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TRANSFORMING THE HIGHER EDUCATION SECTOR THROUGH PUBLIC-PRIVATE PARTNERSHIP UNDER CONDITIONS OF DIGITALIZATION

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Abstract: The introduction of digital technologies into the higher educational process has led to significant changes in the interaction of the state and private business in education. The article examines the transformation of the mechanism of public-private partnership in education under the influence of digitalization processes. Two stages of interaction are distinguished: in the implementation of the traditional educational process and the educational process in the context of the introduction of digital technologies. The methodological basis of the study were scientific publications of domestic and foreign authors, open library Internet resources, data from international organizations and international studies.

Key words: public-private partnership, digitalization, digital technologies, transnational technology companies, globalization of education.

Annotatsiya: Oliy ta'lim jarayoniga raqamli texnologiyalarning joriy etilishi sohada davlat va xususiy biznes o'rtasidagi munosabatlarda sezilarli o'zgarishlarga olib keldi. Ushbu ilmiy maqolada raqamlashtirish jarayonlari ta'sirida ta'limda davlat-xususiy sheriklik (DXSH) mexanizmining transformatsiyasi ko'rib chiqilgan. Bunda hamkorlikning ikki bosqichi ajratib ko'rsatilgan: an'anaviy ta'lim jarayonini amalga oshirish va raqamli texnologiyalarni joriy etish sharoitida ta'lim jarayonini amalga oshirish. Tadqiqotning metodologik asosini mahalliy va xorijiy mualliflarning ilmiy nashrlari, ochiq kutubxona internet-resurslari, xalqaro tashkilotlar va xalqaro tadqiqotlar ma'lumotlari tashkil etgan.

Kalit so'zlar: davlat-xususiy sheriklik, raqamlashtirish, raqamli texnologiyalar, transmilliy texnologiya kompaniyalari, ta'limning globallashuvi.

Аннотация: Внедрение в высший образовательный процесс цифровых технологий привело к значительным изменениям во взаимодействии государства и частного бизнеса в образовании. В статье рассматривается трансформация механизма государственно-частного партнерства (ГЧП) в образовании под влиянием процессов цифровизации. Выделены два этапа взаимодействия: при осуществлении традиционного образовательного процесса и образовательного процесса в условиях внедрения цифровых технологий. Методологической основой исследования являлись научные публикации отечественных и зарубежных авторов, открытые библиотечные интернет-ресурсы, данные международных организаций и международных исследований.

Ключевые слова: государственно-частное партнерство, цифровизация, цифровые технологии, транснациональные технологические компании, глобализация образования.

INTRODUCTION

Public-private partnership (PPP) has long been regarded by many countries as a strategy aimed at addressing challenges in the social sector. In the field of education, this strategy has developed extensively in economically advanced countries and has gradually spread to developing nations with the support of international organizations, particularly the World Bank and the Organisation for Economic Co-operation and Development (OECD). As a macroeconomic category, public-private partnership is defined as "a system of relations between the state and business that is used as a tool for economic and social development and planning at the national, international, regional, urban, and local levels" [1]. The overall purpose of using PPP mechanisms in higher education is to expand the scope of higher education services, improve their quality, and enhance accessibility.

By applying a PPP strategy in the higher education system, the state, as an economic actor, shares with private business the responsibilities of producing and delivering services, financing, managing operations, and ensuring the functioning of the higher education sector.

At the micro level, PPP is implemented in the form of projects. The key characteristics of these projects include the following: social orientation, the formalization of relations between the state and business within a legal framework, the pooling of resources, partnership based on equality and mutual benefit, and the pre-determined distribution of costs, risks, and benefits. The subject of PPP comprises public property as well as services provided by state authorities (national or local) and budgetary institutions. A fundamentally important feature of PPP is that, although agreements may exist between the public and private sectors concerning the use of public infrastructure or the provision of state services by private organizations, the public sector does not relinquish its social obligations and retains strategic oversight over the condition of socially significant facilities and the provision of services.

REVIEW OF LITERATURE ON THE SUBJECT

The theoretical and practical foundations of public–private partnership (PPP) relations between the state and the private sector have been studied extensively in the works of foreign scholars such as E. Yescombe, E. Farquharson [2], D. Hall [3], R. Hemming [4], J. Delmon [5], F. Barrera-Osorio [6], H. Patrinos [7], R. Davies [8], E. Iossa, D. Martimort [9], and others. Among CIS researchers, the works of V. A. Kabashkin [10], V. G. Varnavskiy [11], E. A. Mokhortov, A. S. Semchenkov [12], E. A. Dinin [13], and V. V. Maksimov [14] are devoted to the urgent issues of PPP.

In Uzbekistan, the scientific, organizational-legal, and methodological foundations for the development of the service sector, education services, higher and secondary specialized vocational education, and PPP mechanisms have been extensively discussed in the works of national economists such as S. S. Gulomov, Q. H. Abdurakhmonov [15], Sh. N. Zayniddinov [16], N. D. Rahimova, O. Q. Abdurakhmonov, N. K. Zokirova [17], M. H. Saidov [18], M. Q. Pardaev [19], B. Turaev [20], N. Yusupov, F. Karabayev [21], U. Djumaniyazov [22], B. Ollanazarov [23], Q. Xalmuqmatov [24], G. Sadiqova [25], and others. Within UNDP projects, N. Yusupov and F. Karabayev studied the formation and development of PPP; B. Ollanazarov researched the improvement of investment mechanisms in the tourism sector based on PPP; and U. Djumaniyazov examined the enhancement of corporate governance mechanisms in the housing construction sector within PPP frameworks. Q. Xalmuqmatov investigated the organizational-economic mechanisms of PPP in the service sector of the Republic of Karakalpakstan.

Some aspects of the development of the higher education system have also been addressed in the research of Uzbek scholars. In his studies, academician S. S. Gulomov focused specifically on establishing effective governance in the higher education system and digitizing this sector in accordance with international standards [26]. B. Yu. Khodiyev emphasized the importance of modern educational literature in developing higher education and noted the need to gradually improve the activities of university libraries in line with the evolving environment of rapid development [27].

Considering national characteristics, Uzbek economists N. Yusupov and F. Karabayev examined certain theoretical and methodological issues related to the formation and development of PPP under UNDP programs. Meanwhile, U. Djumaniyazov conducted research aimed at improving corporate governance mechanisms in the housing construction sector through PPP. However, these scientific studies did not treat the effective application and development prospects of PPP mechanisms in the higher education system as an independent research object.

Developing scientifically grounded recommendations for introducing international standards into the higher education system through PPP—successfully practiced in many developed countries—is among the pressing tasks today. Nevertheless, in Uzbekistan, the role of PPP as one of the main drivers of socio-economic development has not yet been fully defined. In particular, issues such as identifying the conditions necessary for developing PPP in higher education services, determining the scale, duration, types, and institutional-organizational mechanisms of PPP projects, analyzing their advantages and limitations, designing cooperation mechanisms between business entities, the state, and higher education institutions suited to modern requirements, as well as determining the effectiveness, prospects, and trends of applying PPP principles in higher education, have not been sufficiently studied as an independent research topic. This gap underscores the relevance of the selected article's theme.

RESEARCH METHODOLOGY

In conducting this research, we extensively used scientific reasoning, abstract–logical analysis, interviews, statistical and economic methods, as well as financial and econometric modeling techniques.

ANALYSIS AND RESULTS

Historically, the development of public–private partnership (PPP) in higher education has taken place along three main directions: contractual, institutional, and various forms of social cooperation. The contractual direction involves addressing urgent problems in the education system based on agreements (contracts) between the state and private partners. The institutional direction refers to the creation of organizational structures aimed at solving specific academic, educational, and research tasks—such as corporate universities, business schools, and research centers—jointly established by the state and private businesses.

The third direction is characterized by different forms of social interaction. Unlike the first two directions, it is non-commercial and typically represents voluntary philanthropic activities conducted through endowment funds, boards of trustees, and similar structures. In global practice, contractual forms are the most widespread type of PPP applied in the education sector. According to World Bank expert G. Patrinos [28], the following types of contracts are used in higher education:

- Professional management and service provision: Government bodies pay for the professional management (financial and human resource management) of higher education institutions, or for the provision of specific services such as transportation, catering, development of curricula, textbooks, and other educational materials, as well as teacher training. The primary objectives are to save budgetary funds and improve service quality by enhancing management efficiency, as well as to promote the innovative development of public higher education institutions.

- Operational management contracts: The government enters into fixed-term agreements with private organizations to manage a public higher education institution and staff its operations. This type of contract aims to improve the quality of educational services and expand access to them.

- Provision of higher education services: A private higher education institution signs a contract with the state partner to deliver higher education services. Financial instruments such as scholarships, vouchers, and subsidies can be used within this form of PPP. These agreements are socially oriented, aimed at expanding educational access for all population groups and improving the quality of educational services.

- Infrastructure investment: Government authorities attract private businesses through tenders to construct or renovate higher education facilities. This form of cooperation focuses on developing and modernizing the infrastructure of higher education institutions. According to global practice, infrastructure-based PPPs in higher education typically involve the regular renewal of relatively small facilities—academic buildings, libraries, dormitories, and sports complexes. The most common mechanism is the Build–Operate–Transfer (BOT) model, in which a private partner receives a concession to build and operate a facility or a specific part of it. During the project period, the government leases the facility, and at the end of the term, it becomes state property. Infrastructure PPP serves as an effective tool for attracting private investment and addressing the imbalance between the growing demand for educational infrastructure and the limited capacity of the state budget.

This list may be expanded by adding contractual PPP forms related to the commercialization of innovation and research activities. These forms involve cooperation with the private sector in carrying out scientific research funded or supported by the state.

The application of PPP mechanisms in the higher education systems of developed and developing countries has also revealed a number of challenges:

- adverse effects on the working conditions of academic staff, including short-term contracts, part-time employment, and salary levels becoming directly dependent on private partners;

- the fact that the profits of private partners often form at the expense of increased public expenditure, with risks being transferred only minimally to the private side;

- the possibility of corruption schemes and conflicts of interest emerging in the process of selecting private partners.

Experts note that PPP can influence the quality of higher education in different ways. In countries where public higher education is underdeveloped, PPP is generally evaluated positively because it serves as a major source of financial and technical support and a driver of reforms in the higher education system. However, in countries with well-developed public higher education, PPP may lead to a decline in educational standards, excessive commercialization of higher education, and a reduction in the role of faculty members. This creates a risk that the profit-oriented logic of the private sector—market principles aimed at financial gain—may conflict with the universal human values of education.

While the development of PPP forms continues at the micro level, the formulation of PPP regulatory policies in higher education at the macro level has led to the expansion of cooperation mechanisms between the state and private business beyond national borders and their development on a global scale.

In 2002, at the initiative of the World Economic Forum, the Global Partnership for Education (GPE) was established. As the largest global fund, it represents multi-stakeholder cooperation aimed at reforming education

in low-income countries [29]. This initiative laid the foundation for a new stage of cooperation between the public and private sectors in education. As an economic category, PPP in the current stage is understood as a broad concept that encompasses all forms of contractual relations among the state, business entities, and social institutions. Within this context, the Global Partnership for Education may be regarded as one of the PPP models.

Although global partnerships in education do not explicitly pursue commercial profit through contractual relationships, their impact on modern educational processes—at both the national and international levels in many countries—is so significant that it cannot be ignored. Global partnerships in education include multinational corporations involved in implementing national-level educational initiatives together with UN agencies, international financial institutions, and civil society organizations. The philosophy of corporate social responsibility constitutes the foundation of global cooperation in education.

Key participants in global partnerships in education include UNESCO, the World Bank, UNDP, and UNICEF. In implementing international educational projects, these institutions work with major corporations (Microsoft, Intel, Cisco) and global foundations (Carnegie, Rockefeller, Ford, Bill & Melinda Gates). Some of the earliest projects implemented with corporate involvement under global educational partnerships are presented in Table 1 (Table 1).

Table 1. Multilateral Partnerships in the Field of Education¹

Organization / Fund	Country	Project Area
UNESCO, Qatar Foundation for Education, Science and Community Development	Iraq	Reconstruction of higher education
UNESCO and Ford Foundation	Arab States	Quality assurance in higher education
UNESCO and Microsoft	Global	ICT for promoting education
UNDP and Honda	Malaysia	Higher education / professional development
UNDP and Coca-Cola	Malaysia	"Lifelong e-learning" – bridging the digital divide
UNDP and Cisco Systems	Vietnam	Internet education, access to Cisco Networking
	Asia-Pacific region (low-income populations)	Bridging the "digital divide"
	160 countries (as of 2004)	Training students in planning, building, and implementing Internet networks
UNESCO and Microsoft	Countries with underdeveloped ICT infrastructure	Accelerating the introduction of ICT in schools and public education
World Economic Forum, global IT companies	Jordan (JEI Initiative)	ICT in education – full digital mathematics curriculum (Grades 1–12)
	Palestine (PEI Initiative)	Integration of ICT in the education system
	Egypt	Creating a scalable education reform model and a virtual learning community
	Rajasthan (India)	Computer education
	Rwanda (GEA)	Ensuring affordable and accessible Internet connectivity

The COVID-19 pandemic prompted the establishment of the Global Education Coalition [30]. "The Global Coalition created by UNESCO brings together multi-sectoral partners to ensure the provision of quality distance learning for all learners" [31]. Its partners include international organizations (UNICEF, WHO, World Bank, Global Partnership for Education, ASEAN, UN's Education Cannot Wait Fund), non-profit organizations (Khan Academy, Wikimedia Foundation, Code.org, ISTE), private companies (Microsoft, Facebook, Google, Weidong, Zoom, Coursera, Moodle), and various media platforms and networks.

¹ Xalqaro tashkilotlarning ta'lim sohasiga oid ma'lumotlari asosida muallif tomonidan ishlab chiqildi.

During the pandemic, the Global Education Coalition coordinated the use of technical resources for the learning process. Some of these resources were provided free of charge, while others were made available at no cost for a limited period during the COVID-19 pandemic. The coalition's activities—supported through charitable contributions and investment funds and involving national governments and prominent political leaders—helped expand the use of digital, including commercial, technologies in education. This, in turn, led to changes in the characteristics of educational services and the nature of the learning process.

As a result, the number of participants in the educational process increased, their influence on the learning environment strengthened, and a new model of the education system emerged accordingly (Table 2).

Table 2. Comparative Analysis of Traditional and Digital Technology-Based Learning Processes

Traditional Learning Process	Learning Process Based on Digital Technologies
Inseparable from the service provider	Temporary mismatch between production and consumption processes
Interpersonal communication	Digital communication
No storage capability (production and consumption occur simultaneously)	Ability to form inventories (access to pre-produced educational content)
Teacher-centered	Learner-centered
Limited educational content	Unlimited educational content
Tied to the service location	Non-localized, available online
Discrete periodicity	Not tied to time; flexible learning pace
Systematization	De-systematization
Limited number of initial consumers (students)	Mass participation; unlimited primary consumers
Development priorities set by state programs; focus on social goals	Development shaped by labor market demand; priority on economic efficiency for producers and consumers
Broad educational goals aimed at knowledge acquisition, development of intellectual skills and abilities, and motivation	Focus on competencies required for business careers, reduced emphasis on fundamental academic education and humanities
Value system formed by the state	Value system shaped by the distributor of educational content
Dominance of the formal sector (structured by official goals, programs, certification)	Dominance of the informal sector (absence of unified, standardized requirements; potential to bypass state resources)
Significant time required for data processing in planning and delivering the educational process	High-speed processing of large volumes of data
Insufficiently defined issues of intellectual property protection	Issues of intellectual property rights and personal data security
Orientation toward the domestic market	Orientation toward the global market
Necessity of physical educational infrastructure (buildings, classrooms)	Dependence on digital infrastructure and software quality
High cost of providing educational services	Cost reduction through decreased demand for qualified faculty and physical infrastructure
Development potential depends on intellectual and financial resources	Development driven by technological progress—AI, augmented and virtual reality

The introduction of digital technologies into higher education has led to the emergence of new participants in the education market. Alongside national governments, educational institutions, and primary (students, learners) and final (firms, enterprises, society) consumers, the following actors have become active participants in the education market:

- international companies operating in the education sector;
 - transnational technology corporations such as Google, Microsoft, and Amazon;
 - social media platforms—for example, in June 2020 TikTok announced partnerships with hundreds of universities, professionals, and charities to create educational content;
 - philanthropists, including prominent figures such as George Soros and leaders of major IT corporations.
- Philanthropic contributions to COVID-19 education initiatives were provided by the Bill & Melinda Gates

Foundation, Facebook, Mark Zuckerberg's CZI foundation, and others. Targeted use of these funds included: ensuring high-speed broadband internet access for schools, creating online learning resources and educational programs, developing virtual learning tools, and financing leadership councils and policy organizations.

Intermediaries providing the digital infrastructure for the learning process include: internet service providers enabling online learning; companies developing communication tools (e.g., WhatsApp), mobile and desktop e-learning applications, videoconferencing platforms (Zoom, Skype), and learning management systems (Moodle); and owners of distance learning platforms, cloud data repositories, resource banks, websites, and more.

Digitalization is creating a unified global higher education space and increasing the dependence of education (both national systems and content delivery) on several major information technology corporations and philanthropists—many of whom are leaders of these IT companies themselves. The future development of education is increasingly shaped by technological breakthroughs such as artificial intelligence, robotics, and virtual and augmented reality.

The balance of power among participants in the higher education process is undergoing significant change. Under the influence of globalization trends, the role of the state as an economic actor in shaping higher education policy is gradually diminishing, and its ability to influence educational processes and content is decreasing. First, this results from the influence of rules established by international actors and stakeholders, as well as from the comparative assessments issued by global ranking agencies, which evaluate national higher education systems relative to global academic standards.

Second, global digital content is emerging. For instance, today the Learning Passport digital education platform operates in 40 countries — including Zimbabwe, Egypt, Mexico, Costa Rica, Sudan, Lao PDR, Nigeria, Poland, Ukraine, Kazakhstan, Uzbekistan, Kyrgyzstan, and Serbia. More than 20 additional countries are currently in various stages of joining the platform. Developed in 2020 by Microsoft in collaboration with UNICEF and with support from the University of Cambridge, the Learning Passport is described on its official website as an online, mobile, and offline platform that ensures continuous access to quality education. It is distinguished by its flexibility and adaptability, enabling countries to adopt the Learning Passport either as a national higher education management system or as a supplementary tool to existing digital learning platforms.

Third, digital platforms for assessing competencies and issuing credentials can serve as alternatives to traditional state examination and certification bodies. Platforms such as Credly, Badgecraft, Accredible, Badgr, and Mozilla Open Badges are already among the most popular. These platforms allow course providers to issue digital micro-credentials that certify professional and other skills acquired through formal and non-formal education. Badge-issuing systems are integrated with learning management platforms and services such as Totara Learn, Moodle, Blackboard Learn, LinkedIn, Facebook, Twitter, and WordPress. Traditional educational institutions, professional associations, and online initiatives may all act as credential-issuing entities.

Badges issued through the Open Badges project contain metadata reflecting the issuing organization, criteria, and related information. They have been developed by organizations such as NASA, Disney-Pixar, 4-H, and DigitalMe. Users can display the badges they have earned on social media profiles, portfolios, and personal websites.

Within the framework of global partnerships, the extensive introduction of digital technologies in education requires new methodological solutions, improved management tools, and a cautious, well-regulated approach at both micro and macro levels. Digital learning platforms and online services that process personal and biometric data provide sophisticated functions enabling personalized education, the creation of individual learning trajectories, remote identification, and assessment of psychophysiological conditions. For example, the Learning Passport platform offers psychological and emotional support for learners and teachers, thereby strengthening the humanistic dimension of digital pedagogy.

The involvement of personal data highlights the need for comprehensive privacy policies, stronger legal frameworks governing data collection, processing, and use, and reinforced security measures. Drawing on international experience, a more reliable model can be developed through enhanced data protection, diversification of digital infrastructures, and transparent governance mechanisms. This approach helps clarify the responsibilities of digital content developers and educational institutions, ensuring that collected data are used exclusively for improving educational quality and developing innovative services.

Effective use of digital databases, precise management of remote access channels, and expanded transparency mechanisms help minimize the risks of commercialization or misuse. International experiences — including incidents associated with the Zoom platform — demonstrate the need for more rigorous standards in this area. Ultimately, this will enable countries to build a strong regulatory framework and a progressive digital culture in the education sector.

Thus, the introduction of digital technologies into the higher education sector creates extensive opportunities for forming new management models and methodological approaches. The participation of international

corporations in this process allows the education market to benefit from innovations, modern platforms, and advanced global practices. At the same time, countries gain broader opportunities to strengthen national standards, enhance quality control, and adapt digital education to local contexts. Such integration, implemented through global cooperation, contributes to building a sustainable model of digital education, increasing the competitiveness of national education systems, and supporting long-term innovative development.

CONCLUSIONS AND SUGGESTIONS

1. The research conducted for this article makes it possible to distinguish two stages of state–business cooperation in higher education. The first is associated with the use of traditional technologies in education. The second represents the stage of introducing digital technologies into the education system.

2. Digitalization is transforming the characteristics of educational services, affecting the technology of the learning process, reshaping the system of economic relations, and influencing PPP mechanisms:

— the scope of PPP is expanding. In addition to traditional infrastructure projects—which have long served as the main direction of state–business cooperation in higher education—the development of digital educational infrastructure and digital learning content is now being added. These areas are becoming priority spheres of partnership;

— the range of PPP participants is widening. Alongside national private business entities, international companies operating in the education sector and transnational technology corporations may also participate as private partners;

— the ability to achieve the goals and objectives of PPP in higher education, as well as its effectiveness, is increasing. The volume of higher education services and the accessibility of these services are expanding;

— the balance of power among PPP participants is changing. The involvement of global corporations as PPP actors creates the potential risk that the public sector may lose strategic control over the condition and content of the higher education system.

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