владислав СТЕПАНЕНКО

доктор філософії, асистент кафедри біобезпеки та здоров'я людини, Національний технічний університет України «Київський політехнічний інститут імені Ігоря Сікорського», Берестейський просп., 37, м. Київ, Україна, 03056; член ГО «Асоціація Біомедицини та Біоінженерії», вул. Валентинівська, 29, оф. 73, м. Харків, Україна, 61146 (vlad.stepanenko@kpi.ua)

ORCID: 0000-0001-8370-6137

SCOPUS: 58500331100

Олена ОШИВАЛОВА

доктор медичних наук, доцент, професор кафедри біобезпеки та здоров'я людини, Національний технічний університет України «Київський політехнічний інститут імені Ігоря Сікорського», Берестейський просп., 37, м. Київ, Україна, 03056; медичний директор з якості та внутрішнього контролю адміністрації Державної наукової установи «Центр інноваційних технологій охорони здоров'я» Державного управління справами, вул. Верхня, 5, м. Київ, Україна, 01104 (oshivalovaea@gmail.com)

ORCID: 0000-0001-8370-6137

SCOPUS: 57211138575

Оксана БОГОМОЛОВА

кандидат технічних наук, доцент кафедри трансляційної медичної біоінженерії, Національний технічний університет України «Київський політехнічний інститут імені Ігоря Сікорського», Берестейський просп., 37, м. Київ, Україна, 03056 (bohomoova@iit.kpi.ua)

ORCID: 0000-0001-5249-4565

SCOPUS: 58127870900

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СУЧАСНІ ІНСТРУМЕНТИ СТРАТЕГІЧНОГО АНАЛІЗУ ДІЯЛЬНОСТІ ПРОТЕЗУВАЛЬНО-РЕАБІЛІТАЦІЙНИХ ЦЕНТРІВ

Актуальність. В умовах реформування системи охорони здоров'я України та викликів воєнного часу особливого значення набуває ефективне управління закладами охорони здоров'я. Протезувально-реабілітаційні центри відіграють важливу роль у відновленні функціональної спроможності пацієнтів та їх соціальній реінтеграції, особливо з огляду на зростання кількості осіб, які потребують реабілітації унаслідок травм та хронічних захворювань.

Сталий розвиток таких установ потребує застосування сучасних підходів стратегічного управління, що дають змогу аналізувати чинники зовнішнього середовища та внутрішні ресурси організації. Водночас використання структурованих інструментів стратегічного аналізу в управлінні протезувально-реабілітаційними центрами залишається недостатньо дослідженим, тому систематизація сучасних інструментів стратегічного аналізу є важливим науковим і практичним завданням.

Мета дослідження – систематизація сучасних інструментів стратегічного аналізу (PESTEL, SWOT, модель п'яти сил Портера та VRIO) і визначення можливостей їх комплексного застосування в управлінні протезувально-реабілітаційними центрами.

Матеріал і методи. Дослідження ґрунтується на аналізі наукової літератури та методологічних підходів до стратегічного менеджменту в системі охорони здоров'я. У роботі використано методи аналізу, порівняння, систематизації та узагальнення теоретичних джерел.

Також розглянуто застосування стратегічних аналітичних моделей, зокрема PESTEL-аналізу для оцінювання макросередовища, SWOT-аналізу – для визначення внутрішніх і зовнішніх чинників, моделі п'яти сил Портера – для аналізу галузевої конкуренції та VRIO-аналізу – для оцінювання ресурсного потенціалу організації.

Результати дослідження. Проведений аналіз показав, що стратегічний розвиток протезувально-реабілітаційних центрів потребує комплексної оцінки як зовнішніх, так і внутрішніх чинників. PESTEL-аналіз дає змогу визначити політичні, економічні, соціальні, технологічні, екологічні та правові чинники, що впливають на розвиток закладів охорони здоров'я.

SWOT-аналіз забезпечує інтегровану оцінку сильних і слабких боків організації, а також зовнішніх можливостей і загроз. Модель п'яти сил Портера дає змогу оцінити конкурентне середовище ринку медичних послуг, тоді як VRIO-аналіз допомагає визначити стратегічну цінність ресурсів та компетенцій організації.

Комплексне застосування цих інструментів забезпечує цілісне розуміння стратегічного становища реабілітаційних закладів і сприяє формуванню обґрунтованих управлінських рішень.

Висновок. Застосування сучасних інструментів стратегічного аналізу є важливою передумовою ефективного розвитку протезувально-реабілітаційних центрів в умовах реформування системи охорони здоров'я та викликів військового часу.

Комплексне використання PESTEL-аналізу, SWOT-аналізу, моделі п'яти сил Портера та VRIO-аналізу дає змогу закладам охорони здоров'я точніше оцінювати своє стратегічне становище, визначати конкурентні переваги та формувати стійкі стратегії розвитку.

Ключові слова: стратегічний аналіз, стратегічне управління, протезувально-реабілітаційний центр, заклади охорони здоров'я, інструменти управління, методи аналізу.

Introduction. In the context of profound socio-economic transformations and full-scale war, Ukraine's healthcare system is undergoing significant structural changes that necessitate rethinking management approaches in healthcare institutions (Kaminska et al., 2024). The implementation of state policy in the field of medical guarantees, the development of contracting mechanisms through the National Health Service of Ukraine (NHSU), the strengthening of financial autonomy of healthcare providers, as well as regulatory changes established at the governmental level, are shaping a new model for the functioning of the sector (Rogachevskyi, 2020). According to contemporary national strategic documents, particularly the «Strategy for the Development of the Healthcare System up to 2030 and the Operational Action Plan for Its Implementation for 2025–2027» (Verkhovna Rada of Ukraine, 2025), the healthcare system is oriented toward improving the accessibility and quality of medical services, ensuring efficient resource utilization, and advancing rehabilitation care, which has become especially relevant under wartime conditions.

Scientific approaches to strategic management in the field of healthcare emphasize the necessity of a systematic analysis of the external and internal environment as a prerequisite for the formation of a long-term development strategy for healthcare institutions. Contemporary studies also highlight the importance of integrating managerial approaches with the development of medical and rehabilitation technologies, which contributes to improving the efficiency of healthcare service organizations and the quality of services provided to patients (Zamorsky et al., 2022). In modern research, strategic management is interpreted as a comprehensive process of formulating, implementing, and evaluating managerial decisions aimed at achieving sustainable competitive advantages and ensuring organizational effectiveness (Synenka, Ilchyshyn, 2025). Methods of strategic analysis, including PESTEL and SWOT analysis, as well as industry competitive forces analysis, make it possible to identify macroeconomic, social, technological, legal, and market factors of influence and to determine the internal resource potential of an institution.

The traditional administrative model of managing medical institutions in Ukraine, characterized by centralized financing and formal strategic planning, is gradually being transformed into a model based on the principles of autonomy, financial accountability, results orientation, and service quality. In this context, strategic analysis acquires significance as a tool that ensures a well-grounded determination of an institution's market position, assessment of external risks and opportunities,

identification of unique resources and competencies, and selection of priority areas for development.

The growing demand for medical and physical rehabilitation as a consequence of hostilities, the increase in the number of patients with injuries, complex musculoskeletal injuries (Grigorov et al., 2024; Moldavska et al., 2025), and chronic complications, the expansion of the private sector, and the implementation of digital solutions, including the electronic healthcare system and telerehabilitation, substantially complicate the managerial environment. Under such conditions, healthcare institutions, particularly prosthetic and rehabilitation centers, operate within a competitive space characterized by competition for patients, funding, qualified personnel, and innovative technologies.

For prosthetic and rehabilitation centers, strategic management involves planning the development of specializations in accordance with patient needs, defining target groups and formats of service delivery, forming competitive advantages based on quality, innovation, and a multidisciplinary approach, as well as developing a long-term strategy for financial sustainability (Shuranova, 2024). Thus, the application of contemporary strategic analysis tools is a necessary condition for the effective functioning and sustainable development of healthcare institutions in a dynamically changing external environment.

Objective of the study. The purpose of this study is to provide a theoretical substantiation and systematization of contemporary strategic analysis tools (PESTEL, SWOT, Porter's Five Forces model, and VRIO) and to determine the possibilities for their integrated application in the management of prosthetic and rehabilitation centers in order to develop a well-grounded long-term development strategy, enhance competitiveness, and ensure financial sustainability under the conditions of healthcare system reform and wartime challenges.

Materials and methods. The study is based on the analysis and synthesis of contemporary scientific literature, regulatory documents, and methodological approaches to strategic management in healthcare. The research methodology included general scientific methods such as analysis, comparison, systematization, and generalization of theoretical sources.

In addition, elements of strategic analytical frameworks were examined, including PESTEL analysis for macro-environment assessment, SWOT analysis for the integration of internal and external factors, Porter's Five Forces model for evaluating the competitive environment of the healthcare sector, and VRIO analysis for assessing the strategic resource potential of organizations. The application of these methods made it possible

to structure key determinants influencing the development of prosthetic and rehabilitation centers.

Results and discussion. Rehabilitation care has specific characteristics that distinguish it from other medical fields and determine the particular features of strategic management in rehabilitation institutions, which is confirmed by contemporary clinical and organizational studies in the field of medical rehabilitation (Boichuk et al, 2025; Nikolaenko et al., 2005). The main characteristics include:

1. Multidisciplinary. This involves the coordination of activities among physical therapists, occupational therapists, physicians, psychologists, and other specialists.

2. Long-term service provision. Rehabilitation is a prolonged process that requires stable and sustainable financing.

3. Significant role of human capital. The quality of services largely depends on the competence and professional expertise of specialists, which is supported by prior laboratory and clinical research methods (Nikolaenko et al., 2005).

4. Social significance. The outcomes of rehabilitation activities directly influence a patient's return to an active social life.

Given these characteristics, strategic analysis in the field of rehabilitation must take into account not only economic factors but also social determinants that shape the long-term societal value of the institution's activities.

Strategic analysis constitutes a fundamental stage of strategic management (fig. 1), as it provides the basis for the development of a well-grounded strategy for institutional growth and development.

Without a systematic analysis of the internal and external environment, strategic decisions become intuitive in nature and fail to ensure an adequate level of justification. A rehabilitation institution operates in a complex, dynamic, and unstable environment dependent on state policy, the economic situation, demographic changes, technological progress, and competitive pressure. At the same time, the effectiveness of its activities is determined by internal resources, including human capital, organizational structure, financial capacity, and the level of managerial culture (Schimböck et al., 2025; Armstrong et al., 2019; Torres et al., 2026; Biloshytska et al., 2025).

A systematic assessment of these factors requires the application of structured analytical tools of strategic management. In the practice of strategic management, a number of analytical models have been developed to structure information and support managerial conclusions. The most widely used among them are (Rachas et al., 2022; van Wijngaarden., Scholten, van Wijk, 2012; Mello, Guha, 2024):

1. PESTEL analysis – for examining the macro-environment;

2. Porter's Five Forces model – for assessing the industry's competitive environment;

3. SWOT analysis – for integrating internal and external factors;

4. VRIO analysis – for evaluating resources and forming sustainable competitive advantages.

Therefore, it is advisable to apply a set of complementary strategic analysis tools that cover different levels of the institution's operating environment.



Fig. 1. Diagram of the Strategic Management Process

Each of these tools has its own methodological purpose, and their integrated use ensures the formation of a comprehensive vision of the institution's strategic position. For a systematic presentation of the material, it is appropriate to consider each tool separately, defining its purpose, methodology of application, and possibilities for practical use in the activities of a rehabilitation center.

1. PESTEL Analysis.

PESTEL analysis is used to assess the macro-environment, including political, economic, social, technological, environmental, and legal factors. For prosthetic and rehabilitation centers, the following factors are of particular importance (fig. 2): Political (healthcare system reform (changes related to the NHSU), political stability/martial law and its impact on service accessibility, state funding programs and licensing requirements); Economic (inflation rate affecting the cost of medicines and equipment, population purchasing power and the level of health insurance development, opportunities to attract grant funding for development); Social (demographic changes, level of public health awareness and demand for preventive services, changing patient preferences (online appointments, service quality)); Technological (implementation of the electronic healthcare system (eHealth), development of telemedicine and diagnostic equipment, use of artificial intelligence for diagnostics); Environmental (requirements for medical waste disposal, energy efficiency of healthcare facility buildings);

Legal (legislation on the protection of patients' personal data, accreditation requirements and medical standards (clinical protocols), laws on medical liability, regulatory and public administration framework).

The application of PESTEL analysis makes it possible to identify external opportunities and threats to the sustainable development of an institution. A distinctive feature of this tool is that it focuses on assessing an environment that is not directly controllable by the organization but significantly influences its strategic decisions (Alvarez, Winkel, Karamatsu, 2025; McDonagh et al., 2023; Destrieux et al., 2026). Therefore, the strategy of a rehabilitation center should be developed with due consideration of political instability, economic risks, technological transformations, and evolving social demands.

2. SWOT Analysis

SWOT analysis provides an integrated assessment of the internal and external factors influencing an institution's development. It enables the systematization of the organization's strengths and weaknesses, as well as the identification of opportunities and threats within the external environment (fig. 3) (Khudyakova, 2022).

The analysis of internal characteristics includes the following factors: staffing (number of personnel, level of professional qualification, age structure), material and technical base, range of services provided, management system, financial mechanisms, and infrastructure (Khudyakova, 2022).



Fig. 2. PESTEL Analysis Factors (Yeshchenko, 2024)

External factors include: population characteristics (demographic structure, economic indicators of the community, identified needs, etc.), geographical location, level of competition (number of healthcare institutions and their proximity to one another), and infrastructure development (roads, transport infrastructure, availability of educational institutions, etc.) (table).

International quality certification is of particular importance for building competitive advantages, especially JCI (Joint Commission International) standards, which are recognized by the International Society for Quality in Healthcare and the World Health Organization (WHO) as the «gold standard» of quality management in healthcare. Their implementation enhances patient trust, promotes the development of medical tourism, and contributes to the expansion of paid services (Zalyhina, 2020; Al-Sayedahmed et al., 2021)

Thus, SWOT analysis is a tool within the sphere of managerial influence of an institution's leadership. Its application makes it possible to minimize the negative

impact of weaknesses and threats while strengthening the use of internal advantages and external opportunities.

3. Porter's Five Forces Model

Porter's Five Forces model is applied to assess industry competition and market structure. It includes the analysis of the intensity of competitive rivalry, the threat of new market entrants, the risk of substitute services, as well as the bargaining power of suppliers and consumers.

Competitor analysis is an integral component of marketing research and enables timely responses to changes in market conditions, the introduction of new services and facilities, and the optimization of pricing and operational processes (Porter, 2008).

In the healthcare sector, competition extends not only to private institutions but also to public healthcare facilities, telemedicine services, foreign clinics, and alternative forms of medical care. Considering the industry structure allows for the development of a realistic marketing and investment strategy, optimization of pricing

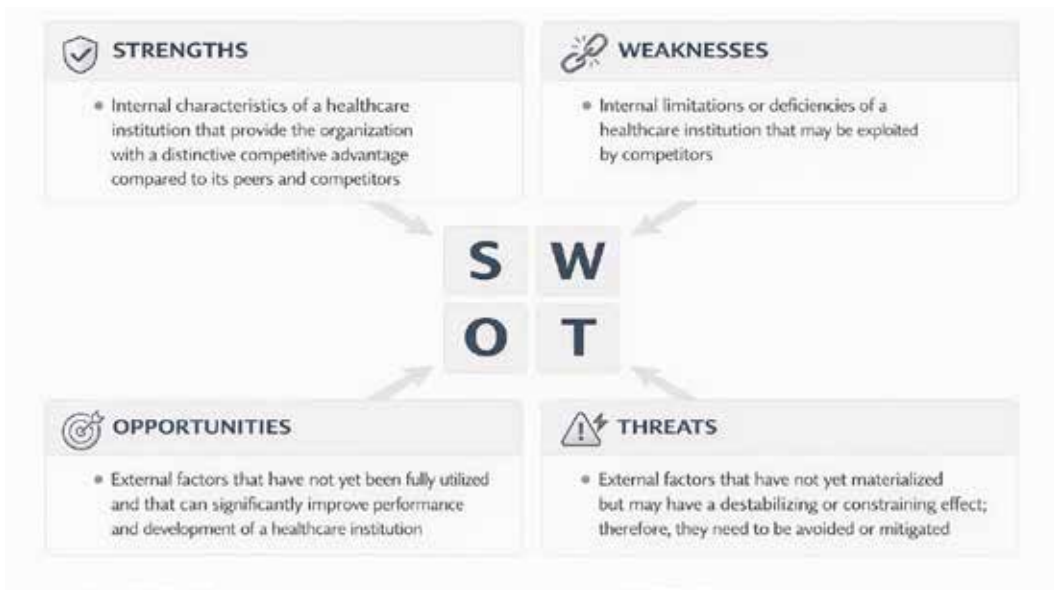


Fig. 3. SWOT Analysis Factors (Khudyakova, 2022)

Table

Example of a SWOT Analysis (Khudyakova, 2022)

Factors	Contribute to Goal Achievement	Hinder Goal Achievement
Internal	Strengths: • well-equipped material and technical base; • available funds to establish a financial incentive mechanism; • provision of paid services; • facility renovation; • competencies in grant proposal writing.	Weaknesses: • low level of staff qualification; • overstaffed organizational structure; • low level of customer service; • absence of a staff motivation system.
External	Opportunities: • strong support from local authorities and businesses; • obtaining JCI certification; • availability of international grants.	Threats: • high level of competition from private healthcare institutions; • health risks to staff due to a pandemic.

policies, and identification of service differentiation directions (Yeshchenko, 2024).

The central element of the model is the intensity of competitive rivalry. Additionally, two threats – the emergence of new competitors and substitute services – and two bargaining powers – those of suppliers and consumers – are analyzed (fig. 4).

For a more comprehensive understanding, it is advisable to examine in detail the approaches to analyzing each aspect of the healthcare sector (Yeshchenko, 2024):

1. Intensity of competition. Assessing the intensity of competition involves considering the following factors:

1.1 The level of market saturation by healthcare service providers and its growth rate.

1.2 The degree of limitation in the ability to raise prices for medical services.

1.3 The level of standardization of services provided by different healthcare institutions.

The level of threat from new entrants into the healthcare services market is determined by the accessibility of the sector and the presence of entry barriers. The lower the organizational, financial, and regulatory restrictions, the higher the likelihood of new competitors emerging.

Assessing the potential dynamics of new market entrants involves analyzing the following factors (Yeshchenko, 2024):

- the level of differentiation in the healthcare services market;

- the volume of investment required to start operations;

- the nature of government policies regarding the establishment and licensing of new healthcare institutions;

- the growth and development rate of the market;

- the presence of institutions with an established business reputation and high patient loyalty.

A comprehensive analysis of these parameters allows determining the potential intensity of competitive pressure from new entrants and considering corresponding risks when developing the institution's strategy.

2. Threat of substitute products. Substitute products in the healthcare services market include alternative ways to meet patient needs, which can be chosen instead of seeking services from a specific healthcare institution. In the context of rehabilitation care, such substitutes may include self-treatment, online consultations, alternative medical practices, or receiving services in other regions or abroad.

Assessing the threat of substitutes involves a comparative analysis of the quality and cost of services offered by different market participants, as well as evaluating patients' trust in alternative treatment options. An important factor is patients' perception of the «price–quality» ratio and their willingness to switch service providers. Reducing the influence of substitutes can be achieved by improving the quality of medical services, ensuring evidence-based treatment outcomes, and building a strong institutional reputation.

3. Supplier power. Supplier power is determined by the extent of their influence on cooperation conditions, including pricing, delivery times, and resource availability. In healthcare, it is important to consider not only factors such as the supply of medical equipment, consumables, or medications, but also information technology, maintenance services, and specialized software products.

Analyzing this factor involves evaluating:

- the availability of alternative suppliers in the market;

- the level of supplier concentration and their strategic priorities;



Fig. 4. Porter's Five Forces (Yeshchenko, 2024)

- resource limitations;
- the complexity of switching to other suppliers.

High dependence on a limited number of suppliers increases the risk of operational instability, requiring diversification of partnerships and the creation of backup supply channels.

4. Consumer power. Consumer power manifests in patients' ability to influence the conditions of medical service delivery, including cost, quality, and service format. In a competitive environment, patients can choose between public and private institutions, enhancing their bargaining power.

Assessing consumer power involves analyzing patient sensitivity to price changes, satisfaction with service quality, and willingness to switch to alternative healthcare providers. High patient awareness and the availability of alternatives increase their market influence, necessitating systematic management of service quality, reputation, and customer service.

4. VRIO Analysis.

VRIO analysis is an analytical model for evaluating an organization's internal resources based on the criteria of Value, Rareness, Imitability, and Organization (Sytnyk, 2011). Its application allows identifying which resources and competencies provide sustainable competitive advantages.

Using VRIO analysis in implementing strategic change management functions is appropriate in two main cases.

First, when assessing the internal strategic potential of an enterprise to determine the uniqueness of its resources and justify their use within a strategic change program. In this context, VRIO analysis serves as a diagnostic tool for competitive advantages, enabling the identification of whether the strategic potential requires overall enhancement or the development of specific components (Prymak, Ivanova, Malovichko, 2020).

Second, during the assessment of the degree to which strategic opportunities created by the market environment are realized and determining their accessibility to the enterprise's existing internal potential. This approach ensures alignment of the organization's resource base with external environment requirements and strategic development objectives (Prymak et al., 2020).

Practical application of VRIO analysis in justifying strategic changes involves evaluating the enterprise's resources and competencies according to four key criteria (Prymak et al., 2020):

- value (determining the ability of a strategic resource to create added value for the organization, support the achievement of strategic goals, and enhance the efficiency of strategic change management);

- rareness (assessing the prevalence of the resource among competitors and the uniqueness of its characteristics that form competitive advantages);

- imitability (determining the difficulty and cost of reproducing or copying the resource by other market participants, including time, financial, and organizational barriers);

- organization (evaluating the degree of integration of the resource into the enterprise's management system and the organization's ability to effectively use its resources and competencies to realize strategic change opportunities).

A comprehensive VRIO approach allows identifying resources that form sustainable competitive advantages and determining directions for strategic development during transformational processes.

In prosthetic and rehabilitation centers, the key strategic resource is human capital – the professional team, management culture, and well-established internal processes. These factors are difficult for competitors to replicate and form the organization's long-term stability.

Conclusions. Under the current conditions of healthcare system reform in Ukraine, amid martial law, increasing competition, and the digital transformation of the sector, strategic analysis acquires practical significance and becomes an essential tool for ensuring the effective operation of prosthetic and rehabilitation centers. The integrated application of PESTEL, SWOT, Porter's Five Forces, and VRIO analysis enables the formation of a comprehensive understanding of both the external and internal environment, supports the justification of strategic decisions, minimizes risks, and enhances the financial sustainability of the institution.

The strategic advantage of a rehabilitation center is shaped not only by material and technical resources but primarily by the quality of human capital, the level of managerial culture, and the organization's ability to adapt to changes. Further research should focus on developing applied models for integrated strategic monitoring of rehabilitation centers' activities, as well as on the empirical evaluation of the effectiveness of implementing comprehensive strategic analysis under conditions of wartime and post-war recovery of Ukraine's healthcare system.

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Email address for correspondence with the authors: vlad.stepanenko@kpi.ua