

THE HISTORY OF THE DEVELOPMENT OF INFORMATICS AND ITS ROLE IN THE MODERN ERA

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Abstract

This article examines the history of the development of informatics, its stages of evolution, and its current role in modern society. It highlights the importance of information technologies in education, medicine, economics, and industry, as well as the advancement of artificial intelligence and the digital economy. The paper also discusses the implementation of the “Digital Uzbekistan – 2030” strategy and its contribution to the country’s digital transformation.

Keywords

informatics, computer, programming, artificial intelligence, digital economy, information technology.

INTRODUCTION: Informatics is one of the fastest-growing fields of modern science. It studies the principles of collecting, storing, transmitting, and processing information and implements these processes through technical and software tools. In the 21st century, information technologies have become the main driving force of human development, and informatics forms the scientific foundation for these technologies.

The term “informatics” was first introduced in 1962 by the French scientist Philippe Dreyfus. Today, informatics covers not only computer technologies but also algorithms, programming, networking, databases, artificial intelligence, and cybersecurity. Therefore, it is not merely a technical discipline but also a tool for managing, analyzing, and developing socio-economic processes.

In Uzbekistan, the development of informatics and information technologies has become a key direction of state policy. The “Digital Uzbekistan – 2030” strategy serves as an important document aimed at transitioning the country toward a

digital economy, modernizing public administration, and improving citizens' quality of life.

LITERATURE REVIEW: The historical roots of informatics date back to the mid-19th century. In the 1830s, the English mathematician Charles Babbage designed the *Analytical Engine*, laying the theoretical foundations of informatics. Ada Lovelace, who wrote the first algorithm for this machine, is recognized as the world's first programmer.

In the early 20th century, Alan Turing published "*Computing Machinery and Intelligence*", introducing the concept of machine thinking. In 1948, Claude Shannon developed *Information Theory*, providing the mathematical basis for informatics.

The 1950s and 1960s marked a period of rapid progress in informatics, with the invention of the first electronic computers such as ENIAC, UNIVAC, and IBM 701. During this period, programming languages such as Fortran, Cobol, and Algol were developed.

In the 1970s and 1980s, the widespread use of personal computers and the emergence of the software industry revolutionized society. In the 1990s, the introduction of the Internet completely transformed human life. Over the past decade, informatics has entered a new stage, characterized by the development of artificial intelligence, big data, cloud technologies, cybersecurity, and quantum computing.

Uzbek scientists such as A. Qayumov, B. Islomov, and X. Abdukarimov have made significant contributions to the field through research on algorithms, cryptography, databases, and intelligent systems, strengthening national progress in information security and AI.

RESEARCH METHODOLOGY: The main goal of the research is to analyze the historical development of informatics, its key directions, and its modern role in society.

The following methods were used in the study:

- **Historical analysis** – to examine the evolution of informatics step by step;
- **Comparative analysis** – to compare different technological periods;
- **Statistical analysis** – to evaluate the growth indicators of the digital economy and ICT sector;
- **Sociological survey** – to identify public trends in the use of information technologies;
- **Systemic approach** – to determine the interconnection between informatics and other disciplines.

The theoretical basis includes works by classic scholars such as Alan Turing, Claude Shannon, John von Neumann, Norbert Wiener, and contemporary Uzbek researchers.

ANALYSIS AND RESULTS: The analysis reveals that informatics plays a vital role in every sector today.

- **In education:** Digital platforms, online courses, e-libraries, and distance learning systems simplify the learning process. Platforms such as *ZiyoNET* and *my.edu.uz* are prime examples.
- **In the economy:** Digital economy models, e-payments, online banking, and e-commerce are boosting efficiency.
- **In healthcare:** Telemedicine, digital diagnostics, and electronic medical records are improving service quality.
- **In industry:** Automated control systems, robotics, and IoT technologies enhance production efficiency.
- **In information security:** Advances in cybersecurity and cryptography have become integral to national security.

The “Digital Uzbekistan – 2030” strategy is of great importance, aiming to digitize government services, develop e-government, expand IT infrastructure, and strengthen digital literacy.

According to the analysis, the ICT sector contributes about 4–5% to Uzbekistan’s GDP, and this figure continues to grow annually.

CONCLUSION AND RECOMMENDATIONS

Based on the conducted analysis, the following conclusions were drawn:

- Informatics is an inseparable part of social development.
- It has become a driving force for economic, scientific, and social processes.
- Artificial intelligence, big data, and cybersecurity will gain even more significance in the future.
- For Uzbekistan, informatics serves as the foundation of digital transformation.

Recommendations:

1. Deepen the practical orientation of informatics education at schools and universities.
2. Support local software developers and startups.
3. Expand national programs to enhance digital literacy among youth.
4. Develop specialized centers for artificial intelligence and cybersecurity.
5. Strengthen Uzbekistan’s participation in international technological cooperation.

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