

THE IMPACT OF DIGITALIZATION AND ARTIFICIAL INTELLIGENCE
ON HUMAN CAPITAL TAKING INTO ACCOUNT
MODERN TECHNOLOGICAL TRENDS

Makarov I.N.^{1,2*}, Dronova S.Yu.³, Goltseva O.S.⁴, Garayli N.T.⁵,
Movsumov S.O.⁶, Lomakina E.V.⁷, Moiseeva O.A.⁸, Sartakov M.V.⁹

¹Lipetsk Branch of the Financial University under the Government of the Russian Federation, Russia
12B, Internatsionalnaya Street, Lipetsk, 398050

²Lipetsk State Pedagogical P. P. Semenov-Tyan-Shansky University, Russia
42, Lenin Street, Lipetsk, 398020

³Financial University under the Government of the Russian Federation, Russia
49/2, Leningradsky Avenue, Moscow, 125167

⁴Russian State Social University, Russia
4, Building 1, Wilhelm Pieck Street, Moscow, 129226

⁵Institute of Geography, Ministry of Science and Education of the Republic of Azerbaijan
117, H. Javid Ave., Baku, AZ1073

⁶Mingachevir State University, Azerbaijan
21, D. Aliyeva Street, Mingachevir, AZ4500

⁷Russian Biotechnological University, Russia
11, Volokolamskoye Highway, Moscow, 125080

⁸K. G. Razumovsky Moscow State University of Technologies and Management
(the First Cossack University), Russia
73, Zemlyanoy Val Street, Moscow, 109004

⁹D. I. Mendeleev Russian University of Chemical Technology, Russia
9, Miusskaya Square, Moscow, 125047

*Corresponding author: inmakarov@fa.ru

Keywords: human capital,
digitalization, artificial
intelligence, efficiency,
competencies, labor market

Summary. This study examines the impact of digitalization and artificial intelligence (AI) on organizational human capital and proposes an approach for assessing the effectiveness of its development. Based on a critical analysis of domestic and international research, human capital is considered through knowledge, skills, experience, motivation, and health, while its effectiveness is evaluated using productivity, innovation, employee satisfaction, and organizational adaptability. The study identifies digitalization and AI as major factors transforming employee competencies, labor-market requirements, work organization, and human capital management. Particular attention is given to automation, digital skills, flexible employment, staff training, and the changing role of employees in technology-intensive environments. An integrated assessment approach is proposed that incorporates weighted indicators and allows organizations to adapt their evaluation criteria to industry characteristics, organizational size, and strategic objectives. The study also proposes formulas for assessing human capital efficiency and its development over time, including the influence of risk factors. The findings emphasize the importance of continuous investment in employee competencies and organizational adaptability under ongoing digital transformation.

© 2026 Earth Science Division, Azerbaijan National Academy of Sciences. All rights reserved.

Introduction

Human capital is generally understood as a combination of knowledge, skills, experience, and health that contributes to economic and organizational development. Schultz (1961) emphasized investment in human capital as an important factor in economic development, while Becker (1964) highlighted education and professional training as key determinants of human capital formation. These approaches established human capital as a strategic resource essential for long-term economic development.

Subsequent research expanded this concept by incorporating social and technological factors. Heckman (2011) emphasized the importance of human capital development, whereas Davenport (2018) highlighted the transformative role of artificial intelligence and digital technologies. Recent studies have also examined the relationship between human capital and organizational competitiveness (Brzaković et al., 2023), flexible working arrangements (Alqasa & Noor, 2022), organizational performance (Austin-Egole et al., 2022), and employee performance (Orishede & Ndudi, 2020).

Domestic research similarly considers human capital through knowledge, practical skills, and motivation (Bondarenko, 2006) and recognizes its importance for organizational competitiveness (Gromova, 2014). More recent studies emphasize the influence of digitalization, information technologies, and employee competencies on human capital development (Kondrashov et al., 2017; Malakhov & Smyslyeva, 2022; Podverbnyh et al., 2024). Despite differences in emphasis, these approaches identify knowledge and skills as fundamental components of human capital. Accordingly, this study examines the influence of digitalization and artificial intelligence on organizational human capital and proposes an approach for evaluating the effectiveness of its development under modern technological conditions.

Results

Modern literature distinguishes different types of human capital according to alienability, individual or corporate characteristics, national affiliation, and the distinction between general and specific capital (Mineeva & Neganova, 2009; Salutova, n.d.). The continuing expansion of the concept also suggests the emergence of new interpretations and forms of human capital (Drozdov, 2013; Kapelyushnikov & Lukyanova, 2010).

In this study, an organization's human capital is defined as a set of employee characteristics—including knowledge, skills, practical experience, motivation, and health—used to achieve strategic goals and perform current organizational tasks. Its structure may include intellectual capital (knowledge, skills, and creativity), social capital (interaction and cooperation), emotional capital (motivation and loyalty), and physical capital (health and working capacity).

The practical application of the human capital concept requires its operationalization through measurable indicators. Its assessment should therefore consider the value, efficiency, and dynamics of its components. Depending on the objectives and available information, organizations may apply cost, income, or market approaches. The cost approach considers expenditures on recruitment, training, and professional development; the income approach evaluates the economic returns generated by human capital; and the market approach relies on comparisons with similar assets. Combining different approaches may provide a more comprehensive assessment, while regular evaluation is necessary because human capital changes over time.

The efficiency of an organization's human capital development can be understood as the relationship between the achievement of strategic objectives and the resources invested in developing and utilizing employee knowledge, skills, and experience. Its assessment may be based on four principal indicators: labor productivity, employee innovation, employee satisfaction, and organizational adaptability.

Effective human capital management contributes to organizational competitiveness and sustainable development. It requires continuous investment in employee development, favorable working conditions, effective interaction between management and staff, and opportunities to improve and apply professional competencies. Assessment should also consider qualification levels, work quality, staff turnover, and the return on investment (ROI) in employee training. In particular, a positive training ROI indicates that the financial benefits associated with staff development exceed the corresponding costs. These indicators collectively enable organizations to identify weaknesses and determine priorities for further human capital development.

To assess the effectiveness of an organization's human capital development, five main stages are proposed: (1) identifying its components; (2) estimating the cost of each component; (3) determining the total or weighted average cost of human capital; (4) identifying and analyzing existing problems; and (5) developing measures to optimize its structure.

Among the factors affecting human capital, digitalization and artificial intelligence (AI) have become increasingly important. Digitalization introduces technologies such as process automation, big data, and cloud computing, thereby increasing demand for digital literacy and analytical skills. AI further transforms the labor

market by automating routine tasks, supporting data analysis and process management, and creating new professional requirements.

These transformations are particularly evident in the financial, retail, transport and logistics, and industrial sectors. AI enables automation of data processing, risk analysis, and customer service in finance; personalization, demand forecasting, and supply-chain optimization in retail; and the development of intelligent management and autonomous technologies in transport and logistics.

In industry, digitalization and AI promote automation, robotics, and data-driven optimization, increasing demand for specialists in data analysis, machine learning, software development, and cybersecurity. Similar transformations are occurring in socially significant sectors, particularly healthcare and education, while routine and repetitive tasks are increasingly automated or redesigned.

In Russia, however, the effective adoption of digitalization and AI is constrained by three major challenges: digital inequality, a shortage of qualified specialists, and insufficient investment in human capital and technological development. Uneven access to digital infrastructure, particularly in rural, mountainous, and remote areas, limits the adoption of advanced technologies. At the same time, shortages of AI and IT specialists restrict innovation and technological competitiveness. Insufficient investment in research and development further limits the creation of domestic AI solutions and increases dependence on external technologies.

To realize the potential of digitalization and AI in Russia, coordinated measures are required to expand digital infrastructure, stimulate investment, support research and innovation, and strengthen the regulatory framework. Economic incentives, including targeted grants, subsidies, and tax measures, can encourage organizations to invest in digital technologies and AI solutions. At the same time, broader access to digital infrastructure and expanded education and professional training are essential for developing the required competencies.

The study identifies three principal effects of digitalization and AI on organizational human capital. First, technological transformation increases qualification requirements and demand for digital literacy, data analysis, adaptability, and non-routine problem-solving skills, requiring continuous employee training and retraining. Second, AI automates routine tasks and allows employees to focus on creative and strategic activities while supporting recruitment, performance assessment, and other human resource management processes. Third, digital technologies facilitate flexible and remote employment, expanding access to talent while increasing the importance of self-organization, communication, and time-management skills.

To assess the effectiveness of human capital in the time period t_1 , the following formula can be used:

$$EH Ct_1 = \frac{(PD+IN+ES)*OA}{Ac}, \quad (1)$$

where $EH Ct_1$ is the efficiency of the human capital of an organization in the time period t_1 ; PD is productivity; IN is the set of innovations; ES is employee satisfaction; OA is the organization's adaptability to environmental conditions; Ac is aggregate cost.

To clarify the calculation, weights can be introduced into formula 1 depending on the significance of the indicator. In this case, formula 1 will be as follows:

$$EH Ct_1 = \frac{(W_1 * PD + W_2 * IN + W_3 * ES) * (W_4 * OA)}{Ac}, \quad (2)$$

where W_1 - W_4 are the corresponding weights characterizing the significance of the components ($0 < W < 1$).

The need to consider weights for each component based on industry, size and strategic goals is critical. In this regard, it would be useful to develop a framework within which organizations could adjust the weighting factors according to their specific context. For example, a knowledge-intensive organization may place greater emphasis on innovation than a trading company focused on operational efficiency.

Each component of the formula requires detailed disclosure, including its essence, measures and methods for determining values.

For example, productivity reflects the ability of employees and the organization as a whole to achieve set goals with minimal time and resource costs. In the context of using digitalization and AI, productivity is related to the automation of routine processes, the use of AI to analyze data and optimize work processes.

Various indicators can serve as measuring instruments of productivity:

1. Output per employee of the organization (volume of products or services per unit of time).
2. Speed of task execution (time spent on performing specific operations).

3. Resource utilization factor (the ratio of actually used resources to planned ones).

Methods for determining productivity values may include: analysis of KPIs (key performance indicators) of employees, automated time tracking systems, comparison of indicators before and after the implementation of digital solutions, etc.

Innovation is an important component of the formula for determining the effectiveness of an organization's human capital development. Innovation is the ability of an organization to create and implement new ideas, technologies, products or processes that improve competitiveness and efficiency. In modern conditions, innovation is often connected with digitalization, the use of AI, and other advanced technologies.

The following indicators can be used to measure innovation:

1. The number of implemented innovative projects over a certain period.
2. The share of new products or services in total sales.
3. Investment level of R&D (research and development).

The following methods can be used to determine the values of these indicators: conducting internal audits of innovation activity, analyzing the company's patent activity, assessing the market share occupied by new products, and others.

Satisfaction is one of the difficult to define components of the formula for the effectiveness of an organization's human capital development.

Satisfaction reflects the level of employee satisfaction with working conditions, corporate culture, opportunities for professional growth and the implementation of digital technologies and AI. High satisfaction helps to reduce staff turnover and increase staff involvement in solving the organization's development problems.

A number of relevant indicators can be used to measure the level of satisfaction:

1. Employee satisfaction index.
2. Rate of employee turnover.
3. Results of employee surveys and questionnaires.

Methods for determining the values of these indicators include conducting regular employee surveys, analyzing feedback on employer platforms, and assessing engagement through monitoring systems.

To assess the effectiveness of human capital development in the time period t_1 and t_2 , one can use the calculation according to the formula:

$$EDHC(t_1, t_2) = EHC(t_2) - EHC(t_1) \quad (3)$$

where $EDHC(t_1, t_2)$ is the efficiency of development (growth) of human capital for periods of time t_1 and t_2 ; $EHC(t_1)$ and $EHC(t_2)$ are the efficiency of the organization's human capital in periods of time t_1 and t_2 , respectively.

Formula 3, considering the heterogeneity of the risk impact at the stages of human capital development, can also be modified to the following form:

$$EDHC(t_1, t_2, t_3) = [EHC(t_2) - EHC(t_1) * R(t_2, t_1)] - [EHC(t_3) - EHC(t_2) * R(t_3, t_2)] \quad (4)$$

where $EDHC(t_1, t_2, t_3)$ is the efficiency of development of human capital for periods 1, 2 and 3; $R(t_1, t_2)$ is the share of the result accounting losses due to the influence of risk in the period from 1 to 2 ($0 < R < 1$); $R(t_2, t_3)$ is the share of the result considering losses caused by the influence of risk in the period from 2 to 3 ($0 < R < 1$).

Calculations according to formulas 1 and 4 allow us to obtain general assessments of the effectiveness of an organization's human capital for the compared periods of time and determine its trends. In addition, it is possible to identify and analyze the impact of individual components of an organization's human capital to optimize them.

If necessary, formulas can be contextualized, for example, by expanding the number of indicators used in them (organizational culture, cooperation, etc.)

It should be considered the possibility of the discussion how the weighting of each component in formulas 1 and 2 (productivity, innovation, or employee satisfaction) may vary depending on the industry, size of the organization, or specific strategic goals. This will allow for a more accurate interpretation and detailed disclosure of the influence of factors on the effectiveness of human capital, which will contribute to the development of correct conclusions and sound management decisions.

Conclusion

1. The human capital of the organization is the most important characteristic of the state of the staff involved in the implementation of strategic goals and solving current tasks of the activity.
2. Digitalization and AI have a significant impact on human capital development, changing skill requirements and transforming the labor market.
3. To improve the efficiency of human capital development, organizations need to implement modern technologies, invest in employee training and adaptability to changing conditions.

REFERENCES

- Alqasa, K.M.A., & Noor, Y. (2022). The impact of flexible work arrangements (FWA) on employees performance in the Saudi education sector. *International Journal of Operations and Quantitative Management*, 28(1), 174–192. <https://doi.org/10.46970/2022.28.1.10>
- Austin-Egole, I.S., Iheriohanma, E.B.J., & Iheanacho, J.I. (2022). Flexible working arrangements (FWAs) and organizational performance: An empirical comparative analysis of production companies. *International Journal of Applied Research in Social Sciences*, 4(4), 131–146. <https://doi.org/10.51594/ijarss.v4i4.341>
- Becker, G.S. (1964). *Human capital: A theoretical and empirical analysis, with special reference to education*. University of Chicago Press.
- Bondarenko, G.I. (2006). *Human capital: Interaction of social institutions, government and business in the context of transforming Russian society*. Nauka.
- Brzaković, S., Brzaković, A., & Đurđević, S. (2023). The influence of the factors for creating the value and competitive advantages of the organization on human capital in organizations. *Journal of Process Management and New Technologies*, 11(1–2), 97–110.
- Center for Military and Political Research. (n.d.). *Definitions, types, kinds and structure of human capital*. <http://www.pravo.mgimo.ru/?q=node/58659>
- Davenport, T.H. (2018). *The AI advantage: How to put the artificial intelligence revolution to work*. MIT Press. [https://aitskadapa.ac.in/e-books/CSE/AI/The%20AI%20Advantage_%20How%20to%20Put%20the%20Artificial%20Intelligence%20Revolution%20to%20Work%20\(%20PDFDrive%20\).pdf](https://aitskadapa.ac.in/e-books/CSE/AI/The%20AI%20Advantage_%20How%20to%20Put%20the%20Artificial%20Intelligence%20Revolution%20to%20Work%20(%20PDFDrive%20).pdf)
- Drozdov, O.A. (2013). Human capital: Are there limits to expanding the interpretation? *Problems of Modern Economics*, (1[45]). <https://cyberleninka.ru/article/n/chelovecheskiy-kapital-est-li-predely-rasshireniya-traktovki>
- Gromova, N.V. (2014). The role of human capital in ensuring the competitiveness of modern companies. *Modern Competition*, (6[48]). <https://cyberleninka.ru/article/n/rol-chelovecheskogo-kapitala-v-obespechenii-konkurentosposobnosti-sovremennyh-kompaniy>
- Heckman, J. J. (2011). Policies to foster human capital. *Educational Studies*, (3). <https://cyberleninka.ru/article/n/politika-stimulirovaniya-chelovecheskogo-kapitala>
- Ibadullayeva, S., & Guliyeva, A. (2025). Biomorphological and bioecological characteristics of the Lamiaceae family distributed in the southern region of Azerbaijan. *Acta Botanica Caucasica*, 4(1), 14–26. <https://doi.org/10.30546/abc.2025.4.1.607>
- Jafarov, S. (2024). Education Policy of 3rd Generation Universities. *Revista De Gestão Social E Ambiental*, 18(6), e05690. <https://doi.org/10.24857/rgsa.v18n6-007>
- Jafarov, S. (2024). Internationalisation and cultural aspects of online learning, training, and research. *Pakistan Journal of Life and Social Sciences*, 22(2), 6437–6452. <https://doi.org/10.57239/PJLSS-2024-22.2.00486>
- Jafarov, S., Babashova, S., Dadashov, T., & Garibov, S. (2024). The influence of intonation on the interpretation of parenthetical clauses. *Pakistan Journal of Life and Social Sciences*, 22(2). <https://doi.org/10.57239/pjlss-2024-22.2.00810>
- Jafarov, S., & Nadirosov, F. (2024). The essential role of STEM in shaping future workforce leaders. *Pakistan Journal of Life and Social Sciences*, 22(1), 6272–6281. <https://doi.org/10.57239/PJLSS-2024-22.1.00463>
- Kapelyushnikov, R.I., & Lukyanova, A. L. (2010). *Transformation of human capital in Russian society (based on the “Russian monitoring of the economic situation and health of the population”)*. Liberal Mission Foundation.
- Kondrashov, V.M., Mosiychuk, A.V., & Shelomentseva, M.V. (2017). Human capital and the digital economy: The regional aspect. *Regional Problems of Transforming the Economy*, (12[86]). <https://cyberleninka.ru/article/n/chelovecheskiy-kapital-i-tsifrovaya-ekonomika-regionalnyy-aspekt>
- Malakhov, V.V., & Smyslyaeva, L. G. (2022). Big data technologies as a means of improving the effectiveness of training sessions in SVE. *Pedagogical Review*, (4[44]), 72–80. <https://doi.org/10.23951/2307-6127-2022-4-72-80>
- Mineeva, N.N., & Neganova, V.P. (2009). Characteristics of types of human capital. *Journal of the Ural State University of Economics*, (4[26]).
- Musostova, D., Dzobelova, V., & Spitsov, D. (2023). Development of socio-ecological systems: Climate, ecology and general trends. *BIO Web of Conferences*, 63, Article 08006. <https://doi.org/10.1051/bioconf/20236308006>
- Orishede, F., & Ndudi, E.F. (2020). Flexible work arrangement and employee performance: A review. *Journal of Resources & Economic Development*, 3(1), 86–103. <https://doi.org/10.37284/eajbe.5.1.557>
- Podverbnih, O.E., Dyatlov, D.V., Samokhvalova, S.M., & Yarovaya, A.A. (2024). Solutions for optimizing employee competency in a knowledge-intensive company. *Journal of Economics, Entrepreneurship and Law*, 14(12), 7997–8020. <https://doi.org/10.18334/epp.14.12.122170>
- Salutova, L. A. (n.d.). *Concept, types and theories of human capital*. Zaochnik. <https://zaochnik-com.com/spravochnik/ekonomika/regionalnaya-ekonomika-teoriya-modeli-i-metody/chelovecheskiy-kapital>
- Schultz, T. W. (1961). Investment in human capital. *The American Economic Review*, 51(1), 1–17. <http://www.jstor.org/stable/1818907>

ВЛИЯНИЕ ЦИФРОВИЗАЦИИ И ИСКУССТВЕННОГО ИНТЕЛЛЕКТА НА РАЗВИТИЕ ЧЕЛОВЕЧЕСКОГО КАПИТАЛА С УЧЁТОМ СОВРЕМЕННЫХ ТЕХНОЛОГИЧЕСКИХ ТЕНДЕНЦИЙ

Макаров И. Н.^{1,2*}, Дронова С. Ю.³, Гольцева О. С.⁴, Гарайлы Н. Т.⁵,
Мовсумов С. О.⁶, Ломакина Е. В.⁷, Монсеева О. А.⁸, Сартаков М. В.⁹

¹Липецкий филиал Финансового университета при Правительстве Российской Федерации, Россия
398050, Липецк, ул. Интернациональная, 12Б

²Липецкий государственный педагогический университет имени П.П. Семёнова-Тян-Шанского, Россия
398020, Липецк, ул. Ленина, 42

³Финансовый университет при Правительстве Российской Федерации, Россия
125167, Москва, Ленинградский пр. 49/2

⁴Российский государственный социальный университет, Россия
129226, Москва, ул. Вильгельма Пика, 4, стр. 1

⁵Институт географии Министерства науки и образования Азербайджанской Республики, Азербайджан
AZ1073, Баку, пр. Г. Джавида, 117

⁶Мингячевирский государственный университет, Азербайджан
AZ4500, Мингячевир, ул. Д. Алиевой, 21

⁷Российский биотехнологический университет, Россия
125080, Москва, Волоколамское шоссе, 11

⁸Московский государственный университет технологий и управления имени К.Г. Разумовского
(Первый казачий университет), Россия
109004, Москва, ул. Земляной Вал, 73

⁹Российский химико-технологический университет имени Д.И. Менделеева, Россия
125047, Москва, Миусская пл. 9

*Автор, отвечающий за переписку: inmakarov@fa.ru

Резюме. В исследовании рассматривается влияние цифровизации и искусственного интеллекта (ИИ) на человеческий капитал организаций и предлагается подход к оценке эффективности его развития. На основе критического анализа отечественных и зарубежных исследований человеческий капитал рассматривается через знания, навыки, опыт, мотивацию и здоровье, а его эффективность оценивается с использованием показателей производительности, инновационной деятельности, удовлетворённости сотрудников и организационной адаптивности. В исследовании цифровизация и искусственный интеллект определяются как основные факторы, трансформирующие компетенции работников, требования рынка труда, организацию труда и управление человеческим капиталом. Особое внимание уделяется автоматизации, цифровым навыкам, гибкой занятости, обучению персонала и изменяющейся роли работников в технологически интенсивной среде. Предлагается комплексный подход к оценке, включающий взвешенные показатели и позволяющий организациям адаптировать критерии оценки к отраслевым особенностям, размеру организации и стратегическим целям. В исследовании также предлагаются формулы для оценки эффективности человеческого капитала и динамики его развития с течением времени, включая влияние факторов риска. Полученные результаты подчёркивают важность непрерывных инвестиций в компетенции сотрудников и организационную адаптивность в условиях продолжающейся цифровой трансформации.

Ключевые слова: человеческий капитал, цифровизация, искусственный интеллект, эффективность, компетенции, рынок труда

MÜASİR TEXNOLOJİ MEYİLLƏR NƏZƏRƏ ALINMAQLA RƏQƏMSALLAŞMANIN VƏ SÜNİ İNTELLEKTİN İNSAN KAPİTALINA TƏSİRİ

Makarov İ.N.^{1,2*}, Dronova S.Y.³, Goltseva O.S.⁴, Garaylı N.T.⁵,
Mövsümov S.O.⁶, Lomakina E.V.⁷, Moiseyeva O. A.⁸, Sartakov M. V.⁹

¹Rusiya Federasiyası Hökuməti yanında Maliyyə Universitetinin Lipetsk filialı, Rusiya
398050, Lipetsk, İnternatsionalnaya küç. 12B

²P.P. Semyonov-Tyan-Şanski adına Lipetsk Dövlət Pedaqoji Universiteti, Rusiya
398020, Lipetsk, Lenin küç. 42

³Rusiya Federasiyası Hökuməti yanında Maliyyə Universiteti, Rusiya
125167, Moskva, Leninqrad pr. 49/2

⁴Rusiya Dövlət Sosial Universiteti, Rusiya
129226, Moskva, Vilhelm Pik küç. 4, tikili 1

⁵Azərbaycan Respublikası Elm və Təhsil Nazirliyi, Coğrafiya İnstitutu, Azərbaycan
AZ1073, Bakı, H. Cavid pr. 117

⁶Mingəçevir Dövlət Universiteti, Azərbaycan
AZ4500, Mingəçevir, D. Əliyeva küç. 21

⁷Rusiya Biotexnologiya Universiteti, Rusiya
125080, Moskva, Volokolamsk şosesi, 11

⁸K.G. Razumovski adına Moskva Dövlət Texnologiyalar və İdarəetmə Universiteti (Birinci Kazak Universiteti), Rusiya
109004, Moskva, Zemlyanoy Val küç. 73

⁹D.İ. Mendeleyev adına Rusiya Kimya-Texnologiya Universiteti, Rusiya
125047, Moskva, Miusskaya meydanı, 9

*Məsul müəllif: inmakarov@fa.ru

Xülasə. Tədqiqatda rəqəmsallaşmanın və süni intellektin (Sİ) təşkilatların insan kapitalına təsiri araşdırılır və onun inkişafının səmərəliliyinin qiymətləndirilməsi üçün yanaşma təklif olunur. Yerli və beynəlxalq tədqiqatların tənqidi təhlili əsasında insan kapitalı

bilik, bacarıq, təcrübə, motivasiya və sağlamlıq baxımından nəzərdən keçirilir, onun səmərəliliyi isə məhsuldarlıq, innovasiya, işçilərin məmnunluğu və təşkilati adaptasiya qabiliyyəti göstəriciləri əsasında qiymətləndirilir. Tədqiqatda rəqəmsallaşma və süni intellekt işçilərin kompetensiyalarını, əmək bazarının tələblərini, əməyin təşkilini və insan kapitalının idarə edilməsini dəyişdirən əsas amillər kimi müəyyən edilir. Avtomatlaşdırmaya, rəqəmsal bacarıqlara, çevik məşğulluğa, kadr hazırlığına və texnologiya tutumlu mühitdə işçilərin dəyişən roluna xüsusi diqqət yetirilir. Çəkili göstəriciləri özündə birləşdirən və təşkilatlara qiymətləndirmə meyarlarını sahə xüsusiyyətlərinə, təşkilatın ölçüsünə və strateji məqsədlərinə uyğunlaşdırmağa imkan verən kompleks qiymətləndirmə yanaşması təklif olunur. Tədqiqatda, həmçinin risk amillərinin təsiri nəzərə alınmaqla insan kapitalının səmərəliliyinin və onun zaman üzrə inkişafının qiymətləndirilməsi üçün düsturlar təklif edilir. Əldə edilən nəticələr davam edən rəqəmsal transformasiya şəraitində işçilərin kompetensiyalarına və təşkilati adaptasiya qabiliyyətinə davamlı investisiya qoyuluşunun əhəmiyyətini vurğulayır.

Açar sözlər: *insan kapitalı, rəqəmsallaşma, süni intellekt, səmərəlilik, sərişlər, əmək bazarı*