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THE ROLE OF ARTIFICIAL INTELLIGENCE IN DEVELOPING COMPETITIVE HUMAN RESOURCES FOR BELARUS' FUTURE

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Abstract

This study is dedicated to exploring the impact of artificial intelligence technologies on training highly qualified specialists in Belarusian universities. Trends in employment, structure of graduates, and readiness of educational systems for industrial transformation are analyzed. A survey among teachers highlighted the need for deep integration of AI methods into education, creation of adaptive learning trajectories, and enhancement of digital skills. Obstacles were identified and measures proposed to increase the effectiveness of digitization in the educational sphere.

Keywords: *Artificial Intelligence, Higher Education, Human Resource Development, Competitiveness, Digital Economy, Professional Competence, Educational Strategies, Belarus.*

Introduction

The current stage of human development is characterized by a transition to a new type of economy where the digital revolution brings fundamental changes to professional preparation systems. The conceptual core lies in the fact that Artificial Intelligence (AI) technologies determine the future of many industries, shaping specific competencies required for tomorrow's professionals. This poses an urgent task for higher education institutions – developing educational strategies enabling students to acquire relevant competencies and prepare for the conditions of the Fourth Industrial Revolution.

Materials and Methods

Methodology is based on foundational research in pedagogy and psychology, adult learning theory, and analysis of publications related to AI. Empirical methods such as observation, surveys, and expert interviews were employed. University curricula, employment statistics, and graduate numbers were also analyzed.

Results and Discussion

Research indicates that the Belarusian economy has undergone profound restructuring due to technological progress, globalization, and changing professional standards. From 2019 to 2024, there was a sharp rise in labor demand coupled with reduced supply.

On average, job vacancies reached 99,300 while official unemployment fell to 7,700, resulting in approximately 13 jobs per applicant (Karpovich, 2024). Industry distribution shows acute shortages in trade, industry, and certain working professions but excess staff in marketing, administrative, and IT sectors.

Analysis of higher education in Belarus revealed that during the academic year 2023–2024, personnel training took place at 49 universities enrolling 214,581 students. By 2024–2025, this network shrank to 47 institutions, reducing student enrollment to 207,198 bachelors and 10,400 master's candidates, along with a decrease in faculty from 17,600 to 17,200. Over the period 2019–2023, the number of graduates decreased by 19%, from 57,500 to 46,400. However, the greatest growth in graduates occurred in "Humanities" (+1.2 times) and "Security" (+1.15 times), whereas reductions were seen in fields like "Pedagogy" (–33.3%), "Agriculture and Forestry" (–26.4%), "Construction," "Economics and Management," and "Social Protection" (approximately 25–26% decline). Leading areas of specialization in 2023 included "Law, Economics, Communication, Management" (29.8%), "Technical Sciences and Engineering" (22.5%), and "Education and Pedagogy" (10.3%) (Karpovich, 2024).

Surveys conducted among university lecturers demonstrated strong interest in digital technologies in education: 23.5% considered information technology crucial for teaching quality, 52.9% supported using AI as a significant resource for enhancing educational efficiency, and only 5.9% expressed caution regarding risk assessment (Azanza, 2024).

Three main directions for effective use of AI technologies in education emerged from comprehensive analyses:

- deep integration of big data analytics techniques and automated systems for objective evaluation of student competence achievement levels (supported by 40.9% of surveyed experts);
- design and practical implementation of personalized distance-learning models tailored to individual cognitive activity patterns and preferences in receiving course materials (endorsed by 27.3% of respondents);

- widespread utilization of virtual assistants and chatbots as auxiliary pedagogical resources ensuring dynamic feedback between instructors and learners, thus improving acquisition of professional competencies (approved by 18.2% of participants) (Lin, 2024).

Approximately half of university professors support updating curriculum through introducing courses on artificial intelligence, neural networks, and machine learning. Additionally, they emphasize the importance of preparing specialists capable of interacting effectively with humans and AI alike. More than two-thirds of experts (62.5%) believe it necessary to include modules addressing ethical and legal issues concerning AI application, given its growing significance in social responsibility.

Despite widespread approval, some academics (6.25%) oppose premature expansion of these components within existing educational frameworks, citing insufficient methodology development and uncertainty about their practical usefulness in the domestic educational landscape.

Key obstacles to optimizing AI integration in higher education were noted by survey respondents:

- high cost of acquiring high-quality software and equipment (86.7%);
- insufficient material and technical infrastructure (53.3%);
- organizational challenges associated with implementing big data analytics (33.3%);
- low level of ICT expertise among employees (26.7%);
- personal data protection concerns (13.3%);
- passivity of university leadership in fostering digital environments (13.3%).

Thus, successful integration of AI technologies into higher education is constrained by structural, financial, personnel, and organizational limitations (Han, 2025). Addressing these challenges requires a comprehensive strategy encompassing increased funding for universities, enhanced technical infrastructure, regulatory framework development, and specialized training programs in Information Technology.

Systematic analysis of opinions from academia provides grounds to assert that perspectives on modernizing current educational standards vary widely;

- the most representative group (just over 41.2%) holds conservative views, arguing that the present system meets contemporary occupational demands without requiring substantial reform or detailed revision;
- another smaller yet influential segment (nearly 29.4%) advocates minor adjustments via modification of selected modules and sections of the curriculum.
- the third category, constituting a minority compared to the first two groups (~23.6%), insists on radical transformations across all aspects of educational content and structures, aiming to produce professionals ready to thrive in globalized informational spaces and rapidly evolving digital economies.

Students who have taken courses incorporating elements of AI demonstrate significantly higher motivation and engagement. Virtual assistants, automated simulators, and advanced diagnostic algorithms allow combining traditional teaching methods with innovative tools, thereby narrowing gaps between knowledge and industry requirements (Huang, 2023).

Nevertheless, Belarussian higher education faces serious difficulties stemming from

deficiencies in professionally trained faculty members and limited infrastructure supporting broad adoption of AI technologies. Prioritizing gradual modernization of the entire educational sector, including deliberate inclusion of innovations in specialist training programs targeting promising economic sectors, becomes essential. Government policy should focus on establishing specialized research centers and laboratories aimed at designing and testing AI applications. Collaboration with foreign and local high-tech companies could be activated to co-design courses leveraging cutting-edge AI developments. Implementing such a strategy would overcome institutional barriers and lay foundations for producing highly skilled personnel equipped to address major contemporary challenges.

Conclusion

Modern challenges necessitate a thorough transformation of the national system for training specialists. Acquisition of new artificial intelligence technologies will become critical for maintaining competitive positions in global economic competition. Our findings underscore the urgency of immediate steps toward modernizing educational programs and integrating AI technologies, which promise to usher in a new era of educational achievements and enhance international recognition of Belarusian diplomas.

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