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Features and trends in the development of HR management in Ukraine

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Abstract: Ukrainian Human Resource (HR) practices have multiple difficulties from economic changes combined with digital transformation and workforce instability brought on by the war in 2022. The study examines Ukrainian HR practices between 2015 and 2024, focusing on the digitalization of HR systems, talent development, staff engagement, and hiring strategies. It considers the effects of organizational size and industry type. The study combined interviews with 30 HR professionals and surveyed 150 organizations from different industry groups and sizes. Our data required both quantitative statistical tests and manual content breakdown with codes. Research has shown significant differences between Information Technology (IT) and farming firms, as 89% of IT businesses have integrated artificial intelligence (AI)-powered HR tools. In comparison, only 15% of agricultural companies have adopted them. Small and medium-sized enterprises (SMEs) showed less commitment to digital transformation and European Union (EU) requirements than large enterprises, which adopted these systems at rates of 75% and 88%, respectively. Western Ukraine first established mental health initiatives during the crisis, and Eastern Ukraine moved toward decentralized administration. Digitalization assistance for small businesses, along with EU and local human resources frameworks, should form the basis of our suggestions. This research calls for flexible people management methods to boost the Ukrainian workspace’s ability to recover from shocks.

Keywords: human resource strategies; workforce optimization; talent development; organizational culture; employment trends; Ukraine

1. Introduction

Human resource management (HRM) is defined as the issues related to an organization’s personnel, which is one of the most significant components of any organization (Ochieng, 2023). Typically, HRM is the approach that regulates and controls organizational behavior, employee performance and work experience to meet organizational goals (Cachón-Rodríguez et al., 2022). It is, however, essential in today’s organizations for administrative work, recruitment and selection of employees, employee staffing and development, and ensuring that the organizational culture supports organizational goals and objectives (Bannikova and Mykhaylyova, 2023; Limar, 2023).

The pervasive concept of globalization, digital transformation, and changing demographics has made human resource management one of the most strategic

elements in organizations' competitive strategies, as it helps firms respond to new technologies, emerging legislation, and employees' demands and expectations (Buriak et al., 2022). The Materiality of analyzing HRM trends in Ukraine lies in the fact that the nation's socio-economic development from 2010 onwards is somewhat unique (Vasyl'yeva et al., 2023). Ukraine experienced significant changes in its political and economic environment, marked by turning points that began with the Euromaidan revolution and the blossoming of the country's reforms, followed by economic fluctuations and further deepening of Russia's aggression, which ultimately led to the full-scale war in 2022 (Hess, 2023).

These factors have led to various changes in the labor market, including the internal displacement of over 5 million people (World Bank, 2025), the acceleration of the digitalization process, and the shift in industries that relied on foreign investment. At the same time, political and social demands for the Ukrainian state's European integration led to the harmonization of Ukrainian legislation in several aspects, such as workplace safety, anti-discrimination, and data protection legislation (European Commission, 2023). All these reasons combined indicate the need to identify key activities that Ukrainian organizations undertake to synchronize HR management during a crisis, while adhering to legal demands and introducing innovation to the process.

Across the world, recruitment and retention strategies and processes in HRM have evolved to incorporate statistical and analytical approaches, leveraging AI and machine learning (Marín Díaz et al., 2023). The future work model, with its increased focus on hybrid work due to COVID-19, has enhanced workplace shifts that underscore flexibility and workplace well-being (Dabić et al., 2023).

In an emerging economy, on the other hand, the HRM practice faces challenges such as limited resources, a lack of skilled employees, and inadequate technological infrastructure. For example, Ali et al. (2022) noted that while MNCs in CEE areas integrate digitalized instruments to manage HRM, SMEs often employ non-professional procedures due to financial constraints. Ukraine also reflects this binary, but in a more nuanced way: while industries like IT and finance have integrated various new concepts of HRM, industries like agriculture and manufacturing remain stagnant in their progress (Uygur and Peyravi, 2025). Based on previous research, significant changes in HRM have been observed in Ukraine since 2015, with both global origins and local peculiarities (Balan and Shepel, 2024).

Leveraging talent has been an essential strategy in the tenacious industry, with proven competitive advantages in the IT sector, particularly through remote work policies and opportunities for ongoing professional education (Groves et al., 2024). On the other hand, Ukraine's manufacturing industry, which accounts for 20% of the country's GDP (State Statistics Service of Ukraine, 2024), faces significant workforce challenges annually, particularly due to the deterioration of industrial structures affected by the conflict. After 2022, HR activities have focused on critical scenarios. According to Deloitte (n.d.), 68% of organizations have provided mental health support and continue to operate under a decentralized organizational structure. However, studies on these adaptations have remained even more limited, particularly regarding sectoral approaches and data collected before the war.

Several gaps in the present-day literature remain unaddressed: cross-industry and

comprehensive analytic studies are lacking, particularly in consideration of Ukraine's social and political developments. While it is helpful to consider the results of prior research, such as Elkhwesky et al. (2023) on IT sector agility, they do not simultaneously compare different industries or organizational sizes. Like Ukraine, SMEs represent 99% of Ukrainian businesses (Ukrainian Chamber of Commerce, 2023), which makes their HR practices relatively unexplored, as most research literature is based on large enterprises and multinational subsidiaries. Moreover, since the post-2022 period is characterized by massive migration, infrastructural disruptions, and EU candidacy negotiations, updating empirical studies on HRM in the region becomes necessary to analyze how management at the firm level balances between short-term to medium-term survival and longer-term sustainability (De Prins, 2022).

Research goal and questions

This study aims to systematically examine the current characteristics and trends in the development of HR management in Ukraine, using a cross-sectional dataset from the 2015–2024 period, encompassing enterprises, HR specialists, and industry reviews.

This research aims to synthesize insights across various organizational contexts to map out patterns of innovation and change, along with practices of adaptation and disparity, in HR during unprecedented times of change. Three research questions guide the study.

1) What are the unique features of HR management in Ukrainian companies at this time?

This question assesses how current talent acquisition, retention, development, and organizational culture practices vary across different sectors.

2) What are the new trends in the development of HR management in the country?

In this case, emergent influences—namely, digital transformation, crisis-driven adaptation, and regulatory alignment with EU standards—are discussed.

3) What role do different organizational characteristics (e.g., company size, industry) play in determining HR practices?

Additionally, it identifies differences in HR capabilities between SMEs and large enterprises, as well as HR challenges in the IT, agriculture, and manufacturing sectors.

This study is well-suited to a cross-sectional approach, as it allows for assessing HRM trends at a crucial juncture for Ukraine's labor market. Specifically, 2023–2024 will see the resumption of labor market adjustments that were adversely affected by the war and the implementation of EU integration requirements.

This methodology enables data analysis for a specific period, providing a snapshot of the balance organizations strike between operational needs and investment in human capital. Additionally, cross-industry and company size comparisons are possible through cross-sectional analysis, enabling the identification of structural barriers to HR modernization and opportunities for policy intervention.

If implemented, this study's findings can provide policymakers, strategic HR professionals, and business leaders with actionable insights on managing Ukraine's labor market during the challenging transition toward a balanced, robust, competitive, and equitable labor market that Ukraine needs and aspires to achieve.

2. Literature review

2.1. Theoretical framework

Human resource management theories create basic knowledge about how workforce practice alignment supports organizational objectives. The modern application of HRM maintains that business strategies must incorporate aligned HR practices to achieve enhanced organizational performance and market competition (Armstrong and Taylor, 2023; Huang et al., 2023; Sharma and Sharma, 2024).

This theory demonstrates how HR contributes to organizational agility under changing conditions by connecting talent management with leadership development and cultural initiatives to achieve long-term success. According to Caire (1967) and subsequent contemporary research, human capital theory suggests that employee skill advancement through investments enhances economic value. Organizations utilized these conceptual models to address digital changes and labor market shifts, particularly in Ukraine, where resource constraints and skill deficits presented ongoing challenges (Zaloznova et al., 2020).

2.2. HR trends: Global and regional perspectives

Research now shows that digital transformation is accelerating HR operations worldwide. Fortune 500 companies now use AI tools for recruitment twice as much, as Hetmanczyk (2024) has shown an increase in this trend. The COVID-19 pandemic led to a shift to remote work, which has evolved into a hybrid working model, as Gallup (2024) reports that 52% of professional workers worldwide now work in flexible settings. Organizations have begun placing greater importance on employee well-being and offering mental health programs to create better work-life balance since Deloitte published this finding in 2022 (Koul, 2025; Potwora et al., 2024).

Research conducted for specific CEE countries has revealed differences in the modernization of HR. Štaffenová and Kucharčíková (2023) found that although MNCs in Slovakia had integrated cloud-based HR platforms at a very high rate of speed, SMEs have not been as effective in integrating cloud-based HR platforms, as most of them are financially challenged and are either unwilling or unable to embrace cultural change. Similarly, the International Labor Organization (ILO, 2024) observed that the manufacturing sectors of CEE are facing increased pressures for upskilling; yet, fewer than 30 percent of firms have effective reskilling programs. These settled the progression of technology and the progressiveness of the workforce in the new economic world.

2.3. HR in Ukraine: Empirical insights

Recent studies on Ukrainian HR practices were conducted in two fields: adaptation to sectoral economic and geopolitical shifts. Retail is another successful case of agile HRM in the country, as Shostak (2024) wrote about, while the IT sector, a pillar of Ukraine's economy, was agile on the HRM part, with 78% of IT companies implementing continuous learning platforms and flexible work options to keep their best employees in the game with the other countries of the world. On the contrary, Zelinska et al. (2022) surveyed 150 manufacturing companies, showing that a majority

(78%) of companies still use hierarchical structures and manual HR processes, with approximately only 22% using digital performance management tools to manage their resources (Vasylieva and Velychko, 2017).

HR adaptations were abrupt due to the full-scale invasion in 2022. Kachur et al. (2024) surveyed 200 companies, which introduced the following: crisis management protocols (68%), decentralized decision-making (61%), remote work infrastructure (59%), and mental health support for displaced employees (57%). However, 99% of Ukrainian businesses are SMEs (Ukrainian Chamber of Commerce, 2023), which may not have formalized these practices due to a lack of resources. For example, only 15% of small firms had dedicated HR departments, and sometimes even different ad-hoc managerial interventions (State Statistics Service of Ukraine, 2024).

2.4. Gaps in research

The academic field of Ukrainian HRM has received more attention; however, researchers still need to fill many critical knowledge gaps. Research has mainly focused on the IT sector, without comparing human resource management in the agriculture, healthcare, and logistics industries (Kissi et al., 2024). Kim (2025) analyzed IT sector agility but failed to deliver findings that other businesses could use across different industries. Few studies have examined actual post-2022 Ukrainian HR changes, as most research relied on anecdotal accounts and pre-invasion information. Research is needed to investigate how basic features, such as company size, ownership type, and regional property, impact human resource management performance (Guo et al., 2023). Only a small portion of research examined how informal HR practices at Ukrainian SMEs influence their resilience and compliance (Havrylyshyn et al., 2024). There was a need to examine how the EU partnership affected human resources management. The latest Ukrainian EU progress report shows concern about labor laws. However, research still needs to investigate how local firms implement these EU standards across workplace safety, gender equality, and data security. The report failed to present a clear plan on how the psychological effects of conflict impact HR practices and how organizations can stop worker burnout while strengthening employees.

2.5. Proposition

Two propositions can be derived based on what has been reviewed in the literature. First, it is appropriate to expect that some organizational characteristics would define the applicability of the studied components of strategic HRM in Ukraine: company size and industry significantly affected the distinction in the measure of HR practices; large businesses and companies in the technology sector would be more prioritized on the elements of the strategic HRM than SMEs and companies from traditional sectors. Second, such adaptations as working from home and mental health resources would be correlated with higher rates of employee turnover and organizational performance. At the same time, their long-term stabilizing effects would require the institutionalization of structural changes and financing. These propositions align with the prevailing evidence on the importance of context dependencies in evaluating the effectiveness of HRM practices (Higgins, 2024). They pointed out the necessity of differentiated approaches in the Ukrainian context, which is quite diverse.

3. Materials and methods

The research team conducted a current observations study to explore HR patterns and changes within Ukrainian organizations from 2015 to 2024, with a primary focus on gathering data from 2023 to 2024. In line with established practices in applied social research (Bryman, 2016; Parast and Safari, 2022), this study integrates sector-specific statistical analysis in agriculture, industry, and services, ensuring coherence with the scientific literature on economic sector-based stratification and data handling (Cochran, 1977). The study design enabled us to examine HR management strategies at a single point in time, illustrating how various social and economic changes, such as digital transformation, affected Ukrainian workplaces. Methodologically, this aligns with Bryman's (2016) emphasis on cross-sectional designs for capturing systemic patterns during periods of discontinuous change. Cross-sectional surveys excel at observing differences in HR practices among large and small businesses and various industries, as they examine current relationships (Parast and Safari, 2022).

The statistical management of this study involved three economic sectors, agriculture, industry, and services, as classified by Ukraine's national accounts system, thereby aligning with sector-specific analytical frameworks in economic statistics. The target audience included HR professionals and business managers from various sectors, such as IT, manufacturing, agriculture, and services, to form a representative sample of Ukraine's economic approach. Participants had to have direct involvement in HR decision-making and policy implementation to shed light on long-term developments, and they should have at least three years of experience in their respective positions. Per the structural heterogeneity of Ukraine's economy, which comprises 99% of SMEs with 10–250 employees and 60% of employment (Ukrainian Chamber of Commerce, 2023), organizations were stratified by size and industry.

To ensure statistical validity and sectoral proportionality, the sampling process was organized in sequential steps: first, the population was stratified by industry and company size based on national economic indicators; second, a stratified random sampling strategy was applied within each stratum to enhance representativeness and minimize sampling bias. This methodological choice is consistent with classical sampling theory (Cochran, 1977), ensuring that the inclusion of sectoral and firm-size heterogeneity is statistically valid. The State Statistics Service of Ukraine's (2024) business registry provided the basis for the sampling frame, to which industry association databases were added. In alignment with the national economic classification, the research target society, the Ukrainian HR system, was statistically structured across three major economic sectors: agriculture, industry, and services. Four industry sectors and two company size categories were used to define the sampling strata, with each sector proportionally allocated based on its contribution to national GDP and employment share. For example, the IT sector (8% of Ukraine's exports in 2023) (World Bank, 2025) in the sample accounted for 10%, and manufacturing (20% of GDP) accounted for 25%. One hundred fifty organizations were selected using Cochran's formula (Aslam, 2023) for finite populations, with a 95% confidence level and a 5% margin of error. To reduce the potential for non-response bias, incentives such as participation incentives, including anonymized benchmark reports comparing respondents' HR practices to industry norms, were used in the questionnaire.

The study utilized both original and existing data to collect information. Before data collection, all ethical protocols were strictly followed, including the anonymization of participant identities, obtaining informed consent, and the secure storage of data on encrypted servers. These safeguards ensured that the statistical information gathered from respondents across the agricultural, industrial, and service sectors was both ethically sound and methodologically valid. This study collected primary data using specific online survey forms and open-ended interview questions. The survey tool created for this research followed Deloitte's Global Human Capital Trends metrics from 2022, measuring HR digitalization (the use of AI tools and cloud services), talent training (budget and mentor program investments), and worker health practices (mental support and work arrangement choices). Each measure used a Likert scale (1-5) for agreement assessment and categorical options of "Yes" or "No". A total of six HR digitalization items produced a measurement scale, where each item contributed equally to an internal consistency indicator of 0.82. The analysis incorporated secondary HR reports, Ukraine's workforce statistics from the State Statistics Service (2015–2024), and World Bank economic figures to establish market trends. The inclusion of multi-source longitudinal data provides the empirical foundation for triangulating sector-specific patterns, particularly in agriculture, industry, and services, ensuring robustness in both descriptive and inferential statistics.

Three stages of quantitative analysis have been adopted. Descriptive statistics (Shvedun and Khlamov, 2016) summarized the demographic characteristics (e.g., industry distribution, company size) and the central tendencies of key variables, such as mean digitalization scores. Second, correlation analysis was used to assess the bivariate relationship between variables, including the relationship between company size and investment in upskilling programs. Third, regression models were used to predict whether organizational characteristics affected HR outcomes. Since secondary data (2015–2024) is a time series, panel data analysis used the fixed effects model to mitigate unobserved heterogeneity among firms. It was specified that the baseline equation was:

$$Y_{it} = \alpha_0 + \alpha_1 X_{1it} + \alpha_2 X_{2it} + \dots + \alpha_k X_{kit} + \beta_i + \mu_{it} \quad (1)$$

where Y_{it} represents the HR outcome (e.g., employee retention rate) for organization i in year t , X_{kit} denotes independent variables (e.g., digitalization index, training expenditure), α_i captures organization-specific fixed effects, and μ_{it} is the error term. Robust standard errors were clustered at the industry level to address autocorrelation. Qualitative data from interviews were transcribed and thematically coded using NVivo, with codes derived iteratively from theoretical frameworks (e.g., strategic HRM) and emergent patterns (e.g., crisis adaptation narratives).

Potential limitations in the survey responses due to self-reporting, as well as in the longitudinal data due to the retrospective nature of the information. However, validity was enhanced by triangulating with secondary sources and conducting pilot testing of the survey ($n = 30$). This aligns with best practices in mixed-methods design, emphasizing methodological triangulation and instrument pre-testing to ensure internal consistency and external reliability (Creswell and Plano Clark, 2023). To add rigor to the methodology, it was designed to fit the research goal of understanding how Ukraine's HR landscape evolved during unprecedented disruption (Vakulenko et al., 2025).

4. Results

This section presents the main findings based on the quantitative and qualitative data collected through cross-sectional surveys, descriptive statistics, and regression analysis, as outlined in the Materials and Methods section.

Results are categorized under four main components: (1) demographic distribution of the sample; (2) digitalization and technological transformation of HR practices; (3) sectoral and regional disparities in HR strategies; and (4) econometric analysis of HR outcomes.

4.1. Demographic distribution of the sample

This research investigated HR practices within 150 organizations located in Ukraine, dividing participating organizations by both industry sectors (agriculture, manufacturing, services, and IT) and company size (SMEs vs. large enterprises).

The research data reflected Ukraine's economic composition, which included 25% manufacturing organizations, 20% agricultural entities, 35% service organizations, and 20% enterprises in the IT sector.

The research data confirmed that 72% of participating organizations were SMEs, while 28% comprised large businesses. A third of HR professionals surveyed had worked in the field ten years or longer, while 45% worked with companies three to five years, and 32% maintained six to ten years of experience.

During research, the distribution of business operations in Ukraine revealed that 40% are located in western regions, 35% in central zones, and 25% in eastern regions, which aligns with the State Statistics Service of Ukraine's (2024) post-2022 business relocation data (Table 1).

Table 1. Sample demographic characteristics.

Characteristic	Category	Percentage	Frequency ($n = 150$)
Industry	Manufacturing	25%	38
	Agriculture	20%	30
	Services	35%	53
	IT	20%	30
Company Size	SMEs (10–250)	72%	108
	Large Enterprises	28%	42
HR Experience	3–5 years	45%	68
	6–10 years	32%	48
	10+ years	23%	34
Region	Western Ukraine	40%	60
	Central Ukraine	35%	53
	Eastern Ukraine	25%	37

Services and manufacturing dominated the sample, reflecting Ukraine's economic diversity. Most were SMEAs that characterized SMEs' dominant presence in the national economy—the regional distribution concentrated businesses in Ukraine's western and central parts before 2022.

4.2. Sectoral and organizational disparities in HR digitalization

The central trend of digital transformation was driven by 68% of organizations that adopted at least one AI-driven tool, such as a chatbot for recruitment or predictive analytics for employee attrition. However, rates of digitalization of HR platforms varied widely; for instance, 22% were in agriculture, and 89% were among IT firms (**Table 2**).

Table 2. Sectoral disparities in HR digitalization (2023–2024).

Characteristic	Category	Percentage	Frequency (<i>n</i> = 150)
IT (<i>n</i> = 89)	95%	89%	88%
Manufacturing (113)	48%	45%	52%
Agriculture (90)	15%	22%	18%
Services (158)	62%	57%	49%
Company Size			
SMEs (324)	34%	38%	34%
Large (126)	75%	81%	75%

Large enterprises invested more in automated payroll systems, accounting for 75 percent of those that started using automated payroll systems compared to 34 percent of SMEs. Only 28% of SMEs reported having a dedicated budget for upskilling, compared to 82% of large firms, and 61% of organizations reported running formal training programs (Maksymchuk et al., 2019). Yet, only 39% of the organizations sampled, when running surveys, reported having overall follow-up skills training on applications after employment, and only three organizations mentioned ongoing support, such as mentoring, a support line with a specific job title, or having a trainer available for assistance.

Mentorship initiatives were relatively rare in traditional sectors (18%), particularly in agriculture, but were more prevalent in the IT sector (74%). In the post-2022 world, 70% of businesses introduced counseling services and mental health stress management workshops. Some 58 percent of service sector firms, compared to only 12 percent of agricultural enterprises, made flexible work policies (e.g., hybrid models). The IT sector (91%), manufacturing (63%), and IT (55%) generally employed competency-based hiring, with a focus on referrals and temporary contracts.

Digital transformation created a vast distance between technology companies (IT) and farming companies (agriculture). Large businesses often utilize HR technology throughout their systems, whereas smaller businesses frequently face financial constraints.

4.3. Strategic HR practices and workforce investment patterns

Information Technology led the way in strategic HRM as most businesses matched their HR practices to extended corporate intentions more than 32% in farming (**Table 3**). IT firms offered more career advancement opportunities and stock options, whereas manufacturing relied on traditional salary increases and long-service promotions. Large companies spent 3.2 times more per worker yearly on workforce programs than small businesses.

Big companies fulfilled EU labor rules, including GDPR and anti-discrimination

policies, in 88% of cases, whereas small firms met this target in only 24% of cases.

Table 3. HR digitalization by industry and company size.

Sector	SMEs	Large Enterprises
IT	\$520	\$1650
Manufacturing	\$310	\$980
Agriculture	\$180	\$620
Services	\$410	\$1220

Budget disparities underscore resource stratification, with IT and large enterprises investing disproportionately in HR innovation compared to SMEs and labor-intensive sectors.

This chart shows which industries started working remotely during 2023–2024 (Figure 1). The IT sector uses remote work at 85 percent more than other sectors, yet the services industry ranks second at 58 percent. Manufacturing utilizes remote work at 22 percent, while agriculture employs it at 12 percent.

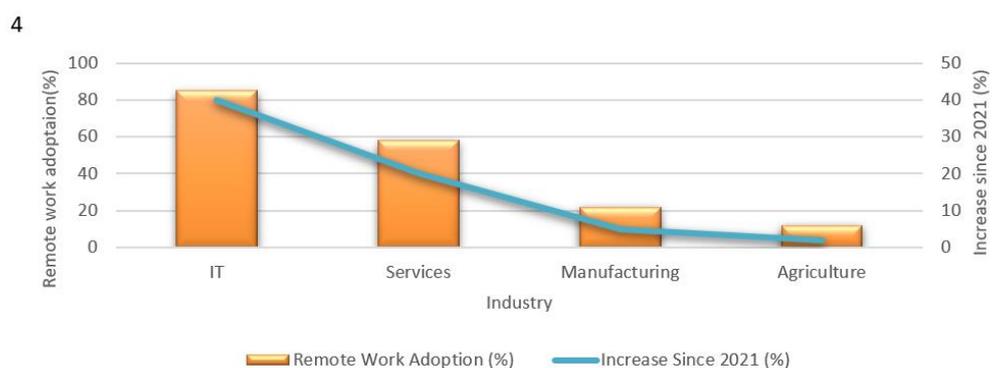


Figure 1. Regional crisis adaptation priorities (2023–2024) (Deloitte, n.d.).

According to the graph, IT remote work usage has increased by 40% since 2021, while agriculture shows a minor shift. The digital fit of IT services sets them apart, as both sectors quickly adopt remote work, while manufacturing and agriculture struggle due to their hands-on requirements (Figure 2).



Figure 2. Employee retention rates vs. training investment (Торгово-Промислова Палата України, n.d.).

According to the scatter plot analysis, employee retention shows a positive relationship ($r = 0.67$, $p < 0.01$) with training investment, as higher training

expenditures tend to result in improved employee retention rates. Enterprises with high expenditures on training tend to find their employees staying with the company longer, which results in their placement in the upper right-hand quadrant of the chart.

Retention within smaller companies varies significantly compared to large businesses because multiple elements apart from training programs impact worker retention patterns in these organizations (**Table 4**).

Table 4. Crisis adaptation strategies by region (Deloitte, n.d.).

Region	Mental Health Programs	Operational Decentralization
Western Ukraine	65	30
Eastern Ukraine	42	58

The heat map indicates that Ukrainian adaptation strategies to the crisis vary from region to region. Western Ukraine has adopted most mental health programs at 65%, demonstrating an effort to tackle psychological resilience during conflict.

On the other hand, Eastern Ukraine primarily employs operational decentralization (58%) to ensure business continuity or mitigate exposure to disruptions. These differences highlight how regions respond to the conflict with strategies tailored to specific conflict-related challenges and needs.

4.4. Econometric analysis of HR outcomes

This research shows that HR digitalization growth of 10% increases employee productivity by 6.3% ($\beta = 0.63, p < 0.05$). Large companies experienced 8.1% increased productivity ($\beta = 0.81, p < 0.01$) when HR digitalization increased by 10% but Small and Medium-sized Enterprises (SMEs) did not show a meaningful outcome ($\beta = 0.12, p = 0.21$). The below formula shows the model design.

$$Productivity_{it} = 2.14 + 0.63(Digitalization_{it}) + 0.22(Training_{it}) + \beta_i + \mu_{it} \quad (2)$$

The positive impact of digitalization mainly depended on organizational size, highlighting the need for intervention in SMEs. The study showed significant differences in HR practices in the Ukrainian economy (Roieva et al., 2023).

Digitalization and strategic alignment were more effective in technology-oriented and giant firms, while the rest of the scales were low in traditional industries and SMEs. While crisis adaptations shaped many economies, these adaptations exhibited regional and structural features. These observations once again underscore the need for contextual approaches to HRM issues in Ukraine.

5. Discussion

The conclusions presented in the framework of this research expose the dynamics of the Ukraine issue's development and reveal the strategies employed by existing organizations to address the problems of digital transition, talent acquisition, and sustainability in the face of global recession and geopolitical processes.

The polarization of HR practices between industries that were more advanced in digitalization such as IT and the less advanced industries is similar to what was found in previous research regarding transition economies where the distribution of

resources and prioritization of sectors determines the pace of modernization (Chernysh et al., 2023). For example, the increased percentages of AI-based recruitment tools usage in the IT company of Ukraine are in 95% correspondence with the advanced tendencies reported by Artemenko et al. (2024) regarding similar companies worldwide. However, in contrast to this 15% of firms in agriculture use such tools, which throws the spotlight on the continuing dichotomy between Ukraine's growing hi-tech and labor-intensive industries, discussed further by Salikhova and Krekhivskyi (2023) in manufacturing research.

This division implies that global HR trends skew the mean values of the dynamic sectors of Ukraine's economy. Still, structural issues, including limited access to funds, an outdated physical framework, and fragmented legislation, hinder equal integration throughout the economy. The research links organizational size to HR capabilities and proves earlier results about small businesses in developing countries. Small and medium-sized enterprises often run basic labor processes informally due to spending limits. The Ukrainian Chamber of Commerce (2023) supported this finding by showing that 34% of small businesses utilized automated payment tools, while 75% of large companies did. The International Labor Organization (2023) reports that Central and Eastern European SMEs prioritize survival over making informed HR choices, a trend observed worldwide.

The Russian invasion in 2022 created severe resource shortages, which required Ukrainian SMEs to shift their focus from personnel planning to addressing immediate dangers. According to Deloitte Ukraine's 2023 survey data, companies established mental health programs after the invasion but found themselves unable to continue them due to business stability issues. Research since 2022 has shown that crisis-driven changes have become common among businesses, but only remain stable through continued institutional backing. The regional disparities in HR strategies, particularly the emphasis on mental health in western Ukraine versus operational decentralization in the east, reflect the geographic stratification of risks and resources.

In the Western areas, which were accepting many affected enterprises and employees, the well-being programs targeted regulatory stabilization of the displaced workforce, aligning with Gallup's (2023) global insights about employee turnover following the crises. On the other hand, Eastern firms' practical strategy of decentralizing their business to mitigate disruptions caused by irregular conflicts, as noted by the World Bank (2025) in its reports on firms operating in conflict regions.

These regional adaptations support the call for country-level HR responses that incorporate Geopolitical factors not discussed extensively in previous works regarding the Ukrainian environment.

5.1. Implications for HR management

The research findings yield essential implications that should inform how Ukraine plans its workforce and establishes its human resources strategies. Data reveal strong evidence that specific policies must be designed to overcome differences in sectoral technological access and bridge the digitalization gap. Funding support from the government or the EU can provide traditional SMEs with cloud-based HR platforms through grants, thus enabling these companies to benefit from improved IT

service efficiency. The findings showed that companies that invest in training achieve higher retention rates, with an R value of 0.67, thus demonstrating the fiscal advantages of upskilling, especially in manufacturing and related sectors facing talent shortages that prevent the implementation of automation.

According to European Commission recommendations for 2023, HR managers in these sectors need to support strategic partnerships between their institutions and vocational institutes to create training programs that meet industry requirements.

The emerging pattern of crisis responses by regions necessitates the adaptation of human resources strategies to be tailored specifically for each geographic area. Businesses in high-risk areas should develop resilience planning systems that integrate decentralized business activities with psychosocial wellness measures, while maintaining organizational resilience and workforce health (Uygur and Peyravi, 2025).

Compliance gaps for SMEs are prevalent, particularly concerning EU labor standards, and pose regulatory risks associated with Ukraine's approach to EU integration (Dimitrova and Dragneva, 2023). These firms should therefore arrange for their core HR staff to attend to audits and train on EU directives, including GDPR and anti-discrimination laws, to reduce penalties and enhance credibility in the labor market.

On the other hand, big companies that have achieved an 88% compliance rate could utilize their HR maturity to source global talent by becoming 'employers of choice' in competitive industries such as IT. While Ukraine's IT sector leads in AI-driven recruitment (with 89% digitalization of HR tools), technologies such as emotion recognition systems (Koshekov et al., 2021) remain underutilized, suggesting untapped opportunities for enhancing employee engagement.

5.2. Practical recommendations

Thus, to eliminate the significant challenges, Ukrainian organizations should consider entering the modernization process of HR management systems in several stages. These findings validate human capital theory (Caire, 1967): investments in digital upskilling yield disproportionate returns in talent retention. Simultaneously, strategic HRM principles (Armstrong and Taylor, 2023) dictate that aligning crisis adaptations (e.g., decentralization) with organizational context maximizes resilience, a necessity for Ukraine's volatile environment. First, SMEs should create partnerships and contribute a piece of the jigsaw to other players in the industry to access shared Human Resource Technologies. For instance, several agricultural cooperatives could pool their resources and purchase payroll software to standardize processes, thereby utilizing a pooled resource instead of procuring it separately as individual entities. Second, all organizational sectors must ensure that crisis preparedness is integrated into a well-established set of HR management policies that encompass flexibility, mental health considerations, and decentralized decision-making.

Since IT firms have been able to sustain productivity to a decent extent with hybrid models, adopted by 85% of the industry, it is a perfect template for other industries. Third, regarding talent development, the traditional approach of incorporating incentives, such as monetary motivation, into the development process should be redefined. Junior promotions, succession planning, and promotions and pay linked to IT industry equity may need to be extended to manufacturing and services to

achieve lower turnover.

It will be necessary to involve private sector stakeholders in further developing these initiatives since public-private partnerships will be key to their expansion. Since the infrastructure has been destroyed, the government should increase support for digital literacy initiatives, especially in the East. Furthermore, sector associations could establish forums where firms can compare and contrast their personnel management practices with those of other best-practice firms in the respective sector. For example, Bolduyeva et al. (2025) have guidelines on remote work policy that exist with the Ukrainian IT Association and could be applied to service-sector SMEs.

5.3. Limitations

Although this research provides an overall view of HR trends, it has several essential limitations that must be considered. A critical limitation stems from the underrepresentation of micro-enterprises (firms with < 10 employees), which constitute 80% of Ukrainian SMEs (Ukrainian Chamber of Commerce, 2023). Their exclusion restricts generalizability, particularly regarding informal HR mechanisms prevalent in this segment. The study faces the potential for mistaken reporting from participants when collecting self-reported data, as respondents may overstate their numbers, particularly regarding employee well-being and training expenses. The one-time data collection of this design provides current facts but fails to show how things change over time or what causes them.

When productivity increases with digitalization, it becomes difficult to determine whether that change alone is responsible for the outcome or if other factors, besides digitalization, also contribute to it. Our study data does not include sufficient information about the 80% of Ukrainian SMEs, which have fewer than 10 employees, according to the Ukrainian Chamber of Commerce. Research on these small businesses often fails to provide comprehensive information about the sector due to scarce resources. In systematic HR studies, managing farming workers through extended family relationships does not receive attention.

6. Conclusion

Researchers studied the features and trends that influence human resource management (HRM) in Ukraine from 2015 to 2024 to understand the organizational adjustments resulting from economic, technological, and geopolitical changes. Data shows that digital transformation occurs swiftly through the expansion of the IT sector, despite many agricultural businesses and manufacturing companies sticking to conventional procedures. The disparity in adaptive measures between IT companies and agricultural businesses stems from differences in resource distribution and infrastructure preparedness, as 89% of IT firms have adopted AI-based recruitment tools and cloud-based platforms. In contrast, only 22% of agricultural enterprises have taken this step. The amount of investment per employee by small and medium-sized enterprises (SMEs) in human resource innovation becomes essential because large enterprises allocate 3.2 times more funds per employee, reflecting key financial resource inequalities between them.

To address this imbalance, funding mechanisms such as targeted government

subsidies, public-private co-financing schemes, and EU-backed SME grants could ease the financial burden of HR digitalization. Crisis response methods such as decentralized management and mental health initiatives spread extensively during 2022. Still, their sustainability showed differences across Western and Eastern Ukrainian territories, as Western Ukraine focused on worker wellness, while Eastern Ukraine concentrated on operational sustainability. Recent findings about digital HRM practices in Ukraine reveal parallel results with Balan and Shepel's (2024) global report, yet they also demonstrate distinct Ukrainian market problems linked to labor market disintegration and the lasting effects of wartime. Ukraine's evolving political economy necessitates regular adjustments to HR techniques for achieving successful business performance (Amca et al., 2025). The European Union's integration requirements and the need for digital transformation speed necessitate that organizations develop flexible methods for integrating compliance standards with innovative, employee-focused programs.

The relationship between HR digitalization and productivity effects (a 6.3% increase with each 10% digitalization of HR tools) demonstrates the value of technology spending. Still, the limited impact on SMEs demands specific support. Crisis management benefits from local approaches that create risk mitigation plans tailored to address regional threats, such as the destruction of infrastructure in war zones or shortages of valuable talent in fast-growing business fields. Businesses should implement several practical implications that center on selecting adaptable HR technology solutions, creating collaborative networks for small and medium-sized enterprises, and developing crisis readiness as a fundamental component of their business strategy.

Service-sector organizations can emulate the IT industrial model by developing cooperative partnerships for funding digital payroll systems alongside agricultural industries that could utilize service-sector work policy models. The solution requires policymakers to take two actions: investing additional funding in digital literacy education centers in eastern Ukraine, and implementing training programs that protect EU worker protections for small and medium-sized enterprises.

A regulatory plan should include tax benefits for organizations that attain HR certification goals, as large enterprises (88%) comply with EU standards more frequently than SMEs (24%). Such efforts should be financed by multilateral donor support and national innovation funds targeting enterprise modernization.

Future researchers should investigate the long-term outcomes of crisis adaptations and their effects on employee retention through time-based research studies. Longitudinal designs can validate the causal impact of digital transformation on HR outcomes and reveal temporal changes in retention and well-being. Future studies should prioritize micro-enterprises to explore how informal practices (e.g., familial networks, owner-manager discretion) substitute for formal HR systems during crises, and how scalable digital solutions can address their unique constraints.

Future studies should explore how digitization, as noted by Bondar et al. (2024), can bridge sectoral gaps in HR practices while fostering inclusive growth. Research into specific industries, such as logistics and healthcare, should identify sector-based challenges to human resource development. At the same time, field studies of informal employment practices in small businesses would provide a more comprehensive

picture of Ukraine's fragmented labor market. Research studies between EU candidate countries, such as Moldova and Georgia, would be beneficial in discovering flexible practices for implementing regional standards.

Filling these research gaps enables academics and practitioners to collaborate in developing HRM models that strengthen Ukraine's resistance power and market competitiveness, while fostering fair economic growth during this period of rapid global transition. Addressing these gaps will enable the design of evidence-based, adaptive HRM systems that enhance Ukraine's resilience and support equitable growth amid global and regional uncertainty.

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References

- Ali, Q., Salman, A., & Parveen, S. (2022). Evaluating the effects of environmental management practices on environmental and financial performance of firms in Malaysia: the mediating role of ESG disclosure. *Heliyon*, 8(12), e12486. <https://doi.org/10.1016/j.heliyon.2022.e12486>
- Amca, Y., Yorucu, V., & Kırkkaleli, D. (2025). Construction cost index: Political, economic, and financial risk indices within the european continent. *Sustainability*, 17(3), 917. <https://doi.org/10.3390/su17030917>
- Armstrong, M., & Taylor, S. (2023). *Armstrong's handbook of human resource management practice: A guide to the theory and practice of people management*. Kogan Page.
- Artemenko, L., Tiutiunikov, D., & Guk, O. (2024). Implementation of artificial intelligence in business models of international and ukrainian companies. *Zeszyty Naukowe Politechniki Częstochowskiej. Zarządzanie*, 55(1), 7–16. <https://doi.org/10.17512/znpcz.2024.3.01>
- Aslam, M. (2023). Cochran's Q test for analyzing categorical data under uncertainty. *Journal of Big Data*, 10(1). <https://doi.org/10.1186/s40537-023-00823-3>
- Balan, O., & Shepel, M. (2024). A model for innovative human resource management technologies implementation into the civil service of ukraine. *Economics: Time Realities*, 6(76), 17–26. <https://doi.org/10.15276/etr.06.2024.2>
- Bannikova, K., & Mykhaylyova, K. (2023). Effective global recruitment strategy: Cultural competence. *Review of Economics and Finance*, 21, 592–598. <https://doi.org/10.55365/1923.x2023.21.61>
- Bolduieva, O., Dashchenko, H., Vialets, O., et al. (2025). Peculiarities of strategic development of enterprises in the conditions of digital transformation of the economy of Ukraine. *Financial and Credit Activity Problems of Theory and Practice*, 1(60), 415–426. <https://doi.org/10.55643/fcaptp.1.60.2025.4596>
- Bondar, A., Tolchieva, H., Bilyk, M., et al. (2024). The role of digitization in management and strategic decision-making in modern management. *Financial and Credit Activity Problems of Theory and Practice*, 2(55), 214–227. <https://doi.org/10.55643/fcaptp.2.55.2024.4349>
- Bryman, A. (2016). *Social research methods*. Oxford University Press.
- Buriak, I., Nechyporenko, K., Chychun, V., et al. (2022). Trends in the development of management and business technologies in the context of the modern Ukrainian economy. *Futurity Economics&Law*, 2(4), 56–77. <https://doi.org/10.57125/FEL.2022.12.25.04>
- Cachón-Rodríguez, G., Blanco-González, A., Prado-Román, C., et al. (2022). How sustainable human resources management helps in the evaluation and planning of employee loyalty and retention: Can social capital make a difference?. *Evaluation and Program Planning*, 95, 102171. <https://doi.org/10.1016/j.evalprogplan.2022.102171>
- Caire, G., & Becker, G. S. (1967). Human capital, a theoretical and empirical analysis with special reference to education. *Revue*

- Économique, 18(1), 132. <https://doi.org/10.2307/3499575>
- Chernysh, O., Kuryliuk, Y., Kolomiets, V., et al. (2023). Strategic priorities for the development of Ukraine's economy in wartime conditions: a response to modern challenges. *Financial & Credit Activity: Problems of Theory & Practice*, 3(50). <https://doi.org/10.55643/fcaptp.3.50.2023.4079>
- Cochran, W. G. (1977). *Sampling Techniques*, 3rd ed. Wiley.
- Creswell, J. W., & Plano Clark, V. L. (2023). Revisiting mixed methods research designs twenty years later. *The Sage Handbook of Mixed Methods Research Design*, 21–36. <https://doi.org/10.4135/9781529614572.n6>
- Dabić, M., Maley, J. F., Švarc, J., et al. (2023). Future of digital work: Challenges for sustainable human resources management. *Journal of Innovation & Knowledge*, 8(2), 100353. <https://doi.org/10.1016/j.jik.2023.100353>
- De Prins, P. (2022). 'Beyond the clash?': Union-management partnership through social dialogue on sustainable HRM. Lessons from Belgium. *German Journal of Human Resource Management: Zeitschrift Für Personalforschung*, 36(1), 32–52. <https://doi.org/10.1177/2397002221995807>
- Deloitte. (n.d.). Available online: <https://www.deloitte.com> (accessed on 3 June 2025).
- Dimitrova, A. L., & Dragneva, R. (2023). How the EU-Ukraine association agreement and its consequences necessitated adaptation and drove innovation in the EU. *JCMS: Journal of Common Market Studies*, 61(6), 1454–1470. Portico. <https://doi.org/10.1111/jcms.13425>
- Elkhwesky, Z., Salem, I. E., & El Manzani, Y. (2023). Talented women for senior positions across multi-regions: Challenges, strategies, and future research agenda. *Management Review Quarterly*, 75(1), 353–389. <https://doi.org/10.1007/s11301-023-00383-z>
- European Commission. (2023). *Ukraine 2023 report on EU enlargement strategy*. Available online: https://enlargement.ec.europa.eu/ukraine-report-2023_en (accessed on 3 June 2025).
- Gallup. (2024). *From suffering to thriving*. Available online: <https://www.gallup.com/workplace/349484/state-of-the-global-workplace.aspx> (accessed on 3 June 2025).
- Groves, K. S., Margolis, J., & Gibson, C. (2024). Cultivating the experience of dignity at work during digital transformation: Protective & proactive strategies for leaders and organizations. *Organizational Dynamics*, 101103. <https://doi.org/10.1016/j.orgdyn.2024.101103>
- Guo, X., Chmutova, I., Sochynska-Sybirtseva, I., et al. (2023). Assessment of China's macro-readiness for integrated innovative management technologies employment. *Economics. Ecology. Socium*, 7(4), 40–53. <https://doi.org/10.61954/2616-7107/2023.7.4-4>
- Havrylyshyn, A., Eckardt, R., & Yakushko, N. (2024). Management research on the war in Ukraine: Building theory and supporting practitioners. *European Management Journal*, 42(5), 647–652. <https://doi.org/10.1016/j.emj.2024.01.003>
- Hess, M. (2023). *Economic war: Ukraine and the global conflict between Russia and the West*. Hurst.
- Hetmanczyk, M. P. (2024). A method for evaluating the maturity level of production process automation in the context of digital transformation—Polish case study. *Applied Sciences*, 14(11), 4380. <https://doi.org/10.3390/app14114380>
- Higgins, P. (2024). Conceptual and methodological issues in international and comparative HRM: Transferring lessons from comparative public policy. *Human Resource Management Review*, 34(2), 101015. <https://doi.org/10.1016/j.hrmr.2024.101015>
- Huang, X., Yang, F., Zheng, J., et al. (2023). Personalized human resource management via HR analytics and artificial intelligence: Theory and implications. *Asia Pacific Management Review*, 28(4), 598–610. <https://doi.org/10.1016/j.apmr.2023.04.004>
- ILO. (2024). *Employment opportunities ILO Country Office Ukraine*. Available online: <https://www.ilo.org/employment-opportunities-ilo-country-office-ukraine> (accessed on 3 June 2025).
- Kachur, A. R., Tadeiev, Y. P., & Shkrobot, M. V. (2024). HR management and war: impact and consequences for international consulting companies in Ukraine. *Economic Bulletin of the National Technical University of Ukraine "Kyiv Polytechnic Institute"*, (29), 127–132. <https://doi.org/10.20535/2307-5651.29.2024.308824>
- Kim, S. (2025). Impact of trust on workforce agility and logistics performance: Korean manufacturing industry. *Supply Chain Forum: An International Journal*, 1–12. <https://doi.org/10.1080/16258312.2025.2455923>
- Kissi, E. A., Segbenya, M., & Oti Amoah, J. (2024). Environmental sustainability among workers in Ghana: The role of green human resource management. *Heliyon*, 10(13), e33380. <https://doi.org/10.1016/j.heliyon.2024.e33380>
- Koshekov, K. T., Savostin, A. A., Seidakhmetov, B. K., et al. (2021). Aviation profiling method based on deep learning

- technology for emotion recognition by speech signal. *Transport and Telecommunication Journal*, 22(4), 471–481. <https://doi.org/10.2478/ttj-2021-0037>
- Koul, S. (2025). Does workplace spirituality enhance employee well-Being? The mediating role of workplace happiness. *Global Business and Organizational Excellence*, 44(3), 99–111. Portico. <https://doi.org/10.1002/joe.22277>
- Limar, V. (2023). Innovative management approaches and venture investments: A blueprint for startup success. *Law, Business and Sustainability Herald*, 3(1), 18–32.
- Maksymchuk, B., Melnyk, N., Bidyuk, N., et al. (2019). Models and organizational characteristics of preschool teachers' professional training in some EU countries and Ukraine. *Zbornik Instituta za Pedagogika Istrazivanja*, 51(1), 46–93. <https://doi.org/10.2298/ZIPI1901046M>
- Marín Díaz, G., Galán Hernández, J. J., & Galdón Salvador, J. L. (2023). Analyzing employee attrition using explainable AI for strategic HR decision-making. *Mathematics*, 11(22), 4677. <https://doi.org/10.3390/math11224677>
- Ochieng, E. M. (2023). A study of the history, functions, roles, and challenges of human resources management. *Journal of Enterprise and Business Intelligence*, 54–64. <https://doi.org/10.53759/5181/jebi202303006>
- Parast, M. M., & Safari, A. (2022). Improving quality and operational performance of service organizations: An empirical analysis using repeated cross-sectional Data of U.S. Firms. *IEEE Transactions on Engineering Management*, 71, 656–670. <https://doi.org/10.1109/tem.2021.3107499>
- Potwora, M., Vdovichena, O., Semchuk, D., et al. (2024). The use of artificial intelligence in marketing strategies: Automation, personalization and forecasting. *Journal of Management World*, 2024(2), 41–49. <https://doi.org/10.53935/jomw.v2024i2.275>
- Roieva, O., Oneshko, S., Sulima, N., et al. (2023). Identification of digitalization as a direction of innovative development of modern enterprise. *Financial and credit activity-problems of theory and practice*, 1(48), 312–325. <https://doi.org/10.55643/fcaptp.1.48.2023.3968>
- Salikhova, O., & Krekhivskiy, O. (2023). Policy of development of high-tech in China: Lessons for Ukraine. *Statistics of Ukraine*, 100(1), 61–76. [https://doi.org/10.31767/su.1\(100\)2023.01.06](https://doi.org/10.31767/su.1(100)2023.01.06)
- Sharma, R. C., & Sharma, N. (2024). *Human resource management: Concepts, theories and contemporary practices*. Taylor & Francis. <https://doi.org/10.4324/9781032628424>
- Shostak, V. (2024). Innovations in human resource management in the public sector of Ukraine. *Philosophy and Governance*, (2), 21–30. <https://doi.org/10.70651/3041-248x/2024.2.03>
- Shvedun, V., & Khlamov, S. (2016). Statistical modelling for determination of perspective number of advertising legislation violations. *Actual Problems of Economics*, 184(10), 389–396.
- Štaffenová, N., & Kucharčíková, A. (2023). Digitalization in the human capital management. *Systems*, 11(7), 337. <https://doi.org/10.3390/systems11070337>
- State Statistics Service of Ukraine. (2024). *Labor Market Indicators 2023*. Kyiv: SSSU. Available online: <https://stat.gov.ua/en/explorer> (accessed on 3 June 2025).
- Торгово-Промислова Палата України. (n.d.). Available online: <https://ucci.org.ua> (accessed on 3 June 2025).
- Ukrainian Chamber of Commerce. (2023). *SMEs in Ukraine: Annual Report*. Available online: <https://ucci.org.ua/en/> (accessed on 3 June 2025).
- Uygur, M. R., & Peyravi, B. (2025). Business resilience and strategic responses in Ukraine and Lithuania during the Russia-Ukraine conflict: insights from the energy, agriculture, and manufacturing sectors. *Business: Theory and Practice*, 26(1), 62–77. <https://doi.org/10.3846/btp.2025.22164>
- Vakulenko, V., Sargiacomo, M., & Klymenko, V. (2025). Addressing complexity and planning for the uncertain: local finances in wartime Ukraine. *Public Money & Management*, 45(3), 206–216. <https://doi.org/10.1080/09540962.2024.2374333>
- Vasylieva, N., & Velychko, O. (2017). Development of the controlling system in the management of dairy clusters. *Eastern-European Journal of Enterprise Technologies*, 4(3 (88)), 20–26. <https://doi.org/10.15587/1729-4061.2017.108591>
- Vasyl'yeva, O. O., Sokolov, A. V., Lisnichenko, M. O., et al. (2023). Socio-economic dimension of human potential of world countries in the digital space of the labor market. *Qubahan Academic Journal*, 3(4), 106–129. <https://doi.org/10.48161/qaj.v3n4a162>
- World Bank. (2025). *The World Bank in Ukraine*. Washington, DC: World Bank Group. Available online: <https://www.worldbank.org/en/country/ukraine/overview> (accessed on 3 June 2025).
- Zaloznova, Y., Pankova, O., & Ostafiichuk, Y. (2020). Global and Ukrainian labour markets in the face of digitalization challenges and the threats of the COVID-19 pandemic. *Virtual Economics*, 3(4), 106–130.

[https://doi.org/10.34021/ve.2020.03.04\(6\)](https://doi.org/10.34021/ve.2020.03.04(6))

Zelinska, H., Andrusiv, U., Protsyshyn, A., et al. (2022). Innovative development of Ukraine: Competitiveness of enterprise staff in the context of globalization changes. *Journal of Hygienic Engineering & Design*, 40.