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DIGITAL PLATFORMS FOR MANAGING FINANCIAL FLOWS AND STUDENT MOTIVATION IN THE HIGHER EDUCATION SYSTEM

Introduction. Research into digital platforms for managing financial flows and student motivation in the higher education system is an important task for modern economic science, considering the deepening digital transformation of universities, the growing role of human capital, the spread of blended learning formats, and increasing demands for transparency and efficient use of resources. In such conditions, the digital student account and integrated payment and motivation modules cease to be auxiliary services and become institutional tools that influence payment discipline, revenue structure, transaction costs, and behavioral parameters of educational activity.

Aim. The aim of the article is to provide a comprehensive economic analysis of digital platforms as tools for managing financial flows and student motivation in the higher education system, as well as to identify the key determinants of their effectiveness using the example of the integrated EUni student account solution in web and mobile formats.

Methods. The methodological basis of the research is the theoretical provisions of the digital transformation economy and the platform economy, as well as scientific approaches to assessing operational efficiency and transaction costs. To solve the research problems, conceptual and logical analysis, systems and interdisciplinary approaches were used, which made it possible to combine the economic interpretation of financial processes with the behavioral aspects of student motivation in a digital environment. Functional and structural analysis of the payment and motivation modules of the student account was applied, as well as elements of institutional analysis to substantiate the role of standardization of procedures, transparency of transactions, and rules of the internal bonus system.

Results. As a result of the study, the economic role of the platform approach in higher education was substantiated as a mechanism for improving the manageability of financial flows and forming behavioral incentives for students within a unified digital environment. It was determined that the key determinants of effectiveness are the standardization of payment procedures and digital accounting of obligations, transparency of transactions and control of payment statuses, integration of financial services with motivational mechanisms, as well as the formation of internal digital economies based on bonus currency and an internal store. It has been shown that the integration of online payment and gamification modules in the EUni student account creates organizational and economic prerequisites for reducing administrative costs, improving payment discipline, and enhancing student engagement.

Conclusions. Revealing the economic determinants of the effectiveness of digital platforms for managing financial flows and student motivation allows us to specify the requirements for the university's platform architecture, clarify the mechanisms of influence of integrated payment and motivation modules on operational efficiency and behavioral parameters of educational activity, and outline directions for further verification of the effects of internal digital economies and the sustainability of incentives in the long term.

Keywords: digital platforms, higher education, financial flows, online payments, gamification, student motivation, digitalization, digital university.

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ЦИФРОВІ ПЛАТФОРМИ УПРАВЛІННЯ ФІНАНСОВИМИ ПОТОКАМИ ТА МОТИВАЦІЄЮ СТУДЕНТІВ У СИСТЕМІ ВИЩОЇ ОСВІТИ

Вступ. Дослідження цифрових платформ управління фінансовими потоками та мотивацією студентів у системі вищої освіти є важливим завданням сучасної економічної науки з огляду на поглиблення цифрової трансформації університетів, зростання ролі людського капіталу, поширення змішаних форматів навчання та підвищення вимог до прозорості й ефективності використання ресурсів. У таких умовах цифровий кабінет студента та інтегровані платіжні й мотиваційні модулі перестають бути допоміжними сервісами й набувають значення інституційних інструментів, що впливають на платіжну дисципліну, структуру надходжень, транзакційні витрати та поведінкові параметри освітньої активності.

Мета. Метою статті є всебічний економічний аналіз цифрових платформ як інструментів управління фінансовими потоками та мотивацією студентів у системі вищої освіти, а також ідентифікація ключових детермінант їх результативності на прикладі інтегрованого рішення кабінету студента EUnі у веб- та мобільному форматі.

Методи. Методологічною основою дослідження є теоретичні положення економіки цифрової трансформації та економіки платформ, а також наукові підходи до оцінювання операційної ефективності й транзакційних витрат. Для розв'язання дослідницьких завдань використано концептуально-логічний аналіз, системний і міждисциплінарний підходи, що дозволило поєднати економічну інтерпретацію фінансових процесів із поведінковими аспектами мотивації студентів у цифровому середовищі. Застосовано функціонально-структурний аналіз платіжних і мотиваційних модулів кабінету студента, а також елементи інституційного аналізу для обґрунтування ролі стандартизації процедур, прозорості транзакцій та правил внутрішньої бонусної системи.

Результати. Результатом дослідження стало обґрунтування економічної ролі платформного підходу у вищій освіті як механізму підвищення керованості фінансових потоків і формування поведінкових стимулів студентів у межах єдиного цифрового середовища. Визначено, що ключовими детермінантами результативності є стандартизація платіжних процедур і цифровий облік зобов'язань, прозорість транзакцій і контроль статусів платежів, інтеграція фінансових сервісів із мотиваційними механізмами, а також формування внутрішніх цифрових економік на основі бонусної валюти й внутрішнього магазину. Показано, що інтеграція модулів онлайн-оплати та гейміфікації в кабінеті студента EUnі створює організаційно-економічні передумови для зниження адміністративних витрат, підвищення платіжної дисципліни та посилення залученості студентів.

Висновки. Розкриття економічних детермінант результативності цифрових платформ управління фінансовими потоками та мотивацією студентів дозволяє конкретизувати вимоги до платформної архітектури університету, уточнити механізми впливу інтегрованих платіжних і мотиваційних модулів на операційну ефективність та поведінкові параметри освітньої активності, а також окреслити напрями подальшої верифікації ефектів внутрішніх цифрових економік і стійкості стимулів у довгостроковому періоді.

Ключові слова: цифрові платформи, вища освіта, фінансові потоки, онлайн-оплата, гейміфікація, мотивація студентів, діджиталізація, цифровий університет.

JEL Classification: E24, I20, I25, N3

Introduction. The digital transformation of higher education has become systemic and goes beyond the implementation of individual educational technologies, forming a new logic for the organization of educational, administrative, and financial processes. In the context of accelerating innovation cycles, the growing role of human capital, and the spread of network forms in the provision of educational services,

there is a growing need for platform solutions capable of ensuring resource manageability, transparency of financial transactions, and enhanced student engagement in the digital environment. From an economic point of view, these changes are transforming approaches to managing university financial flows, increasing the importance of integrated platforms within which standardized rules for transactions, liability control, and revenue analytics are formed. Under these conditions, the digital student account acquires the status of an institutional tool that combines payment infrastructure with motivational mechanisms, including gamification and internal bonus systems, and provides not only service convenience but also a controlled influence on payment discipline and behavioral parameters of students' educational activity within the university's digital ecosystem.

Literature review. The issues of digital transformation of organizations and the formation of platform solutions are actively developing in modern scientific research. The conceptual foundations of digital transformation as a systemic process and its key structural elements are summarized in the works of N. Verina and J. Titko, M. Kaku [1;2;3].

An important area of scientific discussion is innovative mechanisms for the development of organizations in the digital age. The theoretical perspectives of business innovation, including a rethinking of the sources of competitive advantage and organizational configurations, are presented in the monograph by O. Gassmann, K. Frankenberger, R. Sauer, I. Blohm, and M. Palmié [4]. The impact of open innovation practices on organizational performance is discussed by R. Boemelmberg, A. Schuhmacher, and O. Gassmann [5], which is relevant for universities as participants in innovation ecosystems and providers of digital platforms.

Works that reveal the role of autonomous intelligent systems in the transformation of organizational processes and service models deserve special attention. In this context, the concept of "non-human enterprise" substantiates the growing influence of AI agents on the restructuring of operational processes, changes in cost structures, and the reallocation of functions between staff and digital systems [6]. Cybersecurity is also relevant to the research topic, which, in the case of platforms with financial functions, is becoming economically important as a factor in risk minimization. The relevant aspects of automated threat protection and detection using artificial intelligence are discussed in the work of S. Lysenko and co-authors [7].

Within the framework of educational research, a significant body of scientific work is devoted to the impact of digital and interactive technologies on the learning process, engagement, and outcomes of higher education students. In particular, O. Khomenko, M. Paustovska, and I. Onyshchuk analyze the impact of interactive technologies on student learning and development [8], while H. Lan, Y. Zhang, and W. Liu emphasize the digital competence of teachers as a critical condition for the effectiveness of a university's digital transformation [9]. The experience of post-pandemic transformation of educational practices and digital education policies is reflected in the work of B. Williamson, R. Eynon, and J. Potter [10], while G. Kortemeyer, N. Dittmann-Domenichini, and C. Merki explore the determinants of students' choice of learning formats and the associated outcomes [11]. Additional context is provided by publications in the field of human-computer interaction, which emphasize the importance of user experience, interface solutions, and service accessibility for the effective functioning of digital platforms [12].

At the same time, scientific literature still lacks research that examines digital platforms in higher education, specifically from the economic perspective of integrated financial flow management and student motivation. The mechanisms for forming internal digital economies at universities – through bonus currencies, reward programs, and internal marketplaces – and their impact on payment discipline, revenue structure, transaction costs, and behavioral parameters of educational activity remain insufficiently conceptualized. In view of the above, research into digital platforms for managing financial flows and student motivation in the higher education system is relevant and timely.

The aim of the research. The aim of the research is to identify the economic determinants of the effectiveness of digital platforms for managing financial flows and student motivation in the higher education system, as well as to substantiate the mechanisms for their integration within a unified digital environment of the university.

To achieve this aim, the following tasks were set: a) to systematize approaches to interpreting digital platforms in higher education in the context of the digital transformation economy and platform-based organization of services; b) to identify the key channels of economic influence of digital payment services

on the transparency of financial transactions, payment discipline, and operational efficiency of the university; c) to characterize the motivational mechanisms associated with gamification and the formation of internal digital economies (bonus currencies, reward programs, internal marketplaces) as tools for influencing the behavioral parameters of student activity; d) to analyze the functional integration of financial and motivational modules in the web version and mobile application of the EUni student account as an example of a platform solution; e) to outline directions for further verification of the economic effects of the platform approach based on financial flows and student behavioral metrics.

Research materials and methods. The research methods employed include the analysis and synthesis of scientific approaches to digital transformation and platform economics, a systems approach to interpreting integrated digital services at the university, and an interdisciplinary approach that allowed us to combine economic analysis of financial processes with behavioral aspects of student motivation in a digital environment. Functional and structural analysis of digital services (payment modules, accounting for liabilities, internal store, bonus mechanisms) was used, focusing on their transactional logic, operational accounting rules, and the potential for forming internal digital economies. The empirical basis was a generalization of relevant international practices of integrating financial services into student portals and an analysis of the interface and functional solutions of the EUni student account in web and mobile formats based on screenshots of the system. To substantiate the economic effects, elements of the institutional approach and the logic of assessing transaction costs, operational efficiency, and risks associated with the digitalization of the university's payment and motivation infrastructure were applied.

Research results. The rapid development of science, engineering, and technology, which is taking place in the context of the technological revolution, necessitates the functioning of complex socio-economic and technical systems. The period between the emergence of an innovation and its widespread practical application has been significantly reduced, as a result of which new technological solutions spread almost instantly on a global scale [6, p. 3]. Cross-cutting digital technologies that provide competitive advantages are integrated into all key sectors of the economy, including education, medicine, transport, finance, and industry [1;4;10].

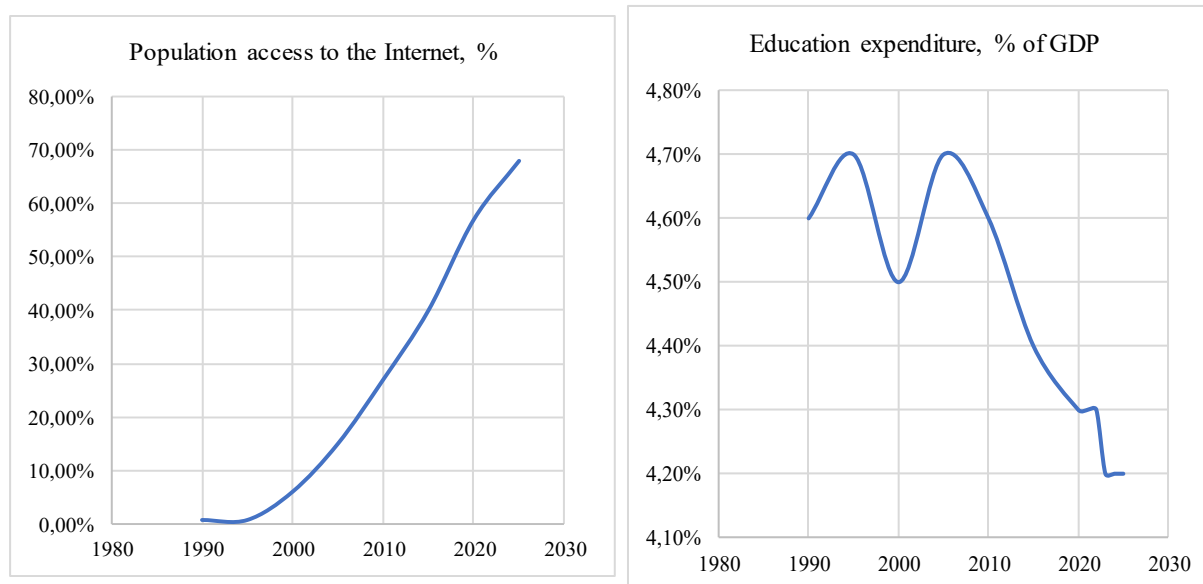


Fig. 1. Factors influencing the development of the education system

Source: compiled by the author based on [13;14].

The rapid pace of technological change means that the speed at which innovations emerge exceeds the rate of specialist training, and knowledge can become outdated even during the implementation of educational programs. Under such conditions, the higher education system is forced to adapt to an environment of constant technological change, which highlights the role of digital tools in managing educational, informational, and financial processes.

In the field of education, the formation of new models of functioning is influenced by a number of global trends, including slowing population growth and aging, intensifying migration processes and employment problems, intensifying technological competition, and increasing accessibility of the Internet as a universal environment for obtaining educational services [7, p. 49]. At the same time, various countries and societies are paying increasing attention to human capital as a key resource for economic development, which leads to increased expenditure on education [11].

At the same time, long-term trends in education funding reveal an asymmetry between the growth in global education expenditure and the pace of global economic expansion: given the increase in the absolute volume of educational expenditure to over USD 4.5 trillion per year, their share in global gross domestic product fell from approximately 4.6–4.7% to around 4.2% (see Fig. 1).

Despite the growth in absolute volumes of global education expenditures, their share in gross domestic product tends to decline. Under such conditions, the importance of digital platforms as tools for rationalizing financial flows, increasing transparency in the use of resources, and forming mechanisms for motivating students in the higher education system increases [6].

It should be noted that a country's higher education system determines its long-term technological and economic potential, as it shapes the quality of human capital, innovative capacity, and adaptability in the digital economy [2, p. 69]. At the same time, structural changes in society and labor markets are not always quickly reflected in educational institutions, which causes an asynchrony between the pace of technological development and the evolution of educational models.

As of 2026, the development of digital technologies, cloud services, and high-speed communications creates objective prerequisites for the functioning of comprehensive digital educational platforms capable of providing integrated management of educational, financial, and motivational processes in higher education. However, even with technological maturity, the implementation of such platforms is uneven, which is explained by institutional inertia, the complexity of regulatory procedures, and the fragmentation of management decisions in the field of education.

Despite the obvious economic advantages of digital platforms – reducing administrative and transaction costs, increasing the transparency of financial flows, automating the accounting of educational services, and creating incentives for student learning activity – their integration into the financial and management architecture of universities is often only partial. This limits the potential of digital solutions as tools for systemic influence on the efficient use of resources and the motivation of students.

Higher education institutions focused on flexible organizational models and diversified funding sources are proving to be more dynamic in implementing digital management platforms. It is in this segment that practices for using electronic educational environments, digital payment and analytical tools, as well as motivational mechanisms related to academic performance, engagement, and individual educational trajectories of students are actively being developed.

After 2020, and especially in 2023–2025, digital platforms have finally established themselves as a basic element of higher education infrastructure. The widespread use of distance and blended learning formats has highlighted the need for systems that combine the functions of organizing the educational process with the management of financial flows, internal settlements, grant and contract mechanisms, as well as tools for the intangible and economic motivation of students. Consequently, as of today, digital management platforms in higher education are viewed not only as a technological supplement to traditional management practices but as a structural component of the university model that ensures the coordination of financial decisions, educational outcomes, and behavioral incentives within a unified digital environment.

Currently, in the field of higher education, there are various solutions for digitally supporting the student experience, which differ in their level of integration and target orientation. In the current digital transformation of universities, two dominant architectural approaches can be identified: a modular approach, which uses a set of specialized services (education, communications, finance) with partial integration, and a platform approach, which involves the formation of a unified digital environment with common rules for access, transaction accounting, and personalization [5]. It is the platform approach that ensures the systemic alignment of educational and financial processes through data standardization, increased transparency of financial transactions, and streamlining of motivation mechanisms in the digital ecosystem.

The experience of ETH Zurich [15] is a good example of the institutionally formalized integration of financial and administrative procedures into the digital infrastructure of a university. Within the student

portal, semester bills are generated and sent to students via digital channels, and payment options are standardized and subject to specific deadlines for fulfilling obligations, which improves payment discipline and reduces the burden on the administrative apparatus by unifying the transaction processing procedure.

A separate class of solutions is represented by systems where the payment infrastructure is supplemented by motivational mechanisms, forming behavior-oriented engagement tools. An example is UPAY Rewards (University of Leicester) – a university system for fast payments on campus that allows payments to be made using a university ID and supports the accumulation of rewards/points within a loyalty program, institutionalizing the link between regular transactions and economically tangible incentives for the user [16].

Another vector of development is related to campus commerce and mobile ordering platforms, which combine ordering, payment, and loyalty programs as tools for managing user behavior. In particular, Transact Mobile Ordering uses loyalty and rewards as tools to influence student purchases in the campus environment, while Grubhub on Site integrates with campus card providers to ensure compatibility between digital ordering and typical student payment options (including campus cards and corresponding “tenders”) [17].

An example of an integrated digital university environment in the domestic digital solutions market is the web version and mobile application of the EUni student account, which is focused on consolidating key services for student interaction with the educational infrastructure. Organizing access through a unified authorization and initial identification mechanism ensures the personalization of services and controllability of access, which is a necessary condition for the functioning of educational, administrative, communication, and motivational components in a unified system (see Fig. 2).

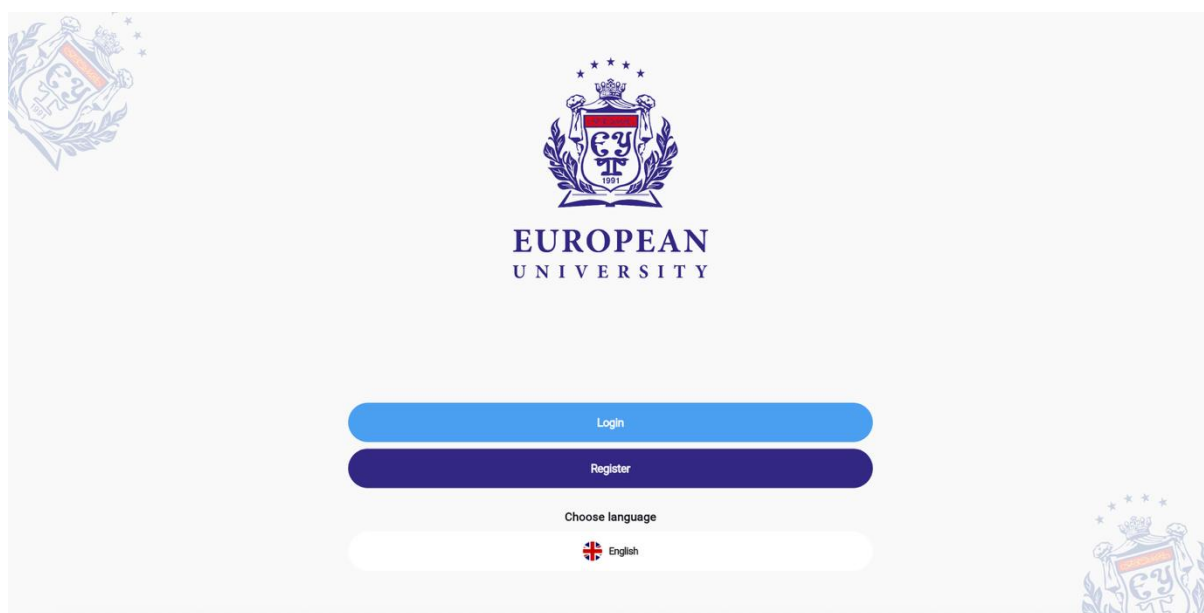


Fig. 2. Login screen in the web version/mobile application of the EUni student account

Source: compiled by the author based on EUni interface screenshots

The next stage of interaction implements role-based user routing, which ensures the correct differentiation of access and usage scenarios depending on status – student or teacher (see Fig. 3). This access organization meets the requirements for role management in digital platforms and provides institutionally defined differentiation of functional capabilities, which is critical for the integration of financial services and motivational mechanisms within a personalized account.

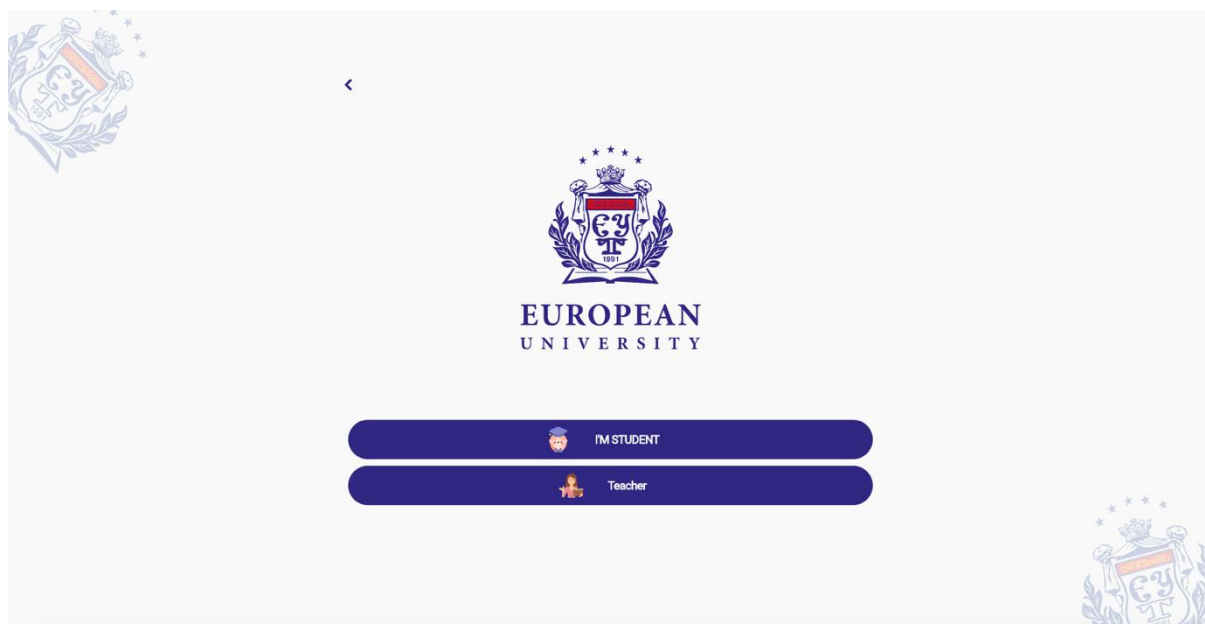


Fig. 3. User role selection in the EUni system (student/teacher)

Source: compiled by the author based on EUni interface screenshots

The functional implementation of motivational and financial components in the student account is structured through corresponding modules, in particular, an internal marketplace and payment services, which are integrated into a personalized interface (see Fig. 4). The visual representation of digital identification and the presence of tabs related to orders, payments, and bonuses form a unified logic of interaction, within which motivational mechanisms (EU points circulation) are coordinated with financial transactions and accounting for operations in the digital environment.

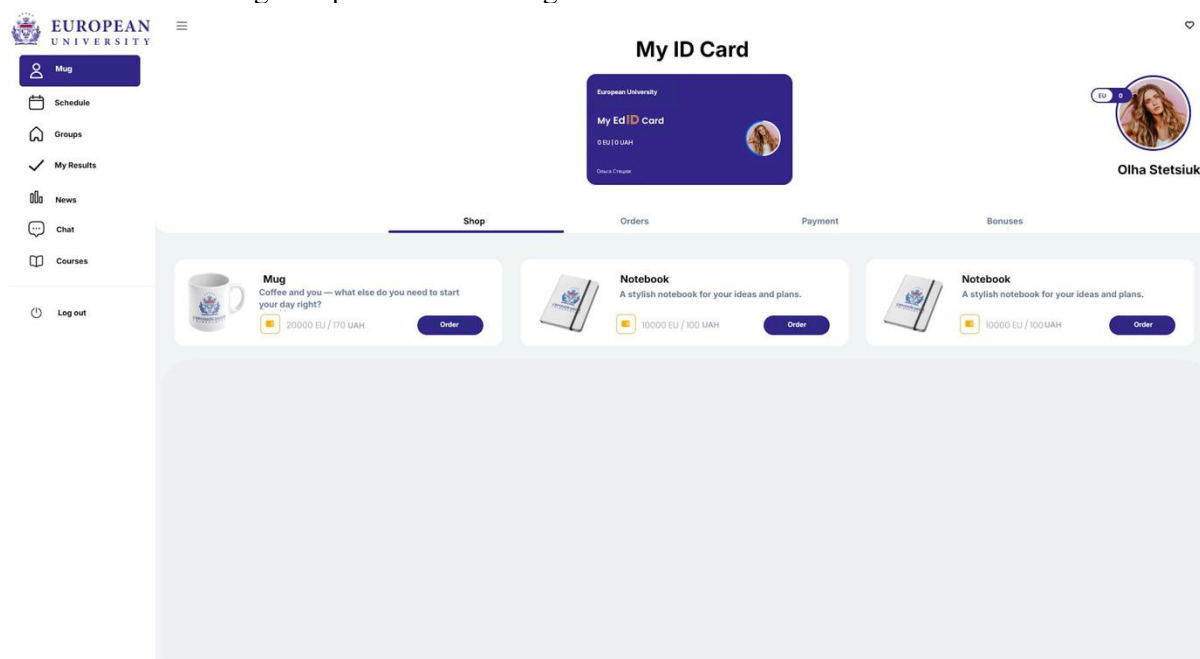


Fig. 4. EUni student account interface: digital identification and internal marketplace module

Source: compiled by the author based on EUni interface screenshots

The institutional value of such a decision in economic terms is manifested through the formation of a digital mechanism for managing monetary and quasi-monetary flows within the university ecosystem. The combination of payment for educational services, reflection of financial obligations, and transaction statuses with motivational tools based on EU points provides the prerequisites for improving payment discipline, reducing administrative costs for calculation support, and increasing the transparency of student transaction accounting. Such integration also creates opportunities for analytical monitoring of financial indicators in terms of student segments, educational programs, and

time periods, which strengthens the university's management capacity for planning revenues and controlling accounts receivable.

Within the economic approach to analyzing digital platforms, EUni can be interpreted as an integrated system that combines payment services with gamification mechanics and ensures the operationalization of motivational incentives through quantitative indicators of user activity. The internal marketplace and bonus system act as a mechanism for forming an internal market with its own exchange rules, in which intangible incentives take on an economic form through the possibility of converting activity into consumer value. This forms the basis for further discussion on the effectiveness of such platforms in the context of optimizing financial flows, reducing transaction costs, influencing student behavior parameters, and the long-term effectiveness of motivational mechanisms in the higher education system.

Discussion. The theoretical and methodological interpretation of the results obtained is based on approaches to the digital transformation of organizations and the platform economy, within which digital solutions in higher education are viewed as an institutional infrastructure for coordinating processes, reducing transaction costs, and improving resource management through the standardization of data and procedures [1;2]. In this logic, the digital platform transitions from the role of an auxiliary IT tool to the status of an organizational mechanism that defines the rules of interaction, access, transaction accounting, and incentive allocation among participants in the educational process.

Empirical observations regarding asymmetry in education funding (growth in absolute expenditures against a backdrop of a relative decline in their share of global product) create an economic basis for increasing attention to the efficiency of internal financial processes at universities. In this context, digital platforms for managing financial flows are becoming a tool for improving financial discipline and transparency through the formalization of obligations, the unification of payments, and the minimization of transaction support costs. For example, a higher education institution's portal that generates and communicates invoices, records payment statuses, and provides a standardized processing procedure reduces administrative operating costs and limits the risk of errors associated with manual data processing. The institutional relevance of this approach is confirmed by the practices of leading European universities, where the digital payment channel is established as a standard element of student interaction with the university [15].

It is also worth noting that, in the current environment, digital platforms are not limited to the function of "accounting" – they increasingly incorporate motivational mechanisms aimed at changing user behavior. From the perspective of behavioral economics, this means the ability to manage learning activity parameters through structured incentives that have a predictable effect when there are clear rules for calculating and using rewards. Motivational solutions integrated into the payment infrastructure create a controllable engagement tool, as the reward becomes part of the familiar transactional environment and is supported by regular feedback. In practice, combining campus payments with reward programs reflects the logic of forming a "participation economy," where interaction with the university environment acquires measurable value for the student [16].

Within this approach, EUni should be interpreted as a platform solution that combines financial services and gamified elements in a unified interface, forming the university's internal digital economy. The internal marketplace and bonus currency (EU points) set the rules of exchange, under which educational activity can be converted into consumer utility. This design is economically relevant because it translates motivational incentives from the abstract plane into an operationalized format – with the possibility of quantitative measurement and inclusion in management analytics. At the same time, the key condition for effectiveness is the alignment of incentives with target indicators – attendance, regularity of activity, timeliness of financial obligations – which determines not only the motivational effect but also the fiscal and organizational outcome for the university.

At the same time, the question arises about the limits of gamification as an economic tool. On the one hand, interactive technologies can enhance engagement, interaction intensity, and the quality of the learning experience through rapid feedback and the convenience of digital services [8, p. 1230]. On the other hand, without proper control of reward mechanisms, there is a risk of "motivation substitution" when external stimuli replace internal learning motivation or provoke formal activity that does not translate into learning outcomes. Therefore, the discussion on EUni involves assessing not only the intensity of service use but also the quality of behavioral changes in relation to academic results and the stability of educational trajectories.

A separate dimension of the discussion concerns the technological evolution of platforms and the organizational implications of integrating intelligent agents into service processes. Within the concept of a "non-human enterprise," AI agents are interpreted as an organizational resource that automates routine operations, increases the speed of user service, and changes the cost configuration by transferring some functions to the digital environment [4, p. 10]. In the context of a student account, this means the potential for further reducing the transaction costs of interaction through the automation of consultations, payment reminders, service navigation, and support for personalized trajectories, which is relevant for both the financial circuit and motivational design.

In turn, the integration of financial functions into a digital platform increases reliability and security requirements, as the concentration of transaction data in the digital channel leads to an increase in potential economic losses in the

event of incidents. With this in mind, security should be interpreted as an economic category – a factor in reducing operational risks, indirect costs of service downtime, and reputational losses. Studies of the role of artificial intelligence in cybersecurity highlight the potential for automating threat detection and improving the resilience of digital systems, which is critical for platforms integrated with payment services [7, p. 48].

In conclusion, the discussion within the study focuses on analyzing the economic feasibility and effectiveness of the platform approach in higher education through the optimization of financial flows, reduction of administrative costs, increased transparency of transactions, and the design of motivational mechanisms capable of influencing student behavior parameters. Further analysis should be aimed at verifying these effects based on indicators of payment discipline, accounts receivable, and intensity of interaction with services, as well as assessing the sustainability of motivational mechanisms in the long term.

Conclusions and prospects for further research. The results obtained confirm that digital platforms in higher education are becoming economically significant primarily as tools for managing financial flows and behavioral incentives for students within an integrated digital environment. The key economic determinants of the effectiveness of such platforms are: standardization and transparency of payment procedures, reduction of transaction and administrative costs of financial administration, improved manageability of obligations through digital accounting and payment status control, as well as institutionalization of motivational mechanisms through the formation of internal digital economies (internal bonus currencies, reward programs, digital marketplaces). The example of the web version and mobile application of the EUni student account demonstrates that the integration of online payment and incentive tools provides the organizational and economic prerequisites for strengthening payment discipline, increasing the transparency of resource flows, and converting educational activity into measurable indicators of interaction with student services.

Prospects for further research are related to the quantitative verification of the economic effects of the platform approach: through the dynamics of accounts receivable, the timeliness of fulfilling financial obligations, the structure of revenues, the operating costs of payment administration, as well as the flexibility of student activity in response to incentives and the stability of motivational mechanisms in the long term. The in-depth assessment of internal digital economies requires additional attention – through the prism of the effectiveness of motivational design, the risks of opportunistic behavior, and the possible consequences of external rewards dominating internal learning motives, as well as through an analysis of the security and reliability of the payment and bonus infrastructure as critical conditions for managing the university's financial and reputational risks.

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