

**THE ABSTRACTS
OF SCIENTIFIC RESEARCHES
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in English language**

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B3. Monograph

B3.1. Marinova-Kostova, K. Research on internet technologies' potential to improve digital competence in education. Varna, Publishing house "Knowledge and business" Varna, 12.2023, 194 pages, ISBN: 978-619-210-070-4

<https://econpapers.repec.org/bookchap/kabmonogr/21.htm>

The penetration of digital technologies in all spheres of modern life turns the digital competence of the population into a key skill for successful adaptation and professional realization. Fields such as information technology, digital marketing, programming, and many others require advanced digital skills, many of which are learned in educational institutions. The digital competence of the learners is a goal that their trainers strive to achieve, but also a tool that will help them in their training in the other disciplines of the training colloquium, allowing them to successfully integrate the technologies and tools they have learned into it. On the other hand, modern teaching is unthinkable without the use of information and communication technologies in general, and Internet technologies in particular, even in disciplines that are not directly related to improving the information literacy of the population. That is why it is also necessary for trainers (teachers and educators) to improve their digital competence by applying a variety of modern Internet technologies both in their classrooms and classrooms and outside them. This inevitably leads to a transformation of the educational system, of the pedagogical approaches that are traditionally used in it and is also related to the training of teachers and lecturers, the provision of the necessary infrastructure and software, as well as the development of appropriate curricula and didactic materials.

The object of our research is the digital competence of learners and trainers, and the **subject** is Internet technologies, with the help of which it can be increased.

This monograph **aims** to present the opportunities offered by some of the most popular Internet technologies to increase the digital competence of 2 categories of persons: learners (pupils and students) and trainers (teachers and university professors), which are the main units and main biotic components of the educational system.

To achieve this goal, we set ourselves the following **tasks**:

1. Identification of the essence of digital competence and its study in the context of the educational system.
2. Highlighting the areas of digital competencies and defining the knowledge and skills that are mastered in them.
3. Presentation of the capabilities of the leading Internet technologies applied in education to increase the digital competencies of trainers and learners.
4. Analyzing the potential of Internet technologies in the education of people with special educational needs;
5. Study of the current state of digital competence of learners and trainers from the Republic of Bulgaria.
6. Study of the level of use of Internet technologies in the Bulgarian educational system.
7. Highlighting the challenges and trends in the application of Internet technologies in education and their analysis through SWOT and PESTEL analyses.

The main **thesis** we defend is that Internet technologies provide powerful and diverse tools for increasing digital competence in education, developing the learning process, facilitating access to information and educational resources, but also promoting interactivity, collaboration, and innovation in the learning environment. In addition, they provide an opportunity for personalization of learning, which can support both learners with different learning styles and different abilities, as well as those with special educational needs. Internet technologies enrich educational practices by creating dynamic and engaging learning environments, which is essential for preparing future workers on the labor market for work in the digital age.

The relatively short volume of the current study has led to the adoption of some **limitations**:

1. The digital competence of the population, learners, and trainers has been thoroughly studied, but the concept of "digital creativity", which is inextricably linked

to it, has not been considered, since it implies a slightly greater creative expression that is difficult to measure and evaluate;

2. The possibilities of all Internet technologies that can be included in the learning process are not studied, due to their diversity and comprehensiveness, but the most popular and with the greatest degree of significance in the context of education and mass digital competence are considered.

3. The survey was conducted only on the territory of the Republic of Bulgaria in the period February-April 2023 and did not consider any changes that occurred after that.

Structurally, the monograph consists of an introduction, 3 chapters, a conclusion, a list of references, and an appendix.

Chapter One **"Digital Competence in Education"** examines the digital transformation of education, which leads to the need to increase digital competence. The role of information technologies in education is identified by deducing the essence of e-learning, its features and types, and the concept of a digital educational ecosystem is presented. The essence of digital competence is defined and its five main areas with their characteristic knowledge and skills are outlined.

Chapter Two **"Application of Internet Technologies in Education"** outlines the historical development of Internet technologies, and in particular web technologies, and outlines the main generations of web services. A detailed analysis of the possibilities of the leading Internet technologies for their application in the educational process to improve digital competence is made. Attention is paid to the specific applications and benefits of the use of Internet technologies for the training of persons with special educational needs.

The third chapter **"Status, Trends and Challenges in the Use of Internet Technologies to Increase Digital Competence in Education"** is entirely practical and presents the results of the author's research on the digital competence of learners and trainers, as well as the application of Internet technologies in the Bulgarian educational system. The identified advantages, disadvantages, opportunities, and problems are summarized within the framework of The SWOT analysis and the PESTEL analysis presented at the end of the chapter outlining the environment in which the education system is positioned and which influences the opportunities for technological innovation and structural reforms in it.

Based on the conducted research, the following *conclusions and generalizations* can be made:

1. Digital competence is defined as the ability of citizens, learners and educators to use information technologies in a specific context, including educational.

It is a set of knowledge, skills, attitudes, abilities, strategies and awareness that are needed when using ICT and digital media to perform tasks in a digital environment. The digital competence of citizens is described and defined in detail in the European Framework for Digital Competences of Citizens: DigCom, and the specific digital competences that teachers and educators must possess are addressed in the European Framework for Digital Competences of Educators (DigCompEdu).

2. Despite some discrepancy and the wider scope of the European Framework for Digital Competences of Educators (DigCompEdu), in this monograph we have adopted the second version of the European Framework for Digital Competences for Citizens: DigCom, as we believe that the main role of trainers is to develop not only their digital competences, but also those of their pupils and students. In this sense, we adopt the following 5 areas of digital competences: ***information and data literacy; communication and collaboration; digital content creation; safety; problem solving.***

3. Internet technologies provide educational institutions with tools and resources that can significantly improve learning and learning. Online education and distance learning have become an integral part of the educational landscape, especially since the global COVID-19 pandemic. Learning Personalization Tools are learning personalisation tools that help pupils and students develop skills and competences relevant to their individual needs and talents. The possibilities for visualization and interactivity provided by Internet technologies make the learning material more accessible and interesting. This can improve students' motivation and engagement. The main Internet technologies that are used in the learning process and can support the development of digital competence are: ***online learning systems; online interaction tools; Internet of Things; video conferencing systems; social media; virtual and augmented reality; artificial intelligence; electronic portfolio; online assessment.***

4. The application of internet technologies is essential to ensure high-quality education for persons with disabilities. Internet technologies can support people with SEN in the following areas: to compensate for a disability, to achieve certain didactic goals, to communicate. A large part of the Internet technologies discussed have significant potential to support the learning of people with special needs, but virtual and augmented reality and artificial intelligence can be singled out as leading in this regard, which overcome some sensory and motor deficits of learners.

5. To clarify the current level of digital competence, 2 surveys were developed and presented, aimed at 2 groups of respondents: learners and trainers, of which we received respectively 136 completed questionnaires aimed at pupils and students and 160 from teachers and lecturers. From the study, we can conclude that learners have a relatively high level of digital competence in terms of communication and collaboration in a digital environment, as well as literacy in terms of information

and data, but they lag significantly behind in terms of knowledge of online safety measures and their abilities to create digital content. On the other hand, the study shows that trainers have a higher digital competence than learners, but it is difficult to present and integrate it into the educational process.

6. The vast majority of the surveyed pupils and students (86%) are convinced that the application of Internet technologies in education will increase their digital competence. The study shows that in practice, several Internet technologies are widely used, mostly online tests and interaction tools, and the most innovative ones, such as artificial intelligence and virtual and augmented reality, are applied very poorly and to a limited extent. The general opinion of trainers is that educational institutions do not do enough to support the introduction of Internet technologies in education.

7. The main challenges faced by learners and trainers are not so much about the nature of the technologies themselves, but rather psychological and social, as well as organizational and technical. The main trend, according to the respondents, to which the efforts of responsible persons and institutions in education should be directed, is the construction of a full-fledged hybrid learning combining face-to-face, synchronous and asynchronous classes. Cooperation and exchange of good practices between educational institutions and countries are key to the successful implementation of Internet technologies in education.

In conclusion, the study of the potential of Internet technologies in education shows that they can significantly contribute to increasing the digital competence of pupils and students. However, it is important to provide adequate resources, training and infrastructure to get the most out of these technologies and ensure quality education for all. However, this process requires an integrated approach, with strong involvement of educational institutions, government authorities, industry partners and learners themselves. With joint efforts and commitment, education can be transformed through internet technologies, supporting the development of digital competence and preparing pupils and students for successful participation in the global digital economy.

Г5. A published book based on a defended dissertation for the award of the educational and scientific degree “Doctor” or for the award of the scientific degree “Doctor of Science”

Г5.1. Marinova-Kostova, K. Improvement of Electronic Customer Relationship Management systems in the financial sector. Svishtov, Tsenov Academic Publishing House, 12.2023, 186 p., ISBN: 978-954-23-2448-5

<https://dlib.uni-svishtov.bg/handle/10610/4893>

The Customer Relationship Management System (CRM System) is a front-office business information system that collects, stores, processes, analyzes and exports all available information about the company's customers. The Electronic Customer Relationship Management System (e-CRM) is defined as a subset of the traditional CRM system, which uses the Internet as a common communication platform and environment for interacting with users.

The financial sector has a significant potential for the implementation of e-CRM systems in order to improve customer relations, which is determined by several main factors: changes in consumer behavior, which constantly increase the requirements and desires of customers and their willingness to change the institution serving them increases; the growing competition in the sector, as a result of which enterprises in the industry operate in saturated markets and increased competition; new structural and business models in the sector. This requires organizations to manage their customer relationships in a new, improved way in order to retain them for an extended period of time on the one hand and to meet their growing information needs on the other. To achieve this goal, enterprises should implement an e-CRM system.

The main **objective** of the study is to investigate the nature, functions and economic role of e-CRM systems to reveal their opportunities for improving relations with the customers of financial institutions and to propose a model of a business information system that serves this interaction to the greatest extent.

To achieve the goal formulated in this way, an attempt was made to solve the following **tasks**:

1. To reveal the essence, technological and functional scope of CRM systems in general and e-CRM systems in particular.
2. To study the necessity, economic and non-economic effects of the implementation of an e-CRM system in business.
3. To identify the main problems in the development, implementation and operation of e-CRM systems.
4. To study and analyze the prevalence and state of e-CRM systems in financial organizations in the Republic of Bulgaria.
5. To propose a model of an advanced e-CRM system, applicable to the greatest extent in the enterprises in the sector.
6. To identify measures to promote e-CRM systems in the industry.
7. To present other innovative models of implementation of CRM systems.

The thesis advocated is that in a complex market situation in which each customer is critically important for the success of an enterprise, financial sector organizations should strive to improve relationships with their customers in order to

retain them for an extended period of time. In the context of the digital economy and the ubiquitous use of the Internet, successful customer interaction is unthinkable without building a well-suited and well-suited to the needs of the industry. A functioning electronic customer relationship management system, which would lead to strategic advantages for the institution implementing it.

Object of study are the electronic customer relationship management systems (e-CRM systems) as part of the information infrastructure of the enterprises in the financial sector of the Republic of Bulgaria.

The subject of the study is the opportunities for application, improvement and development of e-CRM systems as business information systems aimed at managing the relationships with the customers of commercial banks, insurance, insurance, pension companies, health funds, brokerage houses, etc.

The following are used in the development **Methods** of research: description of CRM and e-CRM systems; analysis of the constituent elements of the system and synthesis based on the revealed connections and interactions between these elements; functional analysis of the business information system under consideration; induction; deduction; modeling of an advanced e-CRM system for the financial sector; systemic approach.

The scientific study is based on a survey covering 24 financial institutions, including 9 banks, 11 insurance companies, 1 health insurance fund and 3 enterprises of the "other" category, conducted in the period June-August 2011. The research **methodologies** used are: a questionnaire survey containing 36 questions to establish the current state of the e-CRM system in the surveyed enterprise and 8 optional questions to identify the organization; personal conversation with managers and directors of divisions of the studied institutions.

Subsequently, the results were analyzed using specialized analytical software - SPSS and presented in the form of tables and pie and bar charts using MS Excel.

The following limitations were adopted in the study:

Emphasis is placed on e-CRM systems and they are considered as a type of CRM system. In this regard, the first chapter pays attention to CRM systems as they are the basis for the development of e-CRM systems.

The survey reflects the state of e-CRM systems until August 2011 and does not cover the changes that occurred after this period.

The current work in **Content-structural** relationship consists of three chapters.

The first chapter explores the essence of customer relationship management as a concept, strategy, philosophy and business information system; the main goals, tasks, functions, architectural and technological elements of the system are defined;

differentiate the types of CRM systems, define an e-CRM system and indicate the possibilities for its application in business.

The second chapter focuses on the economic need for the implementation of e-CRM systems in organizations, the need for their implementation, the practical benefits and effects for business from the implementation of approaches to improve customer interaction. In addition, the main problems in the development, implementation and operation of e-CRM systems are analyzed and proposals are made for their solution through the use of new promising variants of the system.

The third chapter presents the results of an author's study on the spread of e-CRM systems in the financial sector of the Republic of Bulgaria, their architectural and functional features, the economic and non-economic effects and benefits of their implementation, the return on investment. Models for improving the system and its integration with data centers are proposed. The opportunities for promoting the application in the sector are described and recommendations are given for solving the problems revealed by the study.

As a result of the study of the theoretical foundations of e-CRM systems and the research in the practice of Bulgarian financial organizations, the following conclusions can be drawn, in accordance with the strategic goals and objectives of the development:

1. The strategy for building customer relationship management (CRM) systems in the sector is a reaction to the increasing needs, inquiries and requirements of customers. It provides competitive advantages to the organization, expressed in increasing the value of the client, increasing his satisfaction, leads to attracting new and retaining existing customers. The Internet is a favorable environment for the implementation of processes related to sales, marketing and customer service, which is a prerequisite for the construction of electronic CRM systems. They are defined as front-office business information systems that collect, store, process, analyze and export all available information about the company's customers, using the Internet as a common platform for work.

2. Architecturally and technologically, the e-CRM system consists of: a data warehouse, analytical tools and solutions that ensure interaction with customers. All these components have their varieties and specific functions. It is necessary for the architectural elements to be integrated with each other, which is a prerequisite for better management of the enterprise in general and its customers in particular, providing management with fast, accurate and adequate information that contributes to making informed management and organizational decisions.

3. The implementation of an e-CRM system is conditioned by the constantly growing competition for each client, the increased number of channels for

communication with customers, changing corporate priorities, the increased information needs of the business, the search for new economic and market advantages.

4. As a result of the implementation of e-CRM systems, a variety of tangible and intangible effects are manifested. The most widespread is the increase in the total number of transactions, which is a prerequisite for increasing customer revenue, reducing service costs and, as a result, increasing profits. The most common intangible effects are the opportunity to develop competitive financial products, reduced administrative work, the creation of a comprehensive vision for the client, improving the quality of services, which are an attestation of the good use of the unified corporate data warehouses (most often in the form of databases) and the operational and analytical part of the e-CRM system. The assessment of the effects and benefits of the implementation of the system as a whole is very good and for most organizations the investment is defined as successful and profitable.

5. There are many difficulties and problems in the development, implementation and operation of the e-CRM system, mostly of an organizational, technological and financial nature. The main obstacle to the implementation of the system is the resistance to changing the way of working with customers, the conservatism regarding such a class of systems, the additional efforts that should be directed to the development, implementation, adjustment of the system and, most of all, to train the staff.

6. E-CRM systems are a modern initiative, widely used in banks, insurance companies and brokerage houses, especially in the last seven years. 75% of the surveyed organizations have a CRM system, and 71% also have an electronic system. The E-CRM system is oriented towards the implementation of operational and analytical functions, but there is a lack of collaborative tools. In particular, it should provide the functions that are most important according to the organisations surveyed: improving service; increasing customer satisfaction; determining the right product for the right customer; market segmentation; conducting appropriate marketing campaigns; individual marketing; deal management.

7. The presented model of an advanced e-CRM system for the financial sector covers to the greatest extent the preferred architectural components, the connections between them, the information flow and the two-way interaction with users, taking into account the above functions. The system, built on the basis of the proposed model, would be widely used in the information infrastructure of any financial organization, because it fully reflects the typical BDS architecture without neglecting any of its main modules and is easily integrated with the back office. In addition, the most commonly used communication channels, data warehouses, analytical tools and front-office applications are represented. The collaborative part of the e-CRM system has been

removed due to its inapplicability at this stage in the financial sphere. The connections between the individual modules have been optimized.

8. The organization's E-CRM system can be integrated with a data center, which is driven by the ever-growing volume of customer data and the need to store it securely and reliably. A model of integration between the system and the data center of SugarCRM is presented.

9. A number of measures can be taken to promote e-CRM systems among financial organizations: to offer cheaper, easier to implement and use and more cost-effective innovative variants of the system, such as Cloud Computing, SaaS and Social CRM based on web 2.0; to organize specialized forums to meet the interests of manufacturers, suppliers and users of e-CRM software, such as CRM Expo; to hold scientific conferences on the problems of the field with the participation of the scientific community and practice.

Г6. Articles and papers published in scientific editions, referenced and indexed in worldwide databases of scientific information

Г6.1. Marinova-Kostova, K., Kostov, I. Application of Internet of Things in Industry 4.0. Economics. Ecology. Socium : Electronic scientific and practical journal., 1.2021, 5, pp. 49-58, ISSN: 2616-7107

<https://ees-journal.com/index.php/journal/article/view/167> Indexing: Web of Science

Industry 4.0 is a concept that is considered a new phase in the Industrial Revolution, closely related to the application of information technologies and the digital transformation of manufacturing. The main purpose is to be created a more holistic and more connected ecosystem, focused on supply chain management in industrial companies. Implementation of solutions in Industry 4.0 is mostly related to the concept of the Internet of Things (IoT). Mass deployment of this type of technology in industrial enterprises is the basis of the so-called Industrial Internet of Things (IIoT). Achieving interoperability in the IIoT requires the combination of two technologies: the Internet of Things and the Internet of People.

This article describes the implementation of the concept of the Internet of Things in industrial enterprises, as a key technology factor for developing Industry 4.0.

A brief overview of the evolution of industrial production - from the beginning of the Industrial Revolution to the emergence of Industry 4.0 is made. The main principles for implementing Industry 4.0 solutions ensure that the entire production process is computerized. Industry 4.0 solutions are mostly associated with the concept

of the Internet of Things (IoT) whose definition and essence are obtained in this article. Based on the various concepts of the IoT are presented solutions that can be used in the industry, namely: in consumer devices in technology used in public organizations in infrastructure applications in industrial applications, also called the Industrial Internet of Things (IIoT). Therefore, we can say that there is a significant potential for improving production processes as regards: optimization of operations, forecasting equipment support, inventory optimization, improving workers' security, shipping chain optimization, etc.

The application of the Internet of Things in enterprises is an important and decisive step in the process of their digital transformation and transition to Industry 4.0. The interaction between humans and machines, carried out through Internet technologies, leads to the emergence of the Internet of Everything, which will be a basic concept in industrial production in the coming years. However, the role of man in the production process should not be completely eliminated, but solutions should be sought that support and intellectualize his work.

Г6.2. Petrova, M., Popova, P., Popov, V., Shishmanov, K. & **Marinova, K.** Digital Ecosystem: Nature, Types and Opportunities for Value Creation. Innovations in Digital Economy: Third International Scientific Conference, SPBPU IDE 2021. Revised Selected Papers - Saint Petersburg, Russia, October 14–15, 2021. Springer Cham, 8.2022, pp. 71-85, ISBN: 978-3-031-14984-9

https://link.springer.com/chapter/10.1007/978-3-031-14985-6_5 Indexing:
Scopus (Elsevier)

In the context of accelerated digital transformation, business organizations face the need to adapt their models of operation, interaction, and value creation. Digital ecosystems (DE) have emerged as a strategic tool for innovation and sustainable development. The article aims to clarify the concept of a digital ecosystem by examining its multilayered and multiperspective nature, classifying its main types and components, and proposing a business model for value creation through an ecosystem approach.

The methodological framework of the study is based on a systematic review of scientific literature. The process includes two main stages: planning the review and its practical implementation. In the first stage, key research questions are formulated, data sources and selection criteria are defined. In the second stage, relevant publications are selected, analyzed, and synthesized using a structured approach. The study encompasses organizational, technological, and economic perspectives, allowing for a comprehensive understanding of the phenomenon.

A digital ecosystem is defined as a self-organizing socio-technical system composed of heterogeneous participants—enterprises, organizations, developers, and customers—interacting through a shared digital platform. It is characterized by adaptability, resilience, dynamism, scalability, and the ability to create synergy among participants. Unlike traditional supply chains, DE offers a new model of collaboration where value is created through shared resources, innovation, and technological connectivity.

DEs are classified according to several criteria: economic potential (production and consumption ecosystems), functionality (process-, resource-, or product-oriented), ownership (centralized, consortium-based, decentralized), and scope of application (industrial, educational, social, etc.). The main technological components of DE are the digital platform and application programming interfaces (APIs), which ensure interoperability, data exchange, and the ability to expand functionality.

Value creation within DE depends on the platform structure, participant roles, and collaboration strategies. A value creation model is presented, which includes role selection (e.g., orchestrator, complementor), partner network development, platform integration, and risk assessment. The concept of “generativity” is used to evaluate the ecosystem’s ability to generate new technological solutions through open and unexpected interactions.

In conclusion, digital ecosystems are viewed as a new paradigm for organizing economic activity, offering significant technological, organizational, and economic advantages. They enable the creation of new business models based on collaboration, innovation, and shared resources.

Г6.3. Petrova, M., Popova, P., Popov, V., Shishmanov, K. & **Marinova, K.** Potential of Big Data Analytics for Managing Value Creation. 2022 International Conference on Communications, Information, Electronic and Energy Systems (CIEES): Conference Proceedings. Hybrid Conference - Veliko Tarnovo, Bulgaria, November 24 - 26, 2022. IEEE , 11.2022, pp. 1-6, ISBN: 978-1-6654-9149-5

<https://ieeexplore.ieee.org/document/9990882> Indexing: Scopus (Elsevier)

In the context of growing digitalization and the exponential increase in data, business organizations are striving to harness the potential of Big Data (BD) and Big Data Analytics (BDA) for value creation. The aim of the study is to identify the key factors influencing the implementation of BD and BDA in organizations and to analyze and compare existing models for generating value through them.

The methodological approach is based on a systematic literature review, involving the selection, analysis, and structuring of relevant publications. The study

covers organizational, technological, economic, and social aspects of BDA, applying critical analysis to extract key factors and models.

The findings reveal that multiple factors affect the effectiveness of BDA—technological (infrastructure, compatibility, security), economic (investment, business models), organizational (flexibility, culture, management), social (human resources, skills), and legal (regulations, data protection). Various models for value creation through BDA are presented, with the most widely used being the Big Data Value Chain (BDVC), which includes seven core phases: data generation, acquisition, preprocessing, storage, analysis, visualization, and exposition.

The study emphasizes the importance of the Analytics Digital Ecosystem, where participants—technology providers, users, and facilitators—interact through platforms to co-create value. In conclusion, the successful implementation of BDA requires a strategic selection of an appropriate model tailored to the organization's scale and specifics, as well as a clear understanding of the key stages and actors involved in the value creation process.

Г6.4. Popova, P., Petrova, M., Popov, V., **Marinova, K.** & Sushchenko, O. Potential of the digital ecosystem for the sustainable development of the tourist destination. IOP Conference Series: Earth and Environmental Science: 2nd International Conference on Environmental Sustainability in Natural Resources Management - Riga, Latvia, 31.10.2022 - 01.11.2022. IOP Publishing Ltd, 1.2023, pp. 1-10, ISBN: 1755-1315

<https://iopscience.iop.org/article/10.1088/1755-1315/1126/1/012021/meta>

Indexing: Scopus (Elsevier)

This study examines the role of the digital ecosystem as a strategic tool for the sustainable development of tourist destinations. In the face of global challenges such as climate change, socio-economic disparities, and digital transformation, the tourism industry must adapt its development and governance models. The article aims to analyze how digital technologies and an ecosystem-based approach can contribute to the sustainability of tourism by addressing economic, social, cultural, environmental, and institutional dimensions.

The methodology includes a systematic literature review, analysis of best practices, and the structuring of sustainability indicators. The authors introduce the concept of a **Sustainable Tourism Ecosystem (STE)**—a dynamic, self-organizing system of stakeholders (local authorities, tourism operators, tech providers, tourists, etc.) connected through a digital platform. This ecosystem enables data exchange, co-creation of value, and adaptive resource management.

The paper emphasizes the importance of digitalization in tourism through the use of IoT, mobile apps, booking platforms, destination management systems, and big data analytics. These technologies support sustainable development by improving planning, monitoring, personalization of tourist experiences, and community engagement.

Sustainability indicators are presented across five key areas:

- **Economic** – revenue diversification, digital competitiveness;
- **Social** – accessibility, local participation, digital literacy;
- **Cultural** – preservation of heritage through digital archives and virtual tours;
- **Environmental** – resource management, carbon footprint reduction via smart systems;
- **Political-legal** – data protection regulations, ethics, and sustainable governance.

In conclusion, the digital ecosystem is not merely a technological solution but a new governance model that requires collaboration, strategic vision, and adaptability. Realizing its full potential demands investment in digital infrastructure, human capital, and institutional support.

Г6.5. Popova, P., Popov, V., **Marinova, K.** & Petrova, M. The Role of Digital Platforms and Big Data Analytics as a Base for Digital Service Innovation. 4th International Conference on Communications, Information, Electronic and Energy Systems (CIEES 2023): Conference Proceedings. Hybrid Conference - Plovdiv, Bulgaria, November 23-25, 2023. IEEE , 11.2023, pp. 1-8, ISBN: 979-8-3503-3691-7 <https://ieeexplore.ieee.org/document/10378780> Indexing: Scopus (Elsevier)

The article explores the role of digital platforms (Digital Platforms – DP) and big data analytics (Big Data Analytics – BDA) as a foundation for digital service innovation (Digital Service Innovation – DSI). In the context of digital transformation and the growing demand for personalized, efficient, and innovative services, DSI is emerging as a strategic approach to value creation and competitive advantage. The study is based on the tripartite framework by Lusch and Nambisan, which includes: service ecosystem (Service Ecosystem), service platform (Service Platform), and value co-creation (Value Co-Creation).

The methodology involves a systematic review of scientific literature using the PRISMA method, analyzing the interconnections between DP, BDA, and DSI. It is emphasized that digital platforms create an environment for interaction among participants, resource exchange, and collaborative innovation, while BDA provides opportunities for real-time decision-making, personalization, and prediction of user behavior.

The study systematizes the role of DP and BDA across several key areas: data-driven decision-making, personalization, efficiency and optimization, market insights and competitive advantage, risk management, real-time responsiveness, customer engagement, and ecosystem building. Examples from various sectors—e-commerce, healthcare, transportation, manufacturing, agriculture, and others—are presented to illustrate how these technologies are applied in practice.

The article also examines different levels of integration between DP and BDA—from minimal to complete—highlighting that the highest level of integration enables automated decision-making, machine learning, and real-time personalized services. The technological interdependence between platforms and data analytics is presented as a key factor for the success of digital service innovation.

In conclusion, it is emphasized that DP and BDA not only facilitate innovation but are themselves subjects of innovation processes. Their interconnection creates a dynamic environment in which new opportunities for value creation, enhanced customer experience, and sustainable competitive advantage continuously emerge.

Г6.6. Popova, P., Petrova, M., Popov, V. & **Marinova, K.** Internet of Things as a Key Technology for Developing Smart Tourism Destinations. Problems of Infocommunications Science and Technology (PIC S&T'2022) : 2022 IEEE 9 the International Conference. Conference Proceedings - Kharkiv, Ukraine, October 10-12, 2022.IEEE , 9.2023, pp. 151-156, ISBN: 979-8-3503-9891-5

<https://ieeexplore.ieee.org/document/10238665> Indexing: Scopus (Elsevier)

The article explores the role of the Internet of Things (IoT) as a key technology for the development of Smart Tourism Destinations (STD). In the context of digital transformation and the evolution of cities into smart cities, tourism destinations are also being transformed through the integration of intelligent technologies that enhance the tourist experience, optimize resources, and promote sustainability.

The aim of the study is to analyze the application of IoT in STD, outline a suitable IoT architectural framework, and identify the main challenges and risks associated with its implementation. The methodology includes a systematic literature review, content analysis, system modeling, and empirical data from a case study on digital transformation in the destination of Veliko Tarnovo.

The article presents key IoT applications across six dimensions of STD: smart transport and mobility, smart environment, smart people, smart living and attractions, smart economy, and smart governance. For each dimension, specific technologies (e.g., RFID, sensors, GPS, mobile apps, AR/VR) and their functions are described—from

tourist tracking and traffic management to personalized services and automated payments.

An adapted IoT architecture based on the Service-Oriented Architecture (SOA) approach is proposed, consisting of four layers: sensing, network, service, and interface. This architecture ensures flexibility, scalability, and integration of diverse devices and services within the tourism ecosystem.

In conclusion, the article emphasizes that IoT is a crucial enabler for the development of STD, offering numerous benefits such as real-time data collection, personalized experiences, and improved management. However, its implementation also poses challenges related to data security, cyber risks, costs, and the need for training. Despite these, the potential of IoT to enhance tourism services and destination management is substantial.

Г6.7. Popova, P., **Marinova, K.** & Popov, V. Internet of Things and Big Data Analytics for Risk Management in Digital Tourism Ecosystems. *Risks*, 12.2023, 11, pp. 1-15, ISSN: 2227-9091

<https://www.mdpi.com/2227-9091/11/10/180> Indexing: Scopus (Elsevier), Web of Science

This article examines the role of the Internet of Things (IoT) and Big Data Analytics (BDA) as key technologies for risk management in Digital Tourism Ecosystems (DTE). In the context of digital transformation and the development of Smart Tourism Destinations (STD), IoT and BDA are emerging as essential tools for improving efficiency, safety, and sustainability in tourism services.

The objective of the study is to identify and systematize the risks faced by participants in the digital tourism ecosystem, to determine the potential of IoT and BDA for managing these risks, and to highlight the challenges associated with the use of these technologies. The methodology is based on a Systematic Literature Review, with three main research questions formulated regarding risks, technologies used, and applicable solutions.

The article proposes a classification of risks in DTE, including strategic, organizational, technological, socio-cultural, environmental, and economic risks. It emphasizes that the specific features of digital ecosystems—such as modularity, convergence, and generativity—also create conditions for risk emergence. IoT and BDA are considered both as solutions for risk management and as sources of new challenges related to infrastructure, security, regulation, and human resources.

The study presents the main IoT technologies and applications used in tourism, such as RFID, sensors, smart chips, tracking and control systems, and their role in risk

mitigation. Through detailed tables, the article demonstrates how different DTE participants—tourists, tour operators, service providers, technology companies, public institutions, and others—can apply specific IoT solutions to address particular types of risks.

In conclusion, the article highlights that IoT and BDA have significant potential to improve risk management in digital tourism, especially in relation to technological and socio-cultural risks. However, their implementation requires careful planning, staff training, and compliance with regulatory frameworks. The relationship between participant roles, risk types, and applicable technologies is presented as a foundation for informed decision-making in the development and management of smart tourism destinations.

Г6.8. Popova, P., Popov, V., **Marinova, K.**, Petrova, M. & Shishmanov, K. The Digital Platform — new opportunities and implementation strategy. 16th International Conference on Electronics, Computers and Artificial Intelligence (ECAI-2024). Proceedings - Romania, Iasi, 27-28 June 2024. IEEE , 9.2024, pp. 1-9, ISBN: 979-8-3503-7115-4

<https://ieeexplore.ieee.org/document/10607401> Indexing: Scopus (Elsevier)

The article examines the role of digital platforms as a key technological infrastructure for building Digital Business Ecosystems (DBE). In the context of digital transformation and the pursuit of efficiency, competitiveness, and innovation, digital platforms have become central tools for value creation, enabling new products and services and expanding market reach.

The aim of the study is to identify the advantages and risks of using digital platforms and to provide best practices and strategies for their integration. The methodology is based on a systematic literature review (including the PRISMA method), analyzing economic, technological, and social aspects of digital platforms.

The article provides a classification of the opportunities and threats related to digital platforms. Key opportunities include modularity and scalability, network effects, innovation, new business models, economies of scale, increased productivity, and access to new markets. At the same time, key risks include lack of regulations, data security and ownership issues, insufficient infrastructure, shortage of skilled staff, and dependence on external platforms.

Two main strategic approaches are outlined: building a proprietary platform or joining an existing ecosystem. The authors analyze key success factors (such as the ability to create and capture value, effective API management, ecosystem governance, and sustainable revenue models), and identify six essential enablers for strategic

development: API, spearhead products, communities, support functions, revenue model, and ecosystem governance.

In conclusion, the article emphasizes that digital platforms offer significant strategic and operational benefits, but their implementation requires a well-planned and adaptive strategy aligned with the dynamic nature of the digital economy. Building a platform is not just a technical task—it also demands new mindsets, inter-organizational collaboration, and holistic transformation.

Г7. Articles and papers published in non-refereed peer-reviewed journals or published in edited collective volumes

Г7.1. Marinova-Kostova, K. Mobile Wallet – Functions, Components and Architecture. Proceedings of the Second Conference on Innovative Teaching Methods (ITM 2017) - Varna, 28-29 June 2017 г. Varna, Publishing house “Science and economics”, 6.2017, pp. 55-58, ISBN: 978-954-21-0930-3

The paper explores the functionalities, architecture, and technological components of the mobile wallet as a key instrument in contemporary digital financial services. In the context of the rapid advancement of mobile technologies and the growing use of smartphones for financial operations, the mobile wallet is considered an innovative solution for facilitating electronic payments and enhancing the user experience.

It aims to systematize the core functions of the mobile wallet, including peer-to-peer and merchant payments, virtual card storage, discount and coupon management, as well as user authentication. A conceptual architecture is presented, comprising three main layers – the user interface, the logic layer, and backend services. Particular attention is given to security aspects such as encryption, tokenization, and the use of Secure Elements.

It is emphasized that the successful implementation of a mobile wallet requires an integrated approach that combines user convenience, a high level of security, and compatibility with external financial and commercial systems. The conclusion is drawn that mobile wallets are an indispensable part of the future of electronic commerce and contactless payments, with their adoption depending on a robust architecture and a clear understanding of the market and technological landscape.

Г7.2. Marinova-Kostova, K. Electronic identification in the European union and Bulgaria - current state, technological features and opportunities for development. Dialog, 12.2019, 3, pp. 60-72, ISSN: 1311-9206

The article explores electronic identification (eID) as a modern digital instrument for reliably and securely verifying the identity of individuals accessing electronic administrative, commercial, and public services. In the context of the growing development of e-government across the European Union and the increasing demand for cross-border digital services, eID is recognized as a foundational component of the digital ecosystem.

The main objective of the article is to clarify the nature of electronic identification and analyze its application within the EU and in Bulgaria. It defines the core characteristics of eID in accordance with European and national legislation, presents the key technical specifications of eID schemes (including SAML protocols, cryptographic mechanisms, interoperability frameworks, and security levels), and outlines various approaches to electronic identification – such as electronic signatures, personal identification codes (PICs), electronic ID cards, and certificates of electronic identity.

Special attention is given to the legal framework—specifically Regulation (EU) No 910/2014 (eIDAS), which aims to achieve mutual recognition of national eID schemes among EU member states. Although Bulgaria has enacted an eID law in 2016, a fully operational national scheme is still lacking. The article includes a SWOT analysis of the three primary means of e-identification used in Bulgaria, evaluating their strengths, weaknesses, opportunities, and threats.

In conclusion, the article emphasizes that the successful development of eID is essential for effective e-Government, access to cross-border digital services within the EU, and building trust in the digital environment. The author advocates for accelerating national efforts to implement an electronic identity certificate that meets European security and interoperability standards.

Г7.3. Marinova-Kostova, K. Opportunities for the Application of Electronic Identification Tools in Bulgaria. Scientific Conference: TechCo – Lovech 2019. Proceedings – Lovech, May 10, 2019. University Publishing House "Vasil Aprilov" Gabrovo, May 2019, pp. 253–258

The report explores the possibilities for implementing electronic identification (eID) tools in the context of e-government in Bulgaria. In the era of digital transformation and the growing need for secure access to electronic administrative services (EAS), eID emerges as a key instrument for verifying citizens' identities.

The aim of the study is to analyze the current state of eID tools used in Bulgaria, assess their advantages and limitations, and outline future development opportunities in line with European regulations. The methodology is based on a review of legal frameworks, statistical data, and practical applications of eID.

The report examines three main eID tools: electronic signature, personal identification code (PIC), and electronic identity certificate. Their characteristics, security levels, accessibility, and compliance with EU standards are discussed. The electronic signature offers high security but is paid and technically limited. The PIC is free and user-friendly but has limited applicability. The electronic identity certificate complies with Regulation (EU) No 910/2014 but remains in a pilot phase.

In conclusion, the report highlights that Bulgaria lags behind in implementing effective and universal eID solutions. It recommends promoting the benefits of eID among citizens, removing technical barriers, and encouraging the use of EU-compliant identifiers.

Г7.4. Marinova-Kostova, K. Application of Web 2.0 Technologies for Sharing Scientific Research, Resources, and Results. *The Economy of Bulgaria – 30 Years After the Beginning of the Changes: Scientific-Practical Conference. Proceedings – Svishtov*, November 22, 2019. Svishtov, Tsenov Academic Publishing House, June 2020, pp. 487–494, ISBN: 978-954-23-1815-6

The report examines the application of Web 2.0 technologies as modern tools for sharing scientific research, resources, and results within the framework of open science. In the context of digital transformation in academia, Web 2.0 platforms offer new opportunities for collaboration, knowledge exchange, and dissemination of scientific output.

The aim of the study is to analyze the main types of Web 2.0 technologies used by researchers—social networks, blogs, wikis, content-sharing platforms, and bibliographic tools—and to assess their role in the research process. The methodology includes a review of existing platforms and tools, as well as an evaluation of their effectiveness and adoption among the scientific community.

The report classifies sharing opportunities into four main areas: research, resources, results, and citations. It presents specific platforms such as ResearchGate, Mendeley, Zotero, Google Docs, SurveyMonkey, Blogger, ScienceBlogs, and others that facilitate collaboration, publishing, and indexing of scientific information. The importance of open access and open information architecture is emphasized as a driver of accelerated scientific exchange.

In conclusion, the report notes that despite the vast potential of Web 2.0 technologies, their use among researchers remains limited due to lack of time, technical support, and concerns about data security. Nevertheless, the scientific community shows willingness to adopt these technologies to enhance communication and collaboration in research.

Г7.5. Marinova-Kostova, K. & Kostov, I. The Internet of Things as a Main Concept for Implementing Solutions in Industry 4.0. Annual International Scientific Conference of the Georgi Benkovski Air Force Academy 2020: Proceedings – Dolna Mitropoliya, October 16, 2020. Georgi Benkovski Air Force Academy, October 2020, pp. 240–247, ISBN: 2738-716X

The report explores the concept of the Internet of Things (IoT) as a fundamental component in the development of Industry 4.0. In the context of digital transformation and automation of production processes, IoT emerges as a key technology for enhancing efficiency, flexibility, and competitiveness in industrial enterprises.

The aim of the study is to analyze the evolution of industrial production from Industry 1.0 to Industry 4.0, define the core principles of Industry 4.0, and examine the role of IoT and the Internet of Everything (IoE) in this transformation. The methodology includes a theoretical review of concepts, technologies, and applications related to industrial digitalization.

IoT is presented as a system of interconnected devices that collect, transmit, and process data without human intervention. It outlines key industrial applications of IoT—ranging from equipment monitoring and inventory optimization to smart logistics and wearable safety technologies. The concept of the Internet of Everything is emphasized as a digital ecosystem integrating people, processes, data, and devices.

In conclusion, the report highlights that the implementation of IoT in industrial enterprises is a decisive step toward achieving smart manufacturing. Despite technological advancements, the human role remains essential, with human-machine interaction forming the foundation of the emerging Industry 5.0.

Г7.6. Emilova, P. & Marinova-Kostova, K. Innovative solutions and technologies in tourism as an opportunity for digitalization of the hotel business. Dialog, 12.2021, No. 4, pp. 16–32, ISSN: 1311-9206

The article explores the role of innovative solutions and technologies as a key driver of digitalization in the hospitality industry amid a rapidly changing tourism environment. The author highlights the necessity for hotels to adapt to digital

transformation and evolving consumer expectations for convenience, personalized experiences, and quick access to information.

The study aims to analyze how digital innovations – including online booking platforms, mobile applications, CRM systems, automated check-in/check-out processes, artificial intelligence, and the Internet of Things – contribute to improving competitiveness, streamlining internal operations, and enhancing customer satisfaction.

Particular attention is given to **Hotel Management Systems (HMS)**, which are presented as the backbone of modern hotel operations. These systems integrate core functionalities such as reservation management, guest check-in/out, billing, customer service, and business analytics. The article emphasizes the role of HMS in achieving operational efficiency and delivering personalized services.

Digital transformation in the hotel sector is framed as not only a technological but also an organizational process requiring new leadership approaches, staff training, and infrastructure investment. In conclusion, the integration of innovative technologies and hotel systems is shown to foster greater efficiency, sustainability, and improved market positioning for the hospitality business.

Г7.7. Marinova-Kostova, K.. Influence of the digitalization of education on the digital competencies of educators. Sustainable Development and Socio-Economic Cohesion in the 21st Century – Trends and Challenges: International Scientific and Practical Conference. Proceedings – Svishtov, November 8–9, 2021. , Tsenov Academic Publishing House, November 2021, pp. 320–327, ISBN: 978-954-23-2069-2

The paper aims to explore the impact of digitalization on the development of educators' digital competencies in modern education. The focus is placed on analyzing the conceptual and methodological dimensions of the digital transformation, using the European Framework for the Digital Competence of Educators (DigCompEdu) as a reference point. Six key domains are presented: professional engagement, use and creation of digital resources, teaching and learning through technology, assessment, learner support, and the promotion of learners' digital literacy.

The necessity for the deliberate development of pedagogical approaches that respond to the demands of the digital environment is emphasized. Key challenges are discussed, such as insufficient digital training, limited resources, and the need for strategic institutional support.

In conclusion, it is highlighted that the formation of digital competence among educators is a continuous process that requires a comprehensive approach, encompassing both technological and pedagogical aspects. Successful adaptation to the

digital educational reality involves not only mastering digital tools but also cultivating a new type of digital culture and mindset in teaching.

Г7.8. Marinova-Kostova, K. Digital education ecosystem. Digital Transformation of Education – Problems and Solutions, Assessment and Accreditation: National Scientific and Practical Conference. Proceedings – Ruse, "Angel Kanchev" University of Ruse, 2023. Ruse University "A. Kanchev", 4.2023, pp. 39–43, ISBN: 978-954-712-892-7

The report examines the concept of a Digital Education Ecosystem (DEE) as an innovative model for organizing and developing education in the context of accelerated digital transformation. The formation of DEE is presented as a logical response to the overall digitalization of society and the increased demand for flexible educational solutions in the post-COVID-19 era.

The main objective of the report is to present the structure, core components, and operational principles of DEE. It is defined as a socio-cultural and techno-technological system based on a unified digital platform, comprising biotic elements (educators, learners, parents, institutions) and abiotic ones (technologies, infrastructure, content, administration). Emphasis is placed on personalized and adaptive learning and on the networked organization of educational interactions.

The report outlines key characteristics of DEE – the use of big data, institutional knowledge and resource sharing, digital transformation of teaching processes, and the application of advanced digital tools for effective educational management.

In conclusion, it is emphasized that DEE holds strong potential to enhance the effectiveness, accessibility, and sustainability of education by creating an integrated, dynamic, and collaborative digital environment.

Г7.9. Marinova-Kostova, K. Key Dimensions of Web-Based Reservation Systems in Modern Tourism Sector. Polish Journal Of Science, 12.2023, 69, pp. 18-20, ISSN: 3353-2389

The article explores the key dimensions of web-based reservation systems (WBRS) within the context of the modern tourism sector, which is marked by rapid technological advancement, global competition, and evolving customer expectations. The main objective is to trace the transformation of reservation systems from their airline-centric origins to comprehensive digital platforms that now encompass a wide range of tourism services, including accommodation, transportation, events, and dining.

The functional scope of modern web-based reservation systems is analyzed, with emphasis on the importance of real-time bookings, personalized service, automated customer communication, and the potential for user behavior analysis. Essential system features are outlined, such as multi-language and multi-currency support, online payment integration, voucher management, mobile compatibility, and social media connectivity. The ability to generate detailed reports and analytics is also highlighted as a critical tool for marketing and strategic planning.

Special attention is given to the role of cloud computing, which enables centralized booking management, dynamic pricing, scalability during peak seasons, and secure data storage. Mobile technologies and social networks are identified as vital channels for customer engagement and service delivery, reflecting the growing demand for flexibility and immediacy in travel planning.

In conclusion, the article argues that WBRS are not merely technical tools but strategic assets for tourism enterprises. They serve as core components of marketing, customer relationship management, and operational efficiency, contributing significantly to the competitiveness and sustainability of tourism businesses in the digital age.

Г7.10. Shishmanov, K. & **Marinova, K.** Specifics in the Functioning of a Digital Enterprise. *Innovative Economics and Management : International Scientific Journal*, 12.2023, 10, pp. 111-123, ISSN: 2449-2604

This article examines the nature, characteristics, and development stages of the digital enterprise as a modern organizational model shaped by the principles of Industry 4.0. The focus is on identifying the specific features that distinguish digital enterprises from traditional ones, emphasizing the strategic role of information technologies in enhancing competitiveness across production, operations, marketing, and customer engagement.

The transition from automation in Industry 3.0 to intelligent, interconnected systems in Industry 4.0 is explored, with key technologies including the Internet of Things (IoT), artificial intelligence, cloud computing, and the SMAC framework (Social, Mobile, Analytics, Cloud). Six essential stages in the development of digital enterprise infrastructure are outlined—from computerization and connectivity to predictive capabilities and adaptability.

The article highlights the importance of universal monitoring systems that integrate and analyze diverse organizational, technical, and production data. Topics such as semantic interoperability, mobility, knowledge and talent management, ERP and

BI systems, and the shift from hierarchical to network-based management models are also discussed.

In conclusion, the digital enterprise is presented as an intelligent, adaptive system that harmonizes traditional production methods with digital technologies. Key challenges include ensuring reliable and relevant data from heterogeneous sources and maintaining human involvement in managing complex processes. Nevertheless, digitally mature enterprises are creating new business models and value streams through data, services, and innovation.

Г7.11. Marinova-Kostova, K. The role of social media in the modern economy: prospects and challenges for the business. Problems and Challenges Facing Economic Science and Education in the 21st Century: International Scientific Conference: Proceedings – Svishtov, November 22, 2024. Tsenov Academic Publishing House, 11.2024, pp. 388–395, ISBN: 978-954-23-2522-2

This report explores the role of social media as a key driver in the modern economy and its impact on business strategies. It traces the evolution of social media from early digital communication tools to today's Web 2.0 platforms, which offer interactivity, personalization, and real-time engagement with users.

The report categorizes the main types of social media and tools—social networks, blogs, content-sharing platforms, streaming services, and virtual communities. It highlights essential features such as real-time content creation, user feedback, virtual identity building, and algorithm-driven personalization.

A wide range of business opportunities enabled by social media is discussed, including increased brand visibility, direct customer communication, cost-effective marketing, social commerce, influencer partnerships, and real-time analytics. At the same time, the report outlines key challenges: reputation management, lack of strategy, high competition, data privacy concerns, shifting algorithms, and the need to adapt to diverse platforms.

In conclusion, social media is presented not only as a communication channel but as a strategic asset for innovation and growth. Successful integration into business models requires proactive management, staff training, and adaptability to the fast-changing digital environment.

Г7.12. Shishmanov, K. & Marinova-Kostova, K. Implementation of digital transformation of enterprises based on application integration. Information and Communication Technologies in Business and Education: Proceedings of the International Conference dedicated to the 55th anniversary of the Department of

Informatics at the University of Economics – Varna, October 18, 2024. University of Economics – Varna, 12.2024, pp. 14–18, ISBN: 978-954-21-1184-9

The report examines application integration as a strategic tool for achieving digital transformation in modern enterprises. It outlines the evolution of integration approaches—from basic point-to-point connections to centralized hubs and modern service-oriented architectures (SOA). The corporate information system is emphasized as the foundation for managing business processes, supporting decision-making, and enabling interaction with external partners.

Key characteristics of modern information systems are analyzed, including distributed architecture, reliability, compatibility with legacy systems, 24/7 availability, and high mobility. Special attention is given to Enterprise Application Integration (EAI) and Service-Oriented Architecture (SOA) as leading models for effective integration. Their advantages include reduced interface complexity, standardized communication, and flexible scalability.

The report highlights a wide range of business benefits enabled by application integration: automation of routine processes, improved internal communication, enhanced data analytics, faster adaptation to market changes, and personalized customer service. At the same time, it addresses major challenges such as technological complexity, data security, harmonization of diverse formats and models, and the need for cultural and organizational change.

In conclusion, the report emphasizes that digital transformation through application integration is not a one-time project but a continuous process requiring strategic vision, technological investment, and staff training. Successful implementation is essential for enhancing competitiveness and ensuring sustainable growth in today's dynamic business environment.

Г7.13. Shishmanov, K., **Marinova-Kostova, K.** & Krasteva, E. Geographic Information Systems – Good Pedagogical Practice for Improving the Competences of Teachers from State Higher Schools. Science and Education, Vol. 9, July 2024, pp. 4–13. ISSN: 2683-0191

The article explores good pedagogical practices as systematic and research-based approaches aimed at improving the quality of education and addressing learners' individual needs. The theoretical section presents key educational theories that underpin modern teaching methods: constructivism, formative assessment, multiple intelligences, social learning, and self-determination. These foundations support innovative approaches such as project-based learning, personalized and game-based

instruction, hybrid formats, cooperative learning, and integrated STEM/STEAM education.

Against this theoretical background, Geographic Information Systems (GIS) are presented as an innovative and effective pedagogical practice that can significantly enhance the competences of higher education instructors. The experience of the Center for Innovative Educational Technologies at D. A. Tsenov Academy of Economics – Svishtov is described, including a training seminar focused on modern digital educational technologies such as cloud platforms, artificial intelligence, and GIS.

Following strong interest from faculty members, a certification course titled “Possibilities for the Application of Geographic Information Systems (GIS) in Education” was developed. The course includes 12 hours of in-person training, conducted in small groups in a specialized lab equipped with modern technologies. The training aims to develop knowledge and skills in using web-based GIS platforms, creating web maps, managing geospatial data, and preparing interactive presentation materials.

GIS supports the visualization of complex relationships, facilitates spatial data analysis, and encourages active learner engagement. In conclusion, GIS is identified as a promising pedagogical practice not only at D. A. Tsenov Academy but also in other public higher education institutions, contributing to improved teaching quality and the preparation of future professionals in various fields.

F7.14. Shishmanov, K., Marinova-Kostova, K. Training of personnel oriented towards innovation. Digital Transformation of Education – Problems and Solutions: Third National Scientific and Practical Conference. Proceedings – University of Ruse, 2025. Ruse University “A. Kanchev”, June 2025, pp. 74–78, ISBN: 3033-0629

The report explores the training of innovation-oriented personnel as a strategic priority in the transition toward a knowledge- and technology-based economy. It emphasizes the role of universities as the primary source of professionals capable of managing innovation processes, applying advanced technologies, and meeting the evolving demands of the labor market. The need for integration between education, science, and business is highlighted, with a focus on creating an innovation-friendly environment through collaboration, strategic planning, and technological platforms.

A model of interaction is presented involving three key stakeholders in the lifelong learning system: employers, universities, and young professionals. Employers define professional standards and participate in the training process through specialized courses, masterclasses, and certification. Universities align their curricula with industry needs, incorporating knowledge in AI, Big Data, IoT, and blockchain. Graduates

undergo additional certification to meet the requirements of the modern innovation economy.

The proposed mechanism for developing the university innovation environment includes the establishment of research and educational structures, business incubators, science and technology parks, and inter-university centers. The importance of international cooperation, resource sharing, and the integration of modern technologies into the educational process is emphasized. In conclusion, the effective preparation of personnel for an innovation-driven economy requires flexible educational models, sustainable partnerships, and targeted investment in research and development.

Г9. Studies published in non-refereed scientific journals with peer review or published in edited collective volumes

Г9.1. Emilova, P., **Marinova, K.**, Spasova, T., Manolova, A. & Dimitrova, Y. Cloud computing in the activities of bulgarian corporations and big organizations. "Scientific Research" Almanac., Tsenov Academic Publishing House, Svishtov, 1.2018, 25, pp. 9-40, ISSN: 1312-3815

The study analyzes the application of cloud computing in the operations of large Bulgarian enterprises and organizations, emphasizing its importance as a strategic tool for the modernization of information infrastructure. Its main objective is to assess the condition of existing IT systems, identify the key challenges faced by organizations, and outline the opportunities that cloud technologies offer for overcoming these challenges.

The study examines various deployment models—public, private, and hybrid clouds—as well as the three main forms of cloud services: Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS). It highlights that cloud solutions provide numerous benefits, including cost optimization, flexible resource access, enhanced security, scalability, and the potential for digital transformation of business processes.

Using an empirical approach, the study explores the attitudes of IT professionals and managers in large Bulgarian organizations toward cloud technologies. The data reveal that while implementation is currently limited—primarily due to concerns about security, data control, and regulatory barriers—there is a growing interest in cloud-based solutions, particularly in the areas of data storage and the use of SaaS applications.

Based on the analysis, the study proposes a model for gradual and strategically managed migration to a cloud environment through a hybrid approach that combines the advantages of both public and private cloud infrastructures. It emphasizes the importance of preliminary cost assessment, organizational readiness, and the enhancement of digital culture as prerequisites for successful implementation.

In conclusion, the study affirms that cloud computing is becoming a key factor in improving efficiency, competitiveness, and sustainable development in large enterprises, providing a foundation for an integrated, secure, and adaptive IT infrastructure.

Г9.2. Emilova, P., Popov, V., **Marinova-Kostova, K.**, Sotirov, M. & Aleksandrov, M. Digital ecosystem of a tourist destination. "Scientific Research" Almanac, Tsenov Academic Publishing House, Svishtov, 1.2023, 31, pp. 268-300, ISSN: 1312-3815

This study explores the digital ecosystem of a tourist destination as a modern framework for organizing, connecting, and generating value among stakeholders in the tourism sector. Its main objective is to assess the level of digitalization within the tourism industry in the city of Veliko Tarnovo and to outline opportunities for developing an integrated technological environment that brings together service providers, ICT companies, institutions, and consumers.

The study adopts a mixed methodological approach, combining a literature review with an empirical survey conducted among tourism organizations in the region. The findings indicate that, although awareness of the importance of digital transformation is growing, the adoption of innovative technologies remains limited. The main obstacles include a lack of technical expertise, financial constraints, and insufficient institutional coordination.

A conceptual model of a digital ecosystem is proposed, based on technological enablers such as cloud computing, the Internet of Things (IoT), artificial intelligence, mobile platforms, and virtual and augmented reality. Emphasis is placed on the networked nature of the ecosystem, which facilitates data exchange, cooperation, and personalized service delivery.

In conclusion, the study highlights that the successful development of a digital ecosystem within a tourist destination requires an integrated strategy, strong digital culture, and targeted institutional support. These factors are essential for enhancing competitiveness, improving the visitor experience, and achieving sustainable destination development.

Г9.3. Popov, V., Popova, P. & **Marinova-Kostova, K.** Opportunities and risks of implementing digital ecosystems and digital platforms in the tourism sector. *Dialog*, 3.2025, No. 1, pp. 1–31, ISSN: 1311-9206

The study explores the opportunities and risks associated with the implementation of digital ecosystems and platforms in the tourism sector within the broader framework of digital business transformation. Its main objective is to systematize the potential of the ecosystem approach for the development of tourism organizations by identifying its benefits and analyzing the accompanying threats.

From a theoretical perspective, the study examines the digital economy's evolution, highlighting the transformative role of platform-based business models such as Airbnb, Booking, and TripAdvisor. It defines digital platforms as key technological enablers for value creation and innovation, while outlining the significance of technologies such as the Internet of Things (IoT) and Big Data Analytics (BDA) in improving efficiency, safety, and adaptability in tourism services.

Special attention is given to various risk factors—strategic, organizational, technological, and social. These arise from the interconnectedness of ecosystem participants, regulatory uncertainty, insufficient technological planning, lack of skilled personnel, and challenges related to system interoperability. Technological risks are also identified, including those related to the management of heterogeneous data, API vulnerabilities, and imbalances in platform governance.

In conclusion, the study emphasizes that establishing an effective digital ecosystem in tourism requires a well-articulated strategy that blends technological infrastructure with a clear business vision, supported by strong institutional and organizational commitment. A strategic model is proposed, featuring critical components such as API design, innovation incentives, fair revenue distribution, and a flexible governance structure.

Г9.4. Emilova, P., Popov, V., **Marinova-Kostova, K.**, Aleksandrov, M. & Zlatev, D. Researching the potential of Big Data and IoT for developing an intelligent business environment. *"Scientific Research" Almanac*, Tsenov Academic Publishing House, Svishtov, 1.2025, 33, pp. 83-116, ISSN: 1312-3815

The study examines the potential of Big Data and the Internet of Things (IoT) as foundational technologies for building intelligent business environments in the context of ongoing digital transformation. Its primary aim is to assess the awareness and readiness of Bulgarian enterprises for adopting these technologies, while identifying the key benefits, challenges, and strategic directions for successful implementation.

The theoretical section elaborates on the concepts of IoT and Big Data Analytics (BDA), highlighting their roles in transforming traditional business models. The joint integration of IoT and BDA is emphasized as a critical enabler for enhancing operational efficiency, fostering innovation, supporting predictive analytics, and enabling informed management decisions. The technological ecosystem includes sensors, communication protocols, cloud platforms, real-time processing tools, and AI-based analytics.

A mixed-method research design is applied, involving structured interviews with IT professionals and business managers, along with quantitative data analysis. Results show distinct perspectives between the two groups: managers emphasize strategic and innovation-related aspects, whereas IT professionals focus more on technical scalability, integration, and data security. Statistical testing confirms significant differences in evaluation across key metrics.

Identified challenges include lack of standardized practices, device interoperability issues, skills gaps, and cybersecurity concerns. Nonetheless, the study highlights notable benefits such as production optimization, enhanced customer service, flexible management tools, and opportunities for sustainable growth.

In conclusion, the study recommends promoting digital awareness, encouraging cross-department collaboration, investing in training, and developing both national and corporate strategies for the adoption of IoT and BDA as pillars of intelligent business development.

Свищов
01.09.2025 г.

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