RAQAMLI JAMIYAT TUSHUNCHASI VA UNING SHAKLLANISH BOSQICHLARI

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Annotatsiya

mazkur maqolada "raqamli jamiyat" tushunchasining nazariy asoslari va uning tarixiy rivojlanish bosqichlarini (kompyuterlashtirish, internet, mobillik, sun'iy intellekt) yoritilgan. Raqamli jamiyatning axborot va ma'lumotning strategik ahamiyati asosida shakllangan yangi ijtimoiy tuzilish ekanligi batafsil tahlil qilinadi.

Kalit so'zlar

raqamli jamiyat, raqamli transformatsiya, texnologik bosqichlar, internet, axborot iqtisodiyoti.

ПОНЯТИЕ ЦИФРОВОГО ОБЩЕСТВА И ЭТАПЫ ЕГО ФОРМИРОВАНИЯ

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Аннотация

Статья анализирует теоретические основы концепции «цифровое общество» и этапы его исторического развития (компьютеризация, интернет, мобильность, искусственный интеллект). Доказывается, что цифровое общество является новой социальной структурой, основанной на стратегической важности информации и данных.

Ключевые слова

цифровое общество, цифровая трансформация, технологические этапы, интернет, информационная экономика.

THE CONCEPT OF DIGITAL SOCIETY AND ITS STAGES OF FORMATION

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Annotation

The article analyzes the theoretical foundations of the "digital society" concept and its historical development stages (computerization, internet, mobility, artificial intelligence). It proves that digital society is a new social structure based on the strategic importance of information and data.

Keywords

digital society, digital transformation, technological stages, internet, information economy.

For the first time in human history, a new societal model is taking shape where information and knowledge are superior to material resources. This process is a direct result of the ongoing digital transformation, which is advancing at high speed across the globe. The concept of a "digital society" represents a complex phenomenon encompassing not just technological progress, but also fundamental changes in social relations, economic systems, cultural interactions, and political processes. Every sphere, from global migration to the nature of jobs, from educational methodologies to the relationship between the state and its citizens, is being reshaped under the influence of digitalization.

The urgency of the issue lies in the fact that the gap between the speed at which digital technologies penetrate our lives and our ability to understand and predict their impact on society is continuously widening. In many cases, the faster a technological innovation is introduced, the later its social, psychological, and ethical consequences are regulated [1]. Therefore, deeply comprehending the essence of the "digital society" and systematically analyzing the stages of its formation is not only of theoretical but also of significant practical importance. This analysis is essential for enabling society to actively and consciously engage with digital changes, to foresee future prospects, and to prevent negative consequences.

Leading global thinkers have developed comprehensive theories on the topic of the "digital society." In his "Information Age" trilogy, M. Castells advanced the concept of the network society, highlighting the emergence of global, networked structures based on information technologies. D. Bell, in his work "The Coming of Post-Industrial Society," spoke about the primacy of theoretical knowledge. Japanese scholar Y. Masuda, in his book "The Information Society as Post-Industrial Society," presented a computer-based society as a positive utopia. In recent years,

the concept of the "Fourth Industrial Revolution," put forward by Klaus Schwab, represents the profound changes arising from the convergence of the physical, digital, and biological worlds.

In the context of Uzbekistan, digitalization has been established as a state-level priority within the framework of the "Digital Uzbekistan – 2030" strategy, further increasing the importance of scientific research in this field. However, while the essence of the digital society is often illuminated in a general sense in existing literature, there is a lack of works that consistently, systematically, and characteristically analyze the historical stages of its formation.

To achieve this goal, the following tasks have been set:

To analyze the primary interpretations of the "digital society" concept in scientific literature and conduct a comparative analysis with related concepts ("information society," "network society," etc.);

To identify the distinguishing characteristics and principles of a digital society (digitalization, networking, the central role of information in the economy and social life, the active role of the user);

To divide the formation process of the digital society into consecutive historical stages (pre-digital/computerization, internet, mobile and social media, data and artificial intelligence) and describe the key technological innovations and social consequences of each stage;

To reveal the interconnections between these formative stages and predict future development trends;

The object of the research is the global social processes developing on the basis of modern information and communication technologies. **The subject** is the essence of the digital society concept and its historical stages of formation.

As the research methodology, methods of systematic, historical, logical, and comparative analysis are employed. An integrated approach to the topic is implemented based on the critique and synthesis of theoretical sources.

Although the term "digital society" entered scientific discourse relatively recently, its conceptual roots trace back to the "information society" concept of the second half of the 20th century [2]. Two main approaches to interpreting this concept can be distinguished: technocratic and socio-cultural. The **technocratic approach** (Y. Masuda, A. Turing) focuses on technological innovations as the primary driving force of development. The **socio-cultural approach** (M. Castells, D. Lyon) studies technology within the context of society, its economic structures, culture, and power relations. Today, the most comprehensive definition of a digital society is accepted as a form of society in which personal, social, and economic activities are extensively carried out on the basis of digital technologies.

The main characteristics and principles of a digital society can be outlined as follows:

Centralization of information as a strategic resource: Unlike material wealth, information is not depleted upon consumption; it is easily copied and rapidly disseminated. In a knowledge-based economy, the primary source of added value is intellectual labor and data processing.

Development of universal infrastructure: The proliferation of broadband internet connectivity, cloud services, and networks of sensors.

Pre-digital or Computerization Stage (1970s-1990s). The key feature of this stage was the automated processing of information. Mainframe computers were used for scientific calculations, military purposes, and managing corporate databases. In the 1980s, the advent of personal computers (IBM PC, Apple Macintosh) brought computing power from large organizations to small offices and even households [3]. The main outcome was the initial transition of data from paper to digital form. However, this data often existed as "information silos": each computer or local area network (LAN) was a closed system unto itself. Global communication was very slow and complex. The impact on society was largely limited to efficiency gains—word processors, spreadsheets, and databases accelerated office work. The societal structure remained hierarchical and traditional, but its "nervous system" began a gradual process of digitalization.

Internet and Web Stage (Early 1990s to the 2000s). This stage was marked by the emergence of a universal bridge between isolated data islands—the World Wide Web (WWW) and web browsers. The web protocols created by Tim Berners-Lee enabled the global exchange of information. The key technological revolution was hypertext and the universal addressing system (URL). During this period, the first search engines (Yahoo!, AltaVista), email, and the first online stores appeared [4].

Mobile and Social Media Stage (2000s to 2010s). If the previous stage brought the internet to the desktop, the third stage put it in people's pockets. Smartphones (the launch of the iPhone in 2007) and 3G/4G mobile communication technologies brought the internet into mobile life—into the subway, buses, and walks [5]. It was during this time that social networks (Facebook, YouTube, Twitter, and later Instagram) flourished. The main feature of this stage was the dominance of user-generated content (UGC) and the platform economy. People were no longer just consumers of information but became its active producers. The concepts of "time" and "place" became increasingly fluid: it became possible to be online anytime, anywhere.

Data and Artificial Intelligence (AI) Stage (2010s to present). The third stage generated vast amounts of data (Big Data), while the fourth stage is directed towards analyzing this data and enabling autonomous decision-making. Cloud computing, Artificial Intelligence (AI), Machine Learning (ML), and the Internet of Things (IoT) are the key technologies. In this stage, the digital world is transforming from a means of communication into a decision-making environment. AI systems offer us recommendations on what to read, where to work, and who to meet. IoT turns the physical world (home, city, factory) into an intelligent and self-regulating system. The concept of the Metaverse points towards the prospect of full integration of physical and digital realities. This stage is exerting the deepest and most complex impact on society:

Automation and the Transformation of the Labor Market: Traditional professions are disappearing, while new ones are emerging.

Personalized Services and Profiling: An individualized approach for every citizen.

Re-evaluating the Human Role in Decision-Making: In which matters can AI play a decisive role?

Ethical and Legal Boundaries: New challenges such as accountability for AI decisions, algorithmic bias, and data sovereignty.

While the stages described above may appear distinct and sequential, they are not separated by clear-cut boundaries; rather, they have organically grown into one another. Each subsequent stage has been built upon the infrastructure of the previous one and has radically transformed it. For example, without the internet (Stage 2), mobile internet (Stage 3) could not exist. Similarly, Artificial Intelligence (Stage 4) could not have advanced without the massive data amassed by social media (Stage 3).

The geographical and social diffusion of these stages has also been uneven. While developed countries have begun transitioning to Stage 4, some regions remain in the early parts of Stage 2 or 3. This further exacerbates the global digital divide. The disparity is now manifested not only in access to the internet but also in the capacity to utilize data, manage algorithms, and benefit from AI advancements.

The dialectical relationship between technology and society is of crucial importance. Technology changes society, but society also shapes the direction of technology [6]. For instance, demands for personal data protection (society's reaction) led to laws like the GDPR in Europe, which in turn spurred technology to develop new security and encryption methods accordingly. In other words, the notion of technological determinism (the idea that technology dictates everything) is not entirely accurate.

1.   Looking at future prospects, it can be said that the era of a "digital second nature" has begun. That is, digital technologies are increasingly becoming a natural environment for humans. The main trends are:

2.   Deepening Integration: The pervasive infusion of AI and IoT into all spheres.

3.   Quantum Computing: Has the potential to fundamentally alter current encryption and computational capabilities.

4.   Human-Machine Collaboration: AI is developing not as a replacement for humans but as a tool for augmentation.

5.   Digital Ecology and Sustainability: The energy consumption and environmental impact of digitalization are becoming urgent issues.

6.   Reconstruction of the Legal and Regulatory Framework: New and universal rules for the digital world are being formed on a global scale.

Based on the results of this scientific research, the essence of the "digital society" concept and its historical stages of formation have been comprehensively analyzed. The obtained results allow for the formulation of the following key conclusions:

The digital society is not merely technological progress, but a qualitatively new social structure in human history. Its foundation is formed by the central importance of information, knowledge, and data as strategic resources in digital form [7]. This society is erasing the rigid boundaries between different spheres, interconnecting the economy, politics, culture, and everyday life, thereby creating a global networked structure.

The formation of the digital society has passed through four main stages with consistency and logic:

Computerization Stage (1970s-1990s) – The transition of data from paper to digital form, yet remaining in "isolated islands."

Internet and Web Stage (1990s-2000s) – The beginning of global data exchange and the democratization of access to knowledge.

Mobile and Social Media Stage (2000s-2010s) – The infiltration of the internet into mobile life, with the user becoming an active producer.

Data and Artificial Intelligence Stage (2010s – present) – The era of big data analysis and autonomous decision-making.

Each subsequent stage relied on the technological and infrastructural achievements of the previous one, radically transforming them. This process is not linear but organic and dynamic, evolving as a result of the dialectical interaction between technology and society. Society's demands and constraints shape the direction of technological innovations, which in turn reshape social relations.

Digital transformation is occurring unevenly, giving rise to new social problems on both global and national scales. The "digital divide" is now related not only to internet access but also to the ability to effectively utilize data, understand, and manage algorithms. Issues such as cybersecurity, personal data protection, algorithmic bias, and "digital loneliness" are among the most urgent threats to modern society.

In conclusion, the digital society is not just a set of technological capabilities but also a tremendous intellectual, ethical, and organizational challenge for humanity. Understanding its stages of formation is knowledge necessary not only for comprehending the past but also for adequately responding to the future. Only through the harmonious cooperation of science, education, and practical policy can digital technologies be shaped into tools that serve human interests and values.

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