Economic Optimization of Trichological Services: Personalization and Market Differentiation Strategies

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Abstract. The aim of the article was to substantiate theoretical and practical approaches to the economic optimization of trichological services by combining service personalization, innovative technologies, and rational resource management. The study was aimed at identifying effective models for the development of trichological clinics and salons in view of growing competition, structural changes in the field of medical cosmetology, as well as increasing role of an individualized approach to the consumer. The research employed the following methods: the systemic approach, economic and analytical method, comparative analysis, structural and logical methods. The application of the principles of interdisciplinary analysis combined the economic, managerial, and technological aspects of trichological services.

The results of the study showed that the economic efficiency of trichological centres directly depended on the ability to integrate personalized technologies into operational processes. The main areas of optimization were identified, including the implementation of personalized service programmes based on genetic and bioanalytical data, the use of artificial intelligence (AI) for diagnostics and marketing automation, the use of innovative procedures (platelet rich plasma (PRP) therapy, nano-encapsulated drugs, photon therapy), building effective cost and personnel management models, as well as the development of partner ecosystems in the field of medical cosmetology. It was proved that these tools contributed to increasing the profitability of enterprises, reducing the cost of procedures, and strengthening customer loyalty. The obtained results can serve as an analytical basis for developing business strategies aimed at increasing the resource management efficiency, service differentiation, and the creation of competitive advantages in the industry.

Keywords: personalization, innovative technologies, artificial intelligence, resource efficiency, cost of procedures, customer loyalty.

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Економічна оптимізація трихологічних послуг: стратегії персоналізації та ринкової диференціації

Анотація. Метою статті було обґрунтувати теоретичні та практичні підходи до економічної оптимізації трихологічних послуг шляхом поєднання персоналізації сервісу, інноваційних технологій і раціонального управління ресурсами. Дослідження було спрямоване на визначення ефективних моделей розвитку трихологічних клінік і салонів у контексті зростаючої конкуренції, структурних змін у медико-косметологічному секторі та підвищення ролі індивідуалізованого підходу до споживача. Методологічну основу дослідження становили системний, економіко-аналітичний, порівняльний і структурно-логічний методи. Застосування принципів міждисциплінарного аналізу дозволило поєднати економічні, управлінські та технологічні аспекти функціонування трихологічних послуг.

Результати дослідження показали, що економічна ефективність трихологічних центрів безпосередньо залежала від здатності інтегрувати персоналізовані технології в операційні процеси. Було визначено основні напрями оптимізації, серед яких – упровадження персоналізованих програм обслуговування на основі генетичних і біоаналітичних даних, використання штучного інтелекту для діагностики та маркетингової автоматизації, застосування інноваційних процедур (PRP-терапії, нанокапсульованих препаратів, фотонної терапії), формування ефективних моделей управління витратами та персоналом, а також розвиток партнерських екосистем у сфері медико-косметології. Доведено, що ці інструменти сприяли підвищенню прибутковості підприємств, зниженню собівартості процедур і зміцненню клієнтської лояльності. Отримані результати можуть слугувати аналітичним підґрунтям для розроблення бізнес-стратегій, спрямованих на підвищення ефективності управління ресурсами, диференціацію послуг і формування конкурентних переваг у галузі.

Ключові слова: персоналізація, інноваційні технології, штучний інтелект, ресурсна ефективність, собівартість процедур, клієнтська лояльність.

Introduction

Modern trichology – an interdisciplinary field that combines medical, cosmetological, and economic aspects of providing hair and scalp care services – is experiencing a period of active commercialization. Over the past decade, the market for trichological services has transformed from a narrow segment of medical cosmetology into a full-fledged sphere of individualized wellness services, where its own economic logic of development is being formed. At the same time, the dynamic growth in the number of trichological clinics, private practices, and beauty centres creates a situation of high competition and market overload with supply. This necessitates a rethinking of approaches to managing economic efficiency, in particular – through personalization of service and differentiation of business models. The problem is that a significant part of trichological practices is implemented according to traditional schemes of cosmetological services, without taking into account changes in consumer behaviour, their willingness to pay for personalized solutions, as well as the need to create long-term client relationships. The development of digital technologies and biometric diagnostic methods opens up new opportunities for building systems for a personalized approach to hair treatment and prevention, but most institutions do not have a structured economic model for implementing such innovations.

In modern economic science, there is a growing interest in studying the service sector as a key factor in socio-economic development. Kucherenko S. Yu. et al. [1] analysed the transformation of the service economy of Ukraine in the context of global trends demonstrating a gradual transition from material production to intangible forms of value creation. The authors established that the growing share of services in the country's GDP structure is not only an indicator of post-industrialization, but also the result of increased demand for intellectually oriented services, including in the medical and cosmetology sector. The study emphasizes that the effective development of the services market in Ukraine is hampered by the low level of innovation, insufficient digitalization, and weak marketing adaptability of enterprises, which requires the search for new economic models for optimizing service provision. Bahorka M. O. et al. [2] substantiated strategic guidelines for the creation of competitive advantages of service enterprises based on the individualization of consumer experience. The authors proved that the marketing strategy built on the principles of personalization becomes a factor in the economic stability of the business. It is emphasized that the use of analytical tools – such as SWOT analysis, brand positioning, and behavioural segmentation of customers – allows to ensure effective market differentiation. In the context of trichological services, these conclusions have practical significance, as personalization and strategic positioning are the basis for increasing the competitiveness of medical cosmetology enterprises.

Pylypenko M. [3] deepened the theoretical understanding of market structures and strategic behaviour of firms in the global economy. The work summarizes models of competitive interaction that take into account the impact of innovations, the production scale, and the level of monopolization on business efficiency. The researcher emphasizes that optimizing the activities of service enterprises requires flexible adaptation to market changes through diversification of services and creation of added value through innovations. These provisions create a methodological framework for the creation of effective management models in the field of trichology, where competition for the client is based not only on price, but also on the quality, trust, and validity of the service.

The issue of sustainable development of the hair care market is revealed in the study of E.-J. Shin [4], who established that the modern hair care market is in a phase of deep transformation under the influence of digitalization, eco-trends and product customization. The author notes that consumers are increasingly focusing on proven effectiveness of products and their biocompatibility, and not only on brand appeal. The results of the study indicate that the integration of the principles of sustainable development and personalized selection of cosmetics is a decisive factor in the formation of long-term customer loyalty. This provision directly correlates with the idea of economic optimization of trichological services by increasing their reliability and environmental safety.

A significant contribution to the development of scientific trichology was made by M. Uyama [5], who systematized the latest achievements in the study of hair structure, in particular in the field of nanotrichology. The researcher proved that the use of Infrared Nanospectroscopy (AFM-IR), NanoSIMS, and Raman spectroscopy not only to assesses the degree of hair damage, but also determines the depth of penetration of active substances. The results of the study indicate that the introduction of bioanalytical technologies into trichological practice creates the prerequisites for the creation of personalized treatment and care programmes. These findings emphasize the economic potential of high-tech differentiation of services in the beauty industry, which is becoming a key factor in competitiveness.

The current prospects for the digitalization of the industry are summarized in the study of H. K. Jeong et al. [6], who investigated the role of AI in the development of trichological technologies. The authors proved that the integration of AI systems into the diagnostics, selection of care products, and planning procedures increases the accuracy and speed of decision-making, reduces the cost of services, and forms a new model of interaction with the client. They emphasized that machine learning (ML) algorithms create the possibility of

forming digital twins of patients, which opens the way to maximum personalization. Such conclusions are important for economic science, because they demonstrate how technological innovation can be combined with resource optimization and increased business profitability. So, the analysis of academic literature shows that despite significant theoretical achievements in the field of service economics, innovative marketing and trichological technologies, the academic discourse lacks comprehensive studies that would integrate the economic, technological, and personalization aspects of the development of trichological services.

The aim of the research is to study conceptual approaches to increasing the economic efficiency of trichological services. The aim involves the fulfilment of the following research objectives:

- Analyse the current state and trends in the development of the trichological services market in the context of structural changes in the medical cosmetology sector.

- Identify key economic factors that affect the efficiency of trichological clinics and private practices; substantiate the methodological principles of personalizing trichological services as a tool for increasing customer loyalty and increasing business profitability.

Results

The modern service economy is characterized by the growing role of the medical and cosmetology sector, where trichological services are becoming one of the most dynamic areas. The demand for professional hair and scalp care is increasing under the influence of urbanization, increased stress levels and changing standards of appearance. At the same time, high competition and equipment costs force businesses to look for new models of economic efficiency. The development of the service sector in Ukraine directly reflects the level of socio-economic well-being of the population. Only after satisfying basic material needs a person begin to actively consume intangible services, in particular beauty, health, and trichological care services. This segment is an indicator of the transition of the economy from an industrial to a post-industrial model, where the quality of life, individual consumer needs and access to innovative services play an important role.

Despite the fact that over the past decade, the average monthly income of Ukrainian households has increased by almost 4.7 times, the structure of consumer spending remains deformed. The share of spending on services increased by only 30%, and the total volume of service consumption is approximately 31.6% of family income. For comparison, this figure exceeds 50–60% in developed countries, which indicates a significant growth potential of the Ukrainian service market, in particular in the field of medical cosmetology and trichology. Ukrainian households continue to spend a significant share of their income on housing and communal services (14.6% of total expenses), while healthcare accounts for about 7-8%, and beauty and recovery – no more than 1.5-2%. At the same time, spending on services related to maintaining health and appearance demonstrates a stable upward trend: the amount of spending on medical cosmetology procedures has increased by 37% over the past 10 years alone [1, p. 102]. This dynamic indicates a gradual reorientation of the Ukrainian consumer from basic consumption to high-quality, personalized services, including trichological procedures that combine therapeutic and aesthetic effects. In the future, this forms a new sector of the health economy, where economic optimization, personalization of service, and strategic market differentiation play a key role.

At the same time, the low level of real incomes and demographic challenges – war, reduction of the economically active population – remain barriers to the sustainable development of the industry. Insufficient consumption of health services, in particular trichological services, can exacerbate the problem of preserving labour potential, because the state of health and appearance is increasingly becoming an important component of professional self-realization. So, increasing the accessibility and economic efficiency of

trichological services is not only a matter of business optimization, but also an element of the country's socio-economic development.

In modern conditions of the development of the medical cosmetology services market, the effectiveness of the activities of trichological centres and clinics directly depends on the correctly chosen marketing strategy. As in any business with high competition, marketing is a key mechanism for building competitiveness and adapting to dynamic changes in demand. In particular, in trichology, strategic marketing should be aimed at building a personalized client experience – from diagnostics to the development of individual treatment and care protocols, which reflects the modern philosophy of the enterprise in the beauty industry. A modern strategy for managing trichological services should also take into account a structural and logical approach to the formation of a competitive strategy, which includes: environmental analysis, identification of the strengths of the enterprise, segmentation of the target audience, development of marketing tools, and assessment of implementation effectiveness. For example, SWOT analysis identifies the risks of losing customers, while the Porter model assesses the market potential and the position of competitors [2]. An effective combination of these approaches ensures increased profitability through strategic personalization, because individual solutions contribute to the formation of trust and reduce the costs of attracting new customers. In this context, trichological clinics should consider personalization not as an aesthetic trend, but as an economic tool that increases the profitability and sustainability of the business in a competitive services market [3].

The hair cosmetics market is growing rapidly, with a global value expected to exceed $100 billion by 2024. This growth is driving companies to move from mass production to customized solutions that take into account individual consumer characteristics. In the context of the Fourth Industrial Revolution, innovations such as genetically personalized cosmetics, 3D printing, and AI are becoming more than just a trend, but a necessary condition for competitiveness [4, p. 7].

The concept of customization in trichology means creating services and products that are as tailored as possible to a specific client. Previously, the industry's goal was mainly to wash and style hair, but today the focus is shifting to restoring hair structure, maintaining moisture at 10-20%, and strengthening hair follicles. This improves the quality of service and also contributes to the formation of a premium brand reputation. The modern consumer chooses products that not only beautify, but also care for the health of the hair. Users prefer products that minimize damage and provide deep hydration. To achieve this, protein formulas based on keratin are used, which forms a protective layer and reduces the risk of structural damage. An innovative direction in trichology is the use of diagnostic devices for analysing the condition of the scalp, blood circulation stimulation technologies, and micro-vibration systems to improve the absorption of active substances. They increase the effectiveness of procedures, while reducing the cost of long-term treatment programmes. From an economic perspective, such differentiation of services creates conditions for attracting a premium audience and increasing profitability [4, p. 8]. The use of personalized service models allows salons and brands to create unique value that is difficult for competitors to reproduce. This, in turn, strengthens the market positions of companies in the beauty industry, which is increasingly turning into an intelligent service industry.

In modern conditions, beauty salons and hair care product manufacturers can significantly increase the efficiency of their activities by implementing individual marketing strategies – for example, segmenting products according to hair type, analysing the condition of the client's scalp, and forming recommendations based on personal diagnostic data. This approach not only helps to increase the level of consumer trust, but also optimizes advertising costs through social networks and recommendations from regular customers. Digital application platforms for the beauty industry open up new economic opportunities – from cost optimization to the creation of new business models in the field of personalized care. Thanks to

them, a new consumption logic is being formed, focused not only on aesthetics, but also on health, environmental friendliness and long-term effect.

Modern trichology is rapidly developing towards the integration of high-tech hair analysis methods, which allow moving from a purely cosmetic perception of care to scientifically sound hair bioanalytics. The study of hair structure today encompasses a multi-level approach – from molecular analysis of protein structures to spatial mapping of lipids, water and pigments in a hair section (Table 1). The most promising are AFM-IR, NanoSIMS, Raman spectroscopy and Scanning ion-conductance microscopy (SICM), as they provide high spatial resolution and accurate chemical characterization of hair [5]. Their application allows not only to assess the degree of damage or the effectiveness of cosmetics, but also to predict the biomechanical behaviour of hair, which is of great importance for personalized trichology.

Table 1

Modern methods of hair condition analysis

Analysis method	Principle of operation	Research object	Capabilities and scientific accuracy	Practical application in trichology
AFM-IR (Atomic Force Microscopy Integrated with Infrared Spectroscopy)	Combining topographic imaging with IR spectrum; allows determination of chemical composition at the nanoscale	Cuticle, cortex, medulla of hair	Detects α-helical structure of proteins, cysteine oxidation level, lipid composition; spatial resolution up to 50 nm	Used to diagnose damage to hair structure, effectiveness of reconstructive agents
FT-IR (Fourier Transform Infrared Spectroscopy)	Measures fluctuations of chemical bonds in proteins, lipids and water	Cortex, cuticle, intercellular membrane complexes	Allows mapping of lipids, fatty acids, protein structures; determines the effect of aging or heat treatment	Evaluation of effectiveness of conditioners, effects of colouring, thermal stress
Raman Spectroscopy (Confocal)	Records scattering of laser light by molecules	All layers of hair (up to 30 microns in depth)	Determines the ratio of α-helix to β-sheet, changes in protein structures during aging or chemical exposure	Analysis of damage from bleaching, evaluation of effectiveness of reconstructive procedures
NanoSIMS (Secondary Ion Nanomass Spectrometry)	Nanoscale visualization of isotopes and trace elements using an ion beam	Medulla, cortex, melanin granules	Resolution up to 50 nm; determines the distribution of active substances, metals, amino acids	Dye penetration studies, toxicological analysis, assessment of absorption of active ingredients
Laser Confocal Microscopy	Using fluorescent dyes for 3D visualization	Surface and internal structure of the hair	Allows quantitative assessment of the penetration of keratins, oils, dyes	Determination of the effectiveness of hair care products, improvement of product formulas
Scanning Ion Conductometry (SICM)	Measures local electrical charge and topography	Surface of the cuticle	Visualization of negative and positive charge zones at the nanoscale	Evaluation of the level of cuticle damage, effectiveness of conditioners

FIB-SEM / STEM (Focused Ion and Scanning Electron Microscopy)	High-precision three-dimensional reconstruction of hair structures	Cuticle, medulla, deposits of salts and fatty acids	Allows detection of crystalline structures (e.g. calcium deposits), changes after bleaching	Analysis of the impact of dyeing and environmental factors on the microstructure
Mechanical Testing (Tensile, Bending, Torsion Test)	Measures fibre elasticity and strength	Hair as a whole	Shows the difference between the elasticity of the cortex and cuticle; determines the degree of damage	Used to assess the quality of straightening, lamination, thermal protection procedures
Trichoscopy (digital dermatoscopy of hair and scalp)	Optical visualization of the hair shaft using high resolution and magnification up to 1000×	Hair, follicles, scalp	Determines the density and thickness of the hair, assesses the condition of the follicles, detects miniaturization and structural damage	Used to diagnose alopecia, seborrhoea, hair growth disorders, assess the effectiveness of treatment and preventive programmes

Source: developed by the author based on [5]

The combination of infrared, Raman spectroscopy, AFM-IR, and NanoSIMS forms a new paradigm of hair research – nanotrichology, which enables observing damage or changes after chemical procedures and accurately tracks the penetration of active ingredients in real time. This creates the prerequisites for personalized trichology, when the selection of products is based on specific indicators of the client's hair structure. NanoSIMS and laser confocal microscopy methods are particularly promising, which open up the possibility of quantitative analysis of the distribution of bioactive substances – amino acids, keratins, dyes – at the level of the medulla, cortex, and cuticle. This approach is already used to improve the formulas of hair colouring, reconstruction, and protection products. In parallel, mechanical tests (for tension, bending, torsion) allow assessing the elasticity and strength of hair, which is important for understanding its behaviour during thermal or chemical exposure. These studies confirm that the outer cuticle layer has a higher Young's modulus than the middle cortex layer, and therefore is more resistant to deformation, but sensitive to chemical agents [5].

In general, promising methods of hair condition analysis have a high potential for commercial adaptation. They allow salons and laboratories to:

- move from visual assessment to accurate biometric hair screening;
- optimize the selection of treatments and cosmetics for a specific hair type;
- generate scientifically verified recommendations for personalized care programmes.

In the context of the global trend towards economic optimization of trichological services, such methods are becoming the key to creating a competitive advantage, as they allow reducing costs for ineffective products, improving the quality of services, and strengthening customer trust. In the future, these technologies can be integrated into digital trichological platforms, where data from hair microanalysis are combined with genetic or environmental factors, creating a new economic model of personalized beauty.

In the context of the issue under research, the use of in trichology also attracts attention (Table 2). It is becoming a key factor in the economic optimization and personalization of hair care services. Its implementation not only increases the accuracy of diagnostics, but also creates new business models for clinics and cosmetic companies focused on long-term interaction with customers.

AI-based systems, such as Haircosys, are capable of conducting a comprehensive assessment of the condition of hair and scalp, generating personalized treatment plans, and predicting the effectiveness of procedures. Deep learning algorithms analyse both macroscopic (density, scalp condition) and microscopic parameters (diameter, hair structure), which increases the reliability of diagnostic results. In a broader context, the integration of AI into information and communication systems (ICT) allows for the creation of digital twins of patients – virtual models of hair and scalp, on the basis of which trichologists can test treatment scenarios or predict the consequences of various procedures [6, p. 12]. This reduces the cost of experimental methods, shortens the time for clinical decision-making, and improves the quality of service.

Table 2

Stages of application of AI in trichology

Application stage	**Content and technological essence**	**AI methods and tools**	**Practical significance in trichology**
Diagnosis and detection of pathologies	Initial detection of hair and scalp condition, determination of alopecia, seborrhoea, dermatitis. Analysis of macro- and microscopic parameters, in particular hair density and diameter	Deep learning, convolutional neural networks (CNN), computer vision systems	Automation of diagnostics, increasing the accuracy of problem detection, reducing examination time
Prognostic analysis and recommendation systems	Making forecasts for the development of hair diseases, determination of treatment effectiveness and risks of relapse	Analytical forecasting models, neural networks, machine learning	Individualization of therapy, selection of optimal care products, increasing the effectiveness of treatment
Personalization of treatment (digital twins)	Creation of a digital patient model for analysis of hair, scalp structure and reactions to treatment	Simulation algorithms, ICT analytics, 3D modelling, adaptive learning systems	Development of personalized treatment programs; modelling of results; increasing the accuracy of forecasts
Control and monitoring of treatment	Tracking treatment adherence, controlling side effects, monitoring hair restoration results	Internet of Things (IoT), mobile applications, intelligent notification systems, chatbots	Providing continuous monitoring, optimizing communication between a specialist and a patient, preventing complications
Transplantation and regenerative trichology	Analysis of hair transplant effectiveness, growth control, assessment of hair life cycle after intervention	Computer visualization, image analysis algorithms, predictive modelling systems	Reducing risks during transplantation, improving the quality of recovery, optimizing postoperative care
Marketing automation and customer engagement	Automated management of records, consultations, feedback and recommendations	Natural language processing (NLP), CRM systems with AI elements, predictive analytics	Increasing customer loyalty, minimizing advertising costs, effective personalized communication

Source: developed by the author based on [6]

From an economic perspective, AI reduces operating costs by automating processes from diagnostics to marketing. AI-based forecasting systems allow for the optimization of appointment schedules, management of cosmetic inventory, and reduction of advertising costs through precise targeting of customers. Instead of mass events, companies can create personalized offers that stimulate loyalty and repeat purchases. A particularly promising area is marketing automation, where AI analyses customer behavioural data, generates recommendations, procedure reminders, and even initiates video consultations. This creates the effect of "smart interaction," when the client receives a sense of individual attention with minimal staff time. As a result, the introduction of artificial intelligence into trichological practice not only contributes to scientific accuracy and personalization of care, but also forms a new economic more efficient, customer-oriented, and competitive model of services [6, p. 15]. Thanks to this, AI is not only a replacement for a specialist, but an intelligent partner that increases business profitability by optimizing costs and strengthening the trust of a premium audience.

Current trends in the development of the trichological market indicate that the economic efficiency of businesses depends not only on the quality of medical cosmetic procedures, but also on the ability to integrate personalized approaches and technological innovations into the business model. In view of high competition and growing customer requirements for service quality, the search for areas of economic optimization that combine personalization, innovation and effective resource management becomes an urgent task. One of the key vectors of optimization is the implementation of personalized service models based on the principles of an individual approach to the client. Personalization requires the development of individual care programmes that take into account the results of trichological diagnostics, genetic testing, hormonal background analysis and lifestyle. This not only increases the effectiveness of treatment and preventive measures but also ensures the formation of sustainable consumer loyalty [7]. The economic effect of personalization is manifested through the creation of a system of subscription services, personal hair restoration plans and long-term support programs, which increase the average check and reduce marketing costs associated with attracting new clients. The next area of optimization is the use of digital technologies and bioanalytics. The digitalization of trichological services is becoming a key prerequisite for innovation, as it enables integrating AI into practice for diagnosing the condition of hair and scalp, implementing virtual consultations, as well as CRM platforms for personalized interaction with clients [8]. Such tools optimize operational processes, reduce staff time costs, ensure a uniform workload for doctors and expand the client base through remote service formats, in particular teletrichology, which is especially important for regions with limited availability of specialists. The integration of innovative products and procedures also plays a significant role in the economic optimization of trichological services. The use of modern technologies – mesotherapy with nanoencapsulated drugs, PRP therapy, cellular methods, photon and laser therapy – enables establishing a premium price level and creating one's own market niche. Such a strategy provides the possibility of flexible pricing, based on segmentation of clients by solvency and individual needs, allowing you to balance between high-tech and basic procedures without losing profitability [9].

An important component of economic optimization is rational management of resources and personnel. The efficiency of the use of materials, medicines and equipment can be increased by using ABC/XYZ analysis tools, a system for accounting for costs per unit of service, as well as to use outsourcing of laboratory tests. The development of a personnel motivation system tied to financial indicators (profitability, number of repeat visits, average check) stimulates labour productivity and contributes to the reduction of unproductive costs [10]. Further optimization is possible through the development of marketing analytics and strategic brand differentiation. Market differentiation involves the formation of a unique sales offer that

emphasizes the scientific validity and technological innovation of approaches, for example, in the format of "genetically personalized hair therapy". The use of data-driven marketing, customer behaviour analytics and targeted communications enables optimizing the advertisement budget and increasing the effectiveness of promotion and strengthen trust in the brand. The final strategic direction is the formation of a partnership ecosystem that unites trichological centres, pharmaceutical companies, laboratories, cosmetic manufacturers, and digital service developers. Such cooperation ensures a reduction in costs for research and marketing processes, creates a synergy effect and facilitates access to innovative technologies and drugs. At the same time, it strengthens the market position of trichological institutions, increases their scientific reputation and contributes to long-term competitive advantage.

Conclusions

The conducted research gives grounds to conclude that the economic optimization of trichological services in modern conditions is a multifactorial process that combines managerial, marketing, technological, and socio-economic aspects of the development of medical cosmetology services. The growth of demand for trichological services in Ukraine and the world is determined by both objective factors of urbanization, environmental stress, changing standards of appearance, and subjective consumers' expectations regarding an individual, scientifically based approach to hair and scalp care. In these conditions, the key task for market participants is to build economically sustainable business models that can combine service personalization, innovative technologies, and effective resource management.

The results of the analysis show that promising areas of optimization include the implementation of personalized service models based on genetic, bioanalytical, and behavioural data of clients; the use of AI and digital platforms to automate diagnostic, treatment and marketing processes; integration of innovative treatment and diagnostic methods, such as PRP therapy, nanoencapsulated drugs, photon therapy. The combination of these technologies not only improves the quality of services but also creates the prerequisites for price premiums and market differentiation.

From an economic perspective, the efficiency of trichological clinics is determined by the level of rational use of resources and human capital. The introduction of cost accounting systems per unit of service, ABC/XYZ analysis, outsourcing of laboratory tests and effective mechanisms for motivating personnel ensures a reduction in costs and an increase in business profitability. Of particular importance is strategic marketing management, based on consumer data analytics and targeted communication, which allows minimizing advertising costs and increasing the rate of repeat visits.

At the same time, the development of the trichological services market has both an economic and a social dimension. Increasing the availability of personalized services contributes to strengthening the labour potential of the population, improving the quality of life, and forming a new culture of health care. This corresponds to the global trend of transition from an industrial to a post-industrial economic model, where the main values are well-being, self-realization, and individual human comfort.

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