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Scholarly Publisher
RS Global Sp. z O.O.
ISNI: 0000 0004 8495 2390

Dolna 17, Warsaw, Poland 00-773
Tel: +48 226 0 227 03
Email: editorial_office@rsglobal.pl

JOURNAL	International Journal of Innovative Technologies in Economy
p-ISSN	2412-8368
e-ISSN	2414-1305
PUBLISHER	RS Global Sp. z O.O., Poland

ARTICLE TITLE	DIGITAL ECONOMY: ERA OF INNOVATION AND CHANGE
AUTHOR(S)	Kamran Rasulov
ARTICLE INFO	Kamran Rasulov. (2023) Digital Economy: Era of Innovation and Change. <i>International Journal of Innovative Technologies in Economy</i> . 4(44). doi: 10.31435/rsglobal_ijite/30122023/8092
DOI	https://doi.org/10.31435/rsglobal_ijite/30122023/8092
RECEIVED	23 November 2023
ACCEPTED	26 December 2023
PUBLISHED	29 December, 2023
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DIGITAL ECONOMY: ERA OF INNOVATION AND CHANGE

Kamran Rasulov

Azerbaijan Technical University

DOI: https://doi.org/10.31435/rsglobal_ijite/30122023/8092

ARTICLE INFO

Received 23 November 2023

Accepted 26 December 2023

Published 29 December 2023

KEYWORDS

Digital Economy, Innovative Transformations, Information Technologies, Digital Technologies, Business Models, Social Aspects.

ABSTRACT

In the rapid development of information technologies and digital platforms, the digital economy profoundly impacts all spheres of public life. This study constitutes a profound analysis of the development of the digital economy within the context of contemporary innovative transformations. The author aims to identify key aspects of the era of digital changes, assessing their influence on the business environment and societal relations. The objective of the study is a systematic exploration of the main trends and dynamics of the digital economy, with a focus on innovative changes and the identification of prospective development directions in this field. The research concentrates on analyzing structural changes and strategic shifts occurring within the digital economy, delving into key components such as digital technologies, innovative business models, and the social aspects of digital transformation. The study employs methods of systemic analysis, literature review, and the analysis of theoretical ideas in this domain. The foundation of the research lies in the analysis of existing theoretical concepts and practical cases of implementing digital innovations. The results of the study provide strategic recommendations for enterprises and public structures aiming at the effective utilization of digital technologies. The practical significance of the work lies in identifying key success factors in the era of digital changes. This study presents a comprehensive perspective on the evolution of the digital economy, offering evidence-based conclusions and recommendations for all stakeholders focused on achieving success in the modern digital world.

Citation: Kamran Rasulov. (2023) Digital Economy: Era of Innovation and Change. *International Journal of Innovative Technologies in Economy*. 4(44). doi: 10.31435/rsglobal_ijite/30122023/8092

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Introduction.

With the advancement of technologies in recent decades, the world is undergoing incredible changes in various spheres of life. One key aspect of these transformations is the shift towards the digital economy. Digitalization permeates all areas of business and society, altering familiar interaction models and creating new opportunities for development.

The article examines the recent decades during which significant technological changes have occurred. This is relevant as it provides information on how these changes impact various aspects of life and business. The article focuses on challenges such as systemic risks and the limitations of traditional training methods, which are crucial for understanding current issues and seeking optimal solutions.

Discussion of global trends and the need for changes in educational processes makes the article pertinent to an international audience interested in the development of economics and technologies.

Attaining competitiveness in the modern economy is closely linked to the adoption of digital technologies, the creation of new business conditions, and the transition to an innovative economic order. This transition is driven by the attainment of digital leadership at the enterprise, industry, and even national economic levels.

The development of digital leadership and its evolution directly depend on the adaptive capabilities of the educational environment. This includes changes in the activities of universities,

which now not only update their programs and specializations but also integrate new educational technologies into the learning process.

The speed and quality of the transition to digital technologies are largely determined by the development of human capital. This factor plays a crucial role in transitioning to new technological paradigms and production standards. As the digital economy and Industry 4.0 evolve, new opportunities for businesses emerge, accompanied by systemic risks, increased uncertainty, and barriers to development, including hybrid companies.

Social networks exert a growing influence on consumer behavior. New models of collaborative consumption are forming, and cloud technologies, blockchain, as well as crowd-sourcing and crowdfunding methods are actively being implemented. These changes not only create new business opportunities but also require adaptations in management and organization approaches.

The role of traditional universities is currently undergoing modification. The limitations of traditional methods in preparing personnel for the digital economy are evident. Disciplinary and narrowly focused approaches to training specialists are gradually fading. The development of new competencies becomes critically important in ensuring digital leadership.

Adapting the educational process to the new environment becomes a key task. Investigating the essence of the digital economy, the transformation of economic methods, and the experience of modernizing personnel training in universities will help identify the fundamental requirements and necessary competencies for professionals geared towards changing business activity models.

In the context of global trends in the information and digital environment, it becomes clear that the future of the economy and technologies requires changes in education and workforce preparation. Only through systemic measures to adapt educational processes can we ensure digital leadership and effective development in the digital era.

The aim of the article is to explore and discuss the impact of technological advancements, particularly in the realm of digital technologies, on various aspects of contemporary life and the economy. It emphasizes the profound changes brought about by the transition to the digital economy, encompassing shifts in business models, educational paradigms, and societal interactions.

Methods and Materials.

This research is based on the use of a variety of analytical methods and approaches aimed at a deep understanding and assessment of the digital economy and innovative transformations. The methods used include Systems analysis (to comprehensively examine the main trends and dynamics of the digital economy, to analyse structural changes and strategic shifts), literature review (to explore existing theoretical concepts, ideas and practical cases related to the digital economy and innovation) and analysis of theoretical ideas (for a deeper look at the core concepts behind the digital economy).

The research materials include information based on the study of theoretical models and concepts in the field of the digital economy and strategic recommendations arising from the study, proposals and recommendations for businesses and public structures on the effective use of digital technologies.

This study aims to provide a comprehensive overview of the research area, drawing on a variety of methods and materials to provide insight into the digital economy and its impact on contemporary society and business environments.

Results.

The concept of the “digital economy” can be defined as a network of economic, social, and cultural interactions centered around the utilization of digital technologies. It encompasses commercial activities involved in the production and sale of electronic goods and services. This includes electronic commerce, online banking, the development of internet-based services, information platforms generating revenue through advertising, and various forms of digital media (such as recording, film, press, and publishing), as well as entertainment and business software. Additionally, it involves the production of related equipment and other supporting activities.

Historically, terms like “Internet economy,” “Web economy,” and “New economy” have been used interchangeably with similar meanings. In the Organization for Economic Co-operation and Development (OECD), the term “digital economy” is specifically used to describe markets relying on information and communication technologies for trade and information, emphasizing the provision of

digital goods or services over the Internet. From this point of view Goldfarb and Tucker (2018) note the following:

Digital technology is the representation of information in bits. This reduces the cost of storage, computation, and transmission of data. Research on digital economics examines whether and how digital technology changes economic activity... Digital technology often means that costs may constrain economic actions. Therefore, digital economics explores how standard economic models change as certain costs fall substantially and perhaps approach zero (p. 3).

In this position Goldfarb and Tucker introduce the idea that, in the realm of digital technology, costs play a crucial role in shaping economic decisions and actions. The discussion revolves around the exploration of how traditional economic models need to adapt and evolve as certain costs associated with digital technology experience a substantial reduction, possibly approaching zero. In essence, the focus is on understanding the transformative effects of digital technology on economic paradigms as costs become more accessible and less prohibitive.

World Bank reports provide a broad definition of the digital economy as a system of economic, social, and cultural relations grounded in the use of digital information and communication technologies. Despite various interpretations, the essence of the digital economy can be summarized as follows:

1. A specific type of economy marked by active application and practical use of digital technologies for collecting, storing, processing, and transmitting information across all areas of human activity.
2. An economic sector within the national economy focused on the production and trade of digital goods and services in a virtual environment.
3. A complex combination of elements (technical, infrastructure, organizational, programmatic, regulatory, legislative, etc.) complementing the real economy to promote sustainable economic development.
4. A system of socio-economic and organizational-technical relations grounded in the real-time utilization of digital information and telecommunication technologies and networks.

Research by Jamilzade (2023) supports that the digital economy operates as a system of global social, economic, and technological relations within the vast landscape of information, heavily relying on networked digital technologies (p. 86).

The digital economy is described as an economic order, signifying a particular arrangement or structure in which the driving force behind economic activities is predominantly digital technologies. The digital economy is portrayed as a transformative force that brings about changes in how economic activities are conducted.

The methods and processes through which goods and services are created are influenced and modified by digital technologies. The ways in which individuals and businesses acquire and use goods and services are affected by the digitalization of economic processes. The manner in which various entities, such as businesses and consumers, communicate and engage with each other undergoes a shift due to the adoption of digital technologies.

Analysis of works dedicated to the study of issues in the field of the digital economy allows identifying certain trends, assessments, and regularities of its formation and development.

Researchers notes that, "widespread computerization and the extensive expansion of the areas of application of computer systems have initiated the emergence of the currently relevant topic of the digital revolution." (Freitas Junior, J. C. da. S. et al, 2023). J. C. da. S. Freitas Junior and et. all (2023) complement the concept of digital capabilities based on digital literature by highlighting the importance of two key capabilities: sensing and responsiveness. Sensing refers to the ability of firms to collect and analyze data from various sources to gain insights into customer needs and preferences. Responsiveness, on the other hand, refers to the ability of firms to quickly respond to new customer needs and changing market conditions. The authors argue that these two capabilities are essential for firms to develop, mobilize, and use organizational resources effectively, improve their business processes, and create value during digital transformation (p. 1430).

Currently, in economic theory, researchers of digital processes in the economy propose a whole range of definitions and principles of the functioning of the digital economy. Stages of digital economic development have been formulated, certain trends in the transformation of industries and the emergence of new business structures have been identified. However, there is no unified

methodological approach to defining the “digital economy.” In this context, the position of L.V. Lapidus (2019) is noteworthy:

The formation of new business conditions, the emergence of new digital products and electronic services, the acceleration of business processes in all areas of activity over one to two decades have prepared for the transition to the fourth industrial revolution (p. 55).

A general analysis of perspectives on the basic characteristics of the new digital stage in economic development within the first approach leads to the conclusion that the understanding of the digital economy is primarily associated with the structural components of its new elements. It is revealed through the analysis of key innovative technologies and management tools that transform within the framework of digitization strategies. Russian economists Yu.M. Osipov and T. Yudina (2019), as part of this approach, consider the “information economy” as a phenomenon of the information revolution of the mid-1970s, when information became a specific information product and almost the primary productive resource and factor of production, entering a new stage of development (p. 44).

These factors include new resources (search engines, mobile communication, artificial intelligence, systems for collecting, processing, and storing information based on Big Data, cloud computing, the Internet of Things, social networks, e-commerce), which gradually transform and organize business management on digital platforms, including marketing activities. It is also worth noting the characteristics of the modern stage of development of the digital economy, as defined by Yu.M. Osipov (2019):

Within the framework of the Information and Communication Environment (ICE), there is a transition of various economic processes and types of activities of subjects into the format of hybrid (virtual-physical) reality. Significant reduction in geographical, temporal, and other barriers in hybrid reality compared to physical reality allows, in particular, to accelerate and optimize various business processes, reduce transaction costs for economic agents, create conditions for the emergence of new markets and industries, new ways of creating value, interaction, and exchange (p. 45).

Among foreign authors, the methodological primacy of the analysis and features of the digital economy is attributed to D. Tapscott (1996), but over a sufficiently long period, a deeper understanding of the development dynamics has emerged.

The term “digital economy” was introduced into scientific discourse by D. Tapscott in 1994 in the work “The Digital Economy.” Shortly thereafter, in 1996, the scholar further developed ideas about the formation of a new type of economy in the work “The Digital Economy: Promise and Peril in the Age of Networked Intelligence.” He identified the most significant parameters of the digital economy, based on free access to information and the transfer of knowledge to entities without territorial restrictions.

The basic idea with respect to digital economic activity is that it is easier to find and compare information about potential economic transactions online than offline (Goldfarb and Trucker, 2023).

At the present stage, the most significant contribution to the study of digital processes, their structure, and resources has been made by works focused on identifying the characteristics of managerial and operational transformation of business processes driven by the use of innovative information and communication technologies.

Within the framework of the second methodological approach, this term is considered in the context of both the main stages of social reproduction and new forms of economic activity. For example, L.V. Lapidus (2019) defines the digital economy broadly as a set of relations that arise in the processes of production, distribution, exchange, and consumption, based on online technologies and aimed at satisfying needs in goods, which, in turn, implies the formation of new ways and methods of economic activity and requires effective methods of state regulation. The digital economy, in a narrow sense, is online consumption, conducting transactions over the internet, which is associated with electronic commerce and e-business. Industry 4.0 and the digital economy are related as part and whole (p. 52).

Based on the fundamental principles of economic theory, most authors emphasize the digital format of interaction among economic agents, for most of whom new sources of competitiveness are formed due to the efficient transformation of both production and management systems, including

digital marketing. It seems that in her recent works, L.V. Lapidus (2019) has formulated the most substantive features of the digital economy:

Change in ways and methods of economic activity; change in the competitive environment; transition to digital platforms, which become the central link in new business models; change in the competitive environment, mass collaborations, open labor market, emergence of new production models (p. 52).

Modern research on the transformation of management systems under the influence of information and digital technologies indicates changes in the composition and quality of resources involved in the production process, as well as changes in the behavior models of participants in this process. In earlier works by the author of the article, trends in pricing strategies in the context of electronic commerce were investigated. It was emphasized:

Various forms of e-commerce contribute to increasing consumer loyalty. Internet trade through various forms, including search engines, the participation of internet providers, information websites, is oriented towards selling goods and services, and the customer receives maximum benefits (Drozdovich, 2020).

The third approach is presented by economists Yu.V. Belousov and O.I. Timofeeva (2019):

The digital economy is a complex phenomenon that includes two interrelated processes: the process of creating digital management systems by means of labor and the process of using digital management systems in production activities. It is important to note that the two mentioned processes impose completely different requirements on the qualifications of the subjects of labor activity (p. 88).

The concept of the digital economy during the formation of the digital state plays an important role and has certain specifics because in the near future, all spheres of activity will have to attract managerial personnel whose functional basis will be competencies in the field of ICT. Modern digital companies, mainly at the transnational level, actively shaping digital development strategies, apply new management methods, using social networks as an effective tool for interacting with consumers. In digital marketing, these techniques are called “managed consumer journey.”

The analysis of the activities of modern companies in the field of e-business and e-commerce allows us to conclude that “specialists are needed who can not only carry out digital transformation but also develop new business models for enterprises. Digital transformation and the emerging digital economy require new specialists with different skills and key competencies, which inevitably leads to the improvement of personnel training, the emergence of modern educational institutions, and the provision of relevant training programs in the education services market” (Lapidus, 2019).

The author is emphasizing the need for specialists who possess the capability to not only implement digital transformation but also innovate and devise new business models for enterprises. The shift towards digital transformation and the burgeoning digital economy demands a fresh breed of professionals equipped with diverse skills and crucial competencies. This, in turn, is anticipated to prompt enhancements in personnel training, the establishment of contemporary educational institutions, and the availability of pertinent training programs in the education services market.

Discussion.

At the current stage, there is a real trend in the transformation of personnel competencies. In G.G.Golovechik’s (2019) research, fundamental trends in the evolution of essential competencies are articulated:

Management systems within digital companies and the evolving organizational and production processes exhibit increased flexibility, introducing new roles in the workforce such as CDO (Chief Digital Officer — overseeing Digital Transformation) or roles like Director of Recruitment for digital specialists. Specialized roles with narrow focus are losing significance. There is a growing emphasis on the value of additional professional training and retraining. The technical aspects of HR work are now delegated to programs utilizing big data and machine learning. In their stead emerges an HR expert, concentrating on the human capital of the company and the cultivation of the employer brand (p. 44).

In modern companies, conservative decision-making models cease to work, excessive bureaucratization of processes significantly increases the time it takes for decisions to go from

development and justification to implementation, and in the digital environment, the most agile, flexibly reacting to the behavior and requests of consumers in social networks, emerge victorious.

Many patterns identified in the analysis of the stages of development of the digital economy have led some researchers, including L.V. Lapidus (2019), to propose their own original concept for improving the training of manager-economists. This concept is oriented towards “building ecosystems based on the platform principle, managing the development and commercialization of digital developments based on licensing, developing innovative business, reducing costs for scaling digital solutions, using customization as a tool to increase consumer loyalty, developing and justifying a digital transformation strategy and integrating it into corporate strategy” (p. 56).

This framework is centered around building ecosystems on the platform principle, overseeing the development and commercialization of digital innovations through licensing, fostering innovative business practices, minimizing costs associated with scaling digital solutions, utilizing customization as a tool to enhance consumer loyalty, and formulating and justifying a digital transformation strategy seamlessly integrated into the corporate strategy.

The contemporary experience of training and retraining personnel of various levels, shaping digital competencies demanded by businesses, indicates three practical approaches in this field:

1. Creation of specialized courses for professional development and retraining for middle and senior-level company executives.
2. Integration of new interdisciplinary courses focused on developing competencies in electronic business management and digital transformation into the curricula of engineering-economic and economic-management specialties.
3. Establishment of new specialties, directions, and specializations in the field of digital technologies.

The formation of new competencies is driven by the distinctive features of digital business compared to offline, especially in electronic commerce management. This requires skills in analyzing and identifying threats, exploring market development opportunities in the digital economy, and dealing with new types of services, such as the messenger market. The integration of internet technologies implies either embedding them into the existing business model or possessing systemic competencies for creating and managing digital business in uncertain external environments. The shortened life cycle of innovations also necessitates the development of programs to adapt company strategies to new digital conditions and utilize innovative competitive advantages. This demands from specialists the ability to form new business ideas in transforming organizational and technological conditions based on business analytics of the internal and external environment.

Conclusion.

The study of the digital economy and its management transformation has revealed an inherent connection between technological advancements and changes in business approaches. The analyzed trends lead to several important conclusions.

Firstly, the digital economy is undergoing a period of rapid development, demanding companies to adapt to new realities. The effective use of information technologies becomes a key factor in competitiveness.

Secondly, the transformation of management systems under the influence of digital technologies goes beyond technical changes. It impacts business models, requiring new strategies, flexibility, and the ability to adapt to rapidly changing environments.

The third conclusion relates to education and workforce preparation. The necessity for new competencies creates a demand for the updating of educational systems and professional retraining, enabling specialists to effectively address the challenges of the digital era.

The digital economy has enormous potential for transforming society and business. However, to reap maximum benefits, emerging challenges such as cybersecurity and ethical issues must be addressed. This is the only way society can take full advantage of this new era of innovation.

Finally, the study emphasizes the importance of not only adapting to existing trends but actively participating in shaping the digital future. The creation of digital ecosystems, the development of innovative strategies, and flexibility in management are key elements of successful adaptation to the digital economy.

These conclusions underscore that a successful future involves not only technological development but also the careful cultivation of human capital, ready to face the new challenges and opportunities presented by the digital economy.

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