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IMPROVING LABOR RELATIONS AND HUMAN CAPITAL IN THE CONTEXT OF DEVELOPING THE DIGITAL ECONOMY

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Abstract: *This paper examines the impact of digital transformation on labor relations and human capital development in Uzbekistan. The rapid growth of the digital economy requires a rethinking of human capital as a critical factor in economic growth, particularly in the context of artificial intelligence and technological advancements. This study reviews the current trends and challenges in labor relations and explores strategies for enhancing human capital through modern technologies. A particular focus is placed on the integration of artificial intelligence with traditional management systems to optimize labor efficiency and innovation. The findings highlight the importance of digital literacy, organizational transformation, and effective leadership in accelerating human capital development, especially in emerging economies like Uzbekistan. Recommendations are made for policymakers and businesses on leveraging digital tools to improve human capital and foster sustainable economic development.*

Keywords: *Human capital, labor relations, digital economy, artificial intelligence, digital transformation, Uzbekistan, economic development, labor efficiency, innovation management*

Introduction

In today's world, alongside the rapid development of the digital economy, the growth of intellectualization and artificial intelligence processes is increasingly dependent on human factors, making "human capital" a critical driver of progress. According to global development trends, the digital economy and human capital are leading to significant qualitative changes in socio-economic sectors. According to the World Bank, "an increase in internet users by 10% can lead to an annual growth of 0.4-1.4% in the national economy's gross domestic product [1]." In the context of the rapid development of the digital economy, intellectualization, and artificial intelligence, organizing the effective management of human capital and improving labor relations has become one of the most pressing issues today.

In the global push for the development of the digital economy, the system for developing human capital and labor relations must be managed according to modern technologies. Research in this field is being prioritized to establish the theoretical, scientific, and methodological foundations for improving labor relations through the integration of artificial intelligence with traditional management methods. Special attention is being given to research on organizing labor relations in line with modern technologies, improving human capital management mechanisms in the context of digital transformation, enhancing methodological foundations of modern labor relations principles and methods, and increasing the accuracy of evaluating human capital development.

In the "New Uzbekistan," comprehensive reforms are being implemented in areas such as the rapid development of the digital economy, organizing labor relations in accordance with effective technologies, and the efficient development of human capital. One of the goals is to improve Uzbekistan's position in the Global Innovation Index and to rank among the top 50 countries by 2030. To achieve this, it is necessary to create broad opportunities in all sectors for the implementation of innovative projects and to introduce modern mechanisms for supporting research and innovative initiatives. Addressing these tasks involves using advanced innovative technologies to enhance human capital development, increasing the efficiency of human resources in regional development, creating an optimal system for training and retraining personnel, and improving labor relations. Deepening research in these areas is essential.

Literature review

The scientific foundations of increasing labor potential, effectively utilizing labor resources, and developing human capital have been researched by foreign scholars such as G. Becker, T. Schultz, L. Thurow, R. Crawford, T. Garavan, and P. Rastor, among others [2,3,4,5,6,7]. The scientific and methodological aspects of human capital development have also been studied by scholars from CIS countries, including Y.G. Odegov, R.I. Kapelyushnikov, B.M. Genkin, V.T. Ryazanov and A.V. Buzgalin [8,9,10,11,]. In Uzbekistan, these issues have been the focus of works by local scholars such as academician K.H. Abdurakhmanov and professors B.Kh. Umurzakov, D.A.Nasimov, X.X.Мамадалиева, and others [13,14,15,16].

It should be noted that the scientific works of these economists only partially address the scientific, methodological, and practical aspects of developing human capital and improving labor relations in the context of the digital economy. The insufficient number of studies on this subject in Uzbekistan highlights the need for deeper scientific and methodological research in this area.

Results

One of the most crucial aspects of economic growth is human capital. Possessing human capital and using it effectively determines a country's position in the global economy. In this regard, it is essential to understand the quality of human capital and how its quantitative and qualitative characteristics align with the new socio-economic transformations driven by digitization. The formation of human capital can occur in various forms, with the most fundamental being the accumulation

of capital through education and the development of skills during professional training.

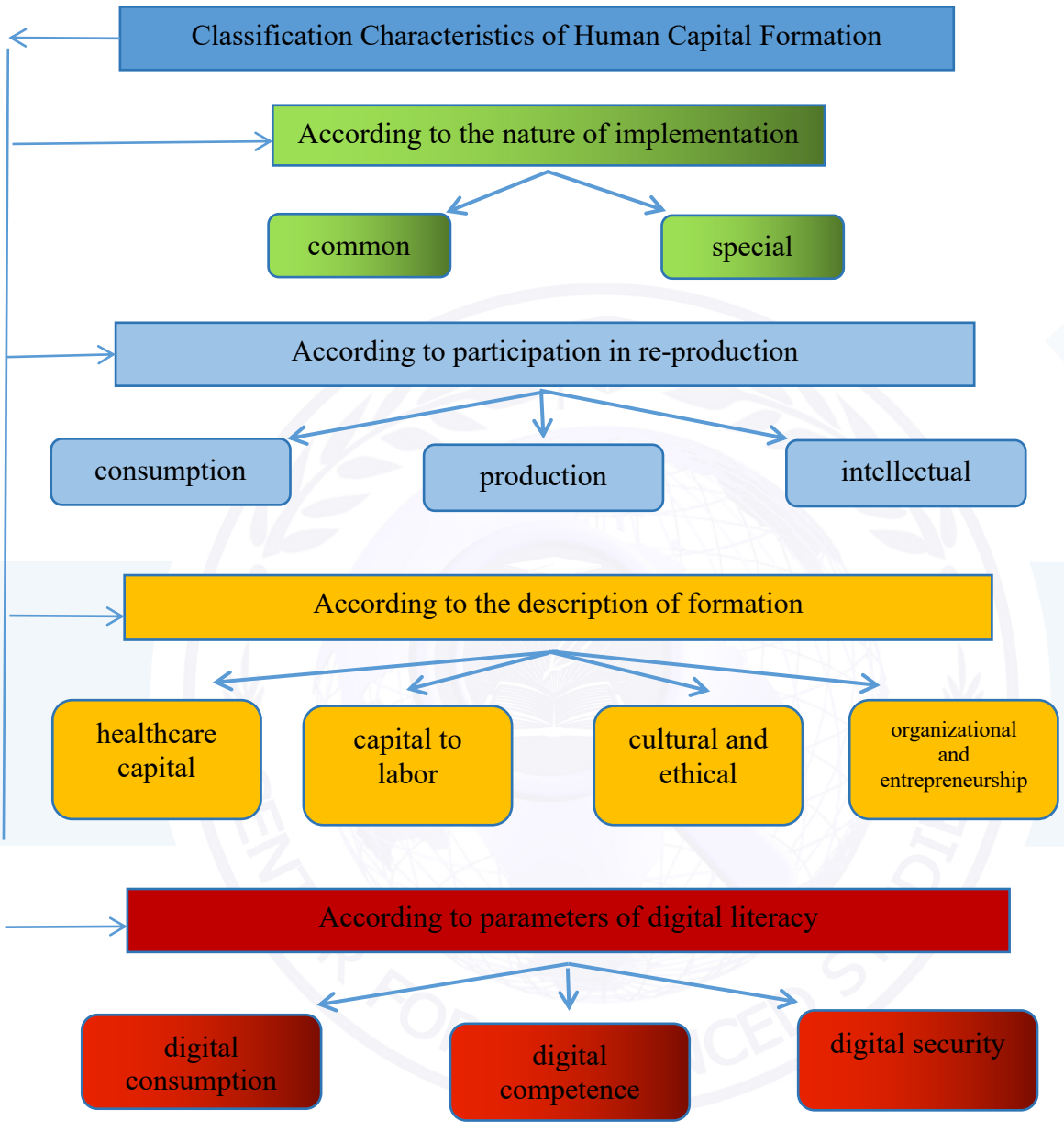

Figure 1. Classification of Factors Influencing the Development of Human Capital in the Context of the Digital Economy[1]

Human Capital is the aggregate of abilities, knowledge, skills, and the economic efficiency of utilizing human resources, which enhances its competitiveness in the

[1] Developed by the author.

labor market. In the context of the digital economy, the development factors of human capital have an expanded classification (see Figure 1). In turn, human capital in the economic system is differentiated by the scale of collective human capital and individual human capital (the skills and abilities of an individual). The gradation of human capital levels has a cumulative nature, as each subsequent level builds upon the previous ones. Moreover, the human capital of an economic system represents the behavioral standards for knowledge acquisition, experience accumulation, professional skills realization, health maintenance, culture, and the synergy of this system, which ensures its effectiveness and quality.

Digital transformation refers to the integration of modern digital technologies into the business processes of socio-economic systems at all levels. This approach involves not only the installation of modern equipment or software but also fundamentally changing management, corporate culture, and approaches to external communication.

In our country, the digital transformation of the socio-economic system is characterized by macroeconomic, socio-demographic, and technological trends, identifying a system of external and internal factors that either constrain or accelerate the digital transformation of socio-economic systems. The key factors influencing the acceleration of the digital transformation of socio-economic systems include:

1. Support for Management: The digital transformation must be supported and encouraged by the organization's leadership or a group of organizations (in state and local governance – by "first" officials).

2. Existence of a Competence Center: It is essential to establish a cross-functional group composed of employees from departments responsible for specific aspects of the operational changes.

3. Organizational Transformation: New business processes are implemented by employees operating within the existing organizational structure over an extended period.

4. Evolutionary Integration with Legacy Systems: The digital transformation of business processes affects many legacy systems that cannot be eliminated simultaneously. Therefore, it is crucial to adopt and implement decisions regarding digital transformation gradually to mitigate risks.

5. Customer Engagement and Motivation: Customers' habits change gradually, which can slow the implementation of new service technologies. Hence, developing new models of consumer behavior is a vital element of digital transformation.

6. Flexible Model for Managing Business Processes: The classic theory of optimizing and reengineering business processes is supplemented with new, flexible approaches in the new reality.

7. Formation of a Technological Base: Before entering the digital transformation process, it is necessary to establish a foundation of relevant technological solutions on which the digitization processes will be based.

The development of human capital is a component of the overall strategy for entrepreneurship structure development, manifested in the following areas: identifying problems and substantiating the need to enhance resource management efficiency; defining the strategic management goals for human resources; developing sections of the overall strategy for the development of entrepreneurial entities; identifying the necessary resources for developing the human capital management system; developing a strategic plan for human capital management based on the operational plan; realizing the elements of the strategic components of human capital management and operational plans; and implementing control over the realization of strategic components of human capital management and operational strategies.

In the Republic of Uzbekistan, the number of preschool education organizations increased from 6,381 in the 2018–2019 academic year to 8,311 in the 2022–2023 academic year. During the same period, the number of children enrolled in these organizations grew from 874,900 to 2,246,300. When examining the availability of places in these preschool education organizations, it was found that there were 109 children per 100 places in the 2018–2019 academic year, which increased to 123 in the 2022–2023 academic year.

Additionally, the total number of general education institutions in the republic rose from 9,774 in the 2018–2019 academic year to 10,522 in the 2022–2023 academic year, reflecting a growth of 107.6%. The number of students receiving education in these institutions reached 6,461,700 in the 2022–2023 academic year, showing a growth trend of 110.4% compared to the 2018–2019 academic year.

Moreover, the number of students in secondary special and vocational education institutions has significantly decreased in the 2022–2023 academic year compared to previous periods (see Table 1).

Table 1

Key Indicators of Education in Uzbekistan
(As of the beginning of the academic year)[2]

No	Indicators	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	Change %
1	Number of preschool education organizations (units)	6.381	6,968	7,753	7,868	8,311	130.2
	Number of children in them (thousands)	874.4	1,276.9	1,444.3	1,779.0	2,246.3	2.6 times
2	Provision of places for children in preschool education organizations (children per 100 places)	109	118	104	115	123	112.8
3	Number of general education institutions (units)	9,774	10,090	10,181	10,289	10,522	107.6
	Number of students in them (thousands)	5,850.9	6,168.2	6,287.9	6,304.6	6,461.7	110.4
4	Number of secondary special and vocational education institutions (units)	1,537	1,117	732	741	727	47.3
	Number of students in them (thousands)	656.3	239.2	189.0	368.5	398.7	60.7
5	Number of students admitted to secondary special and	33.5	28.2	203.5	205.9	209.4	6.2 times

[2] Based on the data from the Statistics Agency under the President of the Republic of Uzbekistan. www.stat.uz

	vocational education institutions (thousands)						
6	Number of students graduating from secondary special and vocational education institutions (thousands)	454.9	468.8	177.6	134.6	138.7	30.5
7	Number of higher education institutions (units)	98	119	127	154	191	194.9
	Including branches of foreign higher education institutions	9	18	21	25	41	4.6 times
	Number of students in them (thousands)	360.2	441.0	571.5	808.4	1,040.4	2.9 times
8	Number of students admitted to higher education institutions (thousands)	114.5	138.1	174.9	235.9	284.3	2.5 times
9	Number of specialists graduating from higher education institutions (thousands) Number of specialists graduating from higher education institutions (thousands)	70.3	70.8	83.9	103.9	101.9	144.9

Discussion

This study aimed to assess the integration of human capital development and labor relations within the digital economy's evolving landscape in Uzbekistan. The findings underscore the vital role of human capital as a driver of economic growth, especially as the nation transitions into a more digitized framework. The significant increase in educational institutions and enrollment numbers highlights the government's commitment to enhancing human capital. However, the decline in secondary vocational education enrollment suggests a potential mismatch between labor market demands and educational outputs.

The results align with existing literature, particularly Becker's human capital theory, which posits that investments in education and training yield economic returns through improved productivity. This correlation emphasizes the necessity of aligning educational programs with the skills needed in a digital economy, ensuring that the workforce is equipped for emerging technological roles.

Despite the promising advancements, several limitations were observed. For instance, the study primarily focused on quantitative data from educational institutions, which may overlook qualitative aspects such as student satisfaction and curriculum relevance. Furthermore, the rapid pace of digital transformation poses challenges in keeping educational curricula updated, which could hinder the alignment between education and market needs.

Future research should explore qualitative factors, such as the experiences of students and employers regarding skill adequacy. Additionally, investigating the long-term impacts of digital transformation on labor relations, such as job displacement and the emergence of gig economies, would provide valuable insights. Addressing these gaps will be crucial for developing comprehensive strategies to enhance human capital and labor relations in Uzbekistan's digital economy.

Conclusion

In conclusion, this study highlights the critical interrelationship between human capital development and labor relations in the context of Uzbekistan’s evolving digital economy. As the nation strives to enhance its global competitiveness, the findings emphasize the importance of investing in human capital through education and training tailored to the demands of a rapidly digitizing workforce. The significant increase in educational institutions and enrollment figures reflects the government's commitment to fostering a skilled labor force, yet the observed decline in vocational

education enrollment indicates a pressing need for alignment between educational outputs and labor market requirements.

The challenges posed by digital transformation necessitate a strategic approach to improve labor relations, focusing on integrating innovative management practices and technologies that enhance workforce engagement and productivity. By addressing existing gaps and adapting educational curricula to reflect industry needs, Uzbekistan can effectively harness its human capital potential.

Ultimately, the findings of this research contribute to the broader discourse on sustainable economic development, offering insights for policymakers, educators, and business leaders aiming to navigate the complexities of a digital economy. As Uzbekistan continues on its path towards becoming a knowledge-based economy, ongoing research and collaboration will be essential in shaping effective strategies for human capital development and labor relations.

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