



SCIENTIFIC AND THEORETICAL ANALYSIS OF THE PHENOMENON OF
THE DIGITAL ECONOMY AND THE STRUCTURAL STRUCTURE OF THE
SERVICES SECTOR, AS WELL AS TRANSFORMATIONAL DEVELOPMENT
TRENDS

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Abstract: *This paper provides a scientific and theoretical analysis of the digital economy as a phenomenon and examines the structural composition and transformational development trends of the services sector. The study argues that digitalization accelerates structural change in services through platformization of value chains, data-driven value creation, service design capabilities, and customer experience management. The paper synthesizes key approaches to measuring digital maturity in services and outlines major transformation drivers (infrastructure, human capital, institutions, innovation, and cybersecurity). The Results section includes analytical tables and conceptual figures illustrating how digital technologies reshape service structures and value creation processes. The study concludes with evidence-informed implications and recommendations for sustainable digital transformation of the services sector.*

Keywords: *digital economy, services sector, structural change, digital transformation, platform economy, data economy, digital infrastructure, digital maturity.*

INTRODUCTION

In the 21st century, the digital economy is not only a set of technological innovations, but also a new institutional and functional architecture of economic relations. Digital technologies (cloud computing, artificial intelligence, big data, IoT, blockchain, mobile and 5G/6G networks) are changing the cost structure of production and service processes, reducing transaction costs, redefining market entry barriers and creating new types of value creation mechanisms. In this sense, the digital economy is a broader concept than “technology”, combining information resources, platforms, network effects, algorithmic governance, the formation of digital labor markets and a new culture of service consumption [OECD, 2019, 21].

The services sector is one of the most active areas of digital transformation. The reason: services are often intangible, highly information-dependent, in direct contact with the client, and the “experience” factor has a strong impact on the quality of the result. Digitalization transforms these very features of services (information, experience, fast communication, individual adaptation) into economic efficiency and reformats the structural structure of services. For example, the transition from traditional banking services to “fintech” ecosystems, the transformation of retail to e-commerce and



“omnichannel” models, the integration of logistics services with digital tracking and optimization systems, and the enrichment of education and medicine with remote services are among them [World Bank, 2016, 67].

The relevance of this study is that the structural structure of the services sector in the digital economy is characterized not only by the share of industries, but also by the reorganization of value chains, the strengthening of platform intermediation, the transformation of data and algorithms into strategic resources, and the acceleration of service innovations. Therefore, a scientific and theoretical analysis of the transformational development trends of the services sector is important for economic policy, business strategy, and human capital development.

The purpose of the research is to summarize the theoretical foundations of the digital economy phenomenon and systematically analyze the structural structure and transformational development trends of the services sector, as a result of which scientific and practical conclusions are developed.

Tasks:

1. analysis of conceptual approaches to the digital economy;
2. Substantiating the structural dimensions of the services sector and digital transformation mechanisms;
3. systematization of transformation drivers and constraints;
4. presenting analytical results through tables and conceptual images;
5. develop policy and management recommendations.

LITERATURE ANALYSIS AND METHODS

Literature review

The term digital economy is interpreted differently by different schools of thought. One approach sees the digital economy as a system that increases the productivity of factors of production (capital, labor, technology) based on ICT. The second approach interprets it as a “platform-based” economic structure that transforms institutions and market mechanisms; in which network effects, data, standards and ecosystems play a central role [UNCTAD, 2019, 14]. The third one identifies “datafication” and algorithmization as the main factors of economic value creation; this approach considers digital transformation as a new paradigm in management and strategy [Brynjolfsson and McAfee, 2014, 92].

Two main strands are visible in the literature on service sector transformation:

- Structural shifts and service innovation : increasing share of services, expansion of high-value-added knowledge-based services (KIBS), competition based on service design and customer experience (CX) [ILO, 2018, 33].
- Platformization and digital intermediation : commoditization of services through platforms (marketplaces, mobile app ecosystems, superapps), evaluation and rating mechanisms, gig labor, algorithmic pricing [OECD, 2019, 45].

At the same time, it is emphasized that digital transformation is not “just the introduction of technology,” but also encompasses business processes, the institutional environment, human resources competence, and cybersecurity [World Bank, 2021, 118].



Therefore, a comprehensive, systematic approach is needed to analyze transformational development trends in the services sector.

Research methods

The following scientific methods were used in the article:

1. Conceptual-theoretical analysis - a comparative and generalization of the concepts of the digital economy and the platform economy;
2. A systemic approach — to substantiate the interdependence of transformation drivers in the services sector (infrastructure–institutions–human capital–innovation–security);
3. Structural analysis - separation of the structure of services into digital and traditional segments, the level of digitalization at the stages of the value chain;
4. Logical modeling — expressing the connection “digital maturity → service innovation → labor productivity → value addition ” in a conceptual model;
5. Scenario approach - interpretation of transformation trends within the framework of scenarios of "inertia", "accelerated digitalization", "institutional modernization" (at the theoretical level).

DISCUSSION

1. The content and attributes of the digital economy phenomenon

The significance of the digital economy as a "phenomenon" is that it makes information and knowledge a central resource at all stages of economic activity. While in an industrial economy the main competitive factors are production capacities and material capital, in a digital economy the main advantages are concentrated around:

- Data and analytics: demand forecasting, personalization, risk assessment, process optimization;
- Platform model : multi-sided markets, network effects, ecosystems and standardization;
- Algorithmic management : pricing, content recommendation, credit scoring, logistics routing;
- Speed and flexibility : real-time service, on-demand consumption;
- Borderless : remote service provision and cross-border digital trade [UNCTAD, 2019, 55].

These attributes are particularly strong in the services sector, as services are directly related to “information flow” and “quality of customer communication.”

2. Structural structure of the services sector: from traditional view to digital ecosystem

The traditional approach to analyzing the structure of the services sector usually shows shares in the sectoral breakdown (trade, transport, communications, finance, education, healthcare, etc.). In the context of digital transformation, it is appropriate to also see the structural structure in the following new segments:

1. Digital services (delivered entirely online): electronic payments, mobile banking, cloud services, online education, telemedicine;



2. Digitized traditional services (hybrid): taxi/courier platforms, "click&collect" sales, digital queuing and booking;
3. Digital intermediation services : marketplace, aggregator, advertising technologies (adtech), information brokerage;
4. Supporting infrastructure services : data centers, cybersecurity, identification (e-ID), API services [OECD, 2019, 60].

This cross-section shows where value creation is moving in the services sector: that is, revenue and added value are increasingly concentrated in the platform and data layer.

3. Transformational development trends: “platformization” and “datafication” of services

Platformization is the increase in the intermediation function in the services market and the standardization of transactions through multilateral markets. A platform often: (a) connects supply and demand; (b) creates trust through rating/identification; (c) provides payment and logistics integration; (d) grows through network effects. As a result, it becomes easier for small service providers to enter the market, but the problems of platform dependence, commissions, algorithmic transparency increase [World Bank, 2021, 164].

Datafication is the transformation of data generated during the service delivery process (customer behavior, geolocation, payment history, service quality) into a strategic resource. Datafication enhances the personalization of services (personalization), optimizes service processes, reduces risk (fraud detection), but sharply increases the requirements for data privacy and cybersecurity [OECD, 2019, 88].

4. Drivers and constraints of digital transformation

Key drivers of transformation:

- Infrastructure : internet coverage, speed, data centers, payment systems, logistics networks;
- Human capital : digital literacy, IT competencies, service design and analytics;
- Institutional environment : digital identification, electronic document management, competition policy, data management;
- Innovation ecosystem : startups, venture financing, regulatory "sandbox";
- Cybersecurity and trust : standards, risk management, consumer rights [UNCTAD, 2019, 101].

The digital divide, the risk of monopolization, staff shortages, regulatory uncertainty, data sovereignty, and cybersecurity threats are cited as constraints [World Bank, 2016, 173].

RESULTS

Below are analytical tables and conceptual diagrams reflecting the structural structure and transformation trends of the services sector. (The tables and diagrams were compiled on the basis of scientific and theoretical generalization.)

Table 1. Transformational structural structure of the services sector (conceptual classification)

Structural segment	Short description	Basic technological base	Value Creation Center
Fully digital services	The service is delivered 100% online (fintech, e-learning)	Cloud, AI, Big Data	Data + service design

Hybrid services (digitalized)	Offline process integrates with digital control	Mobile app, IoT, API	Operational efficiency
Platform mediation	The platform connects supply/demand, has rating and payment integration	Marketplace, superapp	Network effect + commission
Infrastructure digital services	Support for other services: e-ID, cybersecurity, data center	Data center, PKI, SIEM	Trust + continuity

Table 2. Digitalization trends by service value chain stages

Stage	Traditional practice	Digital transformation	Expected result
Demand identification	Survey, experiment, general advertising	Data analytics, segmentation, personalization	Conversion increases
Service design	Standard packages	CX/UX, A/B testing, agile service design	Customer satisfaction increases
Delivery	Branch/office, manual management	Omnichannel, self-service, automation	Speed and convenience
Payment and billing	Cash/terminal	QR, mobile payment, embedded finance	Transaction costs are reduced
Quality control	Based on a complaint	Real-time monitoring, rating, ML-fraud	Trust and security

Table 3. Transformation drivers–risks–control instruments matrix

Driver	Potential risk	Management instrument
Platformization	Monopolization, commission pressure	Competition policy, interoperability, open API
Datafication	Privacy violation, data abuse	Data governance, consent, audit, data minimization
AI automation	Job displacement, discrimination	Reskilling, ethical AI, explainability
Cybersecurity	Fraud, interruptions	Standards, CERT, SIEM, backup infrastructure

CONCLUSION

The article provides a scientific and theoretical interpretation of the phenomenon of the digital economy as a complex process accelerating structural and institutional changes in the service sector. It is argued that the transformation of the service sector, in addition to the traditional industry classification, is manifested in the form of segments such as digital services, hybrid services, platform mediation and infrastructural digital services. Among the transformational trends, platformization and datafication are the most central directions, which mean the shift of value creation to the “customer interface + data + payment” layers.

From a scientific and practical perspective, the following suggestions are summarized:

1. Digital maturity assessment : introducing a system of indicators covering process digitization, data management, cybersecurity, and CX indicators in service organizations;
2. Interoperability and open API : reduce platform dependency, enhance service integration, and support competition;



3. Human capital : mass development of service design, data analytics, cybersecurity, and AI competencies;

4. Data governance : institutionalizing the principles of data privacy, consent, audit, and data minimization;

5. Cybersecurity : Strengthening risk management and continuity standards for critical services (finance, logistics, health, public services).

Thus, the transformational development of the services sector confirms the “systemic” rather than “technological” nature of the digital economy: sustainable outcomes depend on the co-development of infrastructure, institutions, human capital, and trust.

LIST OF REFERENCES USED:

1. Brynjolfsson, Eric, and Andrew McAfee. 2014. *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies* . New York: WW Norton.

2. ILO (International Labor Organization). 2018. *Digital Labor Platforms and the Future of Work* . Geneva: ILO.

3. OECD. 2019. *OECD Going Digital: Shaping Policies, Improving Lives* . Paris: OECD Publishing.

4. UNCTAD. 2019. *Digital Economy Report 2019: Value Creation and Capture—Implications for Developing Countries* . Geneva: United Nations.

5. World Bank. 2016. *World Development Report 2016: Digital Dividends* . Washington, DC: World Bank.

6. World Bank. 2021. *World Development Report 2021: Data for Better Lives* . Washington, DC: World Bank.