









“Digital transformation research trends in Ukraine and the world: meta & bibliometric analysis”

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DIGITAL TRANSFORMATION RESEARCH TRENDS IN UKRAINE AND THE WORLD: META & BIBLIOMETRIC ANALYSIS

Abstract

In this work, the main trends in research and publication activity in digital transformation in the world and Ukraine are analyzed using meta- and bibliometric analysis. For this purpose, bibliometric data on scientific publications on the topic of digital transformations in the Google Scholar and Scopus databases were selected, which were additionally analyzed using the VOSviewer software package. Based on filtering the results obtained, an array was formed that included 366 scientific publications for 2019–2023 in Ukrainian in the Google Scholar database and 3,703 scientific publications in English for 2020–2023 in the Scopus database. Dynamic time analysis revealed a significant surge of scientific interest in the topic of digital transformations in recent years, while structural analysis revealed the multi-industry structure of existing research. The creation of bibliographic maps of keywords and publication maps allowed us to form an idea of the main thematic areas of research in the context of digital transformations and their opinion leaders. The data obtained became the basis for formulating recommendations for further areas of research in digital transformation, in particular, on the development of a unified roadmap for the digital transformation of education at different educational qualification levels and for various specialties. This will contribute to the formation of a single systemic approach to the digital transformation of Ukraine as a guarantee for the state's sustainable development, well-being, strengthening of national security, speeding up the pace of European integration processes, as well as promoting national interests at the international level.

Keywords

digital transformation, digital economy, education,
meta-analysis, bibliometric analysis

JEL Classification

I20, L86, O30

INTRODUCTION

Digital transformations in the modern world play a key role in the development of society and economy, becoming fundamental elements in all spheres of human activity. The accelerated development of information technologies, artificial intelligence, big data, blockchain, the Internet of Things (IoT), and other digital innovations are radically changing traditional approaches to business, education, health care, management, and interaction in society (Schöggel et al., 2023; Straková et al., 2022; Łucjan et al., 2023).

According to the United Nations, technological progress is advancing faster than any other innovation in human history, reaching approximately 50% of the population of developing countries in just two decades and radically transforming societies (UN, 2019). Increasing connectivity, financial inclusion, and access to trade and public services through digitalization can be a powerful instrument for leveling, lowering market entry barriers for SMEs, and promoting global

integration and cooperation. Although these changes open up new opportunities to improve efficiency, accessibility, and quality of services, they also present challenges related to data security, privacy, ethics, and regulation to participants in the digital environment.

The COVID-19 pandemic became a powerful catalyst for digital transformation, forcing many organizations and individuals to rapidly adapt to virtual communication, remote work, and online education (Moosavi et al., 2021; Bovsh et al., 2022; Jurczuk & Florea, 2022; Melnyk et al., 2023; Kamarudin et al., 2023; Bosovska et al., 2023). This not only demonstrated the importance of digital technologies for resilience and flexibility in the face of crisis but also opened up new opportunities for innovation and transformation across sectors (Yakymova et al., 2022; Vatsa et al., 2023; Tshivhase & Bisschoff, 2023; Uppathampracha & Anwar, 2023; Jebbari, 2024; Alrawashedh & Shubita, 2024). In particular, as a response to the challenges of the pandemic, the European Union has officially identified the need for increased investment in key digital technologies, including cybersecurity, cloud computing, artificial intelligence, data spaces, blockchain, and quantum computing, as well as semiconductors, together with the necessary skills (in financial terms estimated as an additional 125 billion euros per year) (EC, 2022).

Meanwhile, the experience of working in the conditions of military conflicts emphasized the strategic importance of digital technologies both for the conduct of hostilities and for ensuring national security and defense, as well as post-war economic recovery and the implementation of reforms in all sectors of the economic complex (NISS, 2023, Shkolnyk et al., 2022). The key achievements in the field of digital transformation of Ukraine, which is a fairly successful modern case, implemented by the Ministry of Digital Transformation of Ukraine during 2022–2023, include the continued development of the Unified State Web Portal of Electronic Services (“Diya”), which also includes military services, the “eRecovery” and “eSupport” programs, the development of military-tech and defense Tech; as well as digital skills of Ukrainians; digital reform of the State Statistics Service of Ukraine; creation of the first IT army, Innovation Development Strategy, military technologies to strengthen the front, fundraising platform UNITED24 (Government portal, 2023).

All this indicates the need to conduct thorough theoretical and empirical research to assess the role of digital transformation in modern conditions and its impact on various aspects of social life, in particular, on economic growth, social inclusion, educational processes, the health of citizens, as well as to determine effective strategies and approaches to regulation and application of the latest technologies in the conditions of globalization and constant changes.

1. LITERATURE REVIEW

The study of digital transformations of modern society, as a key driver in the development of human and intellectual capital, covers a wide range of areas, including economic, social, security, educational and management aspects.

For example, Mikalef and Parmiggiani (2022) developed a conceptual model highlighting the key areas of digital transformation, including digital business strategies, organizational change management, and the use of IT capabilities. At the same time, Gurcan et al. (2023) broadened the discussion by identifying major areas of research in this field, including sustainable energy, digital transformation in healthcare, e-government, edu-

cation, and supply chain optimization, thus emphasizing the multidisciplinary nature of digital transformation.

Many studies are focused on analyzing different aspects of the impact of digital transformation on the education sector. In particular, Trevisan et al. (2023) analyze how digital transformation can contribute to the sustainable development of higher education institutions based on a review of the current state, theoretical approaches in the field, and perspectives for future research. At the same time, Schlegel and Kraus (2023) focus on the analysis of the necessary skills and competencies for successful digital transformation, emphasizing the importance of adapting educational programs to the new challenges of our time.

Researchers also pay attention to the impact of digital transformation on the socio-economic development of countries, improving the quality of life of citizens and transforming business structures (Petrushenko et al., 2022, Lieonov et al., 2022; Kuznyetsova et al., 2022; Prokopenko et al., 2022; Prokopchuk et al., 2022). Kubatko et al. (2022) analyze the priority areas of the innovative potential of Ukraine in the conditions of digitalization. Voronenko et al. (2022) examine the impact of digital transformation on life satisfaction in European countries. Trusova et al. (2021) study the digitization of investment and innovation activities of trade companies in network IT systems, emphasizing its importance for modern business. Others investigate the technological, economic, social, and legal perspectives of the digital transformation of the economy's agricultural sector, substantiate the current state and models of business development, as well as the successful management of this sector of the economy in modern conditions, highlighting the priority areas of research and innovation in the food industry (Dörr & Nachtmann, 2022; Ivanov et al., 2021; Erdei-Gally & Vágány, 2022). Certain attention is paid to issues of security both in the digital space and the security of networks, systems, channels, and data privacy in the conditions of digital transformation, which is extremely important both in the conditions of Russia's military aggression against Ukraine and military and hybrid conflicts in the world as a whole (Faure et al., 2020, 2023; Aleksieieva et al., 2023; Trusova et al., 2023, Voronenko et al., 2022).

The increase in the number of scientific works devoted to digital transformation, digital development, and digitalization has led to a symmetrical increase in scientific research devoted to meta-analysis of the literature and bibliometric analysis. At the same time, it should be noted that in the Scopus database:

- the total number of publications in which “Meta-analysis” is chosen as one of the keywords is 353,164 documents, of which 163,677 are articles, the largest number of which represents scientists from the United States – 46,617, China – 46,609, Great Britain – 22,546. Authors from Ukraine published only 96 relevant documents, 80 of which are from the field

of knowledge “Medicine”, 10 – “Biochemistry, Genetics and Molecular Biology”, 8 – “Environmental Science”, 8 – “Agricultural and Biological Sciences”. Only one document from the above 96 ones is in the fields of knowledge “Business, Management and Accounting” and “Economics, Econometrics and Finance” (Makarenko et al., 2021, 2023);

- the total number of publications in which “Bibliometric analysis” is chosen as one of the keywords is 12,929 documents, of which 7,818 are articles, the largest number of which represents scientists from China – 2,398, India – 838 and the United States – 764. Authors from Ukraine published 34 relevant documents, 22 of which are from the fields of knowledge “Business, Management and Accounting” and “Economics, Econometrics and Finance”, 11 – “Social Sciences”, 6 – “Engineering”, 4 – “Computer Science”. Out of all 34 articles 2 articles in Bibliometric analysis of publications are devoted to the war in Ukraine (Ostapenko et al., 2023, Petrushenko et al., 2023) and 3 articles are devoted to Bibliometric analysis in the field of digitization (Owusu et al., 2023; Vysochan et al., 2023; Bednářová & Serpeninova, 2023);
- regarding publications devoted to Meta-analysis or Bibliometric analysis of studies in which the term “digital transformation” is used in the title, no relevant publications were found.

Therefore, this causes the expediency of conducting this research. The purpose of this article is to analyze the main trends among research and publishing activity in the field of digital transformation in the world and Ukraine using meta- and bibliometric analysis.

2. METHODS

To achieve the goals set in this study, a meta and bibliometric analysis of scientific publications on the topic of digital transformations in the Google Scholar and Scopus databases was used. The main stages of the research process are depicted in Figure 1.

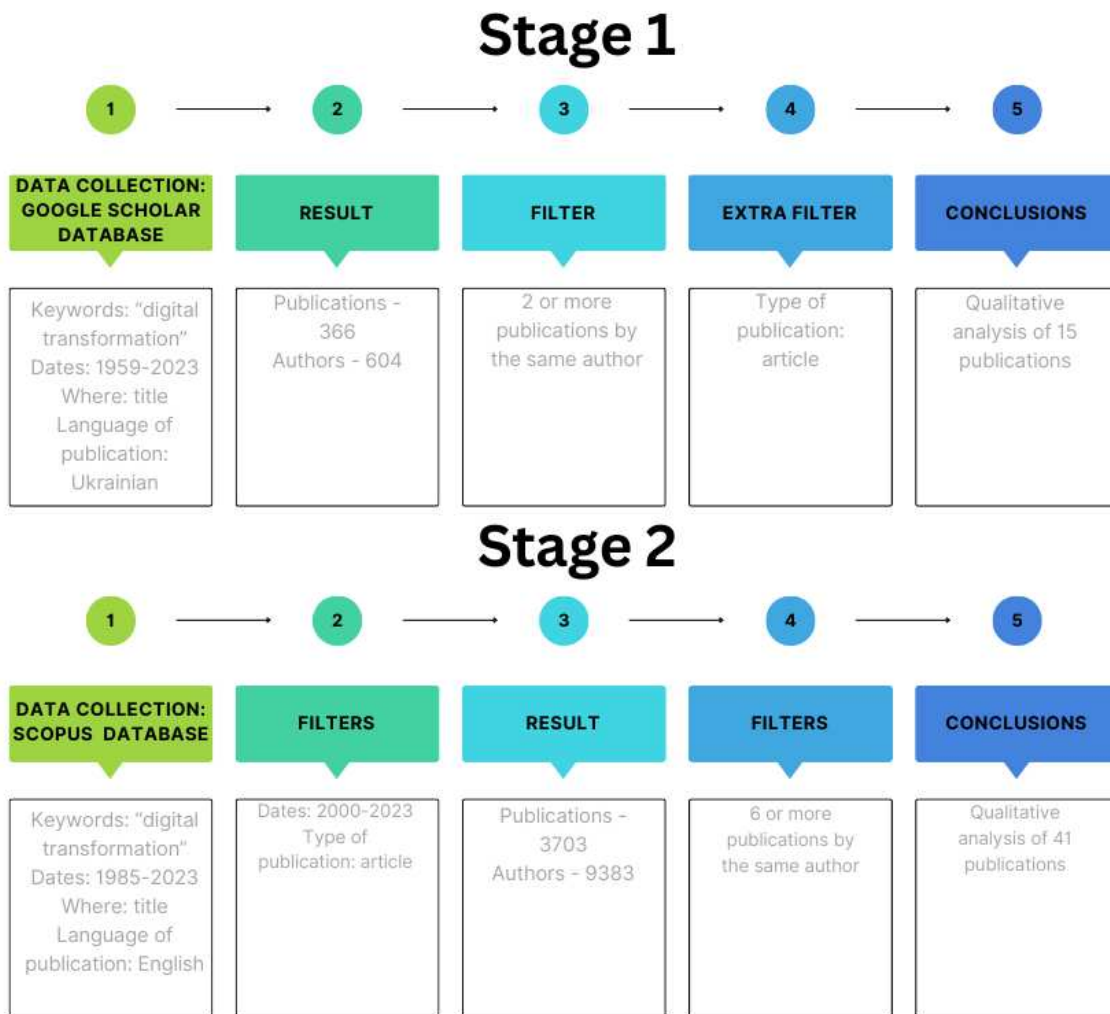


Figure 1. Research algorithm

Using the VOSviewer software package, which is a common tool for creating and visualizing network data that can include bibliographic connections, citations, words, or co-authorships (Van Eck & Waltman, 2023), data on 366 publications cited in Ukrainian during 2019–2023 in the Google Scholar database and 3,703 publications cited during 2020–2023 in the Scopus database were summarized. By filtering the obtained results, their number was narrowed, which became the basis for further qualitative analysis of publications of the authors who made the greatest scientific contribution during 2020–2023 in the field of digital transformation.

The proposed algorithm makes it possible to determine the priority areas of research in digital transformation and form priority tasks, strategic goals, and directions for their achievement.

3. RESULTS AND DISCUSSION

The results of the analysis of a number of scientific publications on the topic of digital transformations in the Google Scholar database are shown in Table 1.

The first scientific publication in which the term “digital transformation” is used was published back in 1959. This work was devoted to the digital recording of electrocardiographic data for analysis by a digital computer, which would make it possible for cardiologists to have a flexible tool for objective analysis of a large amount of biological data according to various possible criteria (Taback et al., 1959). The total number of English-language publications in which the term “digital transformation” appears anywhere in the text in the Google Scholar database is 279,000, with 18,900 – in the title.

Table 1. Number of English-language scientific publications on the topic of digital transformations in the Google Scholar database

Period	The number of publications in which the term “digital transformation” appears anywhere in the text, % of the total number	The number of publications in which the term “digital transformation” appears in the title, % of the total number
Until 1970	0.01	0.01
1970–1979	0.04	0.005
1980–1989	0.08	0.02
1990–1999	0.23	0.05
2000–2009	1.09	0.2
2010–2019	21.4	15.6
2020–2023	63.6	72.5
The year of publication is not specified	13.5	11.36

Table 2. Number of publications in Ukrainian in the scientific metric database of Google Scholar, in which the term “digital transformation” appears in the title

Number of publications on the specified topic by author	Names of authors*	The total number of publications on the specified topic **	of them:	
			Scientific articles	Monographs
5	Kraus, K. M., Kraus, N. M.	5	3	–
3	Byelyenkova, O. Yu., Berestets'ka, O. M., Huzhva, V. M., Dubnyak, M. V., Pushkar, T. A.	15	8	–
2	Bykov, V.Y., Kucherak, I. V., Lebid, O. V., Lytvynova, S. H., Tat'yanko, S. S., Tyshchenko, D. S., Shevchenko, L. S.	14	3	1
Total		34	14	1

Note: * – the authors’ surnames are given in transliteration from the Cyrillic alphabet. ** – includes all possible scientific works: articles, monographs, theses, etc.

Table 2 shows the results of summarizing data on publications in Ukrainian in the Google Scholar database, in which the term “digital transformation” appears in the title, in particular, of a scientific article or monograph.

Of the 15 analyzed publications in Ukrainian, 5 are devoted to various aspects of the economy’s digital transformation, 5 to education, 3 to construction, 1 to cyber security, and 1 to legal services. This allows drawing a conclusion about the multi-industry relevance of digital transformation.

At the second stage of the study, an analysis of scientific publications on the topic of digital transformations from the Scopus database was carried out (Figure 2).

For the first time, the topic of digital transformations appears in a 1985 publication in the context of research into the spectrum of natural and synthesized sound sources that were transformed using analog and digital methods (Smalley, 1985). A

follow-up publication was published in 1989, in which the results of developing a special linear-invariant working method for digital transformation, generalization and extension for any geometric transformations are given (Pross, 1989).

The term “digital transformation” was used for the first time in a 1995 study. It was devoted to studying the transformation technology of graphic land cadastral maps to create a digital land cadaster and make changes in the content of the land cadaster” (Demsar, 1995). The use of this term in the title of a scientific publication was noted only in 2007, namely, “The Work of Theory in the Age of Digital Transformation” (Jenkins, 2007).

The study by Earley (2014) is focused specifically on digital transformations. In particular, the author claims that modern information technologies accelerate the speed with which companies make decisions, process information, and collaborate to solve problems. They conclude that using old approaches with new software is no longer sufficient.

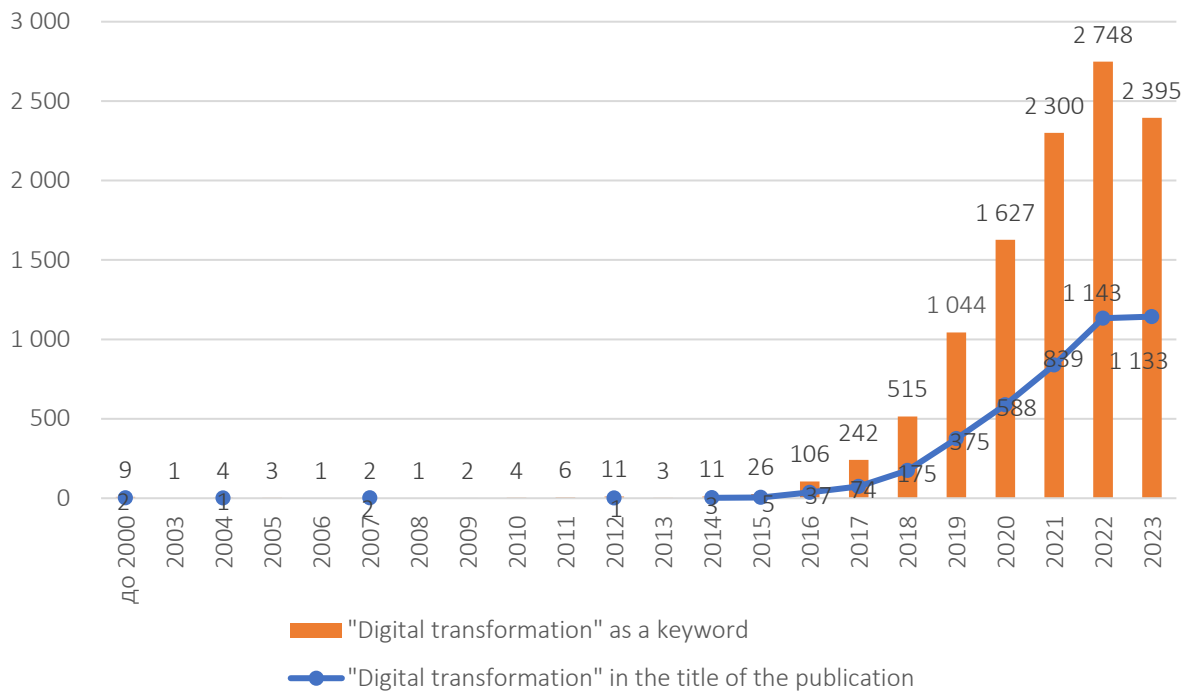


Figure 2. Dynamics of a number of publications on the topic of digital transformations in the Scopus database

The total number of publications in which the term “digital transformation” is listed as a keyword in the Scopus database is 11,079. The percentage of work is distributed as follows:

- published before 2000 make up 0.05% of the total number;
- in 2000–2009 – 0.2% of the total number;
- in 2010–2019 – 17.7% of the total number;
- in 2020–2023 – 81.8% of the total number.

At the same time, it should be noted that in the Scopus database, the year of publication is not specified in 0.2% of publications in which the term “digital transformation” is specified as a keyword. In contrast, the total number of publications with the term “digital transformation” in the title is only 4,385.

By studying keywords related to “digital transformation” for 3,703 publications published in 2020–2023, another 157 terms were selected, the frequency of which is summarized in Table 3.

For clarity, these keywords are built as a bibliographic map using the VOSviewer software complex (Figure 3).

Keyword analysis of scientific publications on digital transformation reveals a wide range of topics covering metadata, digitization, e-learning, Industry 4.0, innovations, artificial intelligence, sustainable development, and the impact of COVID-19. Such diversity indicates a deep and multidisciplinary interest in digital transformations in society and business, from implementing the latest technologies and data management to solving global challenges and increasing competitiveness.

Publications in which the term “digital transformation” is specified as a keyword are published in 21 languages in the Scopus database. Publications in English occupy the largest specific weight – 10,655 or 96.2% of the total number, followed by publications in German (123 or 1.1% of the total number) and in Spanish (120 or 1.1% of the total number). The situation is similar with publications in which the term “digital transformation” appears in the title. 4,188, or 95.5% of the total

Table 3. Frequency of use of keywords related to “digital transformation” in publications of the Scopus database in 2020–2023

Frequency of use	Keywords
317	Metadata
269	Digitalization
256	E-learning
217	Industry 4.0
198	Innovation
189	Artificial Intelligence
160-169	Decision Making, COVID-19, Sustainable Development, Digitization
137	Information Systems
120-129	Competition, Information Management
110-119	Information Use, Big Data
90-99	Sustainability, Case-studies, Digital Technology
70-79	China, Higher Education, Internet Of Things, Business Models, Industrial Research, Technology, 'current,
60-69	Digitization, Sales, Human, Manufacturing, Knowledge Management, Systematic Literature Review, Supply Chains, Public Sector, Engineering Education, Machine Learning, Economics, Students
50-59	Literature Review, Digital Storage, Literature Reviews, Article, Surveys, Project Management, Life Cycle, Human Resource Management, Blockchain, Ecosystems, Digital Devices, Investments, High Educations, Health Care, Small and Medium-sized Enterprise, Public Administration, E-government, Dynamic Capabilities, Construction Industry, Automation, Personnel, Performance, Data Analytics, Case Study
40-49	Smart City, Supply Chain Management, Digital Innovations, Business, Humans, Technological Development, Risk Assessment, Transformation, SMEs, Leadership, Gas Industry, Efficiency, Digital Maturity, Business Model, Organizational Change, Change Management, Technological Innovation, Information Technology, Education, Enterprise Resource Management, Digital Innovation, Virtual Reality, Strategy, Information Services, Information and Communication Technologies
30-39	SME, Manufacturing Industries, Enterprise Architecture, Digitalization, Planning, Organizational, Maturity Model, Learning Systems, Industrial Revolutions, Higher Education Institutions, Digital Platforms, Data Mining, Technology Adoption, Finance, Value Creation, Service Industry, Personnel Training, Emerging Technologies, Competitive Advantage, Block-chain, Industrial Enterprise, Digital Strategy, Risk Management, Social Media, Pandemic, Management, Dynamics Capability, Digital Twin, Enterprise IS, Cybersecurity, Business Model Innovation, Healthcare, Covid-19, Systematic Review, Information And Communication Technology, Developing Countries, Customer Experience, Competitiveness, Business Strategy, Barriers
26-29	Strategic Planning, Marketing, Indonesia, Education Computing, E-Government, Digital Government, Computer Programming, Offshore Oil Well Production, Embedded Systems, Behavioral Research, Teachers', Government, Empirical Analysis, Electronic Commerce, Economic Development, Digital Marketing, Digital Business, Cyber Security, Curricula, Condition, Oil And Gas Industry, Industrial Management, Framework, Digital Strategies, Design/methodology/ approach, Design

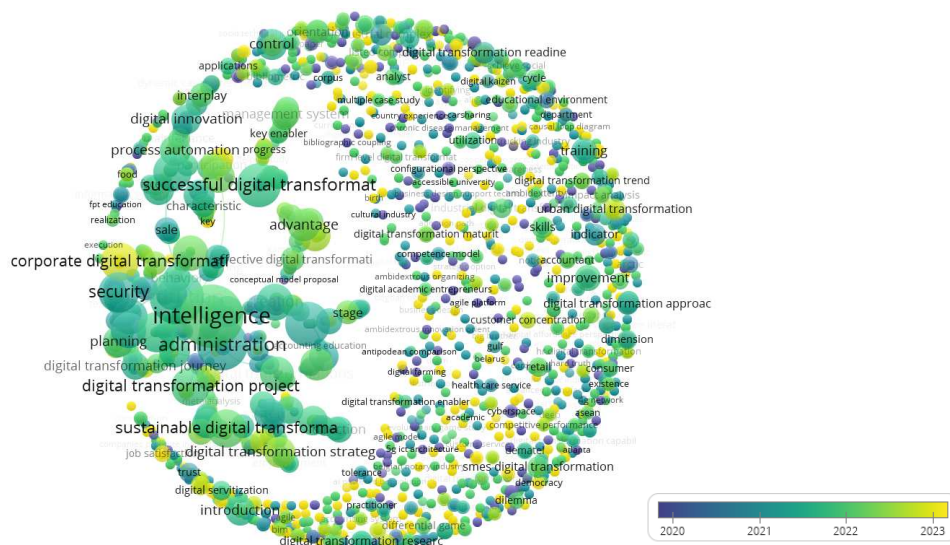


Figure 3. Bibliographic map of keywords devoted to the topic of digital transformations in the Scopus database in 2020–2023

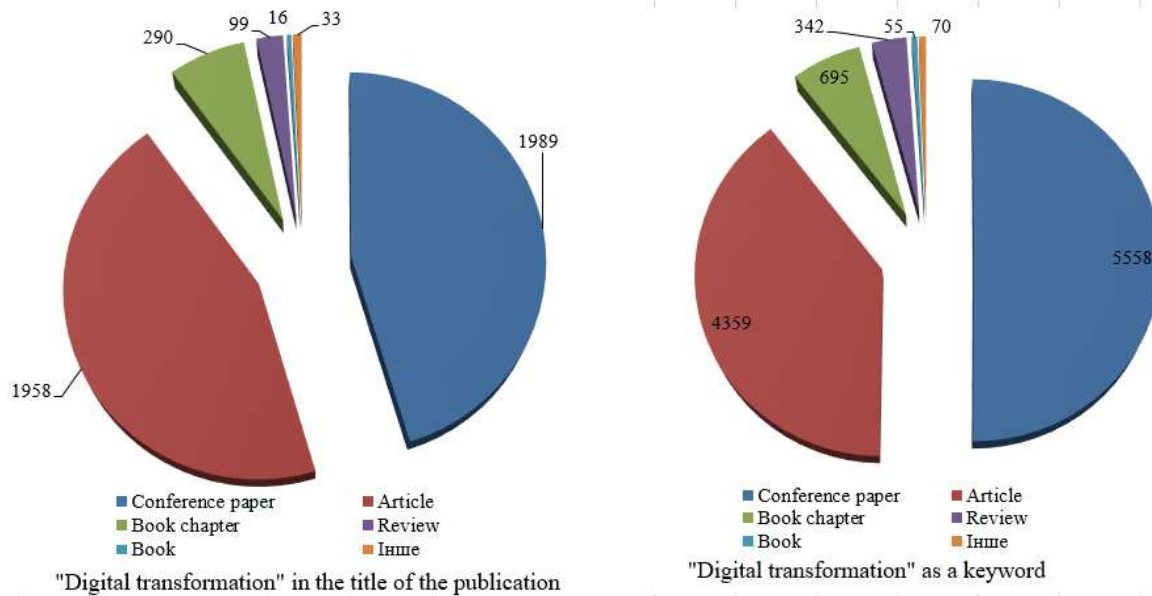


Figure 4. Distribution of publications on the topic of digital transformations in the Scopus database in 2020–2023: by type

number are published in English. By type of publication, the most published ones are conference reports, followed by articles (Figure 4).

The distribution of publications in which the term “digital transformation” is specified as a keyword and publications in which it appears in the title by fields of knowledge is similar to that shown in Figure 5. The largest number of publi-

cations are presented in the fields of Computer Science, Engineering and Business, Management, and Accounting, which together make up 54.6% of publications in which the term “digital transformation” is specified as a keyword, and 52.8% of publications in which the term appears in the title.

Figure 6 shows the bibliographic map of authors’ publication activity devoted to the topic

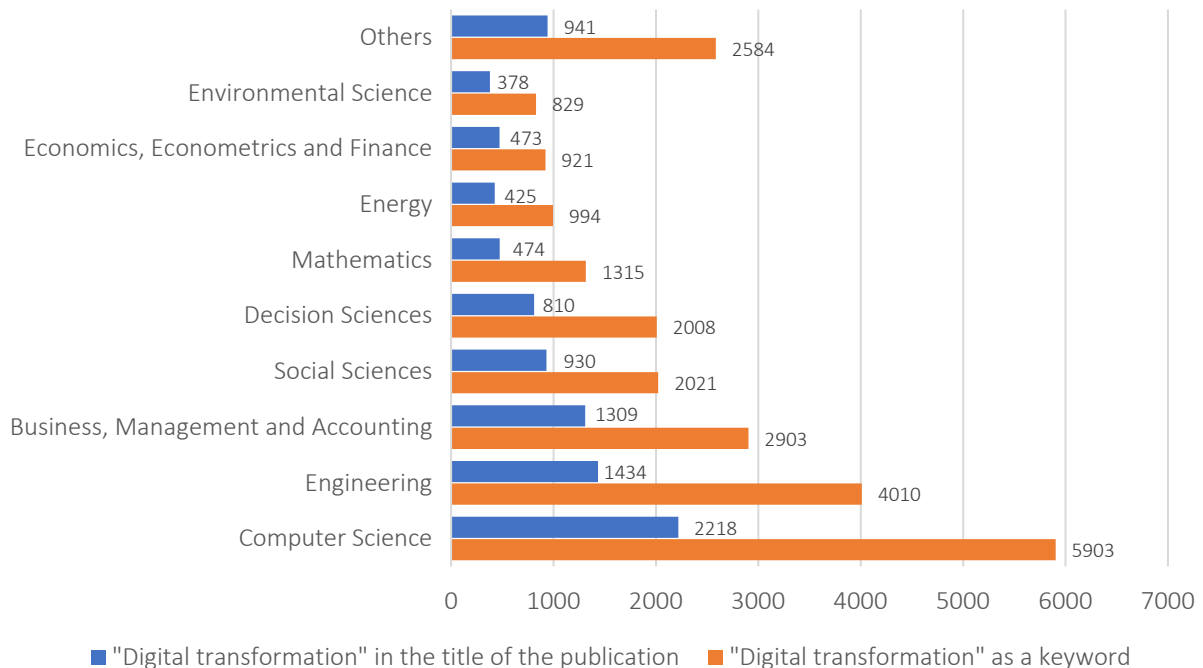


Figure 5. Distribution of publications on to the topic of digital transformations in the Scopus database in 2020–2023: by area of knowledge

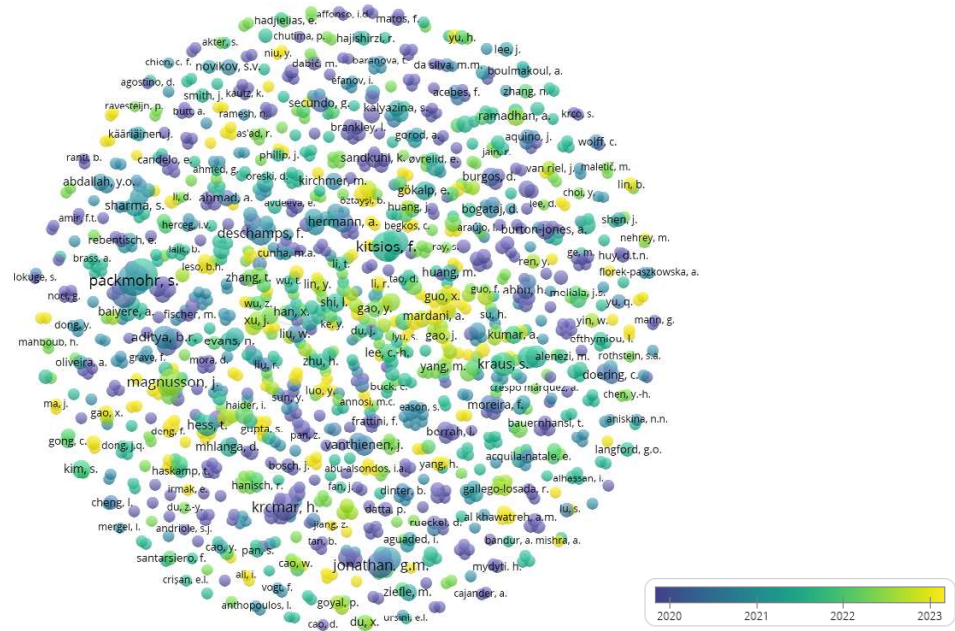


Figure 6. Bibliographic map of publication activity devoted to the topic of digital transformations in the Scopus database in 2020–2023

of digital transformations, built in VOSviewer. Accordingly, 9,383 scientists are the authors of 3,703 publications, of which 22 published 6 or more articles with the term “digital transformation” in the title.

cording to the Scopus database. They represent 10 countries such as Sweden, Germany, Greece, Norway, Canada, Italy, Brazil, Indonesia, Belgium, Australia, and 18 organizations.

Table 4 shows a brief description of authors who made the greatest scientific contribution to the researched scientific topic from 2020 to 2023, ac-

Sven Packmohr from Sweden and Henning Brink from Germany have the largest number of publications on the topic of digital transformations: their total number is 15 (conference abstracts – 13, book

Table 4. Characteristics of the top 20 leading authors on the subject of digital transformations from the Scopus database in 2020–2023

No.	Author	Country	Organization	h-index	Number of citations	Total number of publications in Scopus	The number of publications on the specified topic	Articles
1	Packmohr, Sven	Sweden	Malmö Högskola	6	264	27	15	
2	Brink, Henning	Germany	Osnabrück University	4	41	20	14	
3	Kitsios, Fotis C.	Greece	University of Macedonia	22	1,387	131	13	8
4	Magnusson, Johan	Norway	Kristiania University College	9	318	55	10	1
5	Krcmar, Helmut A. O.	Germany	Technische Universität München	45	9,299	756	10	4
6	Mekonnen, Jonathan Gideon	Sweden	Stockholms universitet,	5	83	26	10	
7	Mosconi, Elaine	Canada	Université de Sherbrooke	10	379	47	9	1
8	Kamariotou, Maria I.	Greece	University of Macedonia	19	854	81	9	5
9	Rusu, Lazar	Sweden	Stockholms universitet	12	498	80	8	
10	Kraus, Sascha	Italy	Free University of Bozen-Bolzano	72	16,960	360	8	8
11	Deschamps, F.	Brazil	Pontifícia Universidade Católica do Paraná	17	2,095	130	8	2

Table 4 (cont.). Characteristics of the top 20 leading authors on the subject of digital transformations from the Scopus database in 2020–2023

No.	Author	Country	Organization	h-index	Number of citations	Total number of publications in Scopus	The number of publications on the specified topic	Articles
12	Aditya, B. R.	Indonesia	Telkom University	6	28	97	8	6
13	Parmiggiani, Elena	Norway	Norges Teknisk-Naturvitenskapelige Universitet	8	176	38	7	
14	Mikalef, Patrick	Norway	Norges Teknisk-Naturvitenskapelige Universitet	35	5,266	137	7	1
15	Hess, Thomas	Germany	Ludwig-Maximilians-Universität München	37	7,866	227	7	1
16	Ferdiana, Ridi	Indonesia	Universitas Gadjah Mada	11	473	115	7	4
17	Böhm, Markus	Germany	Fachhochschule Landshut	19	1,842	120	7	3
18	Paul, Fynn Hendrik	Germany	LandPlan OS GmbH	1	1	7	6	
19	Vanthienen, Jan	Belgium	KU Leuven	41	7,795	226	6	1
20	Kusumawardani, Sri Suning	Indonesia	Universitas Gadjah Mada	9	229	64	6	4

chapters – 2) and 14, respectively (conference abstracts – 12, book chapters – 2, co-authored – 12). In their articles, they mainly investigate barriers that arise during digital transformation using the example of higher education institutions (hereinafter referred to as HEIs) and various sectors of the economy, namely:

- the impact of digital transformations in HEIs on the educational environment, the relationship between the strategic work of institutions and digital transformation and how students perceive the results of this work in their daily studies (Mårtensson et al., 2023; Packmohr & Brink, 2021);
- barriers that arise when improving operations, business models, and contacts with clients on the example of a master’s course in business informatics (Packmohr & Brink, 2022);
- barriers to digital transformation in small and medium-sized businesses (Vogelsang et al., 2021);
- the structure of barriers in the industrial and non-commercial sectors and ways to overcome them (Vogelsang et al., 2021).

Fotis C. Kitsios, co-author of 13 publications, explores individual aspects of digital transformation in various sectors of the economy:

- current expectations of civil servants regarding the implementation of digital transformation projects, as well as the results they expect from these projects, which contributes to the study of barriers to digital transformation in the public sector to improve this process (Kitsios et al., 2023a);
- assessment of individual aspects of guest satisfaction based on online ratings of tourist platforms for the hotel business (Kitsios et al., 2023b);
- analysis of changes occurring in the field of health care as a result of digital transformations (Kitsios & Kapetaneas, 2022, Stoumpos et al., 2023);
- the importance of digital transformation for driving schools, the potential of its application in the business environment of this industry, and how it can be used to improve innovation capabilities and productivity (Nousopoulou et al., 2022);
- assessment of the benefits of using big data analytics systems and the Internet of Things in the telecommunications industry (Moumtzidis, 2022);
- the issue of convergence of artificial intelligence and corporate strategy in organi-

zations; alignment of artificial intelligence tools and information technologies with organizational strategy; artificial intelligence, knowledge management, and the decision-making process; artificial intelligence, innovation, and cost of services (Kitsios et al., 2021);

- the level of acceptance of digital transformation in the banking sector through the analysis of new technologies' perception by bank employees (Kitsios & Kapetaneas, 2021).

Helmut Krcmar, using economic and mathematical methods, analyzes the peculiarities of digital transformation in various ecosystems, in particular, in the field of digital services (Setzke et al., 2023); automotive, blockchain, financial, banking, the insurance industry, and artificial intelligence (Riasanow et al., 2021); in the healthcare sector (Hermes et al., 2020).

Kraus S. investigated the thematic evolution of research in the field of digital transformation related to business and management (Kraus et al., 2021, 2022); differences in approaches and factors affecting digital transformation in small and medium-sized businesses and large firms (Zoppelletto et al., 2023, Dörr et al., 2023, Omrani et al., 2022); management archetypes that are related to mastering digital transformation to decision-making processes based on analytics, (Korherr et al., 2022), etc.

Deschamps focuses on the impact of digital transformation on organizational changes, namely how collaboration in research and development with scientific and business partners contributes to digital transformation (Hannemann et al., 2022). The results suggest that business success depends more on how technologies are developed and used by stakeholders to increase company value than on the simple adoption of new technologies" (Rocha et al., 2023).

Aditya B. R. considers various aspects of digitalization of higher education. In particular, he analyzes priorities and obstacles in implementing digital transformation in higher education (Aditya et al., 2021a, 2021b; Aditya et al., 2022).

He also examines the challenges of rapid digital transformation arising during the pandemic in the context of higher education (Nurhas et al., 2022).

Patrick Mikalef explores the process of transitioning to data-driven decision-making in digital transformation and provides guidelines for evaluating the ability of top managers to manage digital transformation projects (Korherr et al., 2022).

Thomas Hess focuses on strategic changes, showing how, after the appointment of digital transformation leaders (CEOs), they need to be embedded in the organization through (vertical) anchoring in the organizational structure, depending on the firm's digital transformation strategy and the focus of the digital transformation leader's tasks (Singh et al., 2020).

The conducted objective bibliometric analysis emphasizes the importance of strategic management of digital transformation in organizations and its impact on innovative activity and a country's competitiveness. Such conclusions are also reached in other similar works, in particular, in the study by Chawla and Goyal (2022), who analyzed 234 scientific articles published in the last 20 years in the domain of digital transformation, which were obtained from the Thompson Reuters Web of Science database. In contrast to this study, the current one focuses on the latest trends and innovations in digital transformation based on Scopus and Google Scholar scientometric database research providing greater inclusiveness and making it possible to identify specific trends and needs in the context of Ukrainian digital transformation. However, it should be noted that additional analysis of publications from the Web of Science would strengthen the thoroughness of the conducted research and the base of publications for analysis.

Shi et al (2022) use a more comprehensive approach to bibliometric analysis in the field of digital transformation, using tools such as VOSviewer, Harzing's Publish or Perish, and SciMAT, which made it possible to analyze the dynamics in the dissemination of scientific

ideas on this topic and the productivity of authors by country of origin. In the current work, emphasis is placed on the thematic areas of research and the most influential opinion leaders, which ensure the dissemination of existing and the formation of new knowledge on the subject of digital transformation. However, using a wider toolkit could deepen the analysis and reveal deep patterns, which could become a direction for further research.

Hajishirzi et al. (2022) investigated the key aspects of the adoption and implementation of digital transformations in organizations based on citation and co-citation methods, as well as cluster analysis of literature. In contrast, this study is focused on a more global nature, which involves the analysis of the topic of digital transformations at the level of not only organizations but also industries, countries, and the world, making it possible to identify trends in the existing research.

CONCLUSIONS

This paper analyzes the main trends of research and publishing activity in the field of digital transformation in the world and Ukraine using meta- and bibliometric analysis. To achieve the goal, a quantitative and qualitative analysis of scientific publications in the Google Scholar and Scopus databases starting from 1959 was carried out. Based on the selection and filtering of the obtained results, the study summarized the data on 366 publications cited during 2019–2023 in Ukrainian in the Google Scholar database and 3,703 publications cited during 2020–2023 in the Scopus database, in which the term “digital transformation” appears in the title of the article.

The analysis of scientific publications confirmed the multi-disciplinary nature of research in this field, the dynamics of which has been growing exponentially in recent years. Research in the field of digital transformation is carried out in both the public and private sectors in terms of large, medium, and small businesses, banking and finance, education, health care, tourism, etc. According to the world’s leading scientists, the priority areas of research include strategic changes in the system of conducting various types and forms of business at all levels of management in new conditions; key trends and barriers to the modernization of the educational system caused by new challenges; tasks and approaches to drawing up a roadmap for training and adapting personnel of all levels to changes; creation of conditions for ecological reformation of business.

The primary direction of further scientific research should be the building of a fundamentally new system of training, development, and self-improvement, where the integral result should be the formation of professional competencies in the fields of digital economy, digitalization, digital innovations and technologies, digital development, development of the information society, informatization, digital skills and digital rights of citizens, electronic commerce, development of the IT industry. In Ukraine, developing a strategy for the digital transformation of education would be expedient.

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