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Türkiye'deki Metaverse Makalelerinin İçerik Analizi

A Content Analysis of the Metaverse Articles in Turkey*

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Araştırma Makalesi Research Article

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ÖZ

Metaverse, yaklaşık otuz yıl önceki ilk kavramsallaştırmasından bu yana günlük yaşamın bir parçası haline gelmiştir. İnsanların fiziksel gerçekliğin ötesinde dijital bir ortamda etkileşime girdiği sanal bir alanı ifade etmektedir. Metaverse ayrıca , kripto para birimi, oyunlaştırma ve nitelikli fikrî tapu (NFT) gibi bir dizi yeni terim ve kavramla da ilişkilidir. Terimin geniş kullanımı nedeniyle Metaverse, bilgisayar biliminden kişiler arası iletişim çalışmalarına, sosyolojiden pazarlamaya kadar birçok disiplinin ilgisini çekmiştir. Mevcut çalışma, akademisyenlerin ve farklı akademik alanlardan araştırmacıların bu kavramla nasıl ilgilendiklerini incelemektedir. Metaverse ile ilgili toplam 91 makale içerik analizine tabi tutulmuştur. Makaleler, Türkiye'de yayınlanan bilimsel dergiler için bir çevrimiçi barındırma hizmeti ve editoryal iş akışı yönetim sistemi olan DergiPark'tan alınmıştır. Makaleler yıl, dil, dergi, anahtar kelimeler, bilimsel alan, akademik disiplin, metodoloji, örnekleme ve Metaverse ile ilgili kavramlar açısından MAXQDA kullanılarak incelenmiştir . Sonuçlar, Türkiye'deki Metaverse araştırmalarının çoğunun nitel yöntemler kullanılarak sosyal bilimler kapsamında yürütüldüğünü ve makalelerin çoğunluğunun Türkçe yazıldığını göstermiştir. Özellikle Metaverse kavramı, din, moda, pazarlama, turizm, ekonomi, sağlık ve spor dahil olmak üzere birçok farklı alandan araştırmacının ilgisini çekmektedir..

Anahtar Kelimeler: Metaverse, İçerik analizi, DergiPark, Türkiye, MAXQDA.

ABSTRACT

Since its first conceptualization nearly three decades ago, the Metaverse has become a part of daily life. It refers to a virtual space where people interact in a digital environment beyond physical reality. Metaverse is also related to a range of new terms and concepts, such as cryptocurrency, gamification, and non-fungible token (NFT). Because of the wide usage of the term, the Metaverse has attracted the attention of many disciplines, from computer science to interpersonal communication studies, and from sociology to marketing. Accordingly, the current study examines how academics and researchers from different academic fields are interested in this term. A total of 91 papers regarding the Metaverse were subjected to content analysis. These were sampled from DergiPark, an online hosting service and editorial workflow management system for scientific journals published in Turkey. The articles were examined in terms of year, language, journal, keywords, scientific field, academic discipline, methodology, sampling, and Metaverse-related concepts by using MAXQDA. The results showed that most Metaverse research in Turkey has been conducted within social sciences using qualitative methods while the majority of articles were written in Turkish. Notably, the concept of the Metaverse has attracted the attention of researchers from many different fields, including religion, fashion, marketing, tourism, economy, health, and sports..

Keywords: Metaverse, Content Analysis, DergiPark, Turkey, MAXQDA.

*The present study is an expanded version of the abstract of A Content Analysis of the Metaverse Articles in Turkey published at the VIII International Social Sciences Congress.

Introduction

The Metaverse, which has become a part of daily life since the early 1990s, continues to increase in popularity. The term refers to a virtual space where people interact in a digital environment beyond physical reality . However, this concept should not be perceived only as a technological innovation as it is also a new communicative platform within a new social structure. Therefore, Duan et al. (2021) argue that the Metaverse has had a significantly positive impact on the real world, especially in terms of accessibility, diversity, equality, and humanity.

The metaverse is a virtual network focused on social communication. Its progress points to both the transformation of traditional media into new media and the transformation of industrial society into a post-industrial or network society. The features of the new media, such as virtuality, hypertextuality, and interactivity, and the networked logic of social relations provide the basis for the Metaverse environment. Hence, the concept is related to many new terms, such as cryptocurrency, gamification, and NFT. In this respect, it has attracted the interest of many different academic disciplines , including economics, communication, computer sciences, etc.

A number of studies (e.g. Abbate et al., 2022; Duan et al., 2021; Lee et al., 2021; Park & Kim, 2022; Weinberger, 2022) have provided literature reviews, classifications, and definitions of the concept of the Metaverse. However, it is noteworthy that there are insufficient studies analyzing Metaverse-related articles, particularly systematic assessments (Abbate et al., 2022: 255). One of the prominent literature reviews and conceptual classifications is the article by Park and Kim (2022). The authors widely deal with the necessary components of the Metaverse and review the latest trends in Metaverse approaches. Another example is Weinberger's (2022) article proposes a comprehensive definition[1] for the term Metaverse by applying qualitative meta-synthesis to 47 publications.

Abbate et al.'s (2022) study applied bibliometric and network analyses to identify the most influential papers and countries in terms of published articles and total citations. Abbate et al. (2022) analyzed 211 publications from the Scopus database that have "Metaverse" in the title, abstract, or keywords. They found that the United States dominates Metaverse research in terms of both publications and citations while Turkey is in third place. Regarding institutions, Sabancı University from Turkey has published the most documents, with eight papers. In the Turkish case, two studies stand out. The first is Gökçe Narin's (2021) study. This examined 40 journal articles in the Web of Science database containing the "Metaverse" keyword in all fields in terms of content and method. The study focused on the scientific aspect of Metaverse studies and examines academic studies. It revealed that most studies in the literature examined the concept of the Metaverse. The second study belongs to Damar (2021). The study extracted data from all documents (n=93) listed on the Web of Science database between 1990 and 2021. The bibliometric analysis focused on general view, book chapters, proceedings, the article, and content analysis. The study also reported on keyword density, overlay, and network visualizations of the Metaverse.

The importance of the present paper comes from the fact that it is one of the few studies in Turkey to conduct a content analysis of Metaverse-related articles. The main objective is to determine in which areas and how the concept of the Metaverse is handled in Turkish academia. For this purpose, first, the meaning of the Metaverse is explained, and then its theoretical background is discussed. Finally, the study applies content analysis to 91 academic articles selected from DergiPark, an online hosting service and editorial workflow management system for academic journals published in Turkey .

The Metaverse

The term Metaverse was first coined in Neal Stephenson's 1992 novel *Snow Crash*, well before most people had Internet in their homes (Evans et al., 2022: 15). The word Metaverse is a portmanteau

1 See this definition in "The Metaverse" section of the present study.

of the prefix "meta" (meaning "beyond") and the suffix "verse" (shorthand for "universe"). Thus it literally means a universe beyond the physical world (Dionisio et al., 2013: 6). More specifically, it refers to a computer-generated, digitalized world that transcends physical reality, which gives the term both philosophical and technological aspects. In other words, it points to a distinction between real environments (reality) and virtual environments (virtuality). According to Peddie (2017: 10), "the Metaverse is a collective virtual shared space, created by the convergence of virtually enhanced physical reality and physically persistent virtual space, and is a fusion of both, while allowing users to experience it as either." Before considering definitions of the concept, it is useful to touch on reality concepts with which the Metaverse is associated, such as augmented reality, virtual reality, and mixed reality.

"Virtual Reality (VR) is the use of computer technology to create the effect of an interactive three-dimensional world in which the objects have a sense of spatial presence" (Bryson, 2013: 1). It relies on head-tracked displays, hand/body tracking, etc. Ball (2021) argues that the Metaverse is most commonly mis-described as virtual reality whereas virtual reality is merely a way to experience the Metaverse. "Augmented Reality (AR) is the enhanced or resultant image produced by overlaying another (could be computer-generated) image over a real-time view of one's surroundings" (Peddie, 2017: 59). Unlike VR, which creates an artificial environment, AR provides users with a real-world experience with perceptual information. Mixed Reality (MR) is a technology in which virtual reality and augmented reality are used together. According to Selonen et al. (2012: 215), MR refers to the merging of real and virtual worlds to produce environments and visualizations where physical and digital objects coexist and interact with each other in real time.

When describing the Metaverse, a more comprehensive concept is frequently used, namely Extended Reality (XR). XR is an umbrella term that encompasses Augmented Reality (AR), Mixed Reality (MR), and Virtual Reality (VR) technologies (Akyildiz & Guo, 2022; Fujiuchi & Riggie, 2019). However, Ball (2021) argues that hundreds of millions of people are already participating in virtual worlds on a daily basis without VR/AR/MR/XR devices, which makes the Metaverse more than a matter of reality or technology. As Lee et al. (2021: 3) note, "to realise the metaverse, technologies other than the Internet, social networks, gaming, and virtual environments, should be taken into consideration."

Emphasizing the interdisciplinary nature of the Metaverse, Lee et al. (2021: 5-6) evaluate it in terms of fourteen areas of ecosystem and technology. Metaverse technology includes extended reality (XR) and techniques for user interactivity. Computer vision (CV), artificial intelligence (AI)/blockchain, robotics/Internet-of-Things (IoT), edge/clouding, advanced mobile network, and appropriate hardware infrastructure. The ecosystem describes an independent and meta-sized virtual world that mirrors the real world, including social acceptability, security and privacy, trust and accountability, content creation, virtual economy, and avatars. Similarly, Duan et al. (2021) propose a three-layer metaverse architecture from a macro perspective. This contains infrastructure (computation and communication, blockchain and storage), interaction (immersive user experience, digital twins, content creation), and ecosystem (user-generated content, economics, artificial intelligence).

Today, the technological transformation has affected the way we communicate and perceive the world. Social networks and virtual platforms are at the center of this. Therefore the growth of the metaverse cannot be considered independently from the development of computer technologies and the Internet. Nath (2022: 5) considers the Metaverse as the place where the Internet has evolved since Web 1.0 because Web 3.0 has a decentralised network that is more user-centric. Web 3.0 manifests itself through new technologies like cryptocurrencies, virtual and augmented reality, and artificial intelligence.

The concept of the Metaverse has been discussed and defined from many perspectives. Ball (2021), for example, offers the following extended definition: "The Metaverse is a massively scaled

and interoperable network of real-time rendered 3D virtual worlds which can be experienced synchronously and persistently by an effectively unlimited number of users with an individual sense of presence, and with continuity of data, such as identity, history, entitlements, objects, communications, and payments".

Weinberger (2022) also proposes a very comprehensive definition based on a qualitative meta-synthesis: "The Metaverse is an interconnected web of ubiquitous virtual worlds partly overlapping with and enhancing the physical world. These virtual worlds enable users who are represented by avatars to connect and interact with each other, and to experience and consume user-generated content in an immersive, scalable, synchronous, and persistent environment. An economic system provides incentives for contributing to the Metaverse" (Weinberger, 2022: 12).

Methodology

The present study is qualitative research based on the content analysis method using MAXQDA. According to Hsieh and Shannon (2005: 1278), "Qualitative content analysis is a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns." In this study, 91 academic papers about the Metaverse hosted in DergiPark[2] were subjected to content analysis. The articles were found by searching with the keyword "Metaverse" on the official DergiPark website without any date range restrictions. Results covering the categories of "Article", "Journal", "Researcher", and "Publisher" were listed. A total of 91 articles[3] (identified as of 1-20 November 2022) were analyzed that included the term "Metaverse" in their title, abstract, and/or keywords. They were analyzed using the MAXQDA data analysis program to obtain frequency distributions of the key variables. To ensure validity and reliability, the selection of categories depended on the consensus of the researchers involved. The articles were coded in terms of year, language, journal name, keyword, scientific field, academic discipline, method, sample, and the relationship established with the concept of Metaverse .

Findings

The research data were analyzed in terms of the frequency counts of the categories. The tables below present the findings for each category. In order to provide objective results, the statements in the tables are presented in their original formats as stated in the source.

Table 1 Frequency of studies by year

Year	Frequency	%
2018	1	1.1
2021	9	9.9
2022	80	87.9
2023	1	1.1
Total	91	100.0

n=91

Table 1 shows that Metaverse studies were first published in Turkey in 2018, while most studies (87.9 percent) were published in 2022.

Table 2 Frequency of studies by language

Language	Frequency	%
English	30	32.9
German	1	1.1
Turkish	60	65.9
Total	91	100.0

n=91

Table 2 shows that studies were published in three languages, namely Turkish, English, and German. While most research was published in Turkish (65.9 percent), a significant proportion were written in English.

Table 3 shows that the studies were published in 59 different journals. The Journal of Metaverse accounted for the largest share, with 18.7 percent.

2 DergiPark, launched in September 2013, is the platform of TÜBİTAK ULAKBİM, It provides academic journals published in Turkey with online hosting services and an editorial workflow management system. DergiPark is not an index. ULAKBİM (The Turkish Academic Network and Information Center) was founded as an institute of TÜBİTAK (The Scientific and Technological Research Council of Turkey) in 1996.

3 See Appendix.

Table 3 Frequency of studies by journal

Journal	Frequency	%
AKRA International Journal of Culture Art Literature and Education	1	1.1
Academic Journal of Information Technology	1	1.1
Afyon Kocatepe University Journal of Social Sciences	1	1.1
Alanya Academic Review Journal	1	1.1
Ankara Hacı Bayram Veli University Journal of the Faculty of Economics and Administrative Sciences	1	1.1
Avrasya Sosyal ve Ekonomi Araştırmaları Dergisi (ASEAD)	1	1.1
Batman University Journal of Life Sciences	1	1.1
Bilge International Journal of Social Research	1	1.1
Bingöl University Journal of Social Sciences Institute	1	1.1
Dinbilimleri Akademik Araştırma Dergisi	1	1.1
Dokuz Eylul University The Journal of Graduate School of Social	1	1.1
Erciyes Akademi	2	2.2
Erzincan Binali Yıldırım Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi	1	1.1
Etkileşim	1	1.1
Eurasian Journal of Health Technology Assessment	1	1.1
European Journal of Science and Technology	1	1.1
Fiscaoeconomia	1	1.1
Gaziantep University Journal of Social Sciences	1	1.1
Gümüşhane University e-Journal of Faculty of Communication	1	1.1
Intermedia International e-Journal	1	1.1
International Journal of Cultural and Social Studies	2	2.2
International Journal of Economic and Administrative Studies	1	1.1
International Journal of Economics and Political Science Academic Research	1	1.1
International Journal of Exercise Psychology	1	1.1
International Journal of Management Information Systems and Computer Science	1	1.1
International Journal of Multidisciplinary Studies and Innovative Technologies	1	1.1
International Journal of Public Relations and Advertising Studies	1	1.1
International Journal of Social Sciences	1	1.1
International Journal of Western Black Sea Social and Humanities Sciences	1	1.1
Inönü University Journal of Culture and Art	1	1.1
Istanbul Sabahattin Zaim University Journal of the Institute of Science and Technology	1	1.1
Journal of Educational Technology & Online Learning	2	2.2
Journal of Architectural Sciences and Applications	1	1.1
Journal of Design Architecture and Engineering	1	1.1
Journal of Economics and Administrative Sciences	1	1.1
Journal of Economics, Finance and Accounting (JEFA)	1	1.1
Journal of Engineering Sciences	1	1.1
Journal of Entrepreneourship and Development	1	1.1
Journal of Erciyes Communication	1	1.1
Journal of International Banking Economy and Management	1	1.1
Journal of Internet Applications and Management	1	1.1
Journal of Metaverse	17	18.7
Journal of Science, Technology, Engineering, Mathematics and Art Education	1	1.1
Journal of Selçuk University Social Sciences Vocational School	1	1.1
Journal of Strategic and Social Researches	1	1.1
Journal of Turkish Federation of the Blind Person	1	1.1
Journal of the Human and Social Science Researchers	1	1.1

Journal of İstanbul Medipol University School of Law	1	1.1
Kafkas University Journal of the Institute of Social Sciences	1	1.1
Kastamonu University Journal of Faculty of Economics and Administrative Sciences	1	1.1
MUSIAD Afro Eurasian Studies Journal	1	1.1
Metamind: Journal Of Artificial Intelligence And Philosophy of Mind	1	1.1
Yeni Medya	5	5.5
SDÜ ART-E Güzel Sanatlar Fakültesi Sanat Dergisi	1	1.1
Sakarya University Journal of Computer and Information Sciences	1	1.1
Sosyoekonomi	1	1.1
TRT Akademi	1	1.1
The Eurasia Proceedings of Educational & Social Sciences	1	1.1
The Turkish Online Journal of Design, Art and Communication – TOJDAC	2	2.2
Total	91	100.0

n=91

Table 4 Frequency of studies by scientific field

Sciences	Frequency	%
Arts	3	3.3
Health Sciences	4	4.4
Interdisciplinary	2	2.2
Natural and Applied Sciences	13	14.3
Social Sciences	69	75.8
Total	91	100.0

n=91

Table 5 Frequency of studies by methodology

Method	**Frequency**	**%**
Mixed methods	4	4.3
Qualitative methods	70	76.9
Quantitative methods	17	18.6
Total	91	100.0

n=91

Table 4 shows that most studies were conducted within social sciences (75.8 percent).

Table 5 shows that most studies used qualitative methods (76.9 percent).

Table 6 shows that 30 different academic disciplines are represented. The disciplines with the largest proportion of papers (8.8 percent each) were communication, finance, interdisciplinary, and marketing. Table 7 shows that 223 different keywords were across the 91 studies. The most frequent keywords was metaverse (19 percent), followed by blockchain (3.4 percent).

Table 8 shows that there were 12 different kinds of sample represented in 27 of the studies. However,

Table 6 Frequency of studies by academic discipline

Discipline	**Frequency**	**%**
Administration and organization	2	2.2
Advertising	3	3.3
Architecture	3	3.3
Art	4	4.4
Business Administration	4	4.4
Cinema	1	1.1
Communication	8	8.8
Computer science	2	2.2
Culture	1	1.1
Education	6	6.6
Engineering	3	3.3
Entrepreneurship	1	1.1
Fashion	1	1.1
Finance	8	8.8
Health	5	5.5
Information systems	1	1.1

Interdisciplinary	8	8.8
Journalism	1	1.1
Law	2	2.2
Marketing	8	8.8
Multidisciplinary	1	1.1
Philosophy	2	2.2
Production management	1	1.1
Public administration	1	1.1
Recreation	2	2.2
Religion	2	2.2
Sociology	2	2.2
Sports	2	2.2
Technology	1	1.1
Tourism	1	1.1
Total	91	100.0

n=91

Table 7 Frequency of studies by keyword

Keyword	F	%	Keyword	F	%	Keyword	F	%
3D costumes	1	0.2	Customer engagement	1	0.2	Fashion	2	0.5
3D technologies	1	0.2	Customer experience	2	0.5	Fictional space	1	0.2
7P Marketing mix	1	0.2	Cybercrimes	1	0.2	Film analysis	1	0.2
Accounting	1	0.2	Data security	1	0.2	Finance	1	0.2
Accounting education	1	0.2	Deepfake	1	0.2	Financial services	1	0.2
Advertising	2	0.5	Dentistry	1	0.2	Flip ratio	1	0.2
Advertising recall	1	0.2	Development	1	0.2	Freedom	1	0.2
Aesthetic	1	0.2	Dialogical communication	1	0.2	Functional state space	1	0.2
Architecture of the metaverse	1	0.2	Digital advertising	1	0.2	Game	2	0.5
Art	3	0.7	Digital age	1	0.2	Game experience	1	0.2
Artificial intelligence	3	0.7	Digital communication	3	0.7	Game programming	1	0.2
Artificial intelligence in metaverse	1	0.2	Digital division	1	0.2	Gamefi	1	0.2
Auditing	1	0.2	Digital health	1	0.2	General collective intelligence	1	0.2
Augement reality marketing	1	0.2	Digital influence	1	0.2	Genuineness	1	0.2
Augmented marketing	1	0.2	Digital marketing	2	0.5	Hate speech	1	0.2
Augmented reality	11	2.7	Digital money	1	0.2	Health system	1	0.2
Avatar	3	0.7	Digital platform	1	0.2	Healthcare	4	1
Avatar	1	0.2	Digital technologies	1	0.2	Heterotopia	1	0.2
Banking	1	0.2	Digital toxic behaviours	1	0.2	Human-centric functional modeling	1	0.2
Beyond universe	2	0.5	Digital toxic content	1	0.2	Hybrid reality	2	0.5
Bibliometric analysis	1	0.2	Digital transformation	3	0.7	Identity	2	0.5
Bibliometrics	1	0.2	Digital Turkish coin	1	0.2	Individual	2	0.5
Bitcoin	3	0.7	Digital turkish coin exchange	1	0.2	Industry 4.0 (I4.0)	1	0.2
Blockchain	14	3.4	Digital Turkish lira	2	0.5	Inequality	1	0.2
Cardalordz	1	0.2	Digital twins	3	0.7	Infinite universe	1	0.2
Caribbean	1	0.2	Digital world	2	0.5	Influencer	1	0.2
Change	1	0.2	Digitalization	2	0.5	Influencer communication	1	0.2
Changing customer expectations	1	0.2	Digitalization of marketing	1	0.2	Information technologies	1	0.2
Circuit analysis	1	0.2	Digitization	2	0.5	Interactive space	1	0.2
Cocoso	1	0.2	E-commerce	1	0.2	Internet	4	1
Computer vision	1	0.2	Education	1	0.2	Interpersonal communication	2	0.5

Connectivity	1	0.2	Ego	1	0.2	Islamic finance	1	0.2
Consumer behavior	1	0.2	Electronic money	1	0.2	Islamic law	1	0.2
Content analysis	1	0.2	Entrepreneurship	1	0.2	Jus	1	0.2
Contextual marketing	1	0.2	Entropi	1	0.2	Knowledge level	1	0.2
Crypto	1	0.2	Ethereum	1	0.2	Last mile delivery	1	0.2
Crypto assets	2	0.5	Event	1	0.2	Law of obligations	1	0.2
Crypto currency	2	0.5	Evolvr	1	0.2	Leadership	1	0.2
Crypto money	6	1.5	Exhibition	1	0.2	Leisure	2	0.5
Cryptocurrency	1	0.2	Experiential marketing	1	0.2	Literature minings	1	0.2
Culture	1	0.2	Extended reality	4	1	Literature-based discovery	1	0.2
Culture and art	1	0.2	Facebook	1	0.2	Lua programming language	1	0.2
Marketing	3	0.7	Nursing	1	0.2	Semiotics	1	0.2
Marketing mix	1	0.2	Online	1	0.2	Sentiment analysis	2	0.5
Marshall McLuhan	1	0.2	Organizational culture	1	0.2	Simulation theory	1	0.2
Maslow's Hierarchy of Needs	1	0.2	Pandemic	1	0.2	Smart contract	1	0.2
Medicine	1	0.2	Perception level	1	0.2	Social life	1	0.2
Meta	2	0.5	Perception management	1	0.2	Social media	2	0.5
Meta coin	1	0.2	Personal information	1	0.2	Social media mining	1	0.2
Meta universe	3	0.7	Physical education and sports	1	0.2	Social network	1	0.2
Metaeconomics	1	0.2	Pleasure	1	0.2	Socialization	1	0.2
Meta-education	1	0.2	Pre-service teachers	1	0.2	Socio-digital	1	0.2
Metafluence	1	0.2	Press	1	0.2	Sociology of communication	1	0.2
Metahuman	1	0.2	Price bubbles	1	0.2	Some EU Countries and Turkey	1	0.2
Metaleisure	1	0.2	Privacy	1	0.2	Soul	1	0.2
Metamarketing	1	0.2	Production	2	0.5	Sport	1	0.2
Metasport	1	0.2	Promethee ii	1	0.2	Sports sciences	1	0.2
Metaverse	78	19	Property law	1	0.2	Sprituel universe	1	0.2
Metaverse banking	1	0.2	Qualitative analysis	1	0.2	Subject self	1	0.2
Metaverse entrepreneurship	2	0.5	R programming	1	0.2	Surface design	1	0.2
Metaverse marketing	1	0.2	Real and Digital World Interface	1	0.2	Surrealism	1	0.2
Metaverse retailing	1	0.2	Recreation	2	0.5	Taxation	2	0.5
Metaverse world	1	0.2	Religion	1	0.2	Technologies	1	0.2
Midwifery	1	0.2	Revolution	1	0.2	Technology	3	0.7
Mixed reality	2	0.5	Roblox	1	0.2	Text mining	1	0.2
MR	1	0.2	Roblox studio	1	0.2	Time	1	0.2
Networked publics	1	0.2	Sale contract	1	0.2	Token	2	0.5
New communication technologies	1	0.2	Scalability	1	0.2	Tokenization	1	0.2
New media	3	0.7	Scale-free network	1	0.2	Tourism	1	0.2
News	1	0.2	School	1	0.2	Turkey	1	0.2
NFT	8	1.9	Second life	1	0.2	Turkish investor	1	0.2
NLP	1	0.2	Secondary school mathematics teacher	1	0.2	Tweet classification	1	0.2
Nonfungible tokens	3	0.7	Self	2	0.5	Twin worlds	2	0.5
Non-Parametric Value at Risk	1	0.2	Self-presentation	1	0.2	Total	410	100
Norm	1	0.2	Semantic web	1	0.2			

n=91

no sample could be specified for the other 64 studies since they were theoretical, descriptive, or based on a literature review.

Table 8 Frequency of studies by sample

Sample	Frequency	%
Articles	7	25.9
Consumers	1	3.7
Cryptocurrencies	1	3.7
Experts	3	11.1
Films	2	7.4
News websites	1	3.7
Individuals<?>	2	7.4
Interactive Spaces	1	3.7
Students	3	11.1
Teachers	1	3.7
Tweets	4	14.8
Videos	1	3.7
Total	27	100

Table 9 shows that healthcare is the subject most frequently associated (6 percent) with the concept of Metaverse, followed by cryptocurrency and marketing (both 3 percent).

Conclusion

This study aimed to present a roadmap for future studies by investigating the importance and popularity of the Metaverse within the Turkish academic environment. Although it is a relatively new concept, the number of studies has increased rapidly, which shows that the Metaverse is a field of interest across most academic disciplines in Turkey.

The results can be summarized as follows. First, academic interest in the metaverse started in 2018, while it can be predicted that the number of research articles will increase over time. The most obvious indicator is the launch of Journal of the Metaverse[4] in Turkey.

A second striking finding is that although Metaverse research is currently concentrated within social sciences, the concept now attracts the attention of almost all academic disciplines, including tourism, religion, and fashion. Regaring Metaverse-related subjects, the largest proportion of studies examined the relationship between the Metaverse and health. Indeed, the inclusion of the concept within different disciplines has led to new terms emerging, such as metaleisure, metamarketing, and/or metahuman. Regarding keywords, the two most frequent were metaverse and blockchain, indicating that blockchain is the Metverse-related concept that has attracted the most curiosity.

Another notable point is that more studies used qualitative rather than quantitative methods, while the research was mostly based on descriptive analysis and literature reviews.

The lack of quantitative studies can also be interpreted as an indicator of the lack of scale.

4 Journal of Metaverse, published by İzmir Academy Association, is a double-blind peer-reviewed academic journal dedicated to publishing original articles from different disciplines about the Metaverse. It is international, open access, and free, targeting global roaming. The journal, launched in November 2021, is the first academic journal to publish thematically on Metaverse issues.

Table 9 Frequency of studies by metaverse-related concepts

Concepts	F	%	Concepts	F	%
Metaverse - Accounting and auditing	1	1.2	Metaverse - Leisure time habits	1	1.2
Metaverse - Accounting education	1	1.2	Metaverse - Marketing	3	3.6
Metaverse - Advertising	2	2.4	Metaverse - Marketing mix	1	1.2
Metaverse - Art	1	1.2	Metaverse - Needs	1	1.2
Metaverse - Awereness	1	1.2	Metaverse - New media	1	1.2
Metavers - Blockchain	1	1.2	Metaverse - News	1	1.2
Metaverse - Computer Science	1	1.2	Metaverse - NFT	1	1.2
Metaverse - Computer vision techniques	1	1.2	Metaverse - NFT games	1	1.2
Metaverse - Consumer purchasing behaviors	1	1.2	Metaverse - NFT, XR	1	1.2

Metaverse - Cryptocurrency	3	3.6	Metaverse - Organizational culture	1	1.2
Metaverse - Customer engage	1	1.2	Metaverse - Perception	1	1.2
Metaverse - Customer relationship	1	1.2	Metaverse - Physical, Virtual	1	1.2
Metaverse - Data security	1	1.2	Metaverse - Production	1	1.2
Metaverse - Digital hate speech	1	1.2	Metaverse - Production sector	1	1.2
Metaverse - Digital marketing	1	1.2	Metaverse - Real life	1	1.2
Metaverse - Digital transformation	1	1.2	Metaverse - Religion	2	2.4
Metaverse - Digital Turkish Lira	1	1.2	Metaverse - Self	2	2.4
Metaverse - Digital Twins	2	2.4	Metaverse - Self-presentation	1	1.2
Metaverse - Ecosystem	1	1.2	Metaverse - Social Life	1	1.2
Metaverse - Education	2	2.4	Metaverse - Social media and digital advertising	1	1.2
Metaverse - Entrepreneurship	2	2.4	Metaverse - Socialization	1	1.2
Metaverse - Exhibition	1	1.2	Metaverse - Socio digital inequality	1	1.2
Metaverse - Facebook	1	1.2	Metaverse - Spaces	1	1.2
Metaverse - Fashion	2	2.4	Metaverse - Spiritualism	1	1.2
Metaverse - Feelings	1	1.2	Metaverse - Sport	1	1.2
Metaverse - Fictional space	1	1.2	Metaverse - STEM education	1	1.2
Metaverse - Financial Services	1	1.2	Metaverse - Taxation	1	1.2
Metaverse - Game and art	1	1.2	Metaverse - Tourism	1	1.2
Metaverse - Healthcare	5	6.0	Metaverse - Twitter	1	1.2
Metaverse - Human centric functional modeling	1	1.2	Metaverse - Usage intention	1	1.2
Metaverse - Identity, ego, pleasure, consumption	1	1.2	Metaverse - Virtual business Teams	1	1.2
Metaverse - Influencer communication	1	1.2	Metaverse - Virtual migration	1	1.2
Metaverse - Islamic finance	1	1.2	Metaverse - Visual art	1	1.2
Metaverse - Islamic Law	1	1.2	Total	83	100
Metaverse - Knowledge level	1	1.2			

There may be a significant relationship between the concept's relative novelty and the fact that most studies were theoretical. Sample diversity was also relatively low due to the scarcity of quantitative studies and the predominance of descriptive studies.

Limitations

The present study has several limitations. First, it only analyzed articles in the DergiPark database. Thus, the findings cannot yet be generalized. To extend the findings and conclusions, other databases and/or indexes should be examined and comparative studies should be considered. Such comprehensive research will contribute further to the Metaverse literature .

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Appendix

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Genişletilmiş Özet

Metaverse, yaklaşık otuz yıl önceki ilk

kavramsallaştırmasından bu yana, günlük yaşamın bir parçası haline gelmiştir. Metaverse terimi ilk olarak 1992'de Neal Stephenson tarafından bilim kurgu romanı Snow Crash'te İnternet'in sanal gerçeklik tabanlı halefini tanımlamak için ortaya atıldı. Metaverse kelimesi, "meta" (beyond/ ötesi) ön ekinin ve "verse" son ekinin (universe/ evren) bir birleşimidir. Dolayısıyla tam anlamıyla fiziksel dünyanın ötesinde bir evren anlamına gelmektedir (Dionisio vd., 2013: 6). Daha spesifik olarak, terime hem felsefi hem de teknolojik yönler veren, fiziksel gerçekliği aşan, bilgisayar tarafından üretilen, dijitalleştirilmiş bir dünyaya atıfta bulunur. Başka bir deyişle, gerçek ortamlar (gerçeklik) ile sanal ortamlar (sanallık) arasındaki ayrıma işaret eder. İnsanların fiziksel gerçekliğin ötesinde dijital bir ortamda etkileşime girdiği sanal bir alanı ifade etmektedir. Ayrıca kripto para birimi, oyunlaştırma ve NFT gibi bir dizi yeni terim ve kavramlarla da ilişkilidir. Ancak bu kavram, yeni bir toplumsal yapı içinde yeni bir iletişimsel platform olduğu için sadece teknolojik bir yenilik olarak algılanmamalıdır. Metaverse , toplumsal iletişime odaklanan sanal bir ağdır. Kavramın geniş kullanımı nedeniyle Metaverse, bilgisayar biliminden kişiler arası iletişim çalışmalarına ve sosyolojiden pazarlamaya kadar birçok disiplinin ilgisini çekmiştir.

Weinberger (2022) kavrama ilişkin şöyle kapsamlı bir tanım yapmaktadır: "Metaverse, fiziksel dünyayla kısmen örtüşen ve onu geliştiren, her yerde bulunan sanal dünyaların birbirine bağlı bir ağıdır. Bu sanal dünyalar, avatarlarla temsil edilen kullanıcıların birbirleriyle bağlantı ve etkileşim kurmasını ve kullanıcı tarafından oluşturulan içeriği sürükleyici, ölçeklenebilir, senkronize ve kalıcı bir ortamda deneyimlemesini ve tüketmesini sağlar" (Weinberger, 2022: 1).

Bir dizi çalışma (örn. Abbate et al., 2022; Duan et al., 2021; Lee et al., 2021; Park & Kim, 2022; Weinberger, 2022), Metaverse kavramının literatür incelemelerini, sınıflandırmalarını ve tanımlarını sağlamıştır. Ancak Metaverse ile ilgili makaleleri, özellikle sistematik değerlendirmeleri inceleyen çalışmaların yetersiz olduğu dikkat çekmektedir (Abbate ve diğerleri, 2022, s. 255). Öne çıkan literatür taraması ve kavramsal sınıflandırmalardan biri Park ve Kim'in (2022) makalesidir. Yazarlar, Metaverse'in gerekli bileşenleriyle geniş çapta ilgilenmiş ve Metaverse yaklaşımlarındaki en son eğilimleri gözden geçirmiştir. Başka bir örnek, Weinberger'in (2022), 47 yayına nitel meta-sentez uygulayarak Metaverse terimi için kapsamlı bir tanım önerdiği makalesidir.

Türkiye örneğinde ise iki çalışma öne çıkmaktadır. İlki Gökçe Narin'in (2021) çalışmasıdır. Bu çalışma, Web of Science veri tabanındaki tüm alanlarda "Metaverse" anahtar kelimesini içeren 40 dergi makalesini içerik ve yöntem açısından incelemiştir. Çalışma, Metaverse çalışmalarının bilimsel yönüne odaklanmıştır. Literatürdeki çoğu çalışmanın Metaverse kavramını incelediğini ortaya koymuştur. İkinci çalışma Damar'a (2021) aittir. Çalışma, 1990 ile 2021 yılları arasında Web of Science veritabanında listelenen tüm belgelerden (n=93) veri almıştır. Bibliyometrik analiz, genel görüş, kitap bölümleri, bildiriler, makale ve içerik analizine odaklanmıştır. Çalışmada ayrıca Metaverse'in anahtar kelime yoğunluğu, kapladığı alan ve ağ görselleştirmeleri hakkında sonuçlar elde edilmiştir.

Araştırmanın önemi, Türkiye'de Metaverse ile ilgili makalelerin içerik analizini yapan ilk çalışmalardan biri olmasından kaynaklanmaktadır. Bu nedenle bu konuda akademik çalışma yapmak isteyen araştırmacılar için bir rehber niteliğindedir. Metaverse kavramının Türk akademisinde hangi alanlarda ve nasıl ele alındığını tespit etmek temel amaçtır . Bu amaçla öncelikle Metaverse'in anlamı açıklanmış, ardından teorik altyapısı ele alınmıştır. Son olarak, çalışma, Türkiye'de yayınlanan akademik dergiler için çevrimiçi barındırma hizmeti ve editoryal iş akışı yönetim sistemi olan DergiPark'tan seçilen 91 akademik makaleye içerik analizi uygulamaktadır. Makaleler, MAXQDA kullanılarak yıl, dil, dergi, anahtar kelimeler, bilimsel alan, akademik disiplin, metodoloji, örnekleme ve Metaverse ile ilişkili kavramlar açısından incelenmiştir.

Sonuçlar, Türkiye'deki Metaverse araştırmalarının çoğunun nitel yöntemler kullanılarak sosyal bilimler kapsamında yürütüldüğünü ve makalelerin çoğunluğunun Türkçe yazıldığını göstermiştir. Nitel yöntemlerin fazla kullanılması araştırmaların daha çok betimsel analize ve literatür taramasına

dayalı olmasına bağlıdır.

Çalışma, Metaverse'in Türk akademik ortamındaki önemini ve popülaritesini araştırarak gelecekteki araştırmalar için bir yol haritası sunmayı amaçlamıştır. Metaverse kavramı özellikle din, moda, pazarlama, turizm, ekonomi, sağlık ve spor dahil olmak üzere birçok farklı alandan araştırmacının ilgisini çekmiştir. Nispeten yeni bir kavram olmasına rağmen çalışmaların sayısının hızla artması, Metaverse'in Türkiye'deki çoğu akademik disiplin için bir ilgi alanı olduğunu göstermektedir.

Yazar Bilgileri

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