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RISKS AND RESERVES FOR ENSURING THE ECONOMIC SUSTAINABILITY OF A DIGITAL UNIVERSITY IN THE CONTEXT OF EDUCATIONAL TRANSFORMATION

РИЗИКИ І РЕЗЕРВИ ЗАБЕЗПЕЧЕННЯ ЕКОНОМІЧНОЇ СТІЙКОСТІ ЦИФРОВОГО УНІВЕРСИТЕТУ В УМОВАХ ТРАНСФОРМАЦІЇ ОСВІТИ

Summary. The article examines the economic sustainability of a digital university amid higher education transformation driven by digitization, globalization, and shifting stakeholder demands. Digital transformation requires both advanced technology adoption and rethinking financial management, resource mobilization, and stakeholder interaction. Sustainability is seen as a balance between stability and innovation. Risks identified include reduced autonomy, weak strategic management, lack of motivation, process fragmentation, HR, and reputation issues. Based on COSO, FERMA, and EUA data, risks are classified, with measures split into short- and long-term. Key conditions include systematic strategy, cost efficiency, resource attraction, structural flexibility, and a unified analytical platform. Proposed financial policy strategies: revenue growth, cost reduction, economic model transformation, and rational conservatism, ensuring competitiveness in the digital economy.

Keywords: economic sustainability, digital university, strategic management, risk-oriented approach, digitalization.

Анотація. У статті висвітлено комплексну проблему забезпечення економічної стійкості цифрового університету в умовах глибоких трансформацій вищої освіти, що зумовлені цифровізацією освітнього процесу, зростанням рівня невизначеності в економічному середовищі, посиленням впливу глобалізаційних процесів і зміною структури запитів стейкхолдерів. Визначено, що цифрова трансформація університету передбачає не лише впровадження новітніх технологій у навчальний процес, а й переосмислення традиційних моделей фінансового управління, мобілізації ресурсів та організації взаємодії з внутрішніми й зовнішніми учасниками освітнього середовища. Економічна стійкість у цьому контексті розглядається як динамічний баланс між фінансовою стабільністю і спроможністю до інноваційного розвитку. Проаналізовано ризики, що супроводжують цифрову трансформацію, серед яких: зниження фінансової автономії, неефективне стратегічне управління, дефіцит мотиваційних механізмів, фрагментарність внутрішніх процесів, кадрові та репутаційні виклики. На основі моделей COSO та FERMA, а також емпіричних даних European University Association, здійснено типологізацію ризиків за операційними та стратегічними ознаками та представлено перелік найбільш критичних ризиків, що загрожують економічній стійкості університетів в умовах цифровізації. Визначено, що ефективне управління цими ризиками вимагає впровадження ризик-орієнтованого підходу у фінансово-економічну політику університету з поділом заходів реагування на коротко- і довгострокові. Важливою умовою забезпечення стійкості визначено перехід від фрагментарних управлінських рішень до системної стратегії, що передбачає аналітичну оцінку ефективності витрат, залучення додаткових ресурсів, підвищення гнучкості організаційної структури, формування єдиної інформаційно-аналітичної платформи. У межах дослідження запропоновано типологію фінансово-економічної політики цифрового університету, що складається з чотирьох стратегій: зростання доходів і кооперації; скорочення витрат і зростання вартості; трансформація економічної моделі діяльності; раціональний консерватизм. Кожна стратегія представлена як адаптивна відповідь на виклики цифрового середовища та передбачає різні механізми оптимізації фінансових потоків, взаємодії з партнерами, модернізації освітніх послуг і забезпечення гнучкості управлінських рішень.

Зроблено висновок, що економічна стійкість цифрового університету формується на основі інтеграції антикризового управління, інституційної гнучкості, цифрових інструментів планування та ефективної кооперації з багаторівневими стейкхолдерами. Розроблені підходи можуть бути використані при формуванні стратегій розвитку університетів, спрямованих на забезпечення довгострокової конкурентоспроможності в умовах цифрової економіки.

Ключові слова: економічна стійкість, цифровий університет, стратегічне управління, ризик-орієнтований підхід, діджиталізація.

Problem statement. In modern conditions of structural transformations in higher education caused by the introduction of digital technologies, globalization processes, and growing uncertainty in the economic environment, the issue of ensuring the economic sustainability of higher education institutions emerges as one of the key areas of management, financial, and strategic policy for universities. The digitalization of the educational environment is causing not only a rethinking of educational models, but also radical changes in the system of financial and economic activities, which requires new approaches to risk analysis, resource mobilization, and the formation of an adaptive economic architectonics of the digital university.

The economic sustainability of the digital university manifests itself as a dynamic balance between operational stability and the capacity for innovative renewal in the face of external and internal challenges. At the same time, digital transformation is accompanied by increased risks associated with reduced financial autonomy, ineffective strategic management, a lack of motivational mechanisms for staff, fragmented internal processes, and unbalanced relationships with external stakeholders. Against this background, there is a growing need to identify typical risks of economic instability and determine institutional reserves to compensate for it.

Current theoretical and applied research indicates the need to move from fragmented solutions to the systematic implementation of financial and economic policy based on risk-oriented management. This approach involves not only identifying and classifying financial risks according to their nature and scale of impact, but also forming relevant response strategies capable of ensuring the medium- and long-term stability of the university's functioning in the digital environment.

In addition, the importance of analytical assessment of the efficiency of existing models of financial and economic management and the typology of university policies in the context of digitalization is growing. The attraction of additional resources, increased flexibility of expenditure policy, optimization of organizational structure, and integration of digital tools should be considered not as separate elements, but as components of a comprehensive system of strategic support for the economic sustainability of the university. Therefore, it is important to justify the reserves for stabilizing and developing a digital university in the context of risk-oriented management in conditions of transformational changes.

Analysis of recent research and publications. In modern scientific literature, the problem of ensuring the economic sustainability of universities in the context of digital transformation is examined through the integration of financial, management, resource, and digital strategies for stable functioning in conditions of uncertainty. Strategic management research highlights the need to rethink financial stability models, considering educational digitalization and market transformation.

S.O. Karpliuk emphasizes digitalization as a factor influencing educational content, management, and economic approaches [1]. O.V. Skliarenko, S.M. Yahodzinskyi, O.Yu. Nikolaievskyi, and A.V. Nevzorov stress digital interactive technologies for adaptive, efficient educational environments [2]. O.O. Khomenko, M.V. Paustovska, and I.A. Onyshchuk link sustainability to modern technologies that improve quality and optimize budgets [3], while O.S. Dushchenko underscores their role in financing, resources, and management [4].

Funding diversification is a key factor: A. Kozhyna, R. Haiduchak et al. advocate inclusive financial planning to reduce budget dependence [5; 6]. International authors B. Williamson, R. Eynon, and J. Potter analyze pandemic-related political and economic impacts [7], and N. Verina and J. Titko propose systematic risk and cost management in digital ecosystems [8]. S.I. Kubiv et al. highlight legal and analytical support for modernization [9], while H.N. Lopushnyak et al. focus on sustainable resource management [10].

Modern studies note adaptive pricing models and digital platforms as tools for flexible demand response and cost policy [11]. G. Kortemeyer et al. examine post-pandemic student choice behavior affecting university finances [12].

Overall, economic sustainability in digital transformation requires resource optimization, risk management, income diversification, and digital integration into financial policy for long-term competitiveness.

The aim of the article. The aim of this article is to substantiate conceptual approaches to ensuring the economic sustainability of a digital university in the context of transformations in the educational environment and the growing influence of digital technologies. The research focuses on identifying the main risks threatening the financial stability of

universities, classifying these risks according to operational and strategic criteria, and determining institutional reserves and strategies capable of ensuring long-term economic sustainability. Particular attention is paid to developing a typology of financial and economic policies for new-generation universities and identifying optimal management decisions in the context of digitalization, resource mobility, and the adaptability of management structures.

Presentation of the main research material. The risk-oriented approach is recognized as one of the most effective in ensuring the economic sustainability of a university, especially in terms of internal control and management of the financial and economic activities of a higher education institution. The special role of the financial component of economic sustainability is that, at a certain stage, most economic problems manifest themselves as financial ones, which allows them to be clearly identified and analyzed at their root causes.

Based on an analysis of international experience and research in the field of optimizing the financial and economic activities of higher education institutions, a list of typical causes of financial risks and problems that hinder the economic sustainability of new-generation universities has been identified. According to the analytical report of the European University Association (EUA), the most common of these are as follows (Figure 1).

Based on an analysis of the above-mentioned causes of financial problems and taking into account widely recognized international approaches to the classification and identification of risks based on conceptual risk management models – the COSO (Committee of Sponsoring Organizations of the Treadway Commission) model and the FERMA (Federation of European Risk Management Associations) model [14; 15], the following most significant risks of loss of economic sustainability for digital universities were identified:

– the risk of a reduction or failure to fulfill state orders and loss of position in the non-budgetary segment of the educational services market, associated with a deterioration in the quality of educational activities and competitiveness;

– the risk of accumulating insolvency, including due to a consistent orientation toward external financial support;

– strategic risk, caused by insufficient involvement of the university's senior management in the process of determining strategic directions for development;

– human resources risk associated with insufficient staff competence, lack of motivation, and repeated management mistakes;

– organizational risk arising from insufficient regulation of activities and the absence of relevant documents on financial and economic planning;

– the risk of a decline in the quality of educational services due to accumulated problems in financial and economic activities;

– reputational risk, which is of secondary nature but potentially carries high losses due to the openness of information about the institution's

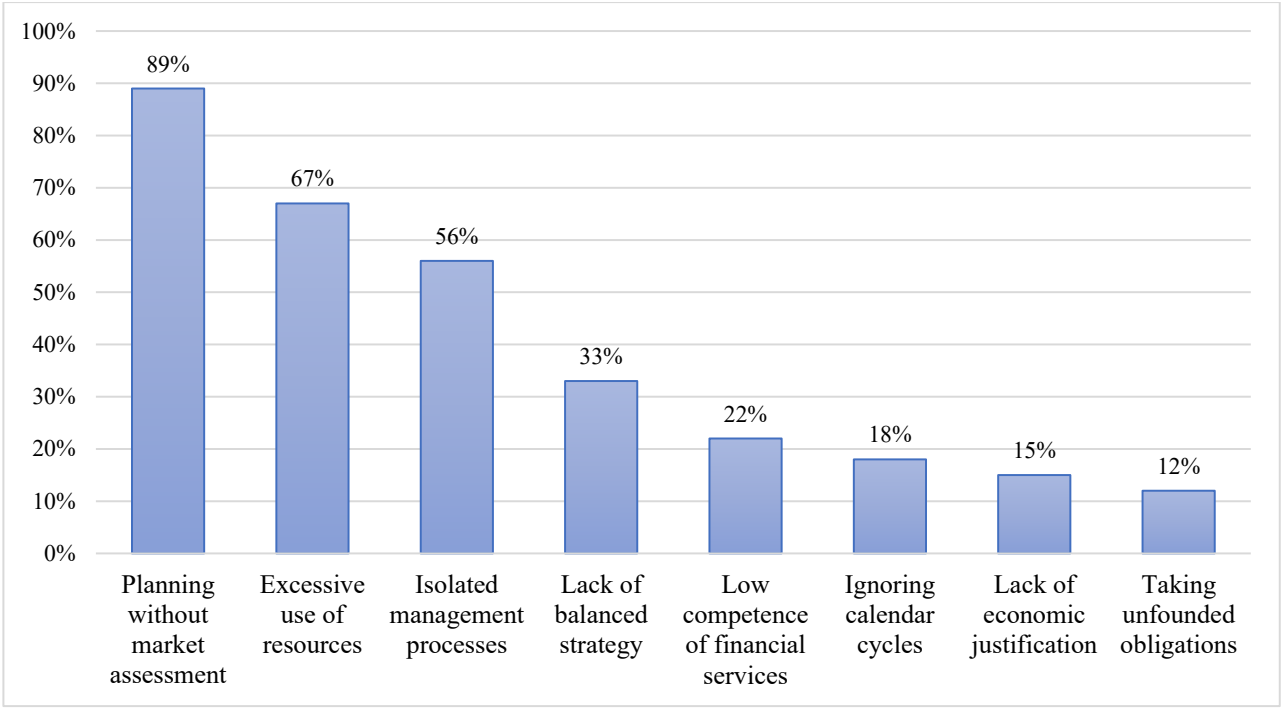

Figure 1 – Typical causes of financial risks in digital universities

Source: compiled by the author based on [13]

financial problems and low competence in reputation management issues.

The proposed list of risks can be used by universities within the framework of internal control procedures to identify and assess risks and develop systematic measures to manage them in order to ensure economic sustainability.

According to the above-mentioned international approaches, risks should be classified into two groups: strategic and operational. Strategic risks are determined by the university's long-term goals and strategic priorities, which are consistent with the institution's mission. These risks reflect the choice of management approaches that the university will follow to achieve positive financial results, taking into account changes in the external environment, regulatory conditions, and reputational factors.

Operational risks traditionally relate to the daily activities of the institution and are caused by errors in internal processes and inappropriate actions by staff, leading to a deterioration of financial indicators. This group includes the risk of failure to fulfill government orders, the risk of loss of solvency, human resources and organizational risks, as well as the risk of a decline in the quality of educational services. Strategic and reputational risks, on the other hand, belong to the strategic group, as they are directly related to long-term decisions that determine the future direction of the institution's development.

In the context of the economic sustainability of a digital university, operational risks also take on a strategic nature in terms of their consequences and prevention mechanisms [11, p. 64]. Therefore, reducing their impact to an acceptable level is only possible if a transparent and holistic financial and economic policy (FEP) is developed and implemented. In combination with an effective remuneration and motivation system, such a policy can provide an additional basis for involving not only specialized financial departments but also all staff of the institution in ensuring economic sustainability.

An important component of financial and economic policy is the identification of a set of measures aimed at minimizing these risks [1; 4]. Such measures may include optimizing financial management processes, strengthening internal control, and implementing modern information systems and digital solutions that allow for more accurate forecasting and prevention of financial losses.

Based on a comparison of the above-mentioned causes of financial problems with measures recommended by international practice that have a direct impact on their resolution, several key interrelationships of the type “cause of financial problem – type of measure to resolve it” were identified:

1. Assuming large financial obligations without adequate economic support requires short-term measures to reduce the level of problem debt, including claims work and cost optimization.

2. Planning without proper market assessment and student enrollment forecasting requires both short-term measures (increasing student enrollment through active marketing policies) and long-term measures (searching for new market niches, developing and implementing new educational products).

3. The isolation of internal processes and departments is addressed through short-term measures to optimize the staff structure, as well as long-term measures to reorganize structural departments and create a unified information and management platform.

4. The low competence or passivity of financial services and heads of departments is eliminated through short-term measures, the organization of regular internships and advanced training courses for financial services employees.

5. The lack of a balanced development strategy that takes into account the interests of all stakeholders is addressed through a short-term focus on achieving strategic target indicators set out in the institution's financial and economic policy.

A strategic choice of financial and economic policy, which must take into account the specifics of the university's functioning in a digital environment, plays a special role in ensuring the economic sustainability of a digital university. Financial and economic policy should focus not only on the operational management of expenses and revenues, but also on long-term investments in technological modernization, digitalization, and increasing the university's competitiveness at the global level.

The typology of financial and economic strategies includes revenue strategies, traditional cost reduction, progressive cost management, and a strategy of rational conservatism, which are adapted to the specifics of the educational services market and the digital transformation of education. The revenue growth strategy is considered the most promising, but its successful implementation requires significant efforts in obtaining grants, attracting private investment, and developing new educational services that deliver tangible economic results within the first two years of implementation [9, p. 252].

Contemporary scientific studies pay particular attention to mechanisms for increasing university revenues in conditions of limited household solvency [2; 3; 12]. The prevailing proposal is a model of redistributing payments over time through lending mechanisms or increased state funding. At the same time, in the context of the digital transformation of education, it seems much more promising to involve other stakeholders, in particular employers, non-profit foundations, and regional or municipal authorities.

Although the mechanisms for such resource attraction are well known, in practice, they are often

considered secondary. This significantly limits the possibilities for developing competitiveness already at the stage of forming the university's financial and economic strategy. One of the reasons for this situation is the simplified view of the economics of educational services as an interaction between only two parties – the university and the student. However, attracting additional resources from stakeholders aimed at improving the quality of educational services may provoke resistance from the academic community, as the emergence of additional customers in the educational process complicates the university's activities, creates risks of negative external assessments, and requires additional efforts to meet the growing demands of various stakeholder groups [8, p. 720].

At the same time, arguments in favor of attracting additional resources often play a decisive role in discussions among the university's academic community. Therefore, it is advisable to expand the initial name of the strategy from "revenue growth" to "revenue growth and cooperation." This model of economic policy is generally comfortable for the administration and academic staff, as it does not involve strict coercion to change traditional forms of activity or significantly intensify work. Economic criteria serve as guidelines for encouraging initiatives and form the basis for stimulating participants in the educational process.

Another strategy is a policy of reducing relative costs and increasing value. Initially, this financial and economic strategy focused on traditional cost optimization methods, such as increasing teacher workload, active budgeting, reallocating resources to high-income areas, and increasing the number of students in study groups. Other important components of this strategy include optimizing administrative costs, adjusting teacher workload, increasing the amount of independent work for students, and reducing the number of subjects that do not add value for students.

Practical experience shows that universities implementing this policy often try to save on actual co-financing of development [12, p. 94]. At the same time, the systematic implementation of appropriate measures can significantly improve financial sustainability and achieve rapid economic effects. The main reserves are the implementation of a flexible pricing policy, an effective payment system, and the use of tools for working with accounts receivable. At the same time, transparency in economic decision-making mitigates the negative effects of unpopular measures.

The next strategy is to transform the university's economic model, which involves introducing new organizational solutions and technologies to reduce the cost of education for students, not just the cost of providing it for the university. This may include optimizing the academic schedule, reducing unnecessary or repetitive courses, and encouraging active, independent work by students based on digital educational resources. Investments within this strategy are directed toward the creation of new educational models. This approach is linked to the digital transformation of the university and assumes that current economic indicators may give way to strategic efficiency.

The last strategy – cost saving through adherence to tradition and minimization of change – is based on a model of rational conservatism. Here, costs are selectively reduced without radically changing the university's activities. Investment resources are directed toward supporting traditionally strong areas, and economic criteria have less influence on decision-making. The advantage of this model is that it minimizes disruption to normal processes, which enables the maintenance of stability.

These four financial and economic strategies are sequential stages in the university's development. Their effective implementation depends on the university's ability to quickly transition from one model to another, which is particularly important in ensuring the economic sustainability of a digital university in the context of modern transformations.

Conclusions. The article substantiates that ensuring the economic sustainability of a digital university in the context of transformations in the educational environment is a complex, multi-level process that requires a systematic risk-oriented approach to managing financial and economic activities, integrating digital solutions into financial policy, and optimizing internal organizational processes. It is determined that the economic sustainability of a digital university is dynamic in nature and is formed as a balance between the capacity for innovative development and the stability of functioning in conditions of growing uncertainty.

Typical risks threatening the financial stability of universities are analyzed, classified according to strategic and operational characteristics, and ways to minimize these risks based on international management models (COSO, FERMA) are proposed. Five key problems of financial instability and corresponding typical stabilization measures in the short and long term are outlined. It is shown that an effective response to these challenges is possible only if a holistic, adaptive financial and economic policy of the university is formed.

The article systematizes four main strategies for ensuring economic sustainability: a strategy of revenue growth and cooperation; a strategy of cost reduction and value growth; a strategy of transforming the economic model of educational activities; and a strategy of rational conservatism. It has been proven that a flexible transition between these strategies is the key to the university's adaptability to changes in

the external environment and forms the basis of its financial autonomy.

Thus, ensuring the economic sustainability of a digital university requires institutionalizing new approaches to risk management, strategic planning, digital transformation, and active engagement with key stakeholders within an innovative model of the educational space.

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