DIMENSIONS OF THE DIGITAL ECONOMY BASED ON THE ANALYSIS OF ARTICLES PUBLISHED IN SELECTED SCIENTIFIC DATABASES

Kinga HOFFMANN-BURDZIŃSKA[1*], Agata STOLECKA-MAKOWSKA[2]

[1] Department of Digital Economy Research, Faculty of Economics, University of Economics in Katowice; kinga.hoffmann-burdzinska@ue.katowice.pl, ORCID: 0000-0002-3993-528X
[2] Department of Digital Economy Research, Faculty of Economics, University of Economics in Katowice; agata.stolecka-makowska@ue.katowice.pl, ORCID: 0000-0003-2013-7680
* Correspondence author

Purpose: The aim of the article was to identify scientific articles dealing with specific dimensions of the digital economy and to characterize them based on an analysis of the abstracts of the identified scientific articles.

Design/methodology/approach: The objectives were achieved by using the method of a literature review, through which scientific articles addressing specific areas/dimensions of the digital economy were identified and analyzed. The analysis was based on scientific articles downloaded from the Web of Science (WoS) and Scopus databases. An in-depth analysis of the articles was used to prepare an overview of the dimensions of the digital economy.

Results: The research shows a rather scarce number of publications on the digital economy and the multifaceted nature of the issues addressed, which are difficult to categorize into specific dimensions of the digital economy. The analysis of keywords and abstracts shows that some dimensions of the digital economy are more frequent and others less studied by the authors.

Research implications: In the future, it would be interesting to fill the gaps in the definition and dimensions of the digital economy, and extend the analysis to include more qualitative aspects.

Originality/value: This article presents the results of a literature review on the dimensions of the digital economy, a new and relatively under-researched topic. The strategy of searching for articles in selected databases represents the author's proposal of a set of dimensions of the digital economy, which is a combination of the dimensions described in the literature and recent trends in the digital economy.

Keywords: dimensions of the digital economy, research dimensions, scientific databases, scientific articles.

Category of the paper: literature review.

1. Introduction

At a time of rapid ICT development and socio-economic change, the digital economy is becoming an increasingly important factor shaping modern societies and global markets. The digital economy is not only a new area of economic activity, but also a broad and diverse area of research, requiring interest from researchers and business representatives. To fully understand this new reality, it is necessary to break it down into smaller areas, or dimensions, and to identify key indicators to measure these dimensions.

The digital economy is still a new research area, which is reflected, among other things, in the fact that there are no clearly established methods for conceptualizing and operationalizing this phenomenon. Ongoing research and published works in this area refer only to selected areas of the digital economy. Attempts are made to measure selected areas of the digital economy, as exemplified by indicators such as DESI (Digital Economy and Society Index) or those proposed by the OECD. The variety of definitions and research approaches to what should be analyzed in this area makes it difficult to understand and study the phenomenon of the digital economy. In addition, the lack of clearly delineated dimensions of this phenomenon and a set of indicators and yardsticks makes it impossible to realize measurements and comparisons of the degree of digitalization of economies on a geographical basis.

The need to undertake research into the digital economy and its dimensions stems from a number of important factors that influence today's society and economy. Among these, the most relevant are the dynamic development of information and communication technologies, the transformation of business processes, the emergence of new business models or new consumption trends. The digital economy is becoming an important factor shaping production processes, consumption processes and social interactions.

In the context of considering the digital economy, it becomes important to understand the transformation processes that are taking place in the structure of the economy as a result of technological development and digitalization. It is therefore cognitively interesting to carry out an analysis of scientific articles published in selected scientific databases on different dimensions of the digital economy. The quantitative and qualitative analysis of these publications allows us to learn and understand the different research approaches and key issues undertaken in scientific work in the area of the digital economy. The analysis of the various dimensions of the digital economy will allow us to understand the mechanisms shaping modern economies and to identify potential challenges and opportunities for development facing the digital sector.

The aim of this article is to identify the issues addressed by researchers on the different dimensions of the digital economy between 2013 and 2023. Presenting the state of knowledge on the dimensions of the digital economy will enable us to understand the complexity of this phenomenon and identify gaps in research relevant to different aspects of socio-economic life and in need of further exploration (e.g. in terms of subject, entity or space).

The objectives were achieved by using the method of a literature review, through which scientific articles addressing specific areas/dimensions of the digital economy were identified and analyzed. The analysis was based on scientific articles downloaded from the Web of Science (WoS) and Scopus databases. An in-depth analysis of the articles was used to prepare an overview of the dimensions of the digital economy.

2. Dimensions of the digital economy - a literature review

The digital economy is a new and complex object of research. It encompasses a broad spectrum of economic, social and cultural activities supported by the internet and related information and communication technologies (Radomska, 2019).

After reviewing the most important publications on the subject, it can be said that there is no clear definition of the digital economy. In the most general sense, this term refers to ICT-based economic activity (Chen, 2020), and in a narrower sense, it means the conduct of economic activity through online and web-based markets (Kupenova et al., 2020). A well-known approach to considering digital transformation is to divide the digital economy into areas such as market 4.0, production 4.0, consumption 4.0, work 4.0, state 4.0 and globalization (Śledziewska, Włoch, 2020).

Some of the key features of the digital economy include increased flexibility, innovation and efficiency of organizations, reduced response time to changing needs of customers, employees, partners, and the creation and use of new digital business models. The digital economy is characterized by knowledge, globalization, digital business models, speed of change, supporting infrastructure and autonomous integration (Kruljac, 2021).

In this article, the digital economy is treated as a system i.e. "an ordered arrangement of elements consisting of economic subjects, resources, as well as adopted ways of solving problems of production, distribution, exchange and consumption" (Kryczka, 2018, p. 545). It also emphasizes the existence of a new paradigm of functioning economic subjects called a "network paradigm" which means that everything in the economy is interrelated (Kołodko, Koźminski, 2017). This system mentions three elements of the digital economy: the networked of the society, the digital transformation and the economy based on the data (Skowronek-Mielczarek, 2021).

Analyzing content and publications on the digital economy, it was found that this phenomenon is defined and analyzed differently in different research scopes. The most frequently researched areas of the digital economy between 2010 and 2021 are the growth and structure of the digital economy, digital strategy and market, business activity of enterprises, ICT and education (Hoffmann-Burdzińska, Stolecka-Makowska, 2022).

Elements enabling the digital economy such as, for example, fast and reliable internet access, developed ICT infrastructure, innovative technological, legal and institutional solutions are recognized as the basic foundations of the digital economy. Hence, the following can be considered as manifestations (symptoms) of the digital economy: popularization of the internet, digitisation of data, consumer networking, the internet of things, business innovation (Platforma Przemysłu Przyszłości, 2020), among others. The dimensions of the digital economy, on the other hand, can be understood as a scope considered in terms of its length, breadth and height or depth.

The topic of dimensions of the digital economy is complex, covering many different aspects, which are most often measured by indicators such as the DESI (Digital Economy and Society Index) and the model developed by the OECD. The aforementioned indicators are tools used to analyze different aspects of the digital economy and society and differ in their thematic scope, geographical scale, methodology and dimensions measured (table 1).

Table 1.
DESI and OECD metrics - basic characteristics

Specification	DESI	OECD
Scope	● focusing mainly on assessing progress in the digitization of society and the economy ● measuring aspects such as Internet access, use of digital technologies by citizens and businesses, digital competencies, integration of digital technologies in the public sector	● covers a wide range of topics, including economy, society, environment, innovation, labor markets, etc.
Spatial scale	Used mainly for analysis of European Union member countries and some non-EU countries (developed by European institutions)	are used to compare data for OECD member countries and other partner countries
Methodology	Use of a specific methodology and a set of indicators specifically designed to assess the digitization of society and the economy	Use of diverse methods and indicators, depending on the specific research needs or analysis conducted by the OECD
Dimensions	● human capital ● connectivity (digital infrastructure) ● integration of digital technologies ● Internet use digital public services (e-government)	● nature of the transaction (environment) - "how" ● digital product - "what" ● producers "who" ● users "who"
Application	● to compare selected economic and socioeconomic aspects of different countries, ● enable evaluation of progress identification of areas requiring further action ● are used in research, serve as recommendations for member countries	

Source: Own elaboration (European Commission, 2022; Fritsch, Lichtblau, 2020; OECD, 2020).

As a measure of the degree of digitization, the DESI helps to assess and monitor the level and progress of digitization and track the digital competitiveness of EU countries. It was created to measure the degree of implementation of the Digital Single Market (DSM) strategy and identify areas for further action (European Commission, 2022).

The DESI consists of five main dimensions and 24 sub-indicators measuring various aspects of digitization. Its main components are: 1. human capital (skills of internet users and advanced digital skills); 2. connectivity (digital infrastructure i.e. availability of fixed and mobile broadband and the cost of these connections); 3. digital integration (digital intensity, digital

technologies for business, e-commerce); 4. internet usage (various online activities performed by citizens); 5. digital public services (e-government) (European Commission, 2022, p. 4).

The OECD model, on the other hand, as an analytical tool, is used to compare primarily OECD member countries. It consists of a set of different indicators covering a wide range of topics related to economy, society, environment and other aspects of development. Among them are measures to measure selected elements of the digital economy. The defined and analyzed dimensions of the digital economy, which have a broad and multidimensional scope, include: the nature of the transaction - "how" (digitally ordered, platform enabled, digitally delivered), the digital product - "what" (goods, services, information/data) and the partners involved - "who" including: producers and users (corporations, households, government, non-profit institutions serving households, rest of the world). Also included is a category of "enablers" understood as "complementary factors of digital transformation". The additional category of "enablers" (infractructure and investment) has a significant impact on the digital economy (Fritsch, Lichtblau, 2020; OECD, 2020). Another OECD indicator that does not refer to dimensions of the digital economy only to trade in digital services is DSTRI (Digital Service Trade Restrictiveness). It measures across the board the barriers that limit companies from providing digital services and includes five measures: 1. infrastructure and connectivity, 2. electronic transactions, 3. electronic payment systems, 4. intellectual property rights, 5. other barriers to trade in digital services (OECD Going Digital Toolkit, 2022).

Also indicated are general levels of the digital economy relating to: business activities of enterprises (including producers of ICT and information goods and services, as well as companies dependent on digital resources), digital society and digitized interactions (e.g., use of digital platforms, social-media), digital transactions (ordered and purchased digital products and services) (Kontolaimo, Skintzi, 2018).

After reviewing the literature on the dimensions of the digital economy, the authors assumed certain keywords as a starting point for redefining the dimensions of the digital economy. Further detailed analyses of scientific articles have already addressed selected dimensions of the digital economy.

3. Research approach

The research aims for this article were: (1) to identify scientific articles dealing with specific dimensions of the digital economy and (2) to characterize them based on an analysis of the abstracts of the identified scientific articles

The method used for this article is a literature review, through which scientific articles addressing specific areas/dimensions of the digital economy were identified and analyzed.

The research investigation proceeded in four stages.

The first was to decide on article databases in which to search for publications for further analysis. Considering the existing possibilities, the authors decided on Scopus and Web of Science databases, which are the leading electronic sources (Jeż et al., 2018).

The second stage of the work involved defining articles' search strategy. The search phrase consisted of two phrases, the first referring to a specific dimension of the digital economy and the second to the digital economy: "name of the dimension of the digital economy" + "digital economy". All phrases were searched first in article titles and then in titles and abstracts. The selected dimensions of the digital economy were: "market" (market issues), "human capital" (labour), "government" (public administration), "business" (companies), "consumers" (consumers, households), "banking system" (banks), "international" (international environment), "digital technologies" (digital technologies), "green" (environment) and "metaverse". The choice of dimensions resulted from a review of the literature on the subject and basic assumptions about the economy as a system in which certain groups of actors, such as businesses, consumers, the state, banks, participate in the processes of production, distribution, exchange and consumption of goods and services. The time period of the searches was assumed to be the years from 2013 to 2023. The reason for such timeframes is the finding of the bibliographic analysis of the digital economy conducted by the authors in 2021. It shows that the digital economy phenomenon was defined in 2013. An increase in the number of published articles on the digital economy has also been observed since that year (Hoffmann-Burdzińska, Stolecka-Makowska, 2022).

The third stage consisted of the preparation of tables of search results and the analysis of the number of papers and citation measures.

The last stage in the research procedure consisted of reading the abstracts of the retrieved articles and identifying the research problems taken up in them and the territorial scope of the research.

4. Research results and analysis

The results of the article search according to the method described in the previous section of the article are presented in Tables 2 and 3.

Table 2 shows the number of articles identified in the search for each phrase. From the data presented in the table, it can be seen that the most popular dimensions on which various authors write are "green", i.e. topics related to the so-called "green economy" and ecological issues (about 45% of the total results at the search level in titles and abstracts in both databases). A relatively large number of results in article titles and abstracts resulted from searches on the "business" dimension (approx. 20% of publications in the WoS database and 14% in the Scopus database).

Table 2.
Digital economy articles 2013-2023*- search phrase "digital economy" in title, abstract, title and abstract (in numbers)

Specification	The number of papers searched in scientific databases					
	Web of Science the phrase in:			Scopus the phrase in:		
	title	abstract	title and abstract	title	abstract	title and abstract
Total	**286**	**3716**	**214**	**348**	**4687**	**241**
"market" + "digital economy"	44	773	25	42	716	28
"human capital" + "digital economy"	20	174	18	16	132	12
"government" + "digital economy"	17	488	12	15	496	14
"business" + "digital economy"	59	936	42	47	807	34
"consumer/s" + "digital economy"	17	194	9	17	288	10
"banking system" + "digital economy"	2	13	1	3	9	3
"international" + "digital economy"	20	361	10	73	649	28
"digital technologies" + "digital economy"	0	484	0	9	1191	5
"green" + "digital economy"	107	283	97	126	376	107
"metaverse" + "digital economy"	0	10	0	0	23	0

Source: Own elaboration.

Analysis of the citation statistics (table 3) shows a similar trend in terms of the dominant dimension. The highest number of citations (about 70% in WoS and about 57% in Scopus) was for the "green" dimension. The highest citation averages in the WoS database were for the "green" (14,28) and "government" (10,27) dimensions. In the Scopus database, the highest averages pertained to the same dimensions, except that the average number of citations per article was higher for the "government" dimension (19,21 - the highest average compared to the others presented in Table 2), followed by "green" (14,73 - a level of average similar to the WoS database). The H-index per dimension in both databases was highest for the "green" dimension (18 in WoS and 19 in Scopus).

Table 3.
Citations for articles on the digital economy 2013-2023 - search for the phrase: "specific dimension" + "digital economy" in the title and abstract of an article

Specification	Citations in:					
	Web of Science			Scopus		
	Total	Average per item	H-index	Total	Average per item	H-index
Total	**1981**	**-**	**-**	**2656**	**-**	**-**
"market" + "digital economy"	156	6,24	5	280	10	8
"human capital" + "digital economy"	28	1,56	3	65	5,42	5
"government" + "digital economy"	113	10,27	4	269	19,21	6
"business" + "digital economy"	190	4,52	5	325	9,56	9
"consumers" + "digital economy"	66	7,33	3	122	12,2	4
"banking system" + "digital economy"	3	3	1	3	1	1
"international" + "digital economy"	40	4	3	78	4,59	4

Cont. table 3.

"digital technologies" + "digital economy"	-	-	-	12	2,4	1
"green" + "digital economy"	1385	14,28	18	1502	14,73	19
"metaverse" + "digital economy"	-	-	-	-	-	-

Source: Own elaboration.

The quantitative data presented in both tables show trends in the coverage of the various dimensions of the digital economy by different authors. In addition to the leading directions, i.e. the dimensions "green", "business", as well as the most frequently cited dimensions "green" and "government", it is worth noting the dimensions that are written about and/or cited the least from their respective scopes. Based on the data in both tables, it can be seen that the dimension of the digital economy that is least addressed is 'metaverse' (the small number of publications whose abstracts address this issue). The results in terms of the number of citations for this dimension indicate a lack of citations over the time period studied. The second dimension very little addressed by the authors is "digital technologies". Given the fact that the digital economy is intrinsically linked to this dimension, the sporadic uptake of this topic by the authors is an interesting result for further research to explain the reason for this. The "banking system" dimension is also relatively rarely addressed.

After identifying the key quantitative metrics for articles on each dimension of the digital economy, the authors conducted a qualitative analysis of the content of the abstracts to identify the detailed research focus of the articles and their territorial scope. As a first approximation to this, the authors combined the search results obtained in both databases at the level of a given dimension and reduced the sum of articles by repeated items. Table 4 presents the results of the qualitative content analysis of the abstracts of the articles identified in each dimension of the digital economy.

Table 4.
Topics and themes of digital economy dimensions on the basis of the review of articles' abstracts (2013-2023) - Search for the phrase "digital economy" in the title and abstract of an article in the Web of Science and Scopus databases

Specification	Research subject and/or problem	Territorial scope of the research
banking system + digital economy (N = 4)	o digital transformation, transformation of a banking system (4) o commercial banks (3) o organization of the cybersecurity system, hacker attacks (2) o financial technologies o financial innovations o application of mobile system to the banking services o developing banking system	Russia (2) Uzbekistan (2)

Cont. table 4.

technology + digital economy (N = 5)	o economic growth (2) o transformation of labour market o supply chain o logistics system o production o blockchain system o the ecosystem o e-government o social adaptation	Russia (3) Turkey Thailand
green + digital economy (N = 113)	o innovation e.g. eco-innovation, green innovation, GI efficiency/quality, green technology innovation, green science innovation, green technological innovation (54) o industry, manufacturing p.ex. manufacturing industry, industrial agglomeration, industrial green development, industrial green innovation, industrial green total factor productivity, industrial green transformation, industrial structure – optimization/ rationalization/upgrading, industry convergence, textile (40) o productivity, green productivity, green total factor productivity – GTFP (32) o spatial spillover, p.ex. spatial: autocorrelation, characteristics, externality, heterogeneity, measurement, regression, effects (32) o green development, sustainable development (31) o technology e.g. technical progress, technology innovation, communication technology, by-production technology (30) o internet, internet of Things - IoT (26) o energy, clean energy, energy conservation/efficiency/transition, renewable energy, green total factor energy efficiency – GTFEE (20) o environment, e.g. environment friendly, environmental quality/regulation, environmental sustainability, ecological, eco-efficiency, ecological efficiency (18) o investment e.g. educational investment, green investment, long-term investment (17) o carbon e.g. carbon credit, carbon emission intensity/reduction, green low-carbon development, low-carbon green total factor productivity (16) o model e.g. chain serial mediation model, coupling and coordination models, difference-in-differences model, dynamic threshold model, gravity model, dynamic panel model; Hidden Markov chain modeling SBM-GML, model Spatial Durbin model (SDM), time-varying DID model, Tobit model (16) o information e.g. feedback, coupling coordination, performance (15) o finance e.g. green finance, digital finance, financial development, financial agglomeration (14) o pollution e.g. air pollution, CO_2 emissions, environmental pollution, heavy-polluting enterprises (12) o urbanization e.g. urban green development efficiency, urban green transformation, urban level, urban agglomeration, promoting urban green development enterprises (10) o agriculture e.g. agricultural green total factor productivity, agricultural supply chain, agricultural technology innovation, green agricultural development (10) o electricity consumption, energy consumption, energy use (9) o big data, data mining, machine learning (9) o ecosystem e.g. cooperation ecosystem, green economy (7) o government, taxes, regulation (7) o agglomeration e.g. city, economic agglomeration (6) o business e.g. enterprise, entrepreneurship (6) o green transformation (5) o green economic efficiency (GEE) (3)	China (111)

Cont. table 4.

consumer + digital economy (N = 17)	o law p.ex. competition law, consumer data protection law, EU consumer law, data protection law (7) o information and communications technology, Information needs, media exposure, smart Contracts (4) o purchases e.g. digital consumption, online purchasing decision-making, online shopping (3) o marketing, digital marketing, marketing studies (3) o consumer behaviour (2) o consumer protection (2) o competition (2) o consumer psychology, psychological state (2) o service business, commercial practices (2) o artificial Intelligence (AI) o canopy clustering algorithm o omnichannel consumer o consumer awareness o consumer welfare o consumer engagement o consumer experience o online consumer skills o index of consumer prices o household production o digital infrastructure o experience economy o online platforms o predictive model design o privacy paradox o sustainable development	Russia (3) Thailand China Malaysia Germany Italy
market + digital economy (N = 25)	o labour market (14) o measurement (12) o technology (AI, big data, IoT, platforms, online games) (7) o transformation (4) o d.e. basics (3) o sustainable development (3) o innovation (3) o market competition (2) o business model (2) o legislation (2) o telecommunications sector (2) o strategic dimension of markets (2) o ambidextrity o working time o factors influencing the labour market o e-commerce, e-marketing o carbon emissions o energy intensity o digital industrialization o information o quality in the food market o market capitalization of the d.e. o digital competence o consumers (privacy) o convergence o engineering marketing o workforce optimization o online payments o law o factor productivity	China (6) Russia (4) Turkey Chile Romania OECD countries BRICS countries USA Germany Republic of Korea Sweden EU USA

	o promotion of tourism companies o technology-based regulation o education market o financial market o healthcare market o market society o innovation risk o mobile, internet, software, IT services sector o insurance for digital workers o internationalization o intellectual property o consumer behaviour o management	
human capital + digital economy (N = 13)	o human capital (quality, level, stability, reproduction, development, management, categories, development effectiveness, transformation) (15) o competences (digital, communication, motivation, professional, personal, digital intelligence, measurement of competences) (12) o d.e. development (3) o education system (2) o measuring the d.e. (2) o digital technologies (2) o training o basics of the d.e. o digitization o innovation o entrepreneurial culture o robots o young generation o trends o learning o machine learning	Russia (6)
international + digital economy (N = 1)	o remote working o taxation of work o reduction of the shadow economy (legalization of income)	Russia China France Ireland Finland
business + digital economy (N = 27)	o business model (7) o technologies (AI, bases, cognitive, consumer, big data, simulation games) (6) o transformation (business, digital, etc.) (4) o platform (3) o potential (business, innovation, entrepreneurship) (3) o competitiveness (3) o competence (communication, etc.) (3) o digitization of processes (2) o transaction costs (2) o trends (2) o green and sustainable development (2) o corporate development o community development o self-sustainable organization o training, education o distributed teams o efficiency o business incubator	Russia (6) Ukraine (3) China EU

Cont. table 4.

| government +
digital economy
(5) | o transformation
o e-commerce
o inclusive green growth
o protection of intellectual property
o digitization
o measurement of the d.e.
o e-government
o environmental regulation (GER)
o entrepreneurship
o equal opportunities in the information society | China (2)
Croatia
Uzbekistan |

d.e. - abbreviation for digital economy.

Source: Own elaboration.

The articles found according to the strategy "technology and digital economics" in the title and abstract are mainly devoted to the problems of digital technologies transformation of a banking system (4). These items described solutions relating to financial technologies and innovations, application of mobile system and organization of the cybersecurity system. Articles with the theme of 'banking system + digital economics' attempted to identify and explain how the application of new digital technologies affects the economic growth of a region, country and their transformation process. They also presented applications in the supply chain, logistics system or e-government.

Among the 113 articles found in both databases having "green + digital economy" in the title and abstractions, the vast majority substantiated the thesis that the digital economy is helpful for advancing the green economy. The majority addressed issues related to innovation impact on green development (54), structure from transformation of industry/manufacturing (40) and also topics related to productivity and its measure - GTFP or spatial spillover (32 each).

Articles whose theme and abstract referred to the "consumer + digital economy" (17) dealt primarily with legal issues related to consumer rights and protection (7), ways of providing and obtaining information (4) and online shopping (3). Individual texts dealt with issues of awareness and psychology of the digital consumer and their behaviour, digital skills, engagement, experience or well-being.

Publications on the topic of the market in the digital economy addressed a wide range of issues, among which references to the labour market (14) and other markets, e.g. financial, education or healthcare, were relatively most common (3). In addition, measurement of various phenomena was popular, as well as modern technologies (e.g. AI, big data, IoT, etc. - 4 articles). Several articles (3) raised the topic of transformation, the fundamentals of the digital economy, as well as sustainability and innovation. Aspects of competition, business models, legal aspects and those concerning the telecommunications sector or the strategic dimension of the market were also of interest (2 publications each). Other issues presented in the table are related to the labour market mentioned above, as well as interesting topics such as energy intensity, digital competences, law, IT sectors.

Another dimension that was characterized on the basis of the content of abstracts of scientific publications concerned human capital. The most popular issue in the identified articles was competence (e.g. digital, communication, digital intelligence - 12 publications). The category of human capital was described in connection with characteristics such as quality, level, stability, development, reproduction, etc. (15). Selected articles dealt with the development (3) and measurement of the digital economy (2), as well as digital technologies (2) and the education system (2). Other items listed were issues such as training, digitization, robots, learning, etc.

The international dimension was addressed in one publication and concerned remote working, labour taxation and the legalization of income.

The articles on business and the digital economy identified within the search strategy given in the table were largely related to the issue of business models (7) and technologies (6). Transformation (4), platforms (3), human potential (3), competitiveness (3) and competences (3) were also aspects of interest to the authors. Digitization of processes, transaction costs, trends and green and sustainability were also of interest (2 articles each).

The last dimension, i.e. public administration, has become a focal point for issues such as transformation, e-commerce, green growth, digitalization, measuring the digital economy and ecology. The topics addressed in this dimension are diverse and no leading aspect emerges from it.

The publications identified in each dimension presented findings from research and analysis on a range of countries and community organizations. The largest number of articles referred to countries such as China (122) and Russia (25). Analyzing the regions of the world, it can be said that Asia is dominant, followed by European countries. A few publications refer to countries affiliated to communities such as the European Union (2), OECD and BRICS (1).

5. Conclusion and discussion

The results of the literature review conducted by authors lead to a few valuable conclusions.

The search strategy adopted by the authors made it possible to focus attention on the dimensions of the digital economy and the accompanying issues. The dimensions of the digital economy used in the search strategy of the publication are a proposal built on existing concepts in this area and the observation of development trends in the area of modern technologies such as the metaverse, as well as those relating to ecology (green economy). The dimensions of the digital economy are therefore not a closed catalogue of issues, but rather an evolving area, complemented by new proposals.

Scientific papers published in the WoS and Scopus databases between 2013 and 2023 on the dimensions of the digital economy indicate that this is an area of interest to researchers. The average number of articles per year during the time period under study is about 19 publications in the WoS database and about 22 publications in the Scopus database. Bearing in mind the popularity and reach of articles published in both databases, it can be said that these results are relatively low, which may be a rationale for considering that the dimensions of the digital economy are still a topic of little interest to researchers. It is worth recalling that the research conducted by the authors of this article on the research areas of the digital economy on the basis of articles published between 2010 and 2021 identified approximately 291 publications on the digital economy in the WoS database and 370 publications in the Scopus database.

The most cited dimensions of the digital economy by researchers are 'green' and 'business'. The highest results in terms of average number of citations are for the 'green' and 'government' dimensions. The search results for the 'green' area had the highest Hirsh index. It can be said that this is the dimension with the strongest scientific development, which may be due to a number of reasons, including, for example, the available funding for research in this area and the desire to solve environmental problems facing the modern economy.

The topics and issues addressed by the researchers in the identified publications represent a very broad area. Between the analyzed dimensions, one can notice a tendency to address the same aspects, e.g. transformation, digitalization, consumers, measuring the digital economy, entrepreneurship, sustainability, technology or public administration. In each dimension it is possible to see the leading issues and their connection to other dimensions.

The objective undertaken in this article, related to the identification and characterization of the dimensions of the digital economy, has been achieved; however, some limitations of the study carried out for this paper should also be mentioned. The article search strategy is a prelude to further activities related to the analysis of the results obtained. In this study, the analysis combines some elements of bibliometric analysis with a qualitative analysis of the abstracts, through which it was possible to identify the leading themes that are elements of the studies carried out by the different authors. An important step in further proceedings should be to learn more about the research results presented in the articles, so that a deeper analysis and identification of research gaps can be undertaken in studies carried out by researchers working on the digital economy. It is interesting to learn more about the methods and tools that researchers have used so far, through which they collect and analyze research material in terms of leading approaches, as well as those that are less or least used.

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