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## The impact of innovation in the global economy on the development of the international labour market

**Abstract.** This study aimed to explore the impact of innovation on employment and the structure of the labour market within the context of the global economy, focusing on the dynamics of transformative processes driven by digitalisation, automation, and changing demand for new skills. A comprehensive methodological approach was adopted, incorporating analysis of sectoral employment shifts, the influence of technological advancement on international labour migration, and the implications of digital transformation for the legal regulation of the labour market. The findings confirm that innovation is a major force behind profound changes in the labour market. In 2023, 66% of tasks were carried out by humans, 33% by technologies, and only 1% through a hybrid format. Projections for 2030 indicate a decrease in the share of human labour to 33%, while hybrid work models are expected to rise to 33%, highlighting the growing need to

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develop digital competencies and adapt to emerging forms of employment. The rise of remote work presents new opportunities, yet it also exacerbates social inequality and intensifies global competition for highly skilled professionals. Virtual labour migration is partially replacing the traditional brain drain by enabling professionals to work remotely without the need for physical relocation. A comparative analysis of Germany and Ukraine revealed shared trends while also highlighting differing levels of adaptation. Germany, through the implementation of Industry 4.0 and flexible labour legislation, achieved a high employment rate (81.1% in 2023). In contrast, Ukraine is demonstrating dynamic growth in the information technology sector. The war has further complicated these processes, exacerbating structural instability in the labour market. The study confirmed that successful adaptation to an innovation-driven economy requires not only technological advancement but also effective education policy, social dialogue, and regulatory support. The practical significance of the research lies in deepening the understanding of transformative processes in the international labour market under the influence of innovation, offering an analytical foundation for further applied research

**Keywords:** scientific and technological progress; innovation; work motivation; international labour migration; employment; unemployment

## INTRODUCTION

Innovation is a key driver of modern economic development, exerting a significant influence on the labour market by creating new opportunities while also prompting major transformations in employment. Automation, digitalisation, and the advancement of artificial intelligence are reshaping the structure of labour demand, contributing to the growth of certain professions and the decline or disappearance of others. These processes affect not only domestic labour markets but also global trends in labour migration, presenting new challenges for governments and businesses alike.

As noted by I. Irtyshcheva (2021), technological progress is transforming not only the structure of employment but also the mechanisms of social protection, necessitating the adaptation of labour legislation and educational programmes. Digital technologies have a profound impact on economic growth, offering new avenues for improving the quality of life and boosting gross domestic product (GDP) through the expansion of the digital economy. Studies using regression models have shown that the digitalisation of key economic sectors – particularly in Ukraine – contributes to increased production and improved financial performance.

K. Zaslavska & Y. Zaslavska (2024) noted that, between 2015 and 2024, accelerating technological evolution has compelled countries to rethink their economic strategies. Global instability,

political crises – such as the war in Ukraine – technological breakthroughs, and shifts in consumer behaviour have created significant challenges for businesses, demanding rapid adaptation. Their study examines how these factors affect entrepreneurial structures, emphasising the need for strategic flexibility, innovation, and the reassessment of traditional models. In Ukraine, according to research by L. Dovgal *et al.* (2021), economic digitalisation is primarily focused on expanding the IT sector and attracting international investment in high-tech industries.

A major challenge is the growing need to develop new skills and retrain the workforce, as traditional forms of employment are gradually being transformed. N. Kraus *et al.* (2022) observed that demand is rising for highly qualified professionals in artificial intelligence, data analysis, and cybersecurity, while low-skilled workers increasingly face the risk of unemployment. This trend underscores the importance of educational and vocational training reforms to ensure the competitiveness of the labour force. The authors also point out that, in Ukraine's post-war context, artificial intelligence plays a dual role – as both a driver of economic recovery and a critical component of national cybersecurity. Innovation is also significantly reshaping international labour migration by altering its structure and underlying motivations. O. Nosova (2024) highlights that developed countries

are showing a growing interest in attracting highly skilled professionals through specialised labour immigration programmes.

Debates concerning the impact of innovation on unemployment remain inconclusive. As demonstrated by L. Yemelyanova & S. Mlynko (2024), technological progress has contributed to the emergence of new forms of employment – such as the gig economy and freelancing – which offer greater flexibility for workers. The relationship between technological development and unemployment is largely inverse: innovation tends to create more jobs than it eliminates. However, not all indicators of technological growth have a direct effect on unemployment levels, due in part to the presence of frictional unemployment and the influence of active social policies. Adapting labour legislation to the new realities of the labour market is a key challenge for many countries. As H. Lopushniak *et al.* (2023) emphasise, traditional mechanisms of social protection often fail to account for emerging employment models, such as work via digital platforms. This highlights the need to reform labour relations systems and introduce new standards of social security.

A comparison of the experiences of Germany and Ukraine reveals both commonalities and differences in the impact of innovation on employment. According to the study by N. Katalin & S.Z. Gábor (2022), Germany has focused on production automation and the integration of robotics, necessitating the retraining of a significant portion of the workforce and the implementation of lifelong learning systems. In contrast, Ukraine, as outlined in research by L. Melnyk *et al.* (2022), is adapting digital technologies to wartime conditions, leveraging the digital economy to support small businesses, develop the IT sector, and expand remote employment opportunities. The German model reflects a gradual transition towards Industry 4.0, with an emphasis on increasing productivity and manufacturing efficiency. By comparison, Ukraine's approach is more reactive and crisis-driven, aimed at enterprise survival and job retention through the use of digital tools.

The central issue addressed in this study lies in the fact that existing academic literature has largely considered innovation as a driver of

economic growth while paying insufficient attention to its direct impact on the international labour market. Key topics such as structural unemployment, changes in employment models, and the adaptation of labour migrants to new conditions resulting from technological transformations have remained underexplored. This research helps to fill that gap by focusing on how technological innovation has reshaped international labour relations, influenced worker mobility, and altered approaches to vocational training and employment.

This study aimed to determine the impact of innovation on the international labour market and to analyse changes in employment structures driven by digital technologies. The key objectives were: to identify the mechanisms through which automation, digitalisation, and artificial intelligence affect global labour markets; to analyse shifts in demand for occupations and worker qualifications linked to the development of innovative technologies; and to conduct a comparative analysis of the adaptive strategies employed by Ukraine and Germany in response to new labour market challenges.

## MATERIALS AND METHODS

The study employed an interdisciplinary approach, combining economic, sociological, and political analysis. Particular attention was given to the cases of Ukraine and Germany (as an example of a European Union member state), representing countries with differing levels of digitalisation and approaches to labour market regulation. The research was conducted in three stages between October and December 2024.

The first stage involved the systematisation of theoretical foundations regarding the impact of innovation on employment and labour market structures. It examined structural changes in employment and the influence of digital transformation on the demand for worker qualifications. This stage drew upon reports from international organisations such as the OECD (International Transport Forum, 2023) and the World Economic Forum (2024), as well as analytical data from national governments (Annual Economic Report, 2024).

The second stage focused on an empirical analysis of the impact of innovation on

international labour migration. A comparative review of trends in brain drain and talent circulation was conducted using data from the European Commission (Employment – annual statistics, n.d.), the McKinsey Global Institute (Lund *et al.*, 2021), the OECD (Özgüzel & Edo, 2023), and the World Bank Group (Constantinescu *et al.*, 2024). The role of digital technologies in the expansion of remote employment, outsourcing, and shifts in international labour mobility strategies was assessed.

The third stage involved an applied analysis of labour market transformation in Ukraine and Germany. A SWOT analysis was employed to compare the effects of digitalisation and Industry 4.0 on the labour markets of both countries. The study focused on labour law reforms and employment support mechanisms. The analysis drew on official EU and German legislation, including Directive (EU) 2021/1883 (2021), the Act on Part-Time Work and Fixed-Term Employment Contracts (2022), Directive (EU) 2024/2831 (2024), and the Skilled Immigration Act (2024). Statistical data from various think tanks were also reviewed (World Economic Forum, 2023; Dynamics of Ukraine's Tech Industry..., 2024; The Main Results of the Year..., 2024; Employment Growth in..., n.d.).

The methodological framework included comparative and SWOT analysis, which enabled the evaluation of the advantages and challenges associated with the innovative transformation of the labour markets in Ukraine and Germany. This approach made it possible to identify key employment trends in the digital economy and to assess national strategies in response to these developments. Comparative analysis was also applied to assess the impact of innovation on international labour migration, juxtaposing trends in brain drain and talent circulation using data from the European Commission (Employment – annual statistics, n.d.; Gig economy..., 2024), McKinsey Global Institute (Lund *et al.*, 2021), OECD (Özgüzel & Edo, 2023), and the World Bank Group (Constantinescu *et al.*, 2024). This method made it possible to identify both common and distinctive features of migration processes in countries with varying levels of innovation-driven economic development. The study examined the role of digital technologies

in the expansion of remote employment, outsourcing, and the evolving approaches to international labour mobility. A SWOT analysis was conducted to compare the advantages and challenges of labour market digitalisation in Ukraine and Germany. This included an assessment of IT sector development, the availability of education programmes aimed at enhancing digital skills, the risk of rising unemployment in traditional industries, unequal access to technology across regions, the potential for increased social inequality, and the displacement of low-skilled workers from the labour market.

The combination of research methods enabled not only the identification of general labour market trends influenced by innovation but also an evaluation of the effectiveness of government responses to these challenges. The interdisciplinary approach allowed for the integration of economic, social, and political dimensions of employment transformation, contributing to a comprehensive analysis of the impact of innovation on the international labour market.

## RESULTS AND DISCUSSION

Innovative processes – particularly automation and digitalisation – play a decisive role in transforming the labour market, shaping a new employment paradigm. These processes lead both to the creation of new jobs and to the displacement of a significant number of workers as human labour is replaced by technological solutions. Structural changes in the global economy, driven by innovation, affect the sectoral distribution of the workforce, alter professional requirements, and necessitate a rethinking of approaches to vocational education and training.

The effects of automation and digitalisation are uneven across different segments of the labour market, depending on the nature of the tasks performed and the extent to which human labour can be technologically substituted. Jobs involving routine tasks that can be codified and executed by robotic systems or artificial intelligence are the most susceptible to automation. These include low-skilled occupations in manufacturing, administrative support, and standard service industries.

According to research by the Organisation for Economic Co-operation and Development

(OECD) and the International Transport Forum (2023), automation is leading to job reductions in sectors such as mechanical engineering, the textile industry, food production, and agriculture. The introduction of industrial robots and autonomous production management systems significantly reduces the need for workers to perform mechanical tasks. In the administrative sector, the widespread adoption of software for automating accounting, data processing, and document management has led to a declining demand for office personnel. However, there is a

concurrent increase in tasks carried out through collaboration between humans and technology, reflecting a growing trend towards hybrid working models. As illustrated in Table 1, while in 2024 the majority of work tasks were still performed by humans (47%), this figure is projected to decrease to 33% by 2030, giving way to technological and hybrid models of work. This trend underscores the need for labour market adaptation, expansion of reskilling programmes, and the development of new competencies demanded by the digital economy.

**Table 1.** Distribution of work tasks between humans and technology, 2023-2030

Indicator	Humans	Technology	Hybrid
Percentage of tasks performed in 2023	66%	33%	1%
Projected percentage of tasks in 2030	33%	34%	33%

**Source:** compiled by the author based on World Economic Forum (2023)

The analysis of Table 1 highlights profound transformations in employment resulting from technological progress and digitalisation. According to the data presented, in 2023, 66% of all tasks were performed by humans, 33% by technologies, and only 1% in a hybrid format involving both human input and technological tools. This distribution indicates that, as of 2023, human labour still dominated most sectors, although the share of automated processes was already significant. However, the forecast for 2030 reveals a fundamental shift in this paradigm: the share of tasks performed by humans is expected to decrease to 33%, while the share executed solely by technology will remain stable at 34%. The most notable increase is projected in the hybrid category, which is expected to rise to 33%. This suggests that, in the future, most work processes will be based on collaboration between humans and technologies, with each contributing to different stages or aspects of a task. This trend does not so much imply the displacement of humans from the labour market as it signals a transformation in the nature of employment. Manual labour and routine tasks are increasingly being automated, while human input will concentrate on activities requiring creativity, critical thinking, emotional intelligence, and adaptability. The rise in hybrid working models also reflects the growing importance of technological

literacy and the need to develop digital competencies across a wide range of professions.

The studies by A. Gallego & T. Kurer (2022) and M. Javaid *et al.* (2024) confirm that automation and digitalisation are reducing the number of low-skilled jobs while simultaneously creating new opportunities in high-tech sectors. The authors emphasise that a key challenge lies in adapting educational programmes to prepare the workforce for the emerging economic landscape. However, the present study demonstrates that although technological change raises concerns about unemployment, current trends indicate employment growth in new areas of the economy. It is important to note, however, that the positive effects of automation largely depend on government policies related to education and reskilling.

Despite the decline in employment in traditional sectors vulnerable to high levels of automation, innovation is driving the development of new employment domains based on the adoption of advanced technologies and the transformation of production and economic models. In particular, there is a marked increase in demand for highly qualified professionals in the field of information technology. In the EU, employment in high-tech occupations grew by 23.8% between 2009 and 2022, with a further increase of 15.4% projected for the period 2022-2035

(Employment growth in..., n.d). Innovative technologies such as machine learning, neural networks, blockchain, and quantum computing are giving rise to new professional fields, including quantum algorithm engineers, ethical AI specialists, blockchain solutions analysts, neural network architecture developers, and cloud data management professionals. These roles require interdisciplinary competencies combining mathematical modelling, algorithmic analysis, computer engineering knowledge, and skills in managing complex information systems.

A high level of innovation has played a pivotal role in transforming the global economy, driving the emergence of new sectors and creating opportunities for job growth in high-tech industries. In particular, the rapid development of the IT sector, digital services, biotechnology, and renewable energy has generated new employment markets and contributed to increased labour

productivity. These sectors often exhibit higher added value and demand a highly skilled workforce, creating favourable conditions for economic growth and the modernisation of national labour market structures. This innovation-driven transformation of the global economy has led to a significant rise in the mobility of highly qualified professionals across borders. Developed countries that were early adopters of digital and technological innovations have faced a continuous demand for specialists in rapidly expanding sectors. This has intensified international competition for human capital and contributed to a large-scale redistribution of labour resources in favour of high-skilled mobility. As indicated by the data presented below (Table 2), the volume of international labour migration involving highly qualified personnel has increased considerably, underscoring the strategic importance of innovation in shaping the global labour market.

**Table 2.** Volume of international labour migration of highly skilled workers

Year	EU (thousands of people)	Germany (thousands of people)
2020	50.2	43.2
2021	67.7	57.6
2022	81.8	63.2
2023	89	69.3
2024	No data available	No data available

**Note:** data for Ukraine are unavailable due to the full-scale invasion, which has hindered data collection. Estimates are based on the number of Blue Card permits issued

**Source:** compiled by the author based on EU Blue Cards by type of decision... (2024)

Analysis of the data in Table 2 reveals a clear trend towards increased mobility of personnel in high-tech and knowledge-intensive sectors. The growth in the number of highly skilled labour migrants in the EU correlates with the rapid advancement of digital technologies, automation, artificial intelligence, as well as bio- and financial technologies. These developments are generating a new type of labour demand, focused on highly specialised occupations that require advanced education, practical skills, and professional experience. The most notable increase occurred in 2021-2022, coinciding with the post-pandemic phase of economic recovery, during which many countries accelerated digital transformation and intensified efforts to attract IT specialists, engineers, researchers, and healthcare professionals. High-skilled migration

serves as an indicator of a country's innovation appeal. EU member states have shown consistent growth in attracting such talent, progressively adapting their policies to meet the demands of the digital economy. At the same time, the situation in Ukraine remains exceptional due to the ongoing war, which, despite the country's considerable human capital, constrains its integration into international frameworks for high-skilled labour migration. Ukraine's absence from the table above is explained by several factors related to geopolitical instability and the specific conditions of the national labour market. Following the fullscale invasion by Russia in 2022, Ukraine has faced acute socio-economic turbulence. As a result, the domestic labour market has been severely disrupted, particularly in sectors involving highly qualified

employment, such as IT, engineering, and scientific research. The war has significantly limited the state's capacity to conduct systematic monitoring of migration flows and to compile up-to-date statistical records. Additionally, economic instability, infrastructure destruction, and the forced displacement of millions have reduced the predictability of labour market developments and hindered Ukraine's inclusion in formalised international comparisons.

However, these positive developments have also been accompanied by significant challenges. The automation and digitalisation of production processes – mainly within traditional sectors such as industry, transport, and agriculture – have led to widespread labour displacement. The reduction in such jobs has not only intensified competition for the remaining positions in the labour market but has also had a considerable impact on the socio-economic landscape of regions historically dependent on labour-intensive industries. The disappearance of stable industrial employment has contributed to rising unemployment, increased social tensions, and growing regional disparities. In countries with high levels of innovation, such as the USA, Germany, and South Korea, the share of automated processes in manufacturing exceeds 30%. While this enhances productivity, it simultaneously reduces the demand for low-skilled labour. For instance, in Germany – where the level of industrial automation is among the highest globally (around 400 robots per 10,000 workers) – the unemployment rate remains low at approximately 3%, due to substantial investment in worker retraining and the support of emerging high-tech sectors (Annual Economic Report, 2024). In contrast, Spain, where automation is progressing at a slower pace (around 100 robots per 10,000 workers), faces a youth unemployment rate exceeding 25%, indicating insufficient integration of innovation into the labour market (International Federation of Robotics, 2023).

Significant changes are taking place in education and vocational training as a result of structural shifts in the labour market driven by intensive digitalisation and automation of production processes. The growing demand for highly specialised professionals in fields such as information technology, robotics, cybersecurity,

and big data analytics necessitates deeper specialisation among workers and a systematic renewal of their skillsets. The traditional model of professional training – based on acquiring a foundational education within a single learning cycle – is gradually being replaced by the concept of lifelong learning, which emphasises the continuous development and refinement of skills (Petryshyn et al., 2023). The concept of lifelong learning has gained broad recognition among international policy and economic institutions such as the OECD, UNESCO, and the World Economic Forum (WEF), all of which stress the critical importance of flexible mechanisms for reskilling and upskilling in order to maintain workforce competitiveness in a post-industrial economy. For example, the World Economic Forum (2023) reports that 60% of workers will require additional training by 2027, yet only half currently have access to appropriate opportunities for skills development. The same report projects that 69 million new jobs will be created by 2027, while 83 million will be eliminated, resulting in a net reduction of 14 million jobs. These changes are being driven by the adoption of new technologies, digital transformation, and the transition towards green energy.

Although automation and digitalisation are driving structural changes in employment and reducing demand for low-skilled labour in traditional sectors, they are simultaneously contributing to the diversification of the labour market and the development of new economic segments founded on advanced technologies. In the long term, labour market adaptation to technological change will require a comprehensive approach that combines government-backed reskilling initiatives, investment in digital education, and the expansion of lifelong learning programmes. The introduction of adaptive educational models, the development of technology incubators, and the promotion of partnerships between academia and industry will support more effective utilisation of human capital and create the conditions for sustained economic growth.

Innovative processes are also reshaping international labour migration trends, leading to a redistribution of the workforce across countries and transforming the nature of employment on a global scale. Notably, the rise of remote work

has become a key driver of these changes. According to a study by D. Salon *et al.* (2022), in the USA, the proportion of workers expecting to work remotely at least a few times per month after the pandemic increased to 40%-50%, compared with 24% before the pandemic. Most of these new remote workers plan to continue doing so on a regular basis. As noted in the study by F. Braesemann *et al.* (2022), remote work tends to be polarised: the majority of tasks are concentrated in North America, Europe, and South Asia, while countries of the Global South participate only marginally. Moreover, remote work is more prevalent in urban areas, leaving rural regions behind, and it is also polarised by skill level: workers with in-demand skills secure well-paid assignments, whereas others face intense competition and low remuneration. These findings highlight that innovation – particularly the advancement of digital technologies – significantly influences international labour migration by driving the expansion of remote work and reshaping the structure of the global labour market.

Automation, digitalisation, and the development of advanced technologies are altering the supply and demand dynamics of the labour market, encouraging the growth of highly skilled mobility and reducing the demand for low-skilled labour. Developed countries that are at the forefront of technological innovation – such as the USA, Germany, the United Kingdom, Canada, Australia, Norway, and Finland – are emerging as primary destinations for highly qualified professionals. This process, commonly referred to as brain drain, has been intensified by the high demand for professionals in fields such as artificial intelligence, machine learning, cybersecurity, robotics, biotechnology, engineering, and financial services. The proportion of highly skilled migrants in EU countries rose from 17% in 2010 to 26% in 2022 (Özgüzel & Edo, 2023). In response to these developments, advanced economies have adapted their migration policies, creating more favourable conditions for attracting foreign specialists. Initiatives such as the European Blue Card (Directive (EU) 2021/1883, 2021) enable the recruitment of professionals in strategically important sectors, thereby supporting the competitiveness of research and technology-based industries.

In 2023, Germany reformed its Skilled Immigration Act (2024), simplifying visa procedures for IT professionals, engineers, and researchers.

The phenomenon of brain drain has traditionally been understood as the emigration of highly skilled professionals from developing countries to economically advanced nations. Such migration results in a loss of intellectual capital, which can hinder the economic development of the countries of origin. However, with the expansion of digital technologies and remote employment, this dynamic is shifting: an increasing number of professionals now remain in their home countries while working for international companies. This trend signals the emergence of a new model of global talent mobility, referred to as virtual labour migration. The COVID-19 pandemic acted as a catalyst for the growth of remote work, prompting many companies to reassess their approaches to recruitment. Research conducted by the McKinsey Global Institute (Lund *et al.*, 2021) found that approximately 20%-25% of the workforce in developed economies can work remotely on a permanent basis without any loss in productivity. At the same time, the World Bank notes that remote employment remains less widespread in developing economies due to uneven access to digital infrastructure, although its prevalence is steadily increasing (Constantinescu *et al.*, 2024).

The growth of remote employment is transforming traditional models of international migration. Highly skilled professionals from developing countries are increasingly able to work for foreign companies without the need for physical relocation. According to the World Economic Forum (2024), more than 30% of specialists in programming, graphic design, and online marketing were engaged in remote international collaboration in 2024. This trend is intensifying competition between developed and developing countries for highly qualified labour, prompting the latter to adapt their policies to encourage talent retention within national economies.

The study by H.E. Wanniarachchi *et al.* (2020) explores the intensifying global competition for skilled professionals in the context of labour market globalisation. The authors highlight that developed countries are actively cultivating favourable conditions for attracting foreign

talent, thereby reinforcing their technological advantages. In contrast, developing countries are experiencing losses through brain drain, which hampers the implementation of innovation-driven strategies. The research by A. Vega-Muñoz *et al.* (2021) focuses in particular on the role of government policy in mitigating talent migration. Researchers note that fostering innovation through state support for research institutions and technology parks can partially offset the effects of human capital outflow. However, the authors emphasise that without active engagement from private investors, such measures tend to be of limited effectiveness. B. Bhardwaj & D. Sharma (2023) highlight the ambiguous outcomes of these policies. In their view, the roles of private investors and the state largely depend on a country's economic structure and level of institutional development. They argue that there is no universal model for encouraging the retention of highly skilled professionals; rather, such measures must be adapted to the national context. Within the scope of their study, it was found that the effectiveness of such strategies largely hinges on a country's integration into global innovation chains and its ability to provide not only financial incentives but also long-term career development opportunities. While the cited authors focus on financial and institutional factors, the present research underscores the importance of systemic interaction between the education sector, the labour market, and innovation policy as a key condition for the effective retention of human capital.

O. Oliinyk *et al.* (2021) examined the challenges of attracting and retaining human capital in a transitional economy. The authors argue that even with active investment from the private sector, the decisive factor in encouraging professionals to remain in the country is not limited to the level of remuneration, but also includes institutional guarantees, stability, access to quality infrastructure, and opportunities for professional growth. M. Simionescu *et al.* (2021) supported this perspective, emphasising that a transparent regulatory environment, public trust in institutions, and a predictable socio-economic policy are critical to the development of a long-term talent retention strategy. The authors maintained that only

under such conditions can investment in human capital yield sustainable results. In this context, the conclusions of the present study align with those of the aforementioned scholars, while also highlighting the more complex nature of the issue. Specifically, the findings suggest that the presence of basic institutional conditions alone does not guarantee the retention of specialists if there is no effective system for adapting to rapid changes in the global labour market. Furthermore, the study demonstrates that a successful human capital retention strategy requires not only institutional stability but also the capacity of national education and professional development systems to respond swiftly to evolving labour market demands – an aspect often overlooked in existing approaches.

The study by G.I. Piroșcă *et al.* (2021) highlights the structural transformations driven by digital labour migration, emphasising that the growing prevalence of remote work necessitates a revision of labour legislation, particularly concerning protecting the rights of remote workers. The authors argue that traditional regulations, which focus on physical presence within the national labour market, no longer reflect the realities in which professionals increasingly work for foreign companies without leaving their home countries. This assertion aligns with the findings of the present study, which indicate the rising popularity of virtual employment models – especially among highly skilled workers in developing countries – where such forms of employment are viewed as a driver of economic growth. By contrast, J. Chen & Z. Xu (2024) focus on the consequences of intensifying global competition for talent, exacerbated by the blurring of boundaries between domestic and international labour markets. They underscore that digital migration deepens inequalities between workers with access to digital skills and those employed in traditional sectors. This corresponds with the findings of the present research, which establish that while digital employment creates new opportunities for highly qualified professionals, it simultaneously intensifies social polarisation, as workers in lower-skilled sectors are frequently excluded from these transformations.

Furthermore, studies by F. Stephany *et al.* (2021) and S. Lykholat *et al.* (2020) indicate

that digital labour migration is reshaping the corporate strategies of large companies, which are increasingly adopting distributed teams and hybrid working models. This shift is altering centres of economic influence: cities and countries that previously served as global hubs for labour migration may lose their prominence due to the reduced physical presence of international companies. In this context, challenges arise in adapting employment and social welfare policies, particularly in areas such as labour contracts, insurance, and pension systems, which remain anchored in traditional forms of employment. Outsourcing – especially in sectors such as software development, technical support, data processing, financial analysis, cybersecurity, and engineering – continues to play a pivotal role in the global economy, contributing to cost optimisation and greater business efficiency. Driven by the rapid development of digital technologies and increasing internet speeds, companies in developed countries are increasingly outsourcing parts of their operations to firms and professionals in developing nations. This enables them to reduce operational costs, access a broad talent pool, and accelerate project delivery while maintaining high service quality. One of the most dynamic segments of outsourcing is the IT sector. In 2023, the global IT outsourcing market was valued at over 460 billion USD, with India accounting for approximately 55% of global programming outsourcing and Ukraine ranking among the top five exporters of IT services in Europe (Basaria, n.d.). These trends reflect significant shifts in the international division of labour driven by technological advancement.

Innovative processes are significantly reshaping international labour migration, contributing to the emergence of new forms of mobility, most notably the phenomenon of virtual labour migration. Enabled by digital technologies and the expansion of global online platforms, highly skilled professionals can now work for foreign companies without leaving their home countries. This model generates economic benefits for countries importing intellectual resources, as they gain access to expertise without incurring the costs associated with social infrastructure or immigration integration. Conversely, exporting countries

face a dual challenge: on the one hand, retaining specialists domestically reduces the risks of brain drain; on the other, there arises a need to create conditions for productive employment in order to avoid dependence on external clients and unregulated digital labour. A prominent example is India, where over four million IT specialists are engaged in remote work with clients in the USA, the EU, and other regions. In 2023, India's IT service exports exceeded 180 billion USD, becoming one of the country's key sources of foreign exchange income (NASCOM, 2023). This illustrates how digitalisation supports economic growth in knowledge-exporting countries, while also highlighting the need for strategic regulation of emerging forms of international employment.

One of the key consequences of recent transformations is the growing importance of alternative forms of employment, which have become a significant element of the contemporary labour market. Flexible working arrangements, digital platforms, and the expansion of the gig economy are opening up new opportunities for workers, while simultaneously posing challenges to traditional systems of social protection and labour legislation. Innovative processes are fundamentally reshaping the structure of the labour market, influencing unemployment levels and contributing to the emergence of new forms of work. The debate over the impact of innovation on mass unemployment remains a pertinent issue among economists and sociologists.

On the one hand, automation, robotics, and digitalisation are reducing the demand for lowskilled labour, leading to job losses in traditional sectors. For instance, according to the McKinsey Global Institute, in the eight core countries studied (the USA, Germany, Japan, France, Spain, the United Kingdom, China, and India), over 100 million workers – or one in sixteen – will need to transition to new occupations. In the United Kingdom alone, employment in the manufacturing sector has declined by more than 600,000 over the past decade, partly due to the implementation of automated production lines (Lund *et al.*, 2021). On the other hand, innovation is driving the emergence of new industries that generate demand for highly skilled labour. These include sectors such as artificial

intelligence, cybersecurity, green energy, software development, and big data analytics.

The study by Y. Lima *et al.* (2021) examined the impact of automation on unemployment dynamics in countries with varying models of state support. The authors argue that automation does not necessarily lead to higher unemployment, provided it is accompanied by active policies that facilitate labour market transformation – particularly support for small businesses and investment in innovative sectors. This aligns with the findings of the present study, which indicate that, under a targeted national strategy, technological modernisation can generate new jobs, even as outdated occupations disappear. B. Schmidpeter & R. Winter-Ebmer (2021) highlighted the regional disparities in the consequences of automation, noting that countries lacking well-developed retraining systems experience sharp increases in unemployment among low-skilled workers. In contexts where labour markets fail to adapt to rapid change, innovation may exacerbate social tension and economic fragmentation. This perspective corresponds with the present analysis, which emphasises the risk of growing social inequality in countries where public policy does not include targeted support for vulnerable population groups. The study by R. Kärtner (2023) focused on the role of institutions in mitigating the negative effects of automation. The author argues that the presence of effective institutional response mechanisms – such as educational programmes and incentives for innovative entrepreneurship – enhances labour market flexibility. The present research confirms a similar pattern: the greater the adaptability of institutions, the lower the risk of mass redundancies. Thus, the effects of automation are not universal; they are shaped by the quality of government intervention and the responsiveness of institutional systems.

The gig economy, which is based on short-term and flexible forms of employment, enables workers to carry out individual tasks or projects without entering into traditional employment relationships, primarily through digital platforms. In 2022, over 28.3 million people were engaged in platform-based work in the EU, with projections suggesting this number will rise to 43 million by 2025 (Gig economy..., 2024). Freelancing

is gaining popularity in Ukraine, demonstrating steady growth even under wartime conditions. The total market volume increased by 26%, from 420 million UAH in 2023 to 528 million UAH in 2024. This reflects both a rise in the average contract value and a growing demand for highly skilled professionals. At the same time, the number of freelancers continues to expand by 14.4% in 2024, reaching 904,000 individuals. The client base has also widened, with the number of clients increasing by 11.6% to 269,000. This trend indicates not only a growing interest among Ukrainians in remote employment but also a gradual increase in trust from companies and entrepreneurs in collaborating with freelancers (The main results of the year..., 2024).

Innovative transformations are exerting an increasingly profound influence not only on the structure and forms of employment but also on a fundamental rethinking of the concept of work motivation. In the contemporary knowledge economy – driven by digital technologies, intellectual capital and the global mobility of the workforce – key determinants of motivation include professional autonomy, digital competencies, and opportunities for career progression in high-tech sectors. Work motivation is gradually shifting away from classical theories that emphasise material rewards, placing greater focus on self-fulfilment, flexible working environments, and intrinsic interest. A leading trend in the modern labour market is the transition from a paradigm of stable employment, typical of the industrial era, to a model of dynamic professional development. This model is characterised by concepts such as psychological flexibility, adaptive careers, and lifelong learning. According to research by McKinsey (Flex, please, 2023), over 70% of professionals in high-tech industries consider the opportunity to engage in projects with flexible schedules a decisive factor when choosing employment. These findings highlight the growing significance of non-material motivators – such as work-life balance, decision-making autonomy, and an innovative corporate culture. At the same time, McKinsey notes that digital proficiency and the ability to work remotely are not only tools for ensuring productivity but also motivational factors that contribute to sustained employee engagement.

As a result, new mechanisms for managing human capital are emerging, based on the development of workers' digital identities, the use of platform-based solutions for organising labour, and the expansion of tools for autonomous career management. This is particularly evident in the gig economy, which represents one of the clearest manifestations of post-industrial transformations in employment. In this segment, work motivation is increasingly shaped by factors such as flexible scheduling, project-based collaboration, simultaneous access to multiple markets, and the ability to independently select partners, clients and work formats. For professionals in IT, Big Data, digital marketing and digital design, motivational drivers also include opportunities for continuous professional development, participation in multicultural teams, and access to knowledge and tools via cloud services and educational platforms. Ultimately, work motivation in the context of digital technological transformation is less a response to external stimuli and more an active process of self-determination, closely linked to identity formation, innovative thinking, and a desire for social participation. This signals a new quality in employment relations, in which the interconnection between motivation, technological competence and economic efficiency becomes a key factor in the sustainable development of the labour market within the global knowledge economy.

Adapting labour legislation to the new realities brought about by innovation is of critical importance. Traditional employment contracts do not always provide adequate protection for workers engaged in the gig economy or freelance work. One of the key initiatives aimed at regulating labour on digital platforms and ensuring social protections for such workers is the EU Platform Work Directive (Directive (EU) 2024/2831, 2024), which seeks to safeguard the rights of platform-based workers. The directive establishes clear criteria for determining the legal status of workers and guarantees minimum wage, paid leave, sick pay, and access to social insurance. A crucial element of the directive is the presumption of employment: digital platforms are now required to prove that a worker is not their employee, rather than the burden

falling on the worker to demonstrate otherwise. This significantly simplifies the process of recognising workers' rights and ensures appropriate social protection. Additionally, the directive addresses the use of algorithmic management on platforms. It obliges platforms to provide workers with information about automated monitoring and decisionmaking systems that affect their work. This includes disclosure of the types of decisions made by algorithms, the parameters that underpin them, and their relative weighting. Such measures aim to increase transparency and prevent discrimination arising from automated decision-making.

The effectiveness of these measures remains difficult to assess, as both the directive and related national legislative initiatives have only recently been implemented, and their impact on the labour market is still the subject of ongoing research. It is important to recognise that regulating the gig economy presents a complex challenge, as it involves balancing the interests of workers – who require social protections – and platforms, which seek to maintain flexibility and economic efficiency. At present, it is not possible to determine definitively whether these measures will succeed in establishing an optimal model of labour relations that simultaneously safeguards workers' rights and supports the development of the digital economy. Moreover, there is a risk that tighter regulation could lead to unintended consequences, such as a reduction in the number of available jobs on platforms or the relocation of companies to less-regulated jurisdictions.

The influence of innovation extends beyond the internal transformation of national labour markets. The globalisation of digital technologies, the expansion of remote work, and the growing mobility of highly skilled professionals are reshaping patterns of international labour redistribution. These trends not only alter the geography of employment but also influence national policies on labour migration, the adaptation of education systems, and the creation of competitive environments to attract talent. To enable a comprehensive assessment of the impact of innovation on the international labour market, a SWOT analysis was conducted using Germany and Ukraine as case studies

(Table 3). This analysis allowed for the evaluation of strengths, weaknesses, opportunities, and threats associated with automation and digitalisation in the employment sector.

**Table 3.** SWOT analysis of Germany and Ukraine in the context of digitalisation and the labour market

Factor	Germany	Ukraine
Strengths	<ul style="list-style-type: none"> <li>■ High level of Industry 4.0 implementation</li> <li>■ Robust dual education system</li> <li>■ Strong government support for digitalisation</li> <li>■ Flexible labour legislation</li> <li>■ Well-developed R&amp;D infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>■ Rapidly growing IT sector</li> <li>■ High adaptability of specialists</li> <li>■ Strong appeal for outsourcing</li> <li>■ Flexibility of small businesses in digital adoption</li> <li>■ Developed the remote work market</li> </ul>
Weaknesses	<ul style="list-style-type: none"> <li>■ High costs of adapting enterprises to digitalisation</li> <li>■ Shortage of IT professionals</li> <li>■ Cybersecurity risks</li> <li>■ Bureaucratic obstacles to implementing digital reforms</li> </ul>	<ul style="list-style-type: none"> <li>■ Absence of a clear national digital labour market strategy</li> <li>■ High emigration rate among professionals</li> <li>■ Inadequate adaptation of labour legislation</li> <li>■ Limited opportunities for workforce retraining</li> <li>■ Weak innovation infrastructure outside major cities</li> </ul>
Opportunities	<ul style="list-style-type: none"> <li>■ Development of AI and Big Data for production optimisation</li> <li>■ Attraction of international IT talent</li> <li>■ Expansion of remote work</li> <li>■ Integration of green technologies into digitalisation</li> </ul>	<ul style="list-style-type: none"> <li>■ Utilisation of international support for digital transformation</li> <li>■ Development of the start-up ecosystem</li> <li>■ Attraction of investors</li> <li>■ Large-scale digital education and workforce retraining initiatives</li> </ul>
Threats	<ul style="list-style-type: none"> <li>■ Intense competition from the USA and China in digital technologies</li> <li>■ Economic crises potentially limit investment</li> <li>■ Mass workforce displacement due to automation</li> <li>■ Geopolitical risks affecting the supply of microchips and equipment</li> </ul>	<ul style="list-style-type: none"> <li>■ Political and economic instability due to the war</li> <li>■ Destruction of infrastructure and enterprises</li> <li>■ Rising unemployment caused by automation</li> <li>■ High dependency on external investors</li> </ul>

**Source:** compiled by the author based on Employment – annual statistics (n.d.), Act on Part-Time Work and Fixed-Term Employment Contracts (2022), Dynamics of Ukraine's Tech Industry... (2024)

The research findings indicate that innovative processes contribute to labour market flexibility, the expansion of remote employment, and increased productivity, while simultaneously generating structural changes, heightening the risk of inequality, and necessitating the adaptation of educational strategies. Germany and Ukraine exhibit significant differences in how their labour markets respond to the challenges of digital transformation and innovation. These disparities are shaped by differing starting conditions, levels of economic development, approaches to state regulation, and the specific challenges each country currently faces.

Germany is among the frontrunners in the digitalisation process and the implementation of the Industry 4.0 concept, which entails the comprehensive integration of digital

technologies across all areas of production and services. In 2023, the country's employment rate stood at 81.1%, 6.8 percentage points above the EU average (Employment – annual statistics, n.d.). The flexibility of Germany's labour legislation is evident in the adaptation of legal norms to shifts in the structure of employment. This includes simplifying regulations for the self-employed and freelancers, introducing legal mechanisms to ensure social protection for such workers, and modernising the labour code in response to the demands of the digital era. One of the key legislative measures is the Act on Part-Time Work and Fixed-Term Employment Contracts (2022), which enables employees to opt for flexible working hours, temporary employment, and part-time positions. The Act also includes provisions granting employees the right to

request remote working arrangements or reduced working hours, provided such requests align with operational requirements. Another relevant development concerns legislative amendments relating to remote work. Through a comprehensive regulatory framework, Germany has established the conditions necessary to balance the interests of employers and employees amid the digital transformation of the economy. At the same time, the government places particular emphasis on safeguarding the rights of workers whose jobs are at risk due to automation and technological change. The adaptation of the German labour market is both structured and forward-looking, grounded in long-term development programmes that integrate industrial modernisation, workforce upskilling, and the regulation of social risks.

The study by A. Batmunkh *et al.* (2022) highlighted the rapid expansion of the gig economy and emerging forms of employment, emphasising that these developments offer opportunities for self-employment and increased flexibility for workers. However, the authors also noted that the growth of non-standard forms of employment presents significant challenges in the field of social protection, as traditional models of labour regulation do not always address the needs of these new forms of work. They argue that legal frameworks in many countries remain insufficiently flexible to extend social guarantees to self-employed individuals. This observation partly aligns with the findings of the present study, which indicates that although the gig economy and novel employment forms are becoming integral components of the modern labour market, the issue of social protection for such workers remains problematic – even in countries with high levels of innovation, such as Germany. The study by J. Bonvin *et al.* (2023) focused on the risks of social instability arising from the expansion of the gig economy. The author argues that non-standard forms of employment may lead to a reduction in social guarantees, creating disparities in access to social protection. At the same time, this study supports the findings of the present analysis regarding the adaptation of labour legislation in Germany. In the context of the current research, it is demonstrated that

Germany, through progressive legislation and a flexible approach to self-employment, has managed to mitigate the risks of structural unemployment caused by automation. However, this does not eliminate the challenges related to social protection for gig economy workers. Even in countries with a high level of regulatory development, such as Germany, there remain difficulties in ensuring comprehensive social coverage for these categories of workers.

Ukraine demonstrates a different approach to adapting its labour market amid the digital transformation. Despite challenging economic and political conditions, the country retains significant potential in the field of information technology, which serves as a key driver of digital modernisation. As of 2024, Ukraine is home to 2,118 active technology companies, of which 47% specialise in outsourcing, 3% in outstaffing, and 31% are product-based companies (Dynamics of Ukraine's Tech Industry..., 2024). These figures reflect a high level of technological specialisation and the adaptability of the IT sector under crisis conditions. However, the digital transformation of Ukraine's labour market remains fragmented and is accompanied by a range of systemic barriers. Unlike Germany, which has an institutionally established system of continuous professional education and digital reskilling, Ukraine lacks a coherent state policy on human capital tailored to the demands of the digital economy. This results in weak institutional alignment between the labour market, educational institutions, and public employment programmes. In the context of full-scale war, the digital adaptation of the labour market is further hindered by the destruction of economic infrastructure, the forced displacement of the workforce, and the growing socio-economic vulnerability of the population. The high level of structural instability is evident in large-scale patterns of occupational migration, whereby a significant proportion of the population changes either their type of employment or place of residence as a result of military conflict. This contributes to labour market imbalances: several sectors, particularly industry and agriculture, are experiencing acute shortages of skilled workers, while certain segments of the digital economy are marked by an oversupply of professionals with similar competencies,

thereby reducing employment levels. The absence of large-scale state programmes to support professional adaptation and digital education – combined with limited financial resources and ongoing security risks – leads to an asynchronous development of digital infrastructure and human capital. As a result, the potential of Ukraine’s digital economy remains underutilised, and the transformation processes are sporadic rather than systematic. In this context, the development of the digital labour market during wartime should be viewed not only as a technological challenge but also as a politico-economic one. It requires an integrated approach to the establishment of resilient employment institutions, the promotion of digital literacy, and the formulation of recovery strategies.

The study by L. Drobiazko (2023) examined the transformation of the labour market in Ukraine amid economic digitalisation and the socio-economic shifts triggered by the war. The authors emphasised that the growth of the IT sector and the spread of digital platforms have opened up new employment opportunities, particularly through remote work and the international integration of Ukrainian professionals into global labour markets. At the same time, the war and the subsequent reconstruction pose numerous challenges for the labour force, including forced migration, the destruction of infrastructure, and the need for workforce retraining to meet the demands of emerging sectors. The study notes that, in comparison to Ukraine, Germany exhibits a more stable and systematic model of digital labour market transformation. As highlighted in the research of M. Fromhold-Eisebith *et al.* (2021) and K. Dengler & S. Gundert (2021), the German government has made substantial investments in infrastructure for digital education, production automation, and the integration of robotics into industry. Particular attention is given to improving workers’ digital skills and establishing a system of continuous professional development. This strategy not only enables the workforce to adapt to technological change but also helps to minimise the risk of structural unemployment. The study observes that while in Ukraine digitalisation has emerged as a necessary means of preserving employment in

wartime conditions, in Germany it forms part of a long-term modernisation strategy. This comparison illustrates that the effectiveness of digital transformation depends not only on technological readiness but also on political stability, institutional support, and the availability of resources to implement innovation.

An analysis of the impact of innovation on the international labour market shows that the effectiveness of economic adaptation to digital transformation depends on the level of institutional preparedness, strategic vision, and the capacity to respond swiftly to technological challenges. The German experience demonstrates that a combination of state regulation, flexible labour legislation, investment in vocational education, and social protection enables a stable transition to new forms of employment while minimising social risks. This model illustrates that digitalisation not only transforms the labour market but also contributes to its structural modernisation, expanding opportunities for workers and enhancing economic competitiveness. In contrast, the situation in Ukraine highlights the challenges faced by countries undergoing economic instability and structural transformation. The absence of a comprehensive national strategy for the digital transformation of the labour market leads to uneven sectoral development, exacerbating the mismatch between labour supply and demand. In this context, innovation acts more as a catalyst for the development of individual industries rather than as systemic tool for labour market reform.

In summary, innovation within the global economy is transforming the international labour market. Innovations are reshaping the nature of labour demand by fostering the emergence of new professions, competence-based profiles, and hybrid forms of employment. Technological shifts – particularly automation, artificial intelligence, robotics, and the development of digital platforms – are facilitating the transition towards a knowledge-based economy and post-industrial models of work, where high-value-added sectors predominate. These developments are accompanied by changes in labour organisation: traditional models of permanent employment are increasingly being replaced by flexible formats such as remote work, the

gig economy, and platform-based employment. This dynamic necessitates a rethinking of social protection frameworks, as conventional mechanisms for regulating the labour market are proving inadequate in the face of rapidly evolving employment relations. At a structural level, innovation drives global labour force reallocation, altering the geographical distribution of employment. High-tech sectors are becoming key drivers of international competition for talent, increasing the mobility of highly skilled workers while also intensifying the issue of brain drain from countries with lower levels of innovative capacity. The international labour market is becoming increasingly stratified, leading to a deepening of global asymmetries between labour resource donor and recipient countries.

Countries that actively invest in the development of human capital, digital education, and institutional mechanisms for adapting to technological change demonstrate a higher level of economic resilience. Such states are not only better positioned to mitigate the risks of structural unemployment, but also to enhance their competitiveness in the global labour market by fostering a flexible and innovation-oriented workforce. In contrast, countries with low institutional readiness for change risk increased social polarisation, the erosion of competitive advantages, and a decline in productivity.

The future of the international labour market will be shaped not only by the pace of innovation but also by the ability of national governments and transnational actors to implement effective policies for transformational adaptation. This involves integrating reskilling initiatives, establishing inclusive employment platforms, developing systems for labour market forecasting, and introducing new social standards. Innovation in the global economy requires not merely flexible but systematically balanced solutions that align the interests of states, businesses, and workers, thereby promoting long-term stability and social equity in an era of transformation.

## **CONCLUSIONS**

An analysis of the impact of innovation on employment and the structure of the international labour market in the context of the global

economy indicates that digitalisation, automation, and the shifting demand for new skills are key drivers of transformational change. Innovation-led development not only alters the nature of employment but also widens the gap between skilled and unskilled labour. Job losses in traditional industrial sectors and low-skilled service industries are occurring alongside the creation of new opportunities in high-tech fields, digital services, and artificial intelligence.

The findings reveal that the demand for professionals with digital competencies is increasing more rapidly than the capacity of vocational training systems to adapt, exacerbating the issue of unequal access to emerging employment opportunities. In 2023, a majority of tasks were carried out by humans (66%), with 33% performed by technology, and 1% completed through hybrid methods. Forecasts for 2030 suggest a decline in the share of human-performed tasks to 33%, while hybrid models are expected to grow to 33%, underscoring the urgent need to enhance digital skills and adapt to new forms of employment. The rise of remote work creates new opportunities but also exacerbates social inequality and intensifies competition between countries for highly skilled professionals. In developed countries such as Germany, government programmes actively support the development of digital education and reskilling initiatives, whereas in developing nations, this process remains uneven. As a result, there is a growing risk of deepening socio-economic disparities both between and within countries. An analysis of international labour migration shows that technological innovation contributes to greater mobility among highly qualified professionals, fuelling competition among countries for talent. Developed nations employ various mechanisms to attract foreign experts in fields such as IT and scientific research. While this enhances global knowledge exchange, it simultaneously poses risks for talent-donor countries. In this context, the traditional concept of a brain drain is gradually evolving into a model of virtual labour migration, whereby digital technologies enable professionals to work remotely without the need for physical relocation.

In the context of digital transformation, the system of work motivation is undergoing

significant change. Traditional material incentives are gradually losing their universal effectiveness, giving way to non-material factors such as professional autonomy, opportunities for development, involvement in project-based work, and flexible working hours. Digital competence functions not only as a tool for ensuring productivity but also as a source of intrinsic motivation, linked to the ability to influence work processes, realise creative potential, and shape a digital professional identity. Within this framework, work motivation increasingly takes on the characteristics of self-determination, whereby individuals not only carry out tasks but also actively shape their professional environment. This dynamic is a key factor in sustaining long-term participation in the labour market within the globalised knowledge economy.

Digital transformation has also led to the expansion of non-standard forms of employment, such as the gig economy, freelance work, and remote employment. While these developments offer greater labour market flexibility and new opportunities for self-employed professionals, they also pose challenges for worker protection, as traditional labour guarantees often do not extend to such employment models. Research has shown that countries with advanced innovation ecosystems – such as Germany – are more proactive in adapting labour legislation to these new realities, ensuring a balance between economic efficiency and social protection. At the same time, less developed economies, such as Ukraine, face challenges related to the uneven distribution of the benefits of innovation-led development, which may contribute to rising social instability. Specifically, the analysis revealed that in Germany, digitalisation and the Industry 4.0 framework are driving the

modernisation of production and increases in productivity, while also necessitating new approaches to regulating labour relations. In Ukraine, the primary driver of transformation is the growth of the IT sector, which is of critical importance for economic recovery in the post-war period. The increasing share of freelancers and remote workers presents new regulatory challenges for the labour market, particularly regarding taxation and social security provisions. Labour market adaptation to innovation-driven change requires not only technological advancement but also the implementation of effective education policy, the development of retraining programmes, and robust regulatory support. States that respond in a timely manner to the challenges of the digital economy are more likely to retain competitiveness while mitigating the risks of social inequality.

The main limitation of this study lies in the difficulty of quantitatively assessing the long-term impact of innovation on employment, as transformation processes remain ongoing and vary significantly across countries and economic sectors. Future research could focus on designing strategies for the effective integration of digital innovations into the labour market, as well as analysing mechanisms of social protection for workers engaged in emerging forms of employment.

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## **Вплив інновацій у глобальній економіці на розвиток міжнародного ринку праці**

**Анотація.** Метою дослідження було вивчення впливу інновацій на зайнятість і структуру ринку праці в умовах глобальної економіки, зосереджуючись на динаміці трансформаційних процесів, викликаних цифровізацією, автоматизацією та зміною попиту на нові навички. У роботі використовувався комплексний методологічний підхід, що включав аналіз змін у секторальній зайнятості, впливу технологічного розвитку на міжнародну трудову міграцію, а також наслідків цифрових трансформацій для правового регулювання ринку праці. Дослідження підтвердило, що інновації спричиняють глибокі трансформації на ринку праці. У 2023 році 66 % завдань виконувались людьми, 33 % – технологіями, а лише 1 % – у

змішаній формі. Прогноз на 2030 рік демонструє зниження частки людської праці до 33 %, а комбінована модель роботи зросте до 33 %, що вказує на необхідність розвитку цифрових компетенцій та адаптації до нових форматів зайнятості. Зростання дистанційної роботи створює нові можливості, проте посилює соціальну нерівність і конкуренцію між країнами за висококваліфіковані кадри. «Віртуальна трудова міграція» частково замінює традиційний «витік мізків», дозволяючи фахівцям працювати дистанційно без фізичного переміщення. Порівняльний аналіз Німеччини та України засвідчив спільні тенденції, проте також виявив різний рівень адаптації. Німеччина, завдяки впровадженню Industry 4.0 та гнучкому трудовому законодавству, забезпечила високий рівень зайнятості (81,1 % у 2023 році). Натомість Україна демонструє динамічний розвиток інформаційно-технологічного сектору. Війна додатково ускладнила ці процеси, посиливши структурну нестабільність ринку праці. Дослідження підтвердило, що успішна адаптація до інноваційної економіки потребує не лише технічного прогресу, а й ефективної освітньої політики, соціального діалогу та регуляторної підтримки. Практичне значення дослідження полягає в поглибленні розуміння трансформаційних процесів на міжнародному ринку праці під впливом інновацій, що може бути використано як аналітична база для подальших прикладних досліджень

**Ключові слова:** науково-технічний прогрес; новація; мотивація праці; міжнародна трудова міграція; зайнятість; безробіття