

PEDAGOGICAL SCIENCES

INFORMATION SYSTEMS AND TECHNOLOGIES IN THE PROFESSIONAL ACTIVITY OF A FUTURE ECONOMIST

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The relevance of using information systems and technologies (IST) in the professional activity of a future economist is driven by the transformation of economic activity. Modern economic processes such as planning, forecasting, accounting, analysis, and control are being intensely digitized and automated using IST. The speed and accuracy of management decision-making directly depend on the effective use of information systems. The volume of economic data is growing exponentially (Big Data). Increased productivity and competitiveness also depend on the ability to utilize modern information systems and technologies. For instance, the application of IST allows for reducing costs associated with routine operations, increasing labor productivity, and securing competitive advantages for an enterprise. Consequently, an economist proficient in IST can not only analyze financial flows but also develop, implement, and support software that systematizes and simplifies business processes. The labor market shows growing demand for specialists at the intersection of economics and IT (e.g., engineer-programmer-economist, data analyst, IT auditor). A future economist must possess not only economic but also technological skills (working with databases, specialized software, understanding network technologies, and cybersecurity of commercial information).

Thus, IST is not just an auxiliary tool but a fundamental basis for the effective and successful professional activity of a modern economist, emphasizing the vital necessity of deep study in this area.

An analysis of scientific literature indicates an activation of research by the educational community regarding the development of ways to use information systems and technologies in economic activity. Digital economy, institutional changes under the influence of IT, and economic security in the digital space were studied by V.M. Heiets and his school. The development and implementation of information systems in enterprises and digital business transformation were studied by O.I. Azarov and other IT management

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researchers. O.V. Kuzmin wrote about modeling and managing economic systems using IT and economic-mathematical modeling. O.M. Hutsaliuk focused on managing the integrated development of corporate enterprises and the impact of digital technologies on economic development. Andrew McAfee studied digital transformation, the interaction between humans and machines, and new data-driven business models. Erik Brynjolfsson explored the impact of Artificial Intelligence and automation on productivity, the labor market, and economic growth. Researchers working with ERP/CRM systems are developing metrics for Information Systems Value (IS Value) and the success of corporate system implementation. FinTech scholars examine the impact of blockchain, cryptocurrencies, and digital platforms on financial markets and services.

Although the issue of using Information Systems and Technologies (IST) in economic activity is actively researched, a number of previously unresolved or insufficiently developed gaps remain in the context of training future economists. Identifying these gaps forms the basis for further scientific research. These include the Adaptation of Educational Programs to the Pace of Technological Development. The problem lies in the fact that the dynamics of IST development (AI, blockchain, quantum computing) significantly outpace the inertia of updating educational standards and curricula. The unresolved part here is the development of flexible, adaptive, and modular mechanisms for the prompt integration of the latest IST competencies (e.g., prompt engineering for economic models or AI system auditing) into the training of economists, allowing for quick response to changes in the labor market. Also relevant is the Integration of Cross-Cutting Digital Skills. IST is often studied as separate disciplines (e.g., "Informatics," "Databases," "Information Technology in Professional Activity") rather than as a ubiquitous tool for solving economic problems. Therefore, creating a holistic methodology for interdisciplinary integration of IST is crucial. This involves developing educational case studies and tasks where IST (e.g., Power BI, Python/R, specialized ERP) are used not only for calculations but as a mandatory instrument for analysis, modeling, and decision-making in all core economic disciplines (microeconomics, finance, accounting). Furthermore, economists primarily study how to use IST, but there is insufficient research on how to evaluate their economic effectiveness and how to manage IT investments. For example, determining for how many years a charitable foundation's funds will suffice? The labor market demands specialists in hybrid roles (Business Analyst, Data Scientist, FinTech specialist) who possess both deep economic and IT skills, yet educational programs traditionally remain narrowly specialized. This necessitates the creation of competency models and educational trajectories that purposefully form these hybrid professional skills, combining economic theory with the practical

development and configuration of IST. This requires close cooperation with the IT industry for curriculum validation.

The goal of the article was to theoretically substantiate and develop a scientific and methodological model for improving the training process of future economists through the effective integration and use of modern Information Systems and Technologies (IST) in their professional activities and educational process.

To address the unresolved problems and achieve the set goal, a conceptual model for improving the training of economists is proposed, based on the principles of cross-cutting integration of IST and the formation of hybrid competencies.

The model is based on three interconnected elements that ensure the formation of a new type of economist:

Technological Foundation (IST-Core): Consolidation of basic IST knowledge early in the curriculum, leading to the acquisition of cross-cutting digital skills (data handling, coding, visualization).

Cross-Cutting Integration: Systematic implementation of IST tools into core economic disciplines, systematizing Data-Driven Decision Making competencies.

Hybrid Specialization: Formation of professional roles at the intersection of economics and IT, resulting in hybrid competencies (Data Analyst, FinTech Specialist, IT Auditor).

The Cross-Cutting Integration mechanism is a key part of the model, ensuring the functional, not isolated, study of IST. This involves the Formation of Technological Cases: For each core discipline (e.g., "Financial Management," "Accounting"), a specific IST tool and a real business case are defined to be solved. For instance, determining the future and present value of payments using financial functions in Excel.

For the formation of hybrid roles, it is necessary to introduce Specialized Modules: Adding electives or modules focused on the intersection of the two fields: "IT Audit and Valuation of IT Investments (RoII)": Training in the economic assessment of the feasibility and effectiveness of IT projects. "Foundations of FinTech and Blockchain Economics": Studying new financial technologies and their impact on business models. "Data-driven Economics": In-depth study of statistics and machine learning methods for economic forecasting. We also applied Project-Based Learning: Students work in interdisciplinary teams (economists + IT specialists) on real business projects. The economist acts as a Business Analyst, formulating requirements for the IST. For example, whether a student will manage to save the required amount for tuition by a certain deadline.

This model ensures that the future economist does not just use IST but thinks in terms of data and IT processes, which is essential for success in the digital economy.

The analysis confirms that in the context of global digital transformation and the exponential growth of economic data volumes (Big Data), Information Systems and Technologies (IST) have ceased to be merely an auxiliary tool and have become the fundamental basis for the effective professional activity of a modern economist. The dynamic digitization of key economic processes (planning, analysis, control) and the growing labor market demand for hybrid specialists (Data Analyst, IT Auditor) require the future economist to possess not only economic theory but also technological skills (demonstrate skills in problem identification and justifying management decisions, identify skills in searching, collecting and analyzing information, calculating indicators for justifying management decisions, demonstrate skills in analyzing situations and communicating in various spheres of organizational activity, form effective socio-labor relations in the organization based on the principles of work rationing, the use of modern information technologies and improving the quality of personnel's working life). Despite active scientific research, a critical gap remains between the speed of IST development and the inertia of educational programs. Specifically, the issues of cross-cutting integration of IST into all core disciplines and methodologies for evaluating the economic effectiveness of IT investments (RoII) are insufficiently developed.

To achieve the article's goal, a conceptual model for improving the training of future economists was theoretically substantiated and proposed.

Thus, the implementation of this model will ensure that the future economist can not only use IST but also think in categories of data and IT processes, guaranteeing their competitiveness and success in the digital economy.