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RESEARCH ARTICLE • FORSCHUNGSARTIKEL • ARAŞTIRMA MAKALESİ

BIBLIOMETRIC ANALYSIS OF THE INTERNET OF THINGS FROM A MARKETING PERSPECTIVE

NESNELERİN İNTERNETİ KONUSUNUN PAZARLAMA AÇISINDAN BİBLİYOMETRİK ANALİZ İLE İNCELENMESİ

Muhammed Fatih CEVHER*

Abstract

The main purpose of this study is to examine dynamics of scientific publications on the "Internet of things" in terms of marketing. The study aims to reveal contemporary research trends and patterns in the field of the Internet of Things so that social scientists new to the discipline can be guided in the right direction while studying this phenomenon. The study analyzes publications on the relationship between Internet of Things and marketing.

The research object is a pool of scientific publications indexed by the keywords "Internet of Things" and "Marketing" in the Web of Science database. The literature review has been done in article titles, abstracts, and keywords with bibliometric analysis. Study includes data from 2008 to 2022 published in the mentioned subject areas. In addition, keyword associations in the articles, the number of publications of the countries, and the language they use were tried to be visualized.

This study, which focuses on addressing the latest situation of IoT in social sciences in its relationship with marketing and systematically synthesizing future research directions, reveals its originality in order to guide and raise awareness for many marketers, considering that the trend in the field of marketing has not yet reached the expected level.

The study is aimed to convey the areas where the internet of things and the studies done together in the field of marketing are related, and the authors-country-institution-journals that contribute the most to this field. The obtained data were interpreted through tables and maps and discussed in the conclusion part.

Keywords: Internet of things, marketing, bibliometric analysis

Jel Classification: M31

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Öz

Bu çalışmanın temel amacı, "Internet of Things" yani "Nesnelerin İnterneti" konusunda bilimsel yayınların yapısını ve dinamiğini pazarlama açısından incelemektir. Çalışma ile Nesnelerin İnterneti (IoT) alanındaki çağdaş araştırma eğilimlerini ve kalıplarını ortaya çıkararak disipline yeni başlayan sosyal bilimcilerin bu fenomeni incelerken doğru yönlere yönlendirilebilmelerini sağlama amacındadır. Bu doğrultuda çalışma Internet of Things ve Pazarlama arasındaki ilişkideki yayınları analiz etmektedir.

Araştırma nesnesi, Web of Science veri tabanında «Internet of Things» (Nesnelerin İnterneti) ve «Marketing» (Pazarlama) anahtar kelimeleri ile indekslenen bilimsel yayınlar havuzudur. Makale başlıklarında, özetlerinde ve anahtar kelimelerde yayın taraması yapılmıştır. Bu çalışma bahsedilen konu alanlarında yayınlanan 2008 ve 2022 yılları arasındaki verileri içermektedir. Yayınlar bibliyometrik analiz yöntemi ile yayın etkinliğinin dinamiğini göstermeye, etkili makaleleri ve güvenilir dergileri vurgulamaya ve ayrıca makalelerde anahtar kelime birlikteliklerini, ortak yazar durumlarını, ülkelerin yayın sayıları ve kullandıkları dili görselleştirmeye çalışılmıştır.

Sosyal bilimlerde nesnelerin internetinin pazarlama ile ilişkisindeki son durumunu ele almaya ve gelecekteki araştırma yönlerini sistematik olarak sentezlemeye odaklanan bu çalışma, pazarlama alanındaki eğilimin henüz beklenen seviyeye ulaşmamasını göz önünde bulundurarak birçok pazarlamacıya yön gösterebilmesi ve farkındalık oluşturması amacıyla özgünlüğünü ortaya koymaktadır.

Çalışmada nesnelerin interneti ile pazarlama alanında birlikte yapılmış çalışmaların ilişki içinde olduğu alanlar, bu alana en fazla katkı sağlayan yazar-ülke-kurum-dergilerin aktarılması amaçlanmıştır. Elde edilen veriler tablo ve haritalar üzerinden yorumlanmış ve sonuç kısmında tartışılmıştır.

Anahtar Kelimeler: Nesnelerin interneti, pazarlama, bibliyometrik analiz

Jel Sınıflandırması: M31

1. Introduction

With the rapid development of technology, it is seen that the effects on people's daily lives are increasing day by day. The rapid change in information technologies has significantly affected both countries and people. Especially in the last few years, the Covid-19 pandemic, which has affected the whole world, has accelerated people's use of technology. In addition to the change in daily lives, Changes are observed in many points such as education, business life, social life, consumption habits, and communication between people and countries.

In recent years, where globalization has increased rapidly, the effect of technological developments is evident in the remarkable importance of glocalization. The marketing discipline continues its activities by changing its customer-oriented strategies without being indifferent to these developments. The rapid development of technology and the increase in the use of social media today trigger changes in marketing activities. In addition to the effect of digital marketing, competition in market conditions is increasing with social media marketing. In an intensely competitive environment where it is difficult to reach consumers, analyzing consumer demands and needs correctly and taking action on time can provide an advantage to marketers. The concept of the Internet of Things is also important in this respect in the marketing discipline.

Artificial intelligence, augmented reality, blockchain, and internet of things concepts are frequently encountered as new technologies in today's digital age. It is seen that these technologies, which make a significant difference in many areas, also gain importance in the marketing discipline. In recent

years, the concept of the Internet of Things has been another remarkable subject. This concept, which will facilitate people's daily lives, will also affect consumer behavior. People's integration with the Internet can affect marketing through products and experiences, even with social networks. Therefore, the internet of things will be important in marketing activities by revealing new facts in the field of marketing. The fact that companies understand this phenomenon well and integrate their marketing strategies with the internet of things and reach consumers will create some advantages in the competitive environment. In the study, the subject of the Internet of Things will be examined in terms of the conceptual framework, and a detailed road map will be created by using the publications in the Web of Science database and the bibliometric analysis method in relation to marketing.

2. Internet of Things (IoT)

The concept of the Internet of Things (IoT) appears to have emerged in 1999 from a study examining how to connect objects to the Internet via a radio frequency identification (RFID) tag. It is thought that this technology, which can offer a limited flow of information, has been replaced by the Internet of Things (Ashton, 2009). The Internet of Things includes placing tags, sensors, and processors on objects connected to the network via an open standard Internet protocol (Crowley & Coutaz, 2015). With this method, it is thought that household appliances will no longer be just physical objects; they will carry more information with them and become information and communication technologies as well as physical objects (Dutton, 2014).

When the words "Internet" and "Things" are brought together, they gain a meaning that brings an important level of innovation to the world of today's information and communication technologies, starting from the internet and things (objects). Internet of Things; It is conceptually expressed as "a worldwide network of uniquely addressable interconnected objects based on standard communication protocols" and means a large number of (heterogeneous) objects involved in the process (Atzori, Iera & Morabito, 2010).

Internet of Things; refers to the interactions between objects by creating network connections between them. Detections are provided by computing technologies, cloud technologies, and wireless sensing technologies, making machine and machine networks, sensor networks, and networks that can be created configurable. Researchers appear to be studying ubiquitous computing techniques, as well as the interactions between humans and the environment, human and machine. The trend of the internet of things in the long term; focuses on making all networked things flexible, intelligent, and autonomous enough to provide necessary services. It is thought that the Internet of Things will provide the desired connection and intelligence to our daily lives (Li, Xu & Zhao, 2015).

Internet of Things, in terms of marketing, is expressed as a concept that can become a huge network that will significantly affect not only smart devices but also the behavior of consumers and the way they make decisions at different stages of the purchasing process. Therefore, extensive scientific research is needed. The issue needs to be reviewed from various aspects, such as opportunities, advantages, disadvantages, legal and technical aspects (Abashidze & Dąbrowski, 2016).

It is expected that a new customer-oriented evolution will take place with the Internet of Things. It will be beneficial for consumers to refer to the experiences of other consumers and to check and verify the product's features and the value attributed to the product by the firm or brand. The physical direct integration of products with the internet and the increased interaction between the product and the consumer; are increased by the Internet of Things. Although the estimated number has not been reached, the idea that more than 50 billion devices will be connected to the internet by 2020 draws attention to this point. The main technologies used in the IoT for the identification of objects and products range from existing technologies such as barcodes to new technologies such as Radio Frequency Identification (RFID) and its version for smartphones and Near Field Communication (NFC) (Jara, Parra & Skarmeta, 2012).

Kannan (2017) draws attention to the fact that the Internet of Things can create significant transformations in the lives of consumers in the near future. In terms of the market research scope, the IoT will have a significant broadening effect (Woodside & Sood, 2017). The internet of things will enable manufacturers to collect data by taking into account the socioeconomic and geographical characteristics of consumers, as well as the analysis of consumers' usage patterns over devices. On the other hand, it is expected that studies will be carried out on the confidentiality of the collected data (Taylor, Reilly & Wren, 2020).

Miskiewicz (2020) emphasizes the arguments in the framework of scientific discussion about the features of the transformation of marketing processes in the conditions of the rapid development of the Internet of Things (Miskiewicz, 2020).

Purwanto, Hurriyati & Dirgantari (2021) try to explain the role of Internet of Things (IoT) technology in business and marketing. The paper highlights excellent opportunities for further research, particularly exploring the connection of the Internet of Things with business model innovation. Also, Internet of Things support; can create value, strategy, innovation, design and customer service security by the company. Meanwhile, on the customer side, Internet of Things has a huge impact on product purchase intentions (Purwanto, Hurriyati & Dirgantari, 2021).

Maucuer, Renaud, Ronteau, & Muzellec (2022) reviewed the marketing literature in terms of business model research with bibliometric analysis. He emphasizes that the business model in marketing will gain importance in the coming years (Maucuer, Renaud, Ronteau, & Muzellec, 2022).

Garcés-Giraldo, Patiño-Vanegas, Espinosa, Benjumea-Arias, Valencia-Arias, & Lampen, (2023), their bibliometric study was conducted to identify the most relevant research actors in the scientific literature on information systems and the Internet of Things. Information systems, logistics systems, health, smart cities, real-time information and risk reduction in decision making were emphasized (Garcés-Giraldo, Patiño-Vanegas, Espinosa, Benjumea-Arias, Valencia-Arias, & Lampen, 2023).

When the Internet of things literature is examined in terms of Web of Science; There are 27 bibliometric analysis studies related to Internet of Things in Web of Science. The titles of these

studies include the terms "IoT" and "bibliometric analysis". These studies were carried out between 2016 and 2022. 11 of these studies were published in 2022 (Özköse, 2023).

In our country (Türkiye), it is thought that correct and fast decisions can be made in marketing strategies with the management of big data that will be formed in relation to the internet of things and consumer preferences and market conditions. The dynamics of both consumption and industrial markets will be monitored instantly and continuously, and services will be offered to customers in a more value-added way (Ventura, Kabasakal, Keskin & Soyuer, 2019).

Personalized real-time marketing, low marginal marketing costs, convenience in marketing research, integrated marketing opportunities, consumer involvement and sustainable marketing activities are among the innovations that the internet of things will provide to companies (Bayuk & Öz, 2017).

3. Methodology

Bibliometric analysis; is seen as a method used to analyze publications and research trends in any field. (Erfanmanesh & Abrizah, 2018). It is also expressed as a rigorous, systematic and innovative method used to research traditional literature. It is seen as a method that can reveal qualitative and quantitative changes in an academic research subject by using statistical techniques and developing the profile of the researched subject (Misra et al., 2016). The publications related to the researched subject are determined, classified and analyzed, and applicable results are revealed (Merigo & Yang, 2017).

The bibliometric analysis, which enables to reveal of the evolutionary nuances of a particular field, offers the opportunity to approach the studied field from many perspectives. It has gained popularity in the social sciences in recent years. The development, usability and accessibility of bibliometric software tools and up-to-date databases such as Scopus and Web of Science, as well as the processing of large volumes of scientific data, are cited as reasons for this popularity (Donthu et al., 2020; Donthu et al., 2021; Khan et al., 2021).

In bibliometric studies, statistics about the author, publication year, published journal, citations to publications, publishing institution, country of publication, and keywords are shared (Koç, & Şimşek, 2021).

4. Research Findings

The findings of the study are examined under this title. Firstly, it started with the analysis of the publications made on the Internet of Things and Marketing keywords at all times. The distribution of publications by year is shown in Figure 1.

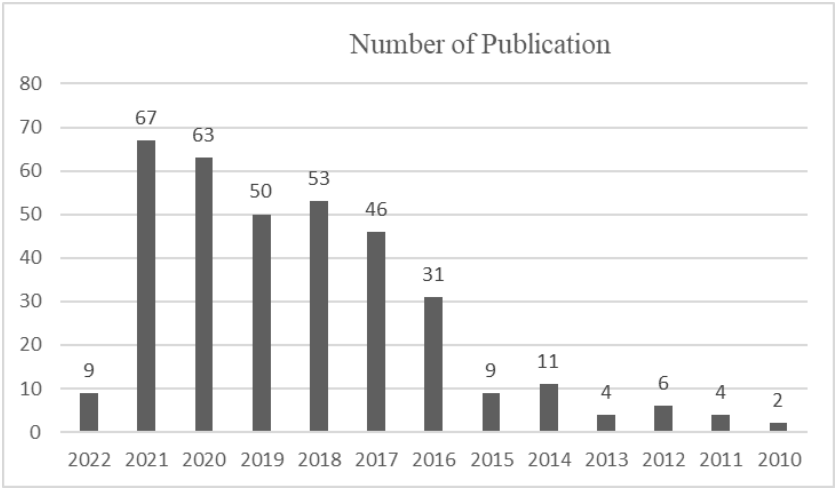

Figure 1: Distribution of Publications by Years

In the Web of Science database, it was found that 355 studies were published in all years under the title of "Internet of Things and marketing". The distribution of studies by years is shown in Figure 1. When the data is examined, the structure and dynamics of scientific publications on the "Internet of Things" were examined in terms of marketing and it is seen that the first study was done in 2010. There has not been much increase in the number of studies for 6 years since 2010. However, a significant increase in the number of studies from 2016 until 2022, when the study was conducted, is also seen in the graph. The reason why 9 studies were seen in 2022 is due to the fact that the current study was completed in the middle of 2022. Studies on the subject in the last five years constitute almost 90% of all studies.

In recent years, the collective power of developments in the field of technology has provided the opportunity to gather people's tastes in a common pool through social platforms. The power of companies to reach these tastes and the ability to read information has enabled companies to develop better and more suitable products. At this point, the power of technology to facilitate human life, which is the main role of technology, has brought about an increase in both consumption and scientific knowledge and research in the relevant field as it becomes understandable and visible with the internet of things.

Table 1: Top Contributing Countries

Country	Number of Publication
China	68
USA	56
Taiwan	25
England	21
South Korea	17
Poland	14
Romania	14
Russia	14
Italy	13
Spain	13
Australia	10
Germany	10
Japan	9
Malaysia	9
France	8
Saudi Arabia	7
United Arab Emirates	7
Canada	6
Iran	6
Netherlands	6

When Table 1 is examined, it is seen that most of the studies took place in the 20 countries listed in the table. According to the table, it is seen that the highest number of publications is in China (68), and the lowest number of publications is in Canada, Iran and the Netherlands (6). The largest contribution to the relevant field was made from the country China.

The high number of publications in China and America can be explained by the technology leadership of China and the USA in the field of technology. Considering the world technology production and export, it can be accepted as a natural result that these two countries have come to the fore in terms of broadcasting. It is recommended that the countries that are behind in technological production and export compared to other countries should conduct research in the relevant fields, since their studies in this field will mean "investment in themselves" in technological production and export in the long run.

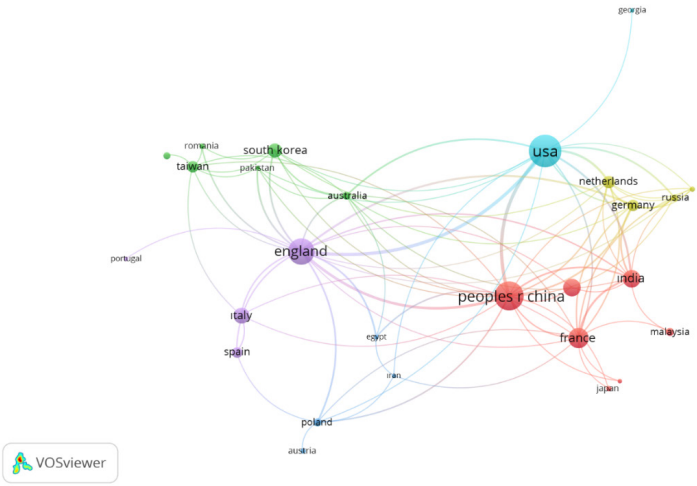

Figure 2: Citation of countries on VOSviewer

Figure 2 shows the mapping of the number of publications and citations of the countries. The same team closely deals with the general approach of the general situation teams and all the applications related to our teams. In Table 1, although the USA is in the 2nd place when it is examined in terms of the number of publications, it is in the 1st place when it is ranked according to the number of citations. Looking at the number of citations according to the publication, it is seen that France has 8 publications and 280 citations, with a higher number of citations compared to the number of publications. According to the number of publications made in the same table, it is seen that Lithuania, which is ranked with only 1 publication, has the best rate with 61 citations.

According to the analysis in VOSviewer, although Lithuania is listed below in the ranking of citations for countries, it can be concluded that when the studies conducted in the countries are evaluated in terms of quality, according to the number of citations received by a single publication, it has a higher quality publication.

Table 2: Top Contributing Authors

Author	Number of Publications	Country	Institute
Chen YY	3	China	Zhejiang University
Kumar V	3	USA	Ctr Excellence Brand & Customer Management
Salis A	3	Italy	Engn Sardegna
Suciu G	3	Romania	BEIA Consult Int
Wang J	3	China	Yanshan University

When Table 2 is examined, the authors who contributed the most to the related field by publishing are cited. According to the table, it is stated that Chen, Kumar, Salis, Suciu, and Wang made the most publications with every three publications. It is seen that Wang's publication was ranked with 198 citations, while Chen, Kumar, Salis, and Suciu were not included in the ranking when the citations were taken into account.

At this point, it is noteworthy that the number of publications is not a sufficient criterion alone in the evaluation of the authors who contributed the most to the field, and the number of citations of the publications should also be taken into consideration. The practical conclusion drawn from this is that the contribution should be evaluated both qualitatively and quantitatively.

Table 3: Distribution of The Number of Articles Published by Journals

	Journal	Number of Document	Citation
1	IEEE Access	8	245
2	Sensors	6	102
3	Sustainability	6	18
4	Industrial Marketing Management	4	135
5	Journal of Business & Industrial Marketing	4	113
6	Journal of Interactive Marketing	4	219
7	Journal of Marketing Management	4	95
8	International Journal of Research in Marketing	3	253

The distribution of the number of articles published in the journals searched in the Web of Science database with the keyword "Internet of Things and Marketing" of the studies carried out in the field of marketing with the Internet of Things is examined in Table 3. It is seen that there are 8 publications on the subject in the IEEE Access journal. Since the total number of publications is 355, the first 8 journals with the most publications are added to Table 3 in order to convey the data clearly.

According to the table, when the citations to the publications are examined, although the number of publications in the "International Journal of Research in Marketing" is low, the number of citations is high. On the other hand, although the number of publications in "Sensors" magazine is 6, the number of citations is low. In addition to the high number of publications in journals, the high number of citations can guide researchers who want to publish. While researchers can learn which journals have publications, they will also be able to see which journals receive more citations in the number of citations. Thus, they will have information about which journals come to the fore both quantitatively and qualitatively in publications related to the subject.

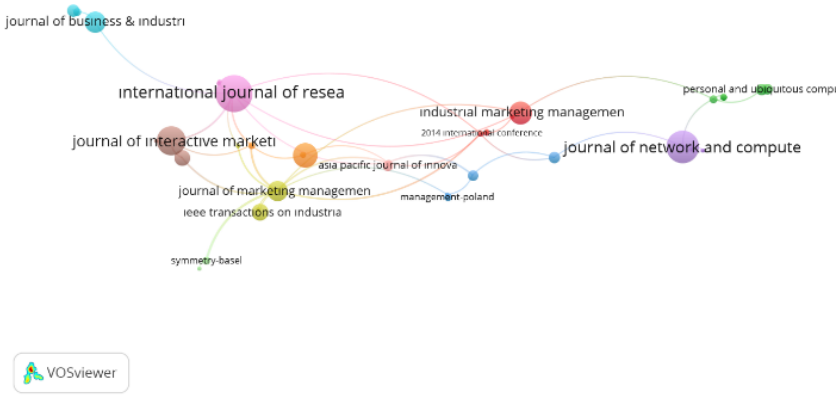

Figure 3: Internet of Things Distribution of Journals by Citations

When Figure 3 is examined, the distribution of IoT publications according to the citations of the journals is shown. Accordingly, in the distribution of journals according to citations, the International Journal of Research in Marketing ranks first with 3 publications and 253 citations, both quantitatively and qualitatively. However, to make a comparison, according to the data given in Table 3, it is seen that the journals "Lecture Notes in Computer Science" and "Sustainability", which are in the ranking of the journals with the most publications, could not be included in the list of sources in terms of citation.

When the internet of things and marketing publications are examined in terms of the publication status in the journals, the ranking according to the number of publications is seen that when evaluated together with the number of citations made to the publications change.

Table 4: Distribution of Documents by Different Institutions

	Institution	Record
1	Bucharest University of Economic Studies	5
2	Beijing University of Posts Telecommunications	4
3	California State University System	4
4	Chaoyang University of Technology	4
5	Peter the Great St Petersburg Polytechnic University	4

The distribution of publications by different institutions is shown in Table 4. A total of 598 different institutions were reached when the institutions which the researchers who carried out studies in the

related field were examined. According to the publication distribution ranking of these institutions, it is seen that the studies of researchers working at Bucharest University of Economic Studies are in the first place with 5 publications. In the order of publication distribution according to different institutions, it is seen that the other institutions follow with 4 publications each. In this ranking, the first 5 are included in the distribution of publications according to different institutions. It has been observed that other institutions make a contribution in decreasing numbers and intensity.

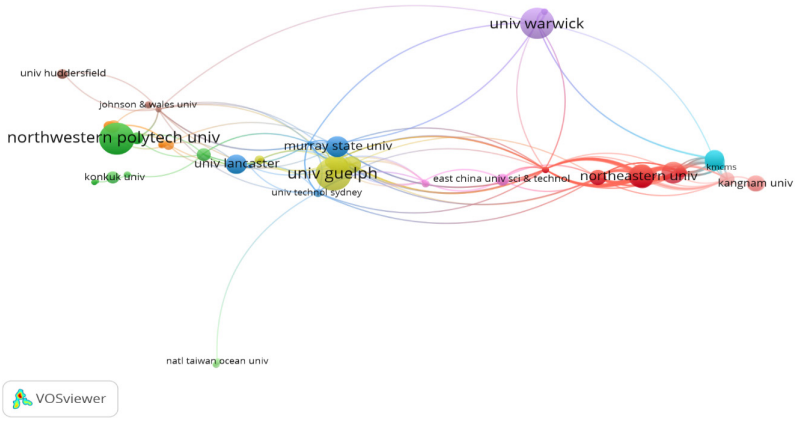

Figure 4: Internet of Things Distribution of Institutions by Citations

According to the data of Vosviewer software, the citation distribution of institutions by publication is shown in Figure 4. When ranking according to the names of institutions, publications and citations to publications, it is seen that the University of Guelph in Canada ranks first with 2 publications and 211 citations. However, it is seen that Telecom SudParis is in 3rd place in the general ranking with 198 references to a single publication.

Table 5: Distribution of Documents by Various Categories

	Document	Records
1	Articles	178
2	Proceeding papers	155
3	Book chapters	6
4	Editorial Materials	11
5	Early Access	9
6	Review Articles	13

The analysis of the distribution of publications according to various categories is shown in Table 5. According to the table, there are categories such as article, paper, book chapter, early access and review article. According to these categories, when the publications are examined, it is seen that there are 178 publications, mostly in article format. The first six categories with the highest number of publications are included in the table.

When the publications made in terms of publication category are evaluated, it is seen that there are publications in different categories. However, it was concluded that the most published category was in the article format.

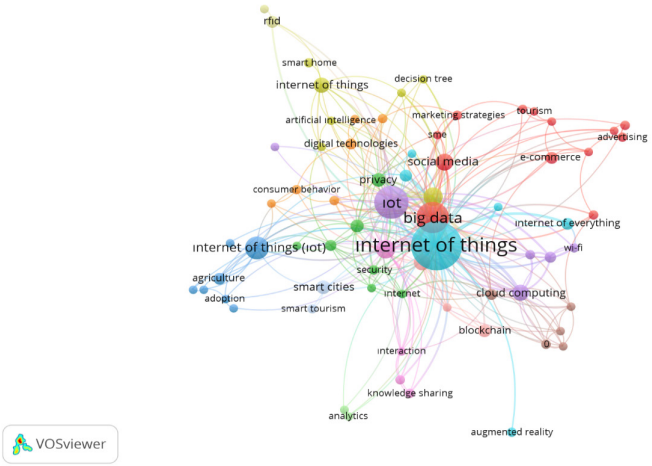

Figure 5: Internet of Things' Use of Keywords

The data related to the analysis made on the keywords are shown in Figure 5 with the mapping analysis. With the analysis and visualization technique, keywords with the same colors and their usage levels are shown with color and circle size. The research tendency towards the subject is expressed in terms of colors and circle size on the map. In addition to the frequent use of the keywords "internet of things", "iot", "big data", it is seen that the words "marketing", "machine learning", "social media" also appear in the analysis.

When the Internet of things is analyzed independently of marketing, although the words "Iot", "Internet of things" are frequently encountered, differently "Internet", "security", "wireless sensors" etc. words are also found (Grupta, 2021).

Table 6: Distribution of Documents in Various Languages

	Language	Records
1	English	347
2	Spanish	3
3	Portuguese	2
4	Afrikaans	1
5	Chinese	1
6	Russian	1

The data on the languages in which the broadcasts are made are shown in Table 6. In the table where there are publications in Afrikaans, Chinese, Russian and Portuguese, it is seen that there are 3 publications in Spanish. In the ranking of the publications according to various languages, the English language, with 347 publications, ranks first.

When the language of the publications is examined, it is concluded that the general publication language is English, although there are several studies in different languages. The fact that the common language used in the world is English is also effective at this point. In addition, it is understood from the language of the Web of Science database that English is widely used.

In the analysis of co-publishing authors, 44 authors were identified. The number of citations received by the authors of their publications is shown in Table 7.

Table 7: Co-citation of Authorship

Author	Document	Citation
Shankar, Venkatesh	2	99
Kumar, V.	2	88
Hoffman, Donna L.	2	84
Nguyen, Bang	2	68
Simkin, Lyndon	2	54

The mapping resulting from the VOSviewer analyzes of the authors' co-authorship is shown in Figure 6.

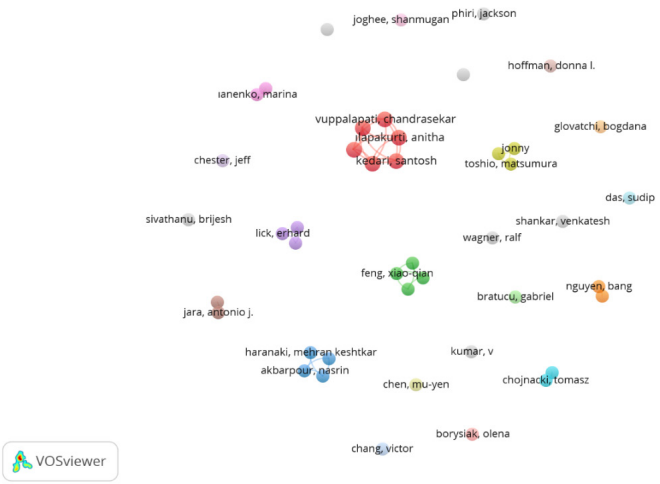

Figure 6: Co-Authorization Status of the Authors

As can be seen in Figure 6, more than one cluster was formed in which the authors of the studies conducted over the years were related to each other. It can be seen from the chart that very few authors are currently co-authoring articles. The ranking of co-publishing authors in terms of the number of publications and citations is shown in Table 8. When the total number of citations received by the authors with 2 articles was examined, "Shankar, Venkatesh" was cited the most. The duo "Simkin, Lyndon" received 54 citations in total.

The point that researchers should pay attention to in this area will be to examine the works of authors with high citation counts. After the analysis of the journals, it is thought that the authors and the number of citations published in the field can guide the researchers.

5. Conclusion

The rapid development of technology brings about changes in people's lives. Many smart devices are included in daily life. It is also thought that thanks to the internet of things and the network connections of devices, it will take more place in people's daily lives. While it is seen that the concept of the internet of things takes place in many areas, when the subject is products and people, it is unthinkable for the marketing discipline to be indifferent to this issue. With digital developments, having information about consumers, controlling market information, and gaining a competitive advantage, as a result, are some of the contributions that IoT technologies will offer to the market. At

this point, the aim of the study is to present a scientific perspective by examining the structure and dynamics of scientific publications on the "Internet of Things" in terms of marketing.

When some studies on the subject are examined; In the study of Miskiewicz (2020), similar to the purpose of this study, it is to analyze the structure and dynamics of scientific publications on the development of the Internet of Things from a marketing perspective. However, unlike our study, the analysis part consists of the analysis of the scientific study presented in the Scopus database. In addition, the study covers only the years 2008-2020. This study also includes the analysis of publications until 2022. He noted that the results of the research conducted have a scientific contribution to the further development of marketing processes under the influence of the Internet of Things.

Purwanto, Hurriyati, & Dirgantari (2021) try to explain the role of Internet of Things (IoT) technology in business and marketing in their work. Different from our study, they analyzed 52 articles by filtering from a total of 1309 articles accessed from the science direct database in the 2011-2020 publication period. The paper highlights excellent opportunities for further research, particularly exploring the connection of the Internet of Things with business model innovation.

Unlike our study, Maucuer, Renaud, Ronteau, & Muzellec (2022) examined the Marketing literature in terms of business model research with bibliometric analysis. They reached 285 articles from 38 marketing journals and discussed the business model logic in marketing.

Another bibliometric analysis in the field of marketing is the bibliometric analysis of industrial marketing research (Lacka, E., Chan, H. K., & Wang, X., 2020). This study is similar to our study because it was conducted in the field of marketing. However, he focused on industrial marketing in the field of marketing and evaluated it in terms of technological developments and B2B international trade. In this respect, it differs from our study.

Again, they studied digital marketing in the field of marketing with another bibliometric analysis method. The study differs from our study in terms of its subject. In addition, 898 studies in the years 2010-2019 were reached in the Scopus database. In our study, the Web of Science database and the Internet of Things and marketing concepts were analyzed together (Ribeiro, Fernandes, & Lopes, 2020). The study was examined in terms of similarities and differences with other studies in the literature. In addition, the results of the study were also examined in detail.

According to the results of the research:

It has been observed that the study area has increased by gaining momentum since 2006. When 355 publications made during this period were examined, it was determined that the number of publications was high in China and the United States. It is seen that the technological development and investments of these countries are also reflected in academic studies. In the order made according to the number of citations of the publications. The study, in which Lithuania is cited by a single publication, also reveals the effectiveness of publications in terms of quality. It is thought

that evaluating the number of publications and the number of citations together in the evaluation of the author who contributed the most to the field will reveal the contribution made in terms of quality. However, in examining the publications according to the journals, it is thought that the evaluation to be made by considering the number of publications and the number of citations would be healthier. Compared to the journals with more publications, journals with fewer publications but higher citation counts were also identified. The distribution of publications according to different institutions has been examined and it is seen that there are at most 5 publications and that the number of publications is also included in other institutions at a decreasing rate. When the publications are examined categorically, it has been determined that there are publications in different categories, but mostly in article format. When the publication languages are examined, it is seen that the English language is the general publication language, although different languages are encountered.

It is seen that the direction of the research made together with marketing and the internet of things are studied together with the fields related to algorithm technology. At this point, understanding how algorithm-based technology works theoretically can help to understand the logic of the areas where internet of things and marketing work together. The basic logic of marketing focuses on meeting customer wants and needs. The logic of Internet of things is that objects, products or devices can be managed remotely through network connections. In the algorithmic approach, it is based on the logic of making the most appropriate choice and learning, step by step, with the connection strength of the most suitable solution of the defined problem (wikipedia.org, 2022). The common point of marketing, Internet of things and algorithmic technology is the development of a solution practice as a result of an intelligent technology with a certain connection power of actions in accordance with the needs analysis made before.

It is thought that the study will help researchers who want to learn more about the Internet of Things research in terms of marketing. In today's world, where technological developments continue rapidly, the subject of the internet of things, which is thought to have an important place in the marketing discipline; It is anticipated that more detailed analysis by marketers will be advantageous. Based on the study, it is recommended to increase the studies on this subject in our country, to increase the awareness of companies on this subject, and to approach the subject from different angles by conducting research on experimental and devices. While following the results of the joint work done to the relevant real sector organizations in both fields; It is recommended that they follow the research to be done in order to develop university-industry cooperation and to find direction in a way that will meet the needs of science.

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