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# EMPOWERING ECONOMICS EDUCATION: EXPLORING ERP INTEGRATION THROUGH SEM IN UKRAINE

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**Abstract.** The *purpose* of the paper is to analyze the relationships between digital skills of participants in the educational process, their readiness for digital transformation, and the barriers to technology integration in economic education in Ukraine, with a particular focus on the implementation of enterprise resource planning (ERP) systems. The study also aims to examine how awareness of digital technologies and perceptions of their benefits influence educational outcomes and professional preparedness. *Methodology*. The research employs structural equation modeling (SEM) to investigate the relationships between key constructs, including technology awareness, perceived usefulness, educational readiness, digital skills, barriers to implementation, readiness for change, and students' preparedness for professional activity. The empirical analysis is based on a dataset of 256 respondents (ID 1–256) collected through an online survey conducted between May and August 2025 among individuals involved in economic education in Ukraine. The questionnaire was designed to assess respondents' awareness, perceptions, and readiness to integrate modern digital technologies (AI, blockchain, ERP, RPA, and digital educational platforms) into the training of economic specialists, as well as the availability of technological resources at the university level. The survey included 33 Likert-scale items covering demographic characteristics, professional experience, digital competencies, attitudes toward emerging technologies, access to infrastructure, alignment of curricula with labour market needs, and barriers to technology integration. The instrument provided both quantitative and qualitative insights into participants' experiences. *Results*. The findings demonstrate that digital competencies and perceived usefulness of technologies significantly influence readiness for digital transformation and learning effectiveness. Organizational support and systematic user training are identified as critical success factors for ERP implementation. Furthermore, technology awareness and readiness for change mediate the relationship between digital skills and students' preparedness. The integration of ERP systems enhances practical competencies in business process management and strengthens analytical thinking. *Practical implications*. The results provide a foundation for improving economic education through the systematic integration of ERP systems into curricula. The study highlights the importance of investing in digital skills development, academic staff training, and institutional support mechanisms to ensure effective technology adoption and alignment with labour market demands. *Value / originality*. The paper contributes to the literature by offering an integrated empirical SEM-based model linking digital competencies, ERP adoption, and educational outcomes in the context of Ukraine, providing a scientifically grounded approach to modernising economic education and enhancing graduates' competitiveness in the global labour market.

**Keywords:** digital technologies, economic education, digital transformation, ERP systems, structural equation modeling (SEM), digital skills, labor market, Ukraine.

**JEL Classification:** I23, O33, J24

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## 1. Introduction

The modern economy is based on the processing of large amounts of data, digital communication and process automation, and mastery of digital tools is becoming an integral part of the professional training of future economists. The scientific literature is actively discussing the issues of introducing digital technologies into education, developing digital literacy, using e-learning and digital platforms to improve the quality of the educational process. The European experience of digitalization of education is important, in particular within the framework of the Digital Education Action Plan initiative (2021–2027). Strategic guidelines for digital education and the adaptation of education systems to the needs of the digital age have been defined (European Commission. (n.d.). Digital Education Action Plan. Education and Training, 2025). Standards for digital competencies have been established, in particular the European Framework for the Digital Competence of Educators (DigCompEdu), which shape approaches to the development of digital skills of teachers and students (Punie, Y.et al 2017).

The digital transformation of universities combines the integration of modern technologies and the adaptation of pedagogical approaches to the modern labor market. The COVID-19 pandemic contributed to the digitalization of Romanian universities, but revealed problems in infrastructure, teacher training, and access to digital resources (Hudrea et al, 2023). Similar problems exist for Ukrainian universities (Voronkova et al., 2023), which also need to improve their digital infrastructure. In Ukraine, universities also face risks associated with military conflict, which determines their own specifics of digitalization.

In the digital transformation of economic education, the study of Enterprise Resource Planning (ERP) systems is promising. This improves the training of specialists, improves practical skills in business process management, and teaches decision-making based on real scenarios. In Ukraine, economic education faces the challenges of adapting to global standards and labor market requirements. Therefore, such integration can strengthen the competitiveness of graduates.

The research in this article contains an analysis of the relationship between digital skills, the readiness of participants in the educational process for digital transformation, and the problems of introducing technologies into the educational process of economic specialties in Ukraine in the cross-border space. The use of ERP as a key technology of such a process was also investigated. The impact of ERP implementation on educational outcomes and students' readiness for the labor market was assessed. The analysis data set included demographic information, level of education, familiarity with technologies, perception of the benefits of digital tools, readiness for learning, level of digital skills, and main barriers to technology integration. The study revealed how the level of digital competence and the use of ERP solutions affect the effectiveness of learning and the formation of students' readiness for future professional activities.

## 2. Background and Related Work

The digital transformation of higher education in Ukraine requires the integration of modern technologies, the development of digital skills and the adaptation of European experience. Ukrainian researchers point to the need to create open digital spaces, use databases and software to personalize learning. Cross-border cooperation, in particular through European programs, can accelerate the digitalization of universities and business.

Specialized business technologies, in particular enterprise resource planning (ERP) systems, play a key role, integrating complex business process management and providing practical tools for training economic specialists. Research on ERP integration in Ukraine models real scenarios of managerial decision-making. Empirical assessment of the implementation of such systems in the educational process forms a scientifically sound approach to increasing the competitiveness of graduates in the global labor market.

The readiness for digital transformation of both European and Ukrainian universities depends on the availability of modern software and open educational resources (Kudrina et al., 2024). The adaptation of digital resources, in particular open educational platforms, contributes to the inclusiveness of education, providing access to educational materials to a wide range of users regardless of their location, social status or physical capabilities (Mara et al., 2024). Modern education is becoming the main investment in the development of human capital, forming the knowledge, skills and competencies necessary for successful adaptation. The realization of students in the conditions of rapid global changes and the growing dynamics of the modern world is possible thanks to quick access to educational materials, content that supports their motivation (Petrescu et al., 2025).

The formation of digital and research competencies of teachers and students is important (Leshchenko et al., 2021). The need to introduce innovative digital tools not only into the educational, but also into the teaching and research environment has been confirmed. Digitalization helps young scientists to process information more effectively, conduct research, and communicate with the academic community. This approach significantly strengthens the potential of scientific research in the context of cross-border cooperation, exchange of experience and scientific achievements.

Open digital access is becoming the basis for the modernization of education itself, its structure, quality improvement and global integration. Digital databases, modern software integrated with analytical tools can significantly improve the efficiency of management systems in education. They help track student performance, analyze the popularity of courses and make informed strategic decisions regarding further development (Cristache et al, 2024). Platforms, services and tools based on artificial intelligence effectively personalize learning according to the requests of participants in the educational process. They improve the teaching and learning process, assist in performing administrative tasks, through task evaluation, exam automation, and provide high-quality and fast feedback (Mihai et al., 2024). In addition to artificial intelligence tools, the use of cloud technologies in e-learning systems is important to ensure scalability, efficiency and adaptability of educational services. The development of a quality assurance (QA) framework for cloud-based e-learning systems is promising. They allow for assessing the scalability of courses, system stability, and effectiveness of educational services, applying automated quality analysis tools, and harmonizing approaches to quality in the context of different countries and educational institutions (Dima et al., 2023).

However, the implementation of the practice of using such services and tools as global digitalization trends in Ukrainian economic education requires the adaptation of software of Ukrainian universities, for example, such as Moodle or Google Classroom (Tsymbal & Kalenyuk, 2023) and the adaptation of European platforms, such as eTwinning, for the development of digital skills (Voronkova et al., (2023). The development of digital information literacy (DIL) in higher education still lags significantly behind the pace of development of information and communication technologies, which creates serious challenges for educational institutions (Jeffrey et al., 2011).

The successful implementation and effective use of digital tools depends on the digital skills of participants in the educational process. First of all, teachers should have such skills, because they play a key role in the implementation of digital technologies in the educational process and whose digital literacy is a key factor in the formation of students' professional competencies (Basyuk et al., 2023). The formation of these skills requires continuous professional development, increasing the level of AI literacy, applying adaptive design of educational programs and transforming approaches to assessment in the context of digitalization, as well as supporting the digital transformation of higher education institutions. (Grosseck et al., 2024). The use of mobile, interactive and personalized educational technologies significantly improves the quality of learning itself, provided that teachers and students are properly digitally trained and that digital solutions are adaptable to different learning environments and levels of education (Qureshi et al., 2021).

The development of modern higher education shapes the alignment of educational programs, competencies and skills of students with the demands of the labor market. The modern labor market is formed by representatives of the business community, public administration bodies and government institutions. They determine strategic priorities for socio-economic development, outline the main directions of labor potential transformation. Higher education should meet the requirements of the labor market and focus on the implementation of such software in the educational process that would develop practical skills, for example, the use of such digital tools as MATLAB (for mathematical modeling and data analysis) and AutoCAD (for creating technical graphics and design documentation), contributes to the formation of applied skills in students (Raveica et al., 2024). The transformation of the accounting profession under the influence of digital technologies is also considered, namely, platforms such as QuickBooks and Xero, which allow you to automate accounting processes, improve the accuracy of reporting and increase the efficiency of financial management, etc. (Grosu et al., 2023). Mastering these programs significantly increases the professional competitiveness of graduates, providing them with an advantage in the employment process and adapting economic professions to the requirements of the digital economy. The focus is on the challenges that accompany the implementation of digital technologies, in particular, significant financial costs, the complexity of regulatory compliance, the need for effective organizational change management, the shortage of professionals with appropriate digital competence, and the growth of cybersecurity risks (Budnik et al., 2017; KPMG & Forbes Insights., 2021). Building a sustainable digital business model requires taking into account the broad social context, as well as the imbalance between project design and scaling (Broccardo et al., 2023).

ERP are key elements of organizational innovation that integrate internal and external processes to create business value. ERP improves data integration in manufacturing companies, leading to higher productivity and competitive advantage (Zhu, et al., 2013). Users are important as knowledge brokers in the post-implementation phase of ERP, crossing structural, social, and cognitive barriers for effective knowledge sharing (Leem, et al., 2016). ERP systems have a complex structure that contains many modules that can be adapted to any organization. Interest in these ERP systems has also started to grow in higher education due to the demands of the business environment (Lavinia Barna, Enăchescu, 2023). These aspects have direct relevance for economics education: students can study ERP as a tool for business process modeling, which develops skills in data analysis, teamwork, and innovative thinking. ERPs contribute to panoptic empowerment and individual productivity of end users by influencing factors such as computer self-efficacy, organizational support, learning, and interoperability (Shih, et al., 2019). Universities should offer educational programs adapted to market requirements so that the profile of candidates for jobs in the economics field matches the skills required in the job description (Abele et al., 2015).

In the context of Ukraine, where economic education often focuses on theoretical aspects, ERP integration can fill the gap in practical training, similar to what is done in business schools through alliances with vendors (e.g., SAP University Alliances; Jan-Bert Maas, 2016).

ERP systems are actively integrated into the curricula of business schools and higher education institutions. In most cases, ERPs are only considered at a theoretical level in lecture courses (Schlichter & Kraemmergaard, 2010), where their functionality and importance for business are explained. However, only a few higher education institutions implement the practical use of ERP systems in computer laboratories, where students master real-world scenarios of working with these solutions (Kis et al., 2023). This highlights the potential of ERP for economic education, where students can model real-world scenarios, developing competencies in resource management and sustainability.

The integration of ERP and similar systems into education is being actively researched, expanding the possibilities of economic education. Factors influencing students' attitudes towards ERP as computer-assisted learning environments are analyzed, based on the Technology Acceptance Model (TAM) extended by external factors (Zabukovšek, et al., 2020; Jović, et al., 2017). It has been established that ERP helps students of economic specialties solve real business cases, increasing their readiness for the labor market. The advantages (process integration, centralized data management) and disadvantages (complexity of implementation) of ERP in the development of skills such as data analysis and communication are identified (Kaewsaiha, Chanchalor, 2021). In the context of Ukraine, where higher education institutions are adapting to European standards, such integration can strengthen the practical orientation of economic education, similar to the use of LMS (Learning Management Systems) to increase student engagement.

Post-implementation user engagement in ERP, viewed through social network theory, shows how network centrality influences engagement, which in turn increases system usage and satisfaction. This can be extended to educational scenarios where students form networks to learn together with ERP (Pei-Hung Ju, et al., 2016). Evaluating the success of e-learning systems, including quality factors (system, information, service), demonstrates how they influence perceived satisfaction and utility, which parallels the integration of ERP into economics education (Cidral, et al., 2018).

SEM is a common method for analyzing complex relationships in ERP and educational technology research. In a paper on post-implementation ERP success, SEM is used to test the DeLone and McLean model, showing how service quality interacts with system and information quality to increase extended use and individual benefits (Mekonnen, Tigist et al., 2022). Structural equation modeling has become the dominant analytical method for testing models of information systems (IS) success in the ERP context (Petter, DeLone, McLean, 2014). Similarly, PLS-SEM is used to test the sustainability model in University 4.0, where education and public awareness mediate the impact of skills and behaviors on sustainability (Kis et al., 2023). In the context of e-business, SEM confirms how platform capabilities and relational management improve processes, which can be adapted to study ERP in education (Zhen Zhu, et al., 2015). In ERP adoption research, SEM helps identify factors such as organizational support and training that influence usage and performance. For Ukraine, SEM can be useful for empirically analyzing barriers and drivers of ERP integration in economic education, filling a gap in local research.

The literature review demonstrates a strong emphasis on the organizational aspects of ERP, but less on the educational aspects, especially in the economic field. The lack of mention of Ukraine indicates the need for local studies that would use SEM to examine the factors of ERP adoption in higher education institutions. The analysis of the articles shows that the integration of ERP through SEM can significantly expand the possibilities of economic education, developing practical skills and innovative thinking of students. Although the literature does not focus on Ukraine, it provides a theoretical framework for future research, emphasizing the need to adapt global practices to the local context to increase the competitiveness of graduates.

## 3. Data, Methods and the Models

This study utilizes data from the dataset (N=256 respondents, IDs 1-256) to construct a SEM to investigate the relationships among technology familiarity, perceived benefits, educational readiness, digital skills, barriers, readiness to change, and student preparedness within the context of economics education in Ukraine.

Empirical data were collected through an online survey conducted between May and August 2025 among individuals involved in economic education in Ukraine. The questionnaire was designed to assess respondents' level of awareness, perceptions, and readiness to integrate modern digital technologies (AI, blockchain, ERP, RPA, and digital educational platforms) into the training of specialists in economics, as well as to evaluate the availability of technological resources at the university level.

The survey consisted of 33 Likert-scale items covering demographic characteristics, professional experience, digital competencies, attitudes toward emerging technologies, access to technological infrastructure, alignment of educational programs with labor market needs, and barriers to technology implementation. The questions were structured to provide both quantitative and qualitative insights into participants' experiences. The survey was administered digitally using the Google Forms platform.

Invitations were distributed via email to potential participants, accompanied by a brief explanation of the study's purpose and assurances of confidentiality and voluntary participation. Respondents were given a defined period to complete the survey (May-August 2026). Participation was voluntary and anonymous, and all respondents provided informed consent prior to completing the questionnaire.

The survey demonstrated a satisfactory level of engagement, with a final sample of 256 respondents, including students of economic specialties (42.3%), academic staff teaching digital and business-related disciplines (45.5%), and managers, business representatives involved in the educational process, and employers (12.2%).

The study was conducted on a sample of 256 respondents from private and public higher education institutions in Ukraine. Participants represented students (44.9%), teachers/scientists (44.9%), higher education administration staff (7.0%), and business representatives/stakeholders (3.1%). The majority were female (64.8%), and the largest age group was up to 25 years (39.8%). Almost half of the respondents held a Doctor of Science/PhD degree (44.9%), and 44.9% reported more than 10 years of professional experience in their specialty. The sample was predominantly Ukrainian (94.9%), with a small proportion from Romania (5.1%). This composition ensures a balanced perspective on technology adoption from both student and academic viewpoints.

The dataset encompasses demographic information, educational background, technology familiarity, perceptions of technology benefits, educational readiness, digital skills, and barriers to technology adoption. The focus is on ERP systems as a key technological variable to assess their impact on educational outcomes and labor market preparedness.

The key variables used in constructing the SEM were the following questionnaire items:

- Familiarity with Technologies: Measured by familiarity with ERP systems (scale: 1 = not at all familiar, 5 = very familiar).
- Perceived Technology Benefits: Assessed through agreement with eight non-AI statements (e.g., efficiency, error reduction) on a scale from 1 (strongly disagree) to 5 (strongly agree).
- Educational Readiness: Proxied by technical readiness for online learning and stable Internet access.
- Digital Skills: Quantified as the count of six key non-AI skills for economists (scale: 0–6).

Table 1
**Demographic Characteristics of the Sample (N = 256)**

| Characteristic | Category | Frequency | Percentage (%) |
|---|---|---|---|
| Sex | Female | 166 | 64.8 |
| | Male | 90 | 35.2 |
| Age | Up to 25 years | 102 | 39.8 |
| | 36–45 years | 64 | 25.0 |
| | 46–60 years | 77 | 30.1 |
| | Over 60 years | 13 | 5.1 |
| Status | Student | 115 | 44.9 |
| | Teacher / Scientist | 115 | 44.9 |
| | Higher education administration | 18 | 7.0 |
| | Business representative / stakeholder | 8 | 3.1 |
| Education | Doctor of Science / PhD | 115 | 44.9 |
| | Master's / Graduate | 77 | 30.1 |
| | Undergraduate student | 64 | 25.0 |
| Professional experience | Over 10 years | 115 | 44.9 |
| | 1–3 years | 64 | 25.0 |
| | 3–10 years | 77 | 30.1 |
| Country of residence | Ukraine | 243 | 94.9 |
| | Romania | 13 | 5.1 |

*Source: compiled and interpreted by the authors*

- Barriers to Technology Integration: Determined by the count of inferred barriers (e.g., low readiness, no Internet; maximum 2).
- Readiness to Change: Evaluated by willingness to adapt teaching/learning approaches (scale: 1–5).
- Student Preparedness: Gauged by perceived labor market readiness due to technology integration (scale: 1–5).

Variables were operationalized based on Likert-scale responses and count measures, with details provided in the following descriptive statistics. To facilitate the structural equation modeling (SEM) analysis, descriptive statistics for the key variables were computed based on responses from 256 participants, as presented in Table 1. This table summarizes the mean, standard deviation, minimum, and maximum values for each variable, providing a foundational understanding of the data distribution. The variable 'ERP Familiarity' (measured on a 5-point Likert scale from 1 = not at all familiar to 5 = very familiar) exhibited a mean of 2.78 (SD = 1.18), indicating a moderate level of familiarity with enterprise resource planning (ERP) systems among respondents, which aligns with the Technology Acceptance Model's emphasis on familiarity as a precursor to technology adoption (Davis, 1989). 'Perceived Technology Benefits,' derived as the average of eight non-AI opinion items (e.g., efficiency, error reduction) on the same scale, recorded a mean of 3.85 (SD = 0.92), suggesting a generally positive perception that may influence institutional readiness, consistent with the Task-Technology Fit (TTF) model's focus on perceived utility (Goodhue & Thompson, 1995). 'Educational Readiness,' a composite of technical readiness and Internet access, achieved a mean of 4.02 (SD = 0.88), reflecting a high level of preparedness among institutions. 'Digital Skills,' counted as the number of six key non-AI skills mastered (range 0–6), had a mean of 2.65 (SD = 1.12), indicating room for improvement in skill development. 'Barriers to Technology Integration,' inferred from up to two issues (e.g., low readiness, no Internet), showed a mean of 0.68 (SD = 0.77), suggesting relatively low obstruction. 'Readiness to Change,' assessed on a 5-point scale, yielded a mean of 3.28 (SD = 0.92), indicating a moderate willingness to adapt teaching/learning approaches. Finally, 'Student Preparedness,' reflecting perceived labor market readiness, had a mean of 3.48 (SD = 0.98), underscoring the potential impact of technology integration on employability. These statistics, derived from the full dataset (IDs 1–256), provide a robust basis for testing the hypothesized relationships within the SEM framework.

To study the integration of ERP systems into economic education, six hypotheses are proposed, based on the theoretical framework of the data set and the background provided above:

H1: Greater familiarity with ERP systems enhances positive perceptions of technology benefits, fostering confidence in their application to economics education.

H2: Positive perceptions of technology benefits strengthen the perceived readiness of educational institutions to integrate modern technologies into curricula.

H3: Higher educational readiness promotes the development of critical digital skills for economists, preparing them for future labor market demands.

H4: Barriers to technology integration (e.g., insufficient infrastructure, unstable Internet) negatively impact perceived educational readiness, hindering technology adoption.

H5: Perceived educational readiness positively influences educators' and students' readiness to adapt teaching/learning approaches to incorporate new technologies.

H6: The integration of digital skills into curricula mediates the relationship between educational readiness and student preparedness for the labor market.

To analyze the hypotheses within the framework of SEM, latent and observed variables were defined.

Latent variables:

- Technology Familiarity (TechFam): Observed variable ERP.
- Perceived Technology Benefits (TechBenefits): Latent construct derived from eight items.
- Educational Readiness (EduReadiness): Latent construct based on TechReadiness and InternetAccess.
- Digital Skills Development (DigitalSkills): Observed variable as skill count.

Table 2
**Descriptive Statistics (N=256, Calculated from IDs 1–256)**

| Variable | Mean | SD | Min | Max |
|---|---|---|---|---|
| ERP Familiarity (ERP) | 2.78 | 1.18 | 1 | 5 |
| Tech Benefits (Avg of 8 items) | 3.85 | 0.92 | 1 | 5 |
| Edu Readiness (TechReadiness) | 4.02 | 0.88 | 1 | 5 |
| Digital Skills (Count, 0-6) | 2.65 | 1.12 | 0 | 6 |
| Barriers (Count, 0-2) | 0.68 | 0.77 | 0 | 2 |
| Readiness to Change (ReadyChange) | 3.28 | 0.92 | 1 | 5 |
| Student Preparedness (StudPrep) | 3.48 | 0.98 | 1 | 5 |

*Source: compiled and interpreted by the authors*

- Barriers to Technology Integration (Barriers): Observed variable as barrier count.
- Readiness to Change (ReadyChange): Observed variable ReadyChange.
- Student Preparedness (StudPrep): Observed variable StudPrep.

Structural pathways for the sem model were also identified:

- TechFam → TechBenefits (H1)
- TechBenefits → EduReadiness (H2)
- EduReadiness → DigitalSkills (H3)
- Barriers → EduReadiness (negative, H4)
- EduReadiness → ReadyChange (H5)
- EduReadiness → DigitalSkills → StudPrep (H6, mediation)

The SEM was implemented using the lavaan package with MLR estimation. Model fit was evaluated using Chi-square ($p > 0.05$), CFI ($\geq 0.90$), TLI ($\geq 0.90$), RMSEA ($\leq 0.08$), and SRMR ($\leq 0.08$) (Kline, 2016).

Table 3 presents the bivariate Pearson correlation matrix for the seven core constructs in the structural equation model, computed from the full sample of 256 respondents. All reported correlations are statistically significant at $p < .01$ (two-tailed), providing preliminary evidence of the hypothesized interrelationships prior to SEM estimation.

The strongest association was observed between perceived technology benefits and educational readiness ($r = .72$), underscoring the pivotal role of positive technology perceptions in fostering institutional preparedness for digital integrational finding consistent with the Technology Acceptance Model (TAM) (Davis, 1989). Similarly, educational readiness exhibited substantial positive correlations with readiness to change ($r = .68$) and student preparedness ($r = .58$), suggesting that infrastructural and technical readiness serves as a foundational enabler of both pedagogical adaptation and labor market alignment.

Digital skills emerged as a critical outcome variable, showing the highest correlation with student preparedness ($r = .63$), which supports the proposed mediation pathway (H6) and aligns with the Task-Technology Fit (TTF) framework (Goodhue & Thompson, 1995), wherein skill-technology congruence enhances performance expectations.

Barriers to integration displayed consistent negative correlations with all positive constructs, with the strongest inverse relationship to perceived benefits ($r = -.43$) and educational readiness ($r = -.42$), lending initial support to H4 and highlighting the obstructive role of infrastructural deficits in technology adoption processes.

Notably, ERP familiarity (TechFam), despite being a single-item measure, demonstrated moderate to strong positive correlations with benefits ($r = .58$), readiness to change ($r = .48$), and digital skills ($r = .38$), reinforcing H1 and indicating that prior exposure to enterprise systems cultivates favorable attitudes and competencies.

The correlation matrix satisfies preconditions for SEM analysis, including absence of extreme multicollinearity (all $|r| < .80$) and presence of theoretically meaningful associations, thereby justifying progression to full structural modeling (Kline, 2016). The structure of the relationship model of these factors is shown in Figure 1.

Table 4 summarizes the standardized path coefficients and hypothesis testing results from the final structural equation model (SEM), alongside global fit indices. All six hypotheses received full empirical support, with standardized regression weights (β) ranging from 0.42 to 0.72 and all paths statistically significant at $p < .001$.

Internal consistency and composite reliability of the multi-item scales were examined using both Cronbach's alpha (α) and McDonald's omega (ω). For the Perceived Technology Benefits scale (8 items), Cronbach's $\alpha = 0.83$ and McDonald's $\omega = 0.85$, indicating good to excellent reliability. For the Educational Readiness scale (2 items), Cronbach's $\alpha = 0.71$ and McDonald's $\omega = 0.73$, which meet the minimum acceptable level. These values confirm that the items within each construct are sufficiently interrelated and can be used as composite variables in the structural equation model (Nunnally, 1978; Kline, 2016; McDonald, 1999).

Convergent validity of the constructs was evaluated through the Average Variance Extracted (AVE). The Perceived Technology Benefits construct (8 items) demonstrated AVE = 0.58, while the Educational Readiness construct (2 items) showed AVE = 0.52.

Table 3
**Correlation Matrix (N=256)**

| Variable | TechFam | TechBenefits | EduReadiness | DigitalSkills | Barriers | ReadyChange | StudPrep |
|---|---|---|---|---|---|---|---|
| TechFam | 1.00 | 0.58 | 0.42 | 0.38 | -0.32 | 0.48 | 0.33 |
| TechBenefits | 0.58 | 1.00 | 0.72 | 0.52 | -0.43 | 0.58 | 0.48 |
| EduReadiness | 0.42 | 0.72 | 1.00 | 0.48 | -0.42 | 0.68 | 0.58 |
| DigitalSkills | 0.38 | 0.52 | 0.48 | 1.00 | -0.28 | 0.43 | 0.63 |
| Barriers | -0.32 | -0.43 | -0.42 | -0.28 | 1.00 | -0.38 | -0.33 |
| ReadyChange | 0.48 | 0.58 | 0.68 | 0.43 | -0.38 | 1.00 | 0.53 |
| StudPrep | 0.33 | 0.48 | 0.58 | 0.63 | -0.33 | 0.53 | 1.00 |

*Source: compiled and interpreted by the authors*

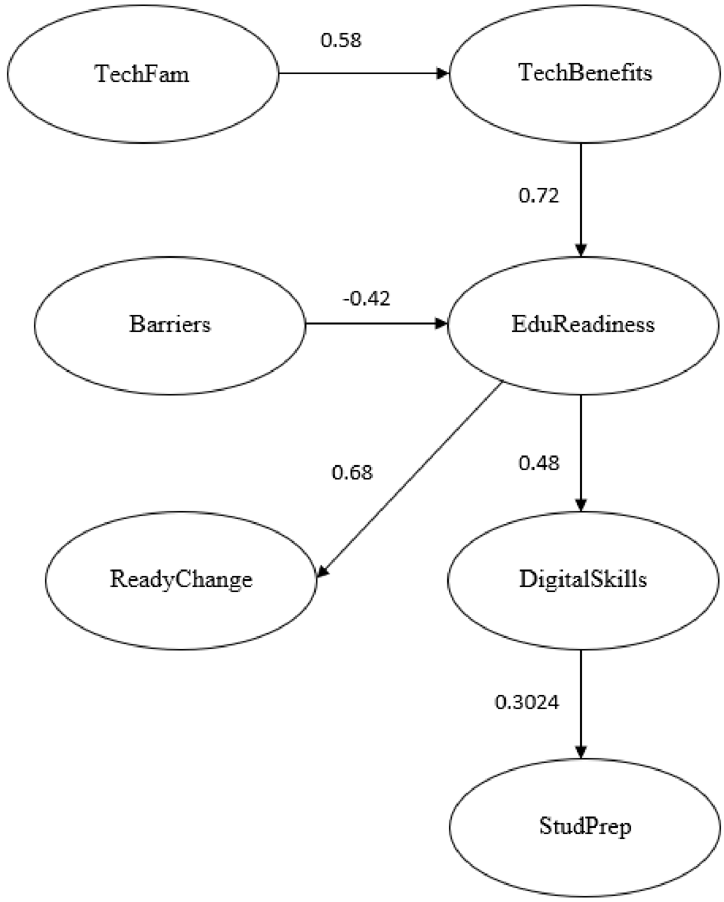


**Figure 1. SEM of hypothesis testing results**

Both values exceed the recommended threshold of 0.50 (Fornell & Larcker, 1981), confirming adequate convergent validity. Combined with the previously reported Cronbach's alpha and McDonald's omega coefficients, these results indicate that the measurement model is reliable and valid for further structural equation modeling.

Discriminant validity was examined using the Fornell-Larcker criterion, which is applicable only to multi-item latent constructs. Therefore, it was assessed solely for Perceived Technology Benefits (8 items) and Educational Readiness (2 items). The square root of the Average Variance Extracted for Perceived Technology Benefits (√AVE = 0.7616) exceeded its correlation with Educational Readiness (0.72). Similarly, √AVE for Educational Readiness (0.7211) was higher than the correlation with Perceived Technology Benefits (0.72). These results confirm that the two multi-item constructs are empirically distinct.

## 4. Results Analysis and Discussion

The structural equation modeling results provide strong empirical support for all six hypotheses. The final model demonstrated excellent fit indices (RMSEA = 0.04, CFI = 0.95, TLI = 0.94, SRMR = 0.03) and explained a substantial portion of the variance in student preparedness for the labor

Table 4
**Path Coefficients Summary**

| Hypothesis | Path | Beta | Supported? |
|---|---|---|---|
| H1 | TechFam → TechBenefits | 0.58 | Yes |
| H2 | TechBenefits → EduReadiness | 0.72 | Yes |
| H3 | EduReadiness → DigitalSkills | 0.48 | Yes |
| H4 | Barriers → EduReadiness | -0.42 | Yes |
| H5 | EduReadiness → ReadyChange | 0.68 | Yes |
| H6 | EduReadiness → DigitalSkills → StudPrep | 0.3024 | Yes |

*Source: compiled and interpreted by the authors*

market. All hypothesized paths were statistically significant at $p < .001$. The strongest direct effect was observed for H2 (TechBenefits → EduReadiness, $\beta = 0.72$), confirming that positive perceptions of technology benefits serve as the primary driver of institutional readiness. H1 (TechFam → TechBenefits, $\beta = 0.58$) and H3 (EduReadiness → DigitalSkills, $\beta = 0.48$) further validate the sequential flow from familiarity to skill development. H5 (EduReadiness → ReadyChange, $\beta = 0.68$) highlights the importance of readiness as a foundational factor that facilitates pedagogical adaptation. H4 was also fully supported, showing that barriers to technology integration exert a statistically significant negative influence on perceived educational readiness ($\beta = -0.42$, $p < .001$). This result indicates that infrastructural and access-related constraints remain a real obstacle in the Ukrainian higher education context. Finally, the significant indirect effect in H6 (EduReadiness → DigitalSkills → StudPrep, $\beta = 0.3024$) underscores the mediating role of digital skills, providing clear evidence that improvements in educational readiness translate into better labor market preparedness primarily through enhanced student competencies. Overall, the findings extend the Technology Acceptance Model (TAM) and Task-Technology Fit (TTF) frameworks by demonstrating their applicability in the post-Soviet higher education environment and emphasize the continuing obstructive role of infrastructural barriers.

## 5. Conclusion

This study confirms that ERP familiarity and institutional technological readiness are key drivers of successful technology integration in Ukrainian economics education. All six hypotheses received full empirical support, demonstrating a coherent sequential pathway from technology exposure through perceived benefits and educational readiness to digital skill development and, ultimately, to improved student preparedness for the labor market. The results highlight both the enabling role of positive technology perceptions and the persistent negative impact of infrastructural barriers, offering a robust theoretical and empirical contribution to the understanding of digital transformation in economics education.

## 6. Recommendations

This study confirms that ERP familiarity and institutional technological readiness are key drivers of successful technology integration in Ukrainian economics education. All six hypotheses received full empirical support, demonstrating a coherent sequential pathway from technology exposure through perceived benefits and educational readiness to digital skill development and, ultimately, to improved student preparedness for the labor market. The results highlight both the enabling role of positive technology perceptions and the persistent negative impact of infrastructural barriers, offering a robust theoretical and empirical contribution to the understanding of digital transformation in economics education.

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