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# The impact of economic digitalisation on the development of government strategies for youth employment

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**Abstract.** The purpose of the study was to evaluate the effectiveness of government strategies to promote youth employment in the context of the digital transformation of the economy. The methodological framework included an analysis of statistical data from international organisations, a content analysis of strategic documents, and an online survey of 512 respondents. The study used a comparative approach based on the analysis of the experience of Kazakhstan, the European Union, Ukraine, Georgia, and Moldova. The survey of young professionals revealed statistically significant differences in the level of digital competencies between the countries of the European Union and neighbouring countries: 7.8 points on a 10-point scale in the European Union and 6.3 points in Georgia, Moldova, and Ukraine ($U = 4{,}890$, $p < 0.01$), which

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confirmed the existence of a persistent gap in digital training and opportunities for integration into the labour market. The higher average score of digital skills and the share of positive assessments of government support measures in EU countries (62% vs 38%; $t(310) = 4.21$, $p < 0.001$; $\chi^2 = 24.7$, $p < 0.001$) indicate a synergistic effect of combining advanced digital infrastructure, educational initiatives, and institutional employment support mechanisms. A strong positive correlation has been established between digital skills and employment in the digital sector ($r_s = 0.62$, $p < 0.001$). In the European Union, digital components are integrated into 90% of strategies, institutional support measures, 80%, integration of education and the digital economy, 73%; in Georgia, Moldova, and Ukraine, these indicators were 60, 45, and 33%, respectively, indicating fragmented approaches and barriers, including lack of practical skills, limited access to targeted internships, and poor integration of educational programmes with the digital sectors of the economy. The practical significance lies in substantiating the priority of the systemic development of digital skills, the integration of educational and labour trajectories, and the expansion of grant, subsidy, and psychological support programmes for the development of sustainable youth employment in the digital economy

**Keywords:** digital literacy; integration into the labour market; post-Soviet space; institutional mechanisms; psychological stability; technological inequality; professional adaptation

## Introduction

The digitalisation of the economy is one of the key factors in the transformation of the contemporary labour market, having a profound impact on employment processes, especially among young people. The introduction of automation, artificial intelligence, platform employment, and remote forms of work is changing not only the nature of work, but also the qualifications of employees. Young professionals find themselves at the centre of these changes, as they are the ones who adapt faster to digital technologies, but simultaneously are more susceptible to the risks of structural unemployment if their skills do not meet the needs of the digital economy. The research problem is related to the fact that in the context of the digital transformation of the economy, government employment strategies should not only create jobs, but also ensure the development of digital competencies, the adaptation of educational programmes, the development of flexible forms of employment and social protection mechanisms. The theoretical basis of the problem is based on the provisions of the theory of human capital and the concept of structural shifts in the labour market. According to these approaches, a sustained reduction in youth unemployment is possible if investments in education and skills are combined with the adaptation of employment institutions to technological changes.

M. Idris & J.M. Maikomo (2024) analysed the impact of the digital economy on youth unemployment in Nigeria. The researchers have identified a key relationship between the level of digital infrastructure and the employment rates of young professionals. The results showed that with insufficient digital literacy and limited availability of technology, digitalisation increases structural unemployment. This conclusion is important for comparative analysis, as similar limitations are evident in a number of Central Asian states.

A. Omarova *et al.* (2024) investigated the socio-economic development of youth policy in the context of digital transformation using the example of Kazakhstan and neighbouring countries. The researchers noted that the digitalisation of the labour market requires a review of the content of government youth employment programmes, including the expansion of educational initiatives and the adaptation of the vocational training system to the digital sectors of the economy. Simultaneously, it was emphasised that the lack of an integrated approach to coordinating measures leads to limited effectiveness of strategies. The paper by W. Geza *et al.* (2022) provided an overview of the dynamics of youth employment and involvement in the agricultural sector in the context of sustainable development. The researchers have revealed that digital technologies can help attract young people to the agricultural sector through the introduction of innovative production methods and remote forms of interaction. Simultaneously, it was emphasised that without a parallel increase in the digital competencies of employees and the development of infrastructure, the effect of such measures remains limited.

The study by A. Barford *et al.* (2021) analysed government measures taken during the COVID-19 pandemic to reduce youth unemployment. The researchers concluded that programmes that combine financial support with the development of digital skills have the greatest potential for a sustained impact on employment. However, in most countries, such measures were short-term in nature and were not integrated into long-term labour market strategies. Analysis by S.K. Azar *et al.* (2025) focused on socio-cultural changes and related mental health issues of young people in Iran in the context of digitalisation. The researchers noted that the economic and cultural transformations caused by digital changes are accompanied by an increase in social instability among young people. These results allow expanding the understanding of the impact of digitalisation not only on the economic, but also on the psychosocial aspects of employment.

M. El Khatib *et al.* (2022) conducted a quantitative study (online survey of approximately 40 participants) aimed at clarifying the relationship between the effectiveness of digital programme management and their success. Although the sample size was smaller than recommended (≥63 for 95% confidence), the results showed a statistically significant positive correlation between digital

governance and programme success. The researchers pointed out the limitations, narrow geographical coverage, and small sample size, and suggested expanding the study to include macro factors and a larger sample. Conclusions by M. El Khatib *et al.* (2022) supplemented the research topic by showing that the success of government strategies in the context of digitalisation is largely determined by the quality of digital programme management. When it comes to youth employment support, this means the need for a centralised digital strategy, standardised processes, and transparent monitoring, without which even promising initiatives lose effectiveness.

The study by A. Turekulova *et al.* (2024) investigated the social, labour, and economic behaviour of young people in the context of the development of a digital society. The conclusions of the study indicated that digitalisation has an impact on employment preferences, increasing the attractiveness of flexible and remote forms of work. However, the researchers noted the risk of social segregation of young people depending on the level of digital skills and access to resources. Current research has revealed the ambiguous impact of digitalisation on the level of youth unemployment in the EU countries. In particular, O. Başol *et al.* (2023) noted that digitalisation acts both as a factor in creating new jobs focused on innovative sectors of the economy and as a source of threat to traditional professions, which leads to structural transformations in the labour market and requires adaptive government support strategies. The researchers emphasised that without adequate development of digital competencies and comprehensive institutional support, the risk of increased youth unemployment increases significantly. Thus, the results showed the need to integrate digital skills into educational programmes and build effective public policy measures aimed at minimising the negative effects of digital transformation and maximising its positive potential for youth employment in the EU.

An analysis of these studies showed that in most countries, a significant proportion of young people still lack digital competencies, which reduces their competitiveness in the labour market. Government measures to support employment are often fragmented and do not produce a long-term sustainable effect. The weak integration of educational and professional programmes with the digital sectors of the economy creates an additional difficulty, as a result of which graduates do not always have the required skills. In addition, employment strategies do not sufficiently consider the socio-psychological aspects of digital transformation, which leads to increased risks of social segregation and job insecurity among young people. In connection with the identified problems, the purpose of this study was to investigate and compare the effectiveness of government strategies to support youth employment in the context of digitalisation. To achieve this goal, the following tasks were set: to analyse existing government programmes to promote youth employment and their compliance with the challenges of the digital economy; to identify factors determining the success or inefficiency of such strategies.

## Materials and Methods

The study was theoretical and applied in nature and was conducted between August and December 2024. Kazakhstan was considered as a separate analytical category, and the geographical framework for comparison included the EU states, Ukraine, Georgia, and Moldova. This allowed comparing the experience of highly developed digital economies with the dynamics of countries undergoing active digital transformation. The research database was formed based on statistical data from OECD (2023a; 2023b), World Bank (2023), and Eurostat (2024). Data and documents were used, including monitoring the digital progress of the EC member states (European Commission, n.d.a; n.d.b), the International Labour Organisation (2022) report reflecting the state of the youth labour market, and the global review of digital skills development policies (Miyamoto & Bashir, 2020).

To obtain the primary data, an online survey was conducted of young professionals aged 18 to 30 (n = 512) living in EU countries (Germany, Poland, Lithuania, Spain), and in Georgia, Moldova, and Ukraine. The toolkit included 18 questions, of which 12 had a closed form (alternative and scale selection), and 6 had an open form that allowed detailed answers. The topics covered three main blocks: (1) the level and structure of digital competencies, including basic and specialised skills; (2) experience and quality of interaction with government employment assistance programmes, including the use of digital services; (3) subjective assessment of the impact of digital skills on employment and career development.

The distribution of respondents by country was as follows: EU countries – 260 people (Germany – 70, Poland – 65, Lithuania – 60, Spain – 65); Georgia – 80, Moldova – 85, Ukraine – 33. Despite the imbalance in the number of respondents by country, the sample was considered acceptable for comparative analysis, since the study was focused on identifying qualitative trends and assessing the availability of key elements of digital education for young people, rather than strictly statistically generalising to the entire population of the country. Additionally, the survey included respondents from the Republic of Kazakhstan (n = 55), who were allocated to a separate analytical group. This allowed for a direct comparison of the indicators of the Republic of Kazakhstan with the results of the EU and other post-Soviet states, and the assessment of the specifics of the impact of national digital initiatives on the perception and level of digital competencies of young people. Inclusion criteria: the presence or receipt of higher or professional education, experience of job search in the digital economy over the past two years. Exclusion criteria: work in an industry that does not meet the stated qualifications, residence outside the specified countries, lack of experience in interacting with digital employment platforms. The sample was formed using the stratified random sampling method, considering the proportional representation of countries. The survey was conducted through the Qualtrics LLC (n.d.) platform, which ensured anonymity and data security.

Participation was voluntary, and each respondent signed an informed consent to data processing and publication of the results. All procedures were in accordance with the Code of Ethics of the American Sociological Association (1997).

Statistical data was processed and analysed using the IBM SPSS Statistics software package version 29 (IBM, 2022), which provided a wide range of tools for both descriptive and inferential statistics. First, the Shapiro-Wilk criterion was used to assess the normality of the distribution of quantitative variables, which allows for reliable testing of normality in medium and small samples. The results of this check served as the basis for the choice of subsequent methods of analysis. In cases where the data distribution corresponded to the normality law, the Student's t-test was used to compare the averages between two independent groups. This parametric test revealed statistically significant differences in the level of digital competencies and perceptions of government measures to support youth employment between respondents from different countries. If the normality check showed deviations from the normal distribution, the non-parametric Mann-Whitney U-test was used, which did not require assumptions about the shape of the data distribution and was suitable for comparing independent samples with an asymmetric distribution. Pearson's $\chi^2$ criterion was used to analyse categorical variables, such as the distribution of responses by type of government support measures or by levels of digital literacy. This test allowed assessing the presence of a statistically significant relationship between categorical features and identifying the frequency distribution by groups.

Confidence intervals for key indicators were calculated at 95%, which ensured the reliability and accuracy of interpretation of the results. The significance level $p < 0.05$ was used to determine the statistical significance of the differences and correlations. To minimise the probability of errors of the first kind that occur with multiple comparisons, an adjustment using the Bonferroni method was applied, which increased the rigour and validity of the study's conclusions. Thus, the choice of statistical methods was determined by the nature of the data and research objectives, which ensured the correctness, reliability and reproducibility of the results obtained. As part of the online survey, the level of digital competencies of young people was assessed on a 10-point author's scale developed specifically for this study. The use of this scale helped to quantify the respondents' skills and provide further comparative analysis of the data obtained. In the study, the assessment of the level of digital training of young people was carried out considering existing programmes and initiatives in different countries. For Kazakhstan, the analysis included the state programme "Digital Kazakhstan" (Ministry of Artificial Intelligence and Digital Development of the Republic of Kazakhstan, n.d.), national online learning platforms, and internship programmes in the IT sector (Aqyl Tech & IT-Aiel, 2025). Strategic documents and targeted digital learning programmes, including post-learning support measures, were considered for Georgia and Ukraine (European Union, n.d.; Osvita.Diia, n.d.). The assessment was carried out on a 10-point author's scale developed to quantify the level of digital competencies of young people.

## Results

In the course of the study, data was obtained on how effective government strategies for supporting youth employment are in the context of the digitalisation of the economy, taking into consideration the level of development of digital competencies and the perception of appropriate measures by young people. As can be seen from the data presented in Table 1, there is a significant difference in the average level of digital competence of young people between the EU countries, Georgia, Moldova, and Ukraine. The statistical significance of the differences was confirmed using the Mann-Whitney U-test ($U = 4{,}890$, $p < 0.01$), which allowed considering them as a stable interregional asymmetry caused by a complex of infrastructural, educational, and institutional factors.

**Table 1.** Average level of digital competence of young people in the EU and neighbouring countries

| Group of countries | Average level of digital competence (on a 10-point scale) | Characteristics of the competence level |
|---|---|---|
| EU countries | 7.8 | High level of development of basic and specialised digital skills, including critical assessment of information, safe online behaviour, and the use of digital tools in professional activities. |
| Republic of Kazakhstan | 6.9 | Stable basic level of digital literacy and the availability of digital learning programmes, while regional differences in access to infrastructure and practical educational modules persist. |
| Georgia, Moldova, and Ukraine (average value) | 6.3 | Insufficient development of individual components of digital literacy, especially in terms of the practical application of technology outside of entertainment or household purposes. |

**Source**: compiled by the authors based on V. Kruhlov (2021), International Telecommunication Union (2021), Asia Pacific Career Development Association (2025), Electronic Government of the Republic of Kazakhstan (n.d.), European Commission (n.d.a; n.d.b)

Thus, the recorded discrepancy in indicators of digital competencies of young people between the EU countries, Georgia, Moldova, and Ukraine should be considered not only as an academically significant feature, but also as a challenge for national and transnational strategies in the field of digital development and education. The emerging

asymmetry requires a comprehensive response involving both increased institutional support and the development of digital inclusion programmes aimed at youth groups with a reduced level of digital literacy. Kazakhstan occupies an intermediate position: its indicators are higher than in Georgia, Moldova, and Ukraine, but lower than in the EU. This reflects the presence of well-developed elements of digital infrastructure and educational initiatives, while maintaining challenges related to regional accessibility and the integration of digital competencies into educational programmes.

The next area of research was the investigation of youth's subjective assessment of the effectiveness of government-implemented employment support measures in the context of the digital transformation of the labour market. Such a comparative approach allowed identifying not only differences in the perception of specific policies, but also considering the deep structural characteristics of trust in the institutional environment in various digital and socio-economic contexts. As shown in Table 2, there is a significant difference in the proportion of positive assessments of the effectiveness of government programmes to promote youth employment between the EU, Georgia, Moldova, and Ukraine. The statistical significance of the revealed differences was confirmed using Student's t-test ($t(310) = 4.21$, $p < 0.001$) and Pearson's $\chi^2$-test ($\chi^2 = 24.7$, $df = 2$, $p < 0.001$), which indicates the presence of both quantitative and qualitative differences in the perception of programme effectiveness between the studied groups of countries.

**Table 2.** Share of positive assessments of the effectiveness of government programmes to promote youth employment

| Group of countries | Percentage of positive scores (%) | Interpretation of results |
|---|---|---|
| EU countries | 62 | Relatively stable trust in government institutions in the field of youth employment promotion and high perceived effectiveness of programmes |
| Republic of Kazakhstan | 49 | Average level of confidence in employment support measures; targeted internships and digital learning programmes are positively assessed, but insufficient integration of education and the labour market is noted |
| Ukraine, Georgia, Moldova (average value) | 38 | More pronounced scepticism is probably related to the limitations of software implementation and the low level of digital maturity of employment institutions |

**Source**: compiled by the authors based on the European Commission (n.d.a; n.d.b), EU NEIGHBORS east (2023), OECD (2023a; 2023b), Asia Pacific Career Development Association (2025), Electronic Government of the Republic of Kazakhstan (n.d.)

Based on the information received, it can be concluded that the institutional integration of digital tools into employment policy is uneven, which affects the perception and trust of the youth audience. The reduced level of positive scores in Georgia, Ukraine, and Moldova should be considered not as a local deviation, but as an indicator of systemic deficits in the field of digital coordination and effective communication between the state and youth as a key group of digital transformation. Kazakhstan shows higher performance than Georgia, Moldova, and Ukraine, but still lags behind the EU. This indicates the potential for improving the effectiveness of support measures through increased coordination between educational institutions, government agencies and the private sector.

A significant empirical result with theoretical and practical significance was the establishment of a statistically confirmed relationship between the level of digital literacy of young people and their actual employment in the segments of the digital economy. The analysis conducted using the non-parametric Spearman correlation allowed recording a positive correlation between the level of digital skills and employment in the digital sector ($r_s = 0.62$, $p < 0.001$). This indicator points to a high degree of correlation between the two variables and emphasises that digital competence is not just a factor in professional suitability, but one of the systemic predictors of young people's integration into modern forms of economic activity.

An in-depth analysis of the sample confirmed that respondents with a higher level of digital education are significantly more likely to demonstrate sustainable employment in industries mediated by digital technologies: in the IT sector, e-commerce, digital marketing, data management, and related fields. The data obtained suggest that digital skills form competitive advantages in the labour market, especially in the context of the transformation of economic models and the increasing demand for flexible professional competencies adapted to work in a digital environment.

A comparative analysis performed using the Student's t-test confirmed a statistically significant difference in the age of starting work in the digital sector: young people with a high level of digital literacy begin professional activity significantly earlier on average ($t(450) = 3.56$, $p = 0.002$). This result can be interpreted as evidence of their higher adaptability to the demands of the digital economy and their ability to quickly learn new professional roles, which, in turn, helps to shorten the period of professional development and accelerate integration into high-tech market segments.

It should be emphasised that the revealed dependence is not solely a consequence of individual characteristics, it reflects the structural patterns of the functioning of the digital labour market, in which the ability to work with digital technologies becomes an essential condition for successful professional socialisation. Thus, youth digital literacy can be considered as a strategically important resource that determines not only individual employment trajectories, but also the overall dynamics of human capital development in the context of the digitalisation of the economy.

An analysis of the content of government strategies aimed at supporting youth employment in the context of digital transformation revealed significant differences in the approaches implemented by the EU countries, Georgia, Moldova, and Ukraine. The documents adopted within the framework of strategic planning in the EU countries emphasised the systematic and multidimensional development of digital competencies of young people as a key resource for ensuring sustainable employment (European Commission, n.d.b). Special attention is paid to institutionalising mechanisms to support youth employment, integrating formal education with the needs of the digital labour market, providing conditions for the socio-psychological adaptation of young people to the changing employment structure.

The results of a frequent content analysis of the strategy texts showed that more than 90% of the policy documents adopted in the EU contain provisions aimed at developing digital skills among young people, which indicates the priority of the digital component in public employment policy (European Commission, n.d.a; EU NEIGHBOURS east, 2023; OECD, 2023b; Asia Pacific Career Development Association, 2025; Electronic Government of the Republic of Kazakhstan, n.d.). These measures range from the inclusion of digital modules in basic education courses to the creation of national digital learning platforms and employment assistance in the digital economy. Such strategies are implemented in coordination with vocational education institutions, employers, and the IT sector, which ensures a high level of coherence between educational outcomes and the needs of the economy.

In Georgia and Ukraine, the situation appears to be less balanced. The share of strategies that include digital training components ranges from 60%, while in some cases these components are presented declaratively and are not supported by developed implementation tools (EU NEIGHBORS east, 2023; European Union, n.d.; Osvita. Diia, n.d.). In particular, the strategic documents of Georgia and Ukraine record limited targeted digital learning programmes, the lack of sustainable interagency coordination mechanisms, and insufficient elaboration of post-training support models, including digital mentoring, skills certification, and employment support (Kruhlov, 2021; International Telecommunication Union, 2021). This fragmentation of approaches leads to the risk of increasing digital inequality among young people and reduces the effectiveness of measures taken in the field of employment promotion. Kazakhstan has institutionalised measures for digital youth training, including modular courses, national online learning platforms, and internship programmes in the IT sector. The state programme "Digital Kazakhstan" is being implemented, aimed at developing digital infrastructure and competencies, which has a positive impact on the level of digital literacy of young people. However, regional disparities persist, and social and psychological support measures are underrepresented, which reduces the overall effectiveness of employment strategies (Ministry of Artificial Intelligence and Digital Development of the Republic of Kazakhstan, n.d.; Aqyl Tech & IT-Aiel, 2025).

A frequency-based content analysis of the EU strategic documents (European Commission, n.d.b), including national programmes of the member states, revealed that approximately 80% of the documents contain institutional measures to support youth employment, such as government internships, subsidies for employers, and grant support for digital initiatives. "Institutional measures" implied the existence of at least one of the listed tools. This indicator was calculated as the proportion of documents with these measures to the total number of strategic documents analysed. These mechanisms are usually integrated into the social policy system and work in cooperation with educational institutions, employment centres and the private sector, reflecting the high level of institutionalisation of approaches to the development of digital labour subjectivity of young people in the EU.

In Ukraine, Georgia, and Moldova, institutional measures of this kind are presented much less consistently: only about 45% of strategies contain provisions on practice-oriented employment promotion tools (Regional United Nations Group for Europe and Central Asia on Digital Transformation, 2022; OECD, 2023a). Even when such initiatives are mentioned, they often lack regulatory support, lack well-developed financing and implementation mechanisms, and, as a result, are limited in scope and effectiveness. This indicates an existing institutional deficit that prevents the establishment of sustainable channels for young people to enter the digital labour market.

A similar asymmetry can be traced in the aspect of the integration of educational programmes with the real sectors of the digital economy. In the strategic documents of the EU countries, integration measures are presented in 73% of cases and cover both the introduction of digital competencies into formal training courses, and the creation of mechanisms for dual education, internships, and partnership programmes with digital companies (European Commission, n.d.a). This allows students and graduates to form an idea of professional requirements and facilitates their transition to real employment. In Ukraine, Georgia, and Moldova, such measures are recorded in only 33% of strategies, and in some cases these are mainly pilot initiatives or short-term projects that are not supported by a long-term institutional framework.

Special attention in contemporary strategies is paid to the issues of socio-psychological adaptation of young people to the conditions of digital transformation. This area includes activities aimed at building resilience to rapid technological change, supporting mental health, combating digital stress, and developing self-regulation skills in remote or hybrid employment. Despite the importance of this area, frequency analysis has shown that even in EU countries, only 45% of strategies contain elements related to the psychological stability and mental health of young people (Regional United Nations Group for Europe and Central Asia on Digital Transformation, 2022; OECD, 2023b). In

the strategies of Georgia, Moldova, and Ukraine, this indicator is even lower and does not exceed 20% (European Commission, n.d.b). Such an underestimation of the psychosocial factors of digital employment can lead to the appearance of hidden risks associated with professional burnout, social isolation, and unstable career paths among young people in the digital economy.

At the subsequent stage of the analysis, special attention was paid to identifying the factors determining the subjective assessment by young people of the effectiveness of state support in the field of employment, with an emphasis on the relationship between this assessment and the level of individual digital competence. The data obtained confirmed the existence of a stable association between these two variables: according to the results of Spearman's correlation analysis, a statistically significant positive relationship was revealed ($r_s = 0.54$, $p < 0.01$), which indicates an internal correlation between the perception of government activity and development of digital skills among respondents. A more detailed interpretation of the results suggests that young people with a high level of digital literacy demonstrate a significantly higher propensity to positively evaluate existing government employment support programs. This may be conditioned by several interrelated factors: firstly, the availability of digital skills facilitates access to information about programs, their conditions and mechanisms of participation; secondly, it is digitally competent respondents who are more likely to become direct beneficiaries of digital government support tools, such as online job search platforms, electronic portals of public services, distance learning programmes and digital forms of internships.

The developed digital literacy also contributes to the more active involvement of young people in communication processes related to employment, and increases their ability to critically assess and rationalise the use of available resources. As a result, not only a positive attitude towards the programmes themselves is formed, but also confidence in government institutions operating in the digital space is strengthened. Thus, digital competence acts not only as an instrumental resource that ensures participation in the labour market, but also as a mediator that forms subjective perception and readiness for institutional interaction. The revealed pattern is of particular importance in the context of the digital transformation of employment, as it indicates the need to interpret the development of digital skills of young people not only as an element of vocational training, but also as a critical condition for the development of social inclusion and trust in public policy mechanisms. Therefore, measures to develop digital literacy should not be considered in isolation, but as an integral component of a broader strategy to strengthen interaction between the state and youth in the context of the transition to a digital economy model.

The analysis showed that comprehensive programmes that ensure a direct relationship between the stages of obtaining digital competencies and subsequent employment demonstrate significantly higher effectiveness compared to scattered or episodic initiatives implemented outside of stable institutional coordination. The data suggest that the purposeful coupling of educational and labour practices forms structurally stable channels for the professional integration of young people into segments of the digital economy, reducing the risk of temporary or structural unemployment in this group. This comparison revealed significant differences in the degree of development, balance, and institutional integration of such approaches. In the EU countries, there is a higher level of coherence between the sectors of education, employment, and the digital economy, expressed in the presence of legally established mechanisms for interagency cooperation, comprehensive plans for the development of digital skills, and sustainable tools to stimulate youth employment in technologically intensive industries.

However, significant institutional and substantive limitations have been identified in Ukraine, Georgia, and Moldova. Among them, there is insufficient integration of educational programmes with practical employment channels, the limited presence of digital modules in vocational training, and the lack of systematic measures for long-term support of young professionals in the digital sector. In some cases, there is a fragmentation of strategic attitudes, when the digital component of employment policy is presented only declaratively and is not supported by effective implementation mechanisms. An additional limiting factor is the weak coordination between the authorities responsible for education, digitalisation and the labour market, which hinders the develoment of a unified institutional ecosystem capable of ensuring sustainable youth employment in the context of digital transformation.

The combined results of the analysis not only confirmed the empirical significance of the identified relationship between the development of digital competencies and the effectiveness of employment promotion mechanisms, but also revealed the need for an institutional review of strategic approaches in a number of national contexts. In particular, the data indicate that the optimisation of public policy towards a deeper and more functionally verified integration of digital education and labour market regulatory instruments is not only a desirable area for modernisation, but also a necessary condition for the development of an inclusive and sustainable model of youth employment in the digital economy.

The final generalisations, formed on the basis of quantitative and qualitative data, allowed systematically characterising the most significant structural constraints and institutional deficits that have a negative impact on the effectiveness of government policy in the field of youth employment promotion in the context of the digital transformation of the economy. Such deficits include both insufficient intersectoral coordination and the lack of long-term support programmes for young professionals in the process of their professional integration into the digital sector. Special attention was paid to the problem of the heterogeneity

of the level of digital competencies among young people from different countries and regions. This heterogeneity is complex and manifests itself both in differences in the basic level of knowledge of information and communication technologies, and in disparities in access to advanced skills in demand in high-tech segments of the labour market. The lack of a balanced training system leads to the reproduction of digital inequality, which is not only a consequence, but also a factor in the consolidation of socio-economic segregation in employment.

The greatest concern is the revealed limitations of digital competencies among young people in Georgia, Moldova, and Ukraine, where the development of digital literacy has not yet been consolidated as a priority area of national strategies for the growth of human capital. As a result, the digitalisation process in these countries is fragmented: educational programmes in the field of digital technologies are implemented pointwise and without systemic alignment with the requirements of the labour market, which reduces their integration potential and hinders the creation of sustainable professional growth channels. In addition, the lack of sustainable interagency mechanisms for implementing digital initiatives in the field of education and employment exacerbates imbalances, making it difficult to form a holistic training model for the digital economy.

Equally significant, in terms of the long-term effectiveness of employment promotion measures, is the continuing weak institutional connectivity between education systems and the labour market. This gap is manifested, in particular, in the absence of stable channels for translating the results of the educational process, both formal and informal, into specific and feasible employment trajectories. Graduates whose professional profiles were formed in conditions of limited access to applied digital skills and insufficient interaction with digital platforms providing modern forms of participation in economic activity are particularly vulnerable in this regard. This category of young professionals is often faced with the fact that the formally acquired qualifications are insufficient for effective inclusion in the segments of the labour market, where digital competencies are the basic condition for professional activity. In addition to these structural limitations, there is a lack of comprehensive socio-psychological support measures, which makes it difficult for young people to adapt to the rapidly changing conditions of the digital economy. The lack of such measures entails not only an extension of the period of professional integration, but also the development of a stable sense of institutional isolation among certain groups of graduates, when the education system and the labour market are perceived as poorly coordinated and functioning in isolation from each other.

The empirical data obtained during the study demonstrate that the combination of highly developed digital competencies with the availability of institutionalised support in the form of grants, subsidies, internship programmes, dual education, and career support significantly increases the likelihood of sustainable youth employment. Moreover, this combination helps to smooth out structural imbalances manifested in regional and social inequalities, which allows considering digital skills not as an isolated component of educational policy, but as part of a multi-level strategy for the establishment of an inclusive model of youth participation in the digital labour market.

In the light of the results obtained for Georgia, Moldova, and Ukraine, the revision of existing approaches to the development of public policy in the field of comprehensive youth support is of particular relevance. The optimisation of this policy involves not only the adjustment of priorities, but also the institutionalisation of those elements, the effectiveness of which is confirmed by international practice. Such elements that have been tested in the EU countries include: creation of continuous digital education systems providing modular and hybrid learning formats that ensure flexibility and adaptability of educational trajectories; expansion of the range of internships and dual programmes integrated with key sectors of the digital economy; establishment of institutional mechanisms for socio-psychological support aimed at developing youth resilience to transformational changes and reducing the risks of digital alienation. Taken together, these measures can create conditions for a systematic increase in the employment rate of young professionals, and for the development of a stable human resource base capable of meeting the needs of the digital economy in the medium and long term.

Based on the results of the survey analysis, it was found that the average integral score of digital competencies was 7.8 in the EU countries and 6.3 in Georgia, Ukraine, and Moldova. 62% of respondents in the EU and 38% in Ukraine, Georgia, and Moldova gave a positive assessment of government measures to support employment. There was a positive and statistically significant correlation between the level of digital competencies and employment in the digital sector ($r_s = 0.62$), and between the level of digital literacy and a positive assessment of government support measures ($r_s = 0.54$). Qualitative responses revealed key barriers, among which respondents most often cited a lack of practical skills, limited access to targeted internships, and poor integration of educational programmes with digital sectors of the economy. Thus, the patterns identified in the course of the study not only reflect the current state, but also form the basis for developing recommendations for improving youth employment policy in the context of digital transformation, focused on the long-term and sustainable inclusion of youth in the digital economy.

## Discussion

The results of empirical analysis confirm that the level of digital competencies of young people is a significant and statistically confirmed factor in their integration into the labour market. The recorded difference between the EU countries (7.8 points) and Georgia, Moldova, and Ukraine (6.3 points) demonstrates not only the difference in the degree of development of basic and specialised digital skills, but also reflects broader structural and institutional differences.

These data correlate with the conclusions of M. Raileanu Szeles & M. Simionescu (2022), who found that regional disparities in the development of digital infrastructure, access to contemporary educational resources, and coverage of the population with digital training programmes create a persistent gap in youth employment opportunities. The analysis of subjective assessments of the effectiveness of government employment assistance programmes, which record 62% of positive reviews among respondents from EU countries and 38% among young people from Georgia, Moldova, and Ukraine, is consistent with the observations of F. Simões & E. Marta (2024). The researchers emphasised that the level of trust of young people in government support measures is significantly higher in those institutional systems where employment services integrate digital tools and provide individualised support for applicants. This relationship is also confirmed by the results of a study by the International Labour Organisation (2022), which found that the effectiveness of employment measures increases with integrated digital services, including training, digital job search, platform mechanisms for selecting internships and support in the early stages of work adaptation.

The revealed positive and statistically significant correlation between the level of digital literacy and actual employment in the digital sector ($r_s = 0.62$) is consistent with the conclusions of F.Y. Mpofu & D. Mhlanga (2022), who showed that human capital in the digital economy is determined not only by the formal level of education, but also by the availability of applied digital skills that directly affect the likelihood of employment in technologically saturated market segments. An analysis of strategic documents conducted from a comparative perspective revealed marked differences in the degree of institutionalisation of digital components in national policies between EU countries, Georgia, Moldova, and Ukraine: in the first case, their integration is recorded in 90% of strategies, while in the second, only in 60%. This gap is interpreted as an indicator of the uneven distribution of institutional resources and confirms the conclusions of A. Zancajo *et al.* (2022) that the COVID-19 pandemic has acted as a catalyst for accelerated digitalisation of educational and labour policies in the EU countries. In states with less developed institutional infrastructure, there is a fragmented and unsystematic implementation of similar measures, which correlates with the findings of the E. Dovgal *et al.* (2021), who documented the lack of elaboration of digital transformation mechanisms in a number of post-Soviet countries, manifested in the absence of a comprehensive regulatory framework, lack of coordination between departments, and low sustainability of design solutions.

An analysis of the socio-psychological support components showed its limited presence in strategic documents: 45% in EU countries versus 20% in Georgia, Moldova, and Ukraine. Conclusions of S.K. Azar *et al.* (2025) pointed to an additional aspect of this problem, the relationship between the scale of digital change, the risks of social exclusion, and the dynamics of youth mental health, which, with a lack of targeted measures, can increase the vulnerability of individual groups in the labour market. A statistically significant correlation between the level of digital competencies and a positive assessment of government employment support measures ($r_s = 0.54$) confirms the assumption of a mediating role of digital literacy in shaping perception and trust in institutional policy in this area. A comparative analysis of the strategic documents revealed significant differences in the degree of integration of educational programmes with the sectors of the digital economy: in the EU countries, this component was recorded in 73% of national strategies, while in Georgia, Moldova, and Ukraine – only in 33%. This imbalance reflects not only quantitative differences in the level of regulatory consolidation of the relevant initiatives, but also the structural features of the institutional environment that determine the possibilities of practical implementation of the concept of "education-employment" in the context of digital transformation. Similar trends were described in the study by A. Avagianou *et al.* (2022), where, despite the presence of targeted digital initiatives in a number of southern EU regions, institutional barriers remain that hinder the effective transition of graduates from the education system to the labour market. The existence of similar restrictions in Georgia, Moldova, and Ukraine was confirmed by the conclusions of D. Vasilescu & K. Sandroshvili (2021), which pointed to insufficient coordination between educational institutions and employment services, which reduces the effectiveness of measures aimed at reducing youth unemployment and increasing the adaptability of graduates to the demands of the digital economy.

Empirical analysis data supported the claim that the combination of digital skills development with institutionalised support in the form of grants, internship programmes, career support and integrated employment services ensures higher employment rates for young people. This conclusion is consistent with the results of D. Bickauske *et al.* (2021), who used the material of several European countries to show that it is the synergetic interaction of digitalisation processes and government initiatives that creates a long-term multiplier effect, expressed both in employment growth and in the structural stability of labour market segments focused on digital industries.

Conclusions of E.K. Buitek *et al.* (2025) complemented this picture by noting that in a digital economy, the attractiveness of an employer to a youth audience is determined not only by the level of wages or working conditions, but also by the availability of integrated professional development programmes, including digital learning, mentoring, and individual career support. Thus, an integrated approach based on the simultaneous modernisation of educational trajectories and the institutional infrastructure of employment can be considered as a key factor in reducing the structural gap between education and the digital economy in emerging economies. Comparison of the presented data with the results of the study by G. Liotti (2022) demonstrated that, along with digital determinants, the level of youth employment is largely determined by the institutional

characteristics of national labour markets. The key elements in this context are the degree of flexibility of employment contracts, the level of legal and social protection of employees, and the availability of incentive mechanisms aimed at encouraging the hiring of young professionals, including subsidised wages, tax incentives for employers, and accelerated employment programmes. These parameters form a different institutional environment in which digital skills are implemented in labour practice, thereby determining the effectiveness of measures to integrate young people into economic activity. The noted variability of institutional conditions partially explains the revealed differences in the perception of government support programmes between the EU countries, Georgia, Moldova, and Ukraine, where the level of regulatory and legal adaptation of the labour market to the challenges of digitalisation remains limited.

Analysis conducted by E.W. Liguori *et al.* (2024) confirmed the relationship established in the study between the level of digital competencies of young people and their integration into the labour market, and the researchers emphasise the need for ecosystem conditions, a developed educational infrastructure, a regulatory framework, and mentoring programmes. This is consistent with higher employment rates in EU countries where such conditions are institutionalised, unlike Georgia, Moldova, and Ukraine. Results obtained by D.E. Ufua *et al.* (2021) coincide with the identified fragmentation of digital transformation in Georgia, Moldova, and Ukraine, emphasising that the lack of interagency coordination and operationalised indicators reduces the effectiveness of implemented initiatives. Conclusions of J.C. Janampa & S. Dasgupta (2021) on the importance of comprehensive measures combining training, internships and digital job recruitment platforms confirm the correlation found between the level of digital literacy and trust in government employment support programmes.

X. Zhang *et al.* (2023) demonstrated that successful digital transformation is possible with a clear strategy and management consensus, which correlates with the recorded gap in the integration of educational programmes with the digital economy (73% in the EU versus 33% in Georgia, Moldova, and Ukraine). Furthermore, L. Zhang (2023) pointed to the instability of employment in digital sectors, which complements the conclusion about the importance of institutional characteristics of national labour markets for ensuring high-quality employment. M. Ridwan *et al.* (2025) confirmed the mediating role of psychological readiness and self-efficacy factors that enhance the impact of digital skills on career outcomes, which is consistent with the revealed relationship between the level of competence and the perception of government support measures.

Conclusions of D.S. Bakry *et al.* (2024) regarding the importance of university-industry-state ecosystem linkages coincide with the established synergy effect of digitalisation and government initiatives observed in EU countries. Research by C.Ø. Madsen *et al.* (2022) complemented the interpretation by noting the risk of increasing administrative burden on citizens during the transition to digital self-service without adapting services to vulnerable groups, which may explain lower estimates of programme effectiveness in Georgia, Moldova, and Ukraine. The findings of Q. Yao *et al.* (2024) confirmed that the coherence of digital strategy and effective management of team diversity enhance the integration of educational and labour components, consistent with a higher level of strategic integration in the EU. J. Reed & C. Dunn (2025) pointed out that regulatory measures that do not consider the digital daily life of young people can undermine confidence in government initiatives, which correlates with a low proportion of socio-psychological support in the strategies of Georgia, Moldova, and Ukraine (20% vs 45% in the EU).

A summary analysis of the comparative data obtained indicates that digital competencies and institutional infrastructure function as complementary factors ensuring the successful inclusion of young people in economic processes. Their interaction is manifested in the fact that a high level of digital skills without an adequate institutional environment does not ensure sustainable employment, while the presence of a developed support infrastructure with low digital readiness of young people also does not lead to significant improvements in the labour market. The gap in the level of digital competencies, reinforced by differences in strategic planning and resource provision, forms a stable digital inequality with both economic and social dimensions. Overcoming this inequality is possible only within the framework of a comprehensive modernisation of educational programmes aimed at developing applied digital skills, expanding access to digital and hybrid employment services, and institutionalising social and psychological support measures that ensure the adaptation of young people to the structural changes of the digital economy and minimising the risks of professional marginalisation.

## Conclusions

The conducted research helped to comprehensively assess the effectiveness of government strategies to promote youth employment in the context of the digital transformation of the economy, based on a comparative analysis of the EU and neighbouring countries. Empirical data confirmed the presence of statistically significant differences both in the level of digital competencies of young people and in the perception of the effectiveness of implemented support measures. In the EU countries, the average level of digital competence was 7.8 points on a 10-point scale, which corresponds to a high level of development of basic and specialised digital skills. In Georgia, Moldova, and Ukraine, the indicator reached only 6.3 points, which indicates the lack of readiness of a significant part of young people to integrate into the digital economy. The application of the Mann-Whitney U-test confirmed that the identified gap is systemic and is conditioned by differences in infrastructure, educational opportunities, and institutional priorities.

A similar asymmetry was found in assessing the effectiveness of government programmes: 62% of positive reviews were in the EU and 38% in Georgia, Moldova, and

Ukraine. The differences were statistically confirmed using the Student's t-test and Pearson's $\chi^2$-test, which indicates their stable nature and reflects both objective limitations of programme implementation and differences in the level of digital maturity of government institutions. Kazakhstan demonstrated intermediate indicators: the level of digital competence (6.9 points) and the share of positive assessments of support measures (49%) were higher than in Georgia, Moldova, and Ukraine, but lower than in the EU countries. Strengthening of the regional digital infrastructure, expansion of dual educational programmes in the IT sector and integration of systemic psychological support into strategic documents on youth employment remain key areas of development for the Republic of Kazakhstan.

An important result was the establishment of a positive correlation between the level of digital literacy and employment in the digital sector ($r_s = 0.62$), and between digital skills and a positive assessment of support measures ($r_s = 0.54$). This allowed considering digital competence as a key factor not only in professional integration, but also in building trust in government employment policy. The survey of young professionals (n = 512) revealed statistically significant differences in the level of digital competencies between the EU and neighbouring countries, which confirmed the existence of a persistent gap in digital training and opportunities for integration into the labour market. The higher average score of digital skills and the share of positive assessments of government support measures in EU countries indicated a synergistic effect of a combination of advanced digital infrastructure, educational initiatives, and institutional employment support mechanisms. The recorded correlation coefficients ($r_s = 0.62$ and $r_s = 0.54$) confirmed the key role of digital literacy as a mediating factor in achieving successful employment and building confidence in government employment policy. The identified barriers, including a lack of practical skills, limited access to targeted internships, and weak integration of educational programmes with the digital sectors of the economy, indicated the need for a comprehensive modernisation of the institutional environment aimed at reducing the gap between the education system and the requirements of the digital economy.

An analysis of strategic documents showed that in the EU countries digital components were included in 90% of strategies, integration of education and the digital economy in 73%, and institutional support measures in 80%. In Georgia, Moldova, and Ukraine, these figures were significantly lower (60, 33, and 45%, respectively), indicating fragmented approaches and a lack of sustainable mechanisms for interagency cooperation. Special attention was drawn to the low representation of social and psychological support measures, which limits the adaptation of young people to transformational working conditions. The prospects for further research are related to the expansion of the sample and an in-depth analysis of the long-term impact of digital programmes on the sustainability of youth employment.

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None.

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# Вплив цифровізації економіки формування державних стратегій працевлаштування молоді

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**Анотація.** Метою дослідження було оцінювання ефективності державних стратегій сприяння зайнятості молоді за умови цифрової трансформації економіки. Методологічна основа включала аналіз статистичних даних міжнародних організацій, контент-аналіз стратегічних документів та онлайн-опитування 512 респондентів. У дослідженні було використано порівняльний підхід, що передбачає аналіз досвіду Казахстану, Європейського Союзу, України, Грузії та Молдови. Проведене опитування молодих фахівців виявило статистично значущі відмінності у рівні цифрових компетенцій у цих країнах: 7,8 бала за 10-бальною шкалою в Європейському союзі та 6,3 бала в Грузії, Молдові та Україні ($U = 4\ 890$, $p < 0{,}01$), що підтвердило наявність сталого розриву у цифровій підготовці та можливостях інтеграції на ринок праці. Вищий середній бал цифрових навичок та частка позитивних оцінок державних заходів підтримки в країнах Європейського Союзу (62 % проти 38 %; $t(310) = 4{,}21$, $p < 0{,}001$; $\chi^2 = 24{,}7$, $p < 0{,}001$) вказують на синергетичний ефект поєднання розвиненої цифрової інфраструктури, освітніх ініціатив та інституційних механізмів супроводу зайнятості. Встановлено сильну позитивну кореляцію між цифровими навичками та зайнятістю в цифровому секторі ($r_s = 0{,}62$, $p < 0{,}001$). У країнах Європейського Союзу цифрові компоненти інтегровані у 90 % стратегій, заходи інституційної підтримки у 80 %, інтеграція освіти та цифрової економіки в 73 %; у Грузії, Молдові та Україні ці показники становили 60, 45 та 33 % відповідно. Це вказує на фрагментарність підходів та наявність бар'єрів, включаючи брак практичних навичок, обмежений доступ до цільових стажувань та слабку інтеграцію освітніх програм із цифровими секторами економіки. Практичне значення дослідження полягає в обґрунтуванні пріоритетності системного розвитку цифрових навичок, інтеграції освітніх та трудових траєкторій, розширення програм грантової, субсидної та психологічної підтримки для формування сталої зайнятості молоді у цифровій економіці

**Ключові слова:** цифрова грамотність; інтеграція в ринок праці; пострадянський простір; інституційні механізми; психологічна стійкість; технологічна нерівність; професійна адаптація