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Research Article

A bibliometric analysis and research agenda of the location of electric vehicle charging stations

Elektrikli araç şarj istasyonlarının konumlandırılmasına ilişkin bibliometrik bir analiz ve araştırma gündemi

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Abstract

Developing technology and population growth increase energy demand. The limited natural resources and their negative environmental effects increase the interest in alternative energy sources. The decrease in oil resources and the environmental problems caused by these resources have increased the studies for electric vehicles. This study presents descriptive statistics on the charging station locations for electric vehicles and relationships between studies by author, country, citation, and occurrence. This will provide a way for researchers to obtain detailed information about their studies into the locations of electric vehicle charging stations. This study examined 212 studies in the "Web of Science" database from 2011 to 2022. Network analysis was conducted in this research using the Vosviewer and R software. In this context, descriptive statistics are first provided. In the section on descriptive statistics, basic facts about the studies are shown along with the annual scientific output, the most productive countries, the total number of citations per country, country collaboration, the most productive countries and authors, and the total number of citations per country. Since the second half of 2010, there has been an increasing trend in the number of publications on the positioning of electric vehicle charging stations. It is seen that most of the studies on the positioning of electric vehicle charging stations were also carried out in China, India and the USA. The analyses of document co-occurrence, bibliographic coupling, and co-citation are presented in the second section. It has been observed that the most frequently used keywords in studies related to the location of electric vehicle charging stations are optimization, sustainability and distribution systems.

Keywords: Electric Vehicles Charging Station, Bibliometric Literature Review, Location, Charging Stations, Sustainability

Jel Codes: L91, R42, O18

Öz

Teknolojik gelişmeler ve nüfus artışı ile birlikte enerjiye olan talep artmaktadır. Doğal kaynakların sınırlı olması ve özellikle petrol gibi doğal kaynakların çevreye olan olumsuz etkileri son yıllarda alternatif enerji kaynaklarına olan ilginin artmasına neden olmuştur. Günümüzde petrol kaynaklarının azalması ve bu kaynakların neden olduğu çevresel sorunlar elektrikli araçların daha popüler hale gelmesini sağlamıştır. Bu çalışmada, elektrikli araçların şarj istasyonlarının konumları ile ilgili yapılan araştırmalara ilişkin detaylı bir bibliometrik literatür çalışması yapılmıştır. Bu çalışma ile, araştırmacıların elektrikli şarj istasyonlarının konumunun seçimine ilişkin yapacağı çalışmalarda literatür hakkında detaylı bilgi edinmelerine olanak sağlanacaktır. Bu araştırmada, 2011 yılından 2022 yılına kadar "Web of Science" veri tabanında yer alan 212 araştırma incelenmiştir. Bu çalışmada, Vosviewer ve R programları kullanılarak ağ analizleri yapılmıştır. Bu kapsamda öncelikle elektrikli şarj istasyonlarının seçimine yönelik çalışmalar ile ilgili tanımlayıcı istatistikler verilmiştir. Tanımlayıcı istatistikler bölümünde, bu alanda yapılan çalışmaların yıllara göre değişimi, en çok çalışma yapılan ülkeler, ülke başına alınan atıf sayısı, ülkeler arası işbirliği, en çok çalışma yapan yazarlar ve toplam atıf sayıları gibi bilgiler derlenmiştir. 2010 yılının ikinci yarısından itibaren elektrikli araç şarj istasyonlarının konumlandırılmasını konu alan yayın sayısında artan bir trend olduğu izlenmektedir. Elektrikli araç şarj istasyonlarının konumlandırılmasını konu alan çalışmalarının çoğunun Çin, Hindistan ve ABD'de de yapıldığı görülmektedir. İkinci bölümde ise incelenen makalelerin co-occurence, bibliographic-coupling ve co-citation analizleri sunulmuştur. Elektrikli araç şarj istasyonlarının konumlandırılması ile ilgili çalışmalarda en sık kullanılan anahtar kelimelerin optimizasyon, sürdürülebilirlik ve dağıtım sistemleri olduğu gözlemlenmiştir.

Anahtar Kelimeler: Elektrikli Araçlar Şarj İstasyonu, Bibliyometrik Literatür Taraması, Konumlandırma, Şarj İstasyonları, Sürdürülebilirlik

JEL Kodları: L91, R42, O18

Introduction

The increased demand for conventional energy sources has resulted in several detrimental environmental impacts (Mastoi, Zhuang, Munir, Haris, Hassan, Usman, Bukhari & Ro, 2022; Tutak & Brodny, 2022). In recent years, electrification of transportation has been seen as a practical way to boost energy efficiency, reduce emissions, and save energy (Hao, Cheng, Liu & Zhao, 2017; Requia, Mohamed, Higgins, Arain & Ferguson, 2018; Zhang, Liu, Zhang & Gu, 2023). According to International Energy Agency (IEA, 2022), electric vehicle sales, which were 120,000 units in 2012, reached 6.6 million in 2021. In the first quarter of 2022, approximately 2 million electric vehicles were sold, an increase of 75% compared to the first quarter of 2021. Electric vehicles (EVs) are a substitute mode of transportation that will soon dominate the automobile industry (An, Gao, Wu, Zhu, Li & Yang, 2023). However, potential buyers who want electric vehicles today still have some reservations. These reservations are; range, temperature-related changes, battery and charging (Hagman & Stier, 2022). Although these factors are interrelated, this study focuses on charging and charging stations. For electric vehicles to continue to be used, their batteries must be charged. That is, they must be connected to the electricity grid. The number of electric vehicle charging stations is also increasing with the spread of electric vehicles. Between 2020 and 2030, there may be a significant increase in the amount of energy needed to charge electric vehicles in China, Europe, and the US, going from about 20 billion kilowatt-hours to about 280 billion kilowatt-hours (Hensley & Knupfer, 2018). Building an adequate number of charging stations to meet the changing needs of all these EVs will be a major challenge shortly as one of the fundamental reasons limiting EV penetration (Afshar, Macedo, Ashraf & Marzband, 2021).

Increasing demand for electric vehicles closely correlates with an increase in the number of charging stations and studies in this field. Examining studies on electric vehicle charging stations (EVCS) reveals that they lay a strong emphasis on placement (Yu, Wu, Li & Bai, 2022), emplacement (Jordán, Palanca, Martí & Julian, 2022), site or location optimization (Zhou, Zhu & Luo, 2022), capacity planning (Mehrjerdi, 2020), allocation (Xu, Zhong, Yao & Wu, 2018), and positioning (Carra Maternini & Barabino, 2022; Kore & Koul, 2022) of EVCS. Since location is the most frequently used concept in research, it was employed in this study's statements about the location of EVCSs. Despite the growing number of EVCS research in the literature and the number of theorists and practitioners working on the subject, the number of review studies is insufficient. Narasipuram & Mopidevi (2021) provides an overview of electric vehicles and compile studies on the charging modes of electric vehicles and the design of electric vehicle charging stations. Mastoi et al. (2022) provide detailed information on electric vehicle charging station types, electric vehicle charging types, electric vehicle charging methods and infrastructures in their review study. Although there are review studies on electric vehicle charging stations (Islam, Shareef & Mohamed, 2015; Zhang et al., 2019; Kizhakkan, Rathore & Awasthi, 2019; Ahmad, Iqbal, Ashraf & Marzband, 2022), no bibliometric study has been found when review studies on the location of electric vehicle charging stations are examined. This study presents descriptive statistics on studies on the location of electric vehicle charging stations and author, country, citation and occurrence relationships between studies. This will enable researchers to obtain detailed information about the studies on the location of electric vehicle charging stations. This study, intended to contribute to the literature on the location of electric vehicle charging stations using bibliometric analysis, attempts to answer the following two research questions.

RQ1: In what research fields, by whom, and in what years were studies on the location of electric vehicle charging stations conducted?

RQ2: What connections may be seen between studies on the location of electric vehicle charging stations? These connections determine which way the field will evolve.

The study's second section contains details on bibliometric analysis. The study's methodology is thoroughly detailed in the third section. The findings and analytical results are presented in the fourth section of the study. The final section includes evaluations based on the findings and recommendations for further research.

Bibliometric analysis

According to Donthu, Kumar, Mukherjee, Pandey & Lim (2021), while meta-analysis summarizes empirical evidence on the relationships between variables and reveals relationships that have not been examined in existing studies, a systematic literature review summarizes and synthesizes the findings of previous research on a specific study topic or field. Bibliometric analysis, another review study method, summarizes enormous amounts of bibliometric data to depict a study topic or field's intellectual structure and rising patterns (Donthu et al., 2021). Meta-analysis and systematic literature reviews focus on a limited number of studies and provide content analysis. In contrast, bibliometric analysis analyzes

nearly all papers on the pertinent subject to produce relational data (Han, Kang, Kim & Kwon, 2020). Bibliometrics is a quantitative analysis of publications to determine specific types of phenomena (Herubel, 1999; Merigó & Yang, 2017). Studies using bibliometrics often serve two objectives. The initial goal is to identify the subject's components that are more closely related to one another. Forming clusters is the second goal. Research in a cluster is more likely to be connected to other studies in that cluster than those in other clusters (Nettle & Frankenhuis, 2019). Bibliometrics as a concept was first used by Groos & Pritchard (1969). Bibliometric studies investigate hundreds or thousands of research papers using objective data such as keywords, citations, and the number of publications. It is utilized to accumulate scientific knowledge with objective and subjective judgments, showing and mapping the evolutionary growth of the studied area (Donthu et al., 2021). The bibliometric analysis gives advantages in forecasting forward discipline tendencies (Q. Wang & Su, 2020). Bibliometric studies also present to researchers which keywords there are relationships between, the years in which the relationships between these keywords occurred, and the points where the field of study has evolved.

It is seen that bibliographic studies in the business literature, including the fields of management, banking, finance, marketing and production-operations management, have been increasing in recent years. Bibliometric studies in sub-fields such as electronic marketing (Gao, Meng, Mata, Martins, Iqbal, Correia, Dantas, Waheed, Xavier Rita & Farrukh, 2021), Islamic banking (Biancone, Saiti, Petricean & Chmet, 2020), service supply chain (Nagariya, Kumar & Kumar, 2021) and quality function deployment (Huang, Mao, Liu, & Song, 2022) are found in the literature. However, in the literature review, although there are review studies on electric vehicle charging stations, no bibliometric study has been encountered. For this reason, in this study, bibliometric analysis is carried out using secondary data on electric vehicle charging station studies.

Methodology and data selection

This bibliometric study went through the following stages (Ruiz-Real, Uribe-Toril, Valenciano & Gázquez-Abad, 2018): (1) provide the search parameters, keywords and periods, (2) choosing the database, (3) modification and improvement of the research parameters, (4) full export of results, (5) evaluation of the data and discussion of the findings. This bibliometric study focuses on studies on the location of electric vehicle charging stations. Three hundred forty-three articles, 253 proceeding papers, 12 early access, and nine review articles were found after searching for "electric vehicle charging station". Since a considerable number of articles from other fields are found when a separate search is conducted for the words “location”, “allocation”, “site”, and “placement”, which are presumed to be used together with the keyword "electric car charging stations," the numerical values of the searches made with these keywords are not presented. Concepts such as location, placement, allocation and site are frequently used in studies on the location of electric vehicle charging stations. Web of Science and Scopus databases are commonly used in bibliometric investigations. The Web of Science database was used in this analysis to obtain the relevant studies. Studies in the related field were analysed, and keywords were selected accordingly. In the search through the Web of Science database, the studies conducted until 2022 were included. All studies in the "article", "proceeding paper", "early access", and "review" classes were included in the study. In the search, the keywords "Electric vehicle charging station" and "allocation" were used together, and at the same time, 47 articles, 12 proceeding papers, four early access and two reviews were encountered. “Electric vehicle charging station” and "location" were the search terms used, and 71 publications, 27 proceeding papers, three early access articles, and one review were found. The keywords "Electric vehicle charging station" and "location" yielded 44 articles, 14 proceeding papers, three early access papers, and one review. Thirty-nine articles, 15 proceeding papers, one early access article, and one review were found in the search for "Electric vehicle charging station" and "site". The analysis includes all articles that used keyword pairings. One hundred thirty-nine publications, 62 proceeding papers, seven early access articles, three review articles and one proceeding paper were discovered when all keywords were searched together. The number of studies obtained from a keyword pair search differs from those obtained by utilizing all keywords simultaneously. This is due to the overlapping keywords in the studies.

Numerous software programs are available for conducting bibliometric studies. Bibliometric analyses are carried out using applications like HistCite (Chawla & Goyal, 2022), Gephi (Shekhar Gupta & Valeri, 2021; Wang, Lai, Zuo, Chen & Du, 2016), VOSviewer (Chawla & Goyal, 2022), BibExcel (Araújo, Pedron & Picoto, 2018), Biblioshiny (Srivastava & Sivaramakrishnan, 2022), BiblioMaps (Kocak, García-Zorita, Marugán-Lázaro, Çakır & Sanz-Casado, 2019), CiteSpace (Su, Li & Kang, 2019), CitNetExplorer (Yu & Li, 2022), SciMat (Luis & Celma, 2020; Sharifi, 2021) and R (Dervis, 2019; Koç & Simsek, 2021). This study performed descriptive statistics with the Web of Science database. Given that, while each program has pros and cons, it is often used in the studies evaluated, the Vosviewer and R programs were utilized in

this study to do network analysis. First, descriptive statistics are provided in this context. The descriptive statistics section shows annual scientific production, most productive countries, total citations per country, country collaboration, most productive countries and authors, and total citations per country, along with basic study information. The second section, Document Co-Occurrence, shows Bibliographic Coupling and Co-Citation Analysis analyses. The bibliometric package program in the R program was used in the descriptive statistics section. The Voswiever software was used in the second section.

Table 1: Main Information

Main Information About Studies	**Timespan**	2011-2023
	Journals	126
	Documents	212
	Document Average Age	3,55
	Average Citations per Document	18,35
	Average Citations per Year per Document	3,506
	References	5289
Document Types	**Article**	139
	Article; Early Access	7
	Article; Proceedings Paper	1
	Proceedings Paper	62
	Review	3
Document Contents	**Keyword Plus (ID)**	308
	Author's Keyword (DE)	858
Authors	**Authors**	600
	Authors Appearances	740
	Authors of Single-Authored Documents	12
Authors Collaboration	**Documents per Author**	0,353
	Co-Authors per Document	3,49
	International Co-Authorships	22,64

Descriptive statistics

In this study, 212 studies were found as a result of a search in the Web of Science database using the keywords "electric vehicle charging station" and "allocation", "electric vehicle charging station" and "location", "electric vehicle charging station" and "site", "electric vehicle charging station" and "positioning", "electric vehicle charging station" and "placement", "electric vehicle charging station" and "emplacement", "electric vehicle charging station" and "facility", "electric vehicle charging station", and "selection". Among these studies, 139 are articles, 62 are proceedings papers, 7 are early access, 3 are review articles, and 1 is "Article; It is classified as "Proceedings paper". As a result of the searches, it was determined that the first study was published in 2011. The main information about the published studies is given in Table 1.

Annual scientific production

The number of research published each year is shown in Figure 1. This information was obtained using the Bibliometrix package in the R program. The first study was published in 2011, according to a search that used the chosen keywords. The number of studies has tended to increase since this time. In Figure 1, the number of studies published by year is given. As a result of the search using the keywords determined accordingly, it was determined that the first study was carried out in 2011. After this date, the number of studies has tended to increase. The number of studies increased to 30 in 2019. Forty-five studies were carried out in 2021 and 2022. In general, it is seen that the studies in this field have increased in recent years. In addition, 600 authors contributed to articles in this field. Studies in this field received a total of 5289 citations. The average citation per study was determined as 18.35. The average age of the studies conducted is 3.55 years. This shows that recent studies conducted in this field are

increasing. In addition, only 12 of the 212 studies reviewed were single-name articles. It is seen that the authors generally cooperated while studying this subject.

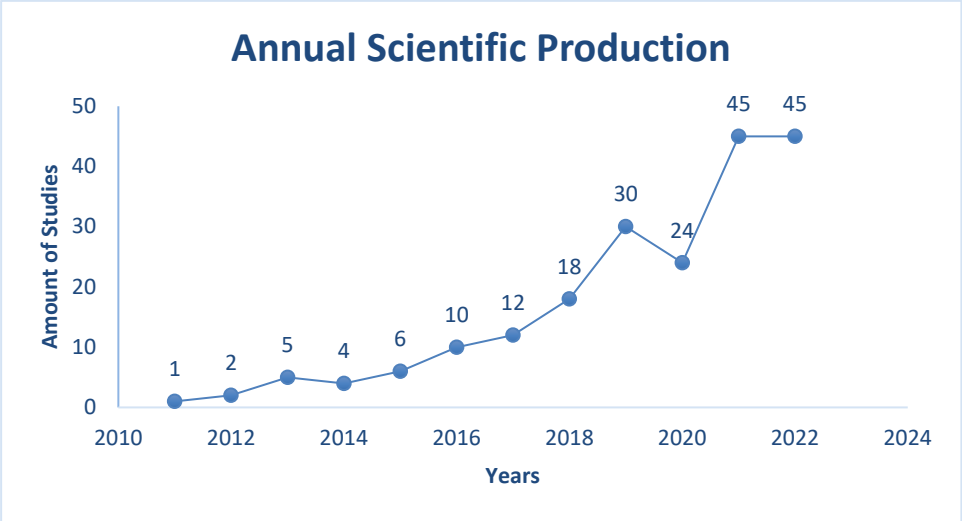

Figure 1: Annual Scientific Production

Most productive countries

The top 10 most productive countries are listed in Table 2. The Bibliometrix package in the R program was used to collect these statistics. According to the table, it was found that China carried out the most studies. A total of 89 studies on this topic have been published in China. 41.98% of the studies in this field are from China. While 15 of these studies were multi-country publications, 74 of these research were single-country publications. In 16.9% of its studies, China collaborated with many countries. China was followed by India, the USA, Korea, Iran and Turkey respectively.

Table 2: Most Productive Countries

Rank	Country	Articles	Freq	SCP	MCP	MCP_Ratio
1	**CHINA**	89	0.4198	74	15	0.169
2	**INDIA**	39	0.1840	35	4	0.103
3	**USA**	15	0.0708	13	2	0.133
4	**KOREA**	10	0.0472	7	3	0.300
5	**IRAN**	9	0.0425	5	4	0.444
6	**TURKIYE**	8	0.0377	7	1	0.125
7	**SINGAPORE**	4	0.0189	1	3	0.750
8	**UAE**	4	0.0189	0	4	1.000
9	**UK**	4	0.0189	1	3	0.750
10	**S.AFRICA**	3	0.0142	2	1	0.333

Total citations per country

Table 3 is provided information about ten countries with the highest citations. This data was collected using the R program's Bibliometrix package. Accordingly, it is seen that China is the country that receives the most citation. China has received a total of 1510 references. The number of references to China per study is 16.97. Canada has 100 citations per study, making it the country with the most references.

Table 3: Total Citations Per Country

Rank	Country	Total Citations	Average Article Citations
1	**CHINA**	1510	16,97
2	**INDIA**	435	11,15
3	**IRAN**	399	44,33
4	**USA**	394	26,27
5	**TURKIYE**	201	25,12
6	**CANADA**	200	100
7	**SINGAPORE**	173	43,25
8	**S. AFRICA**	151	50,33
9	**KOREA**	93	9,30
10	**PORTUGAL**	72	72

Country collaboration

Figure 2 provides the network representing international collaboration. The network's nodes illustrate countries, and the nodes' connections illustrate their interconnections. This information was obtained using the Voswiever software. 7 Clusters, 28 items, and 54 links were identified due to the Country Collaboration study among the countries with a minimum of 5 citations. The first cluster (red) consists of 6 countries. These countries are Chile, Egypt, France, Pakistan, South Korea and the United Arab Emirates. Italy, the Netherlands, Portugal, Saudi Arabia, and Turkey are part of the second cluster (green). The third cluster (blue) includes Denmark, Finland, India and South Africa. The fourth cluster (yellow) includes England, Greece, Norway and Sweden. The fifth cluster (purple) includes Iran, Qatar, Russia and the USA. Brazil, Singapore and Germany are part of the sixth cluster (turquoise). Lastly, in the seventh cluster (orange) are two countries: China and Vietnam. According to the results, China has the highest total link strength, with 23. The USA follows China with 15 and India with 13.

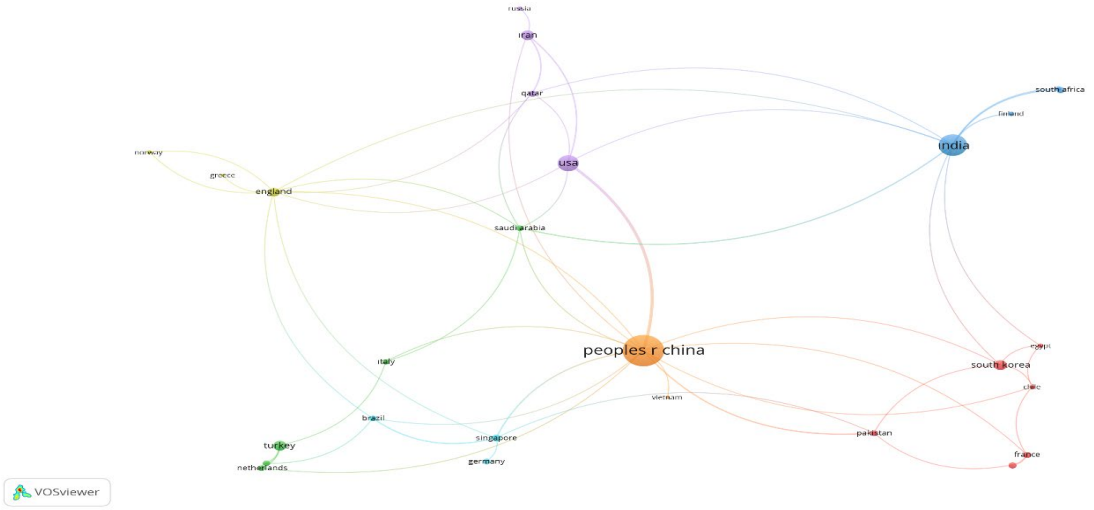

Figure 2: Country Collaboration Map

Most productive journals and authors

Figure 3 shows the ten journals where the most studies were published. These journals were obtained and visualised using the analyse results option of the Web of Science database. Most research was published by the "Energies" journal as a result of a search in the Web of Science database using relevant keywords. A total of 16 studies have been included in this journal since 2011. “Energy” journal is placed in the second position. In this journal, eight studies have been published. The following journals include “Applied Energy”, “IEEE Transactions on Intelligent Transportation Systems”, “Sustainability”, “IEEE Transactions on Smart Grid”, “Sustainable Cities and Society”, and “International Journal of Energy Research”. Six research have been published in these journals.

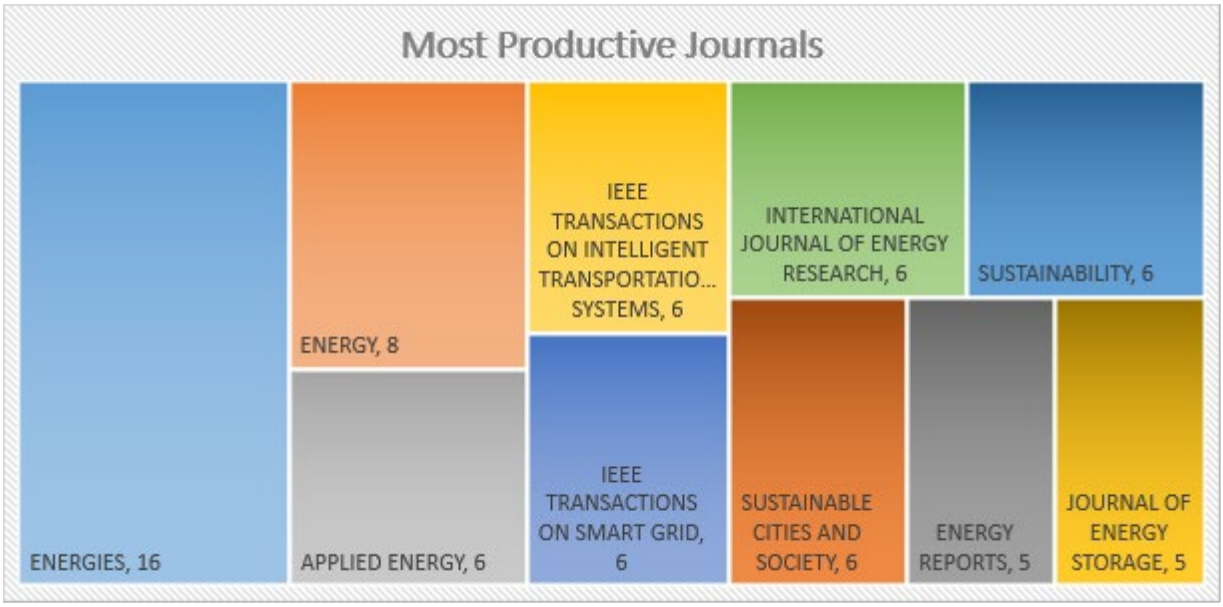

Figure 3: Most Productive Journals

The most productive authors on the topic are represented in Figure 4. Since 2011, Wang, Y., and Wu, Z. have participated in 6 studies. Following that, Li, Y., Liu C., Liu J., and Zhang Y. contributed five studies on the topic.

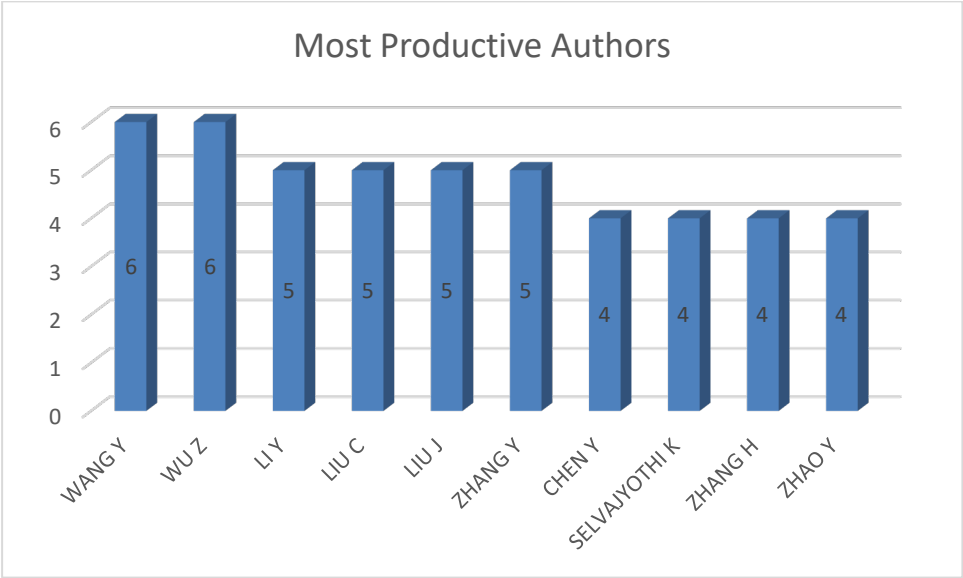

Figure 4: Most Productive Authors

Top manuscripts per citations

The most referenced study in the relevant field belongs to Guo (2015), as shown in Table 4. This study has received a total of 240 references. Since its publication, it has received an average of 26.7 references yearly. Lam (2014) followed with a total of 239 citations. Lam (2014) made an average of 23.9 per year. The study by El-Hawary (2014) is the third most cited study. This study has received a total of 193 citations since publication.

Table 4: Top Manuscripts per Citations

Author	Year	Journal	Total Citation	Total Citation Per Year
GUO S	2015	APPL ENERGY	240	26,7
LAM AYS	2014	IEEE TRANS SMART GRID	239	23,9
EL-HAWARY ME	2014	ELECTR POWER COMPON SYST	193	19,3
TULPULE PJ	2013	APPL ENERGY	177	16,1
MOZAFAR MR	2017	SUST CITIES SOC	150	21,4
AWASTHI A	2017	ENERGY	143	20,4
DEB S	2018	ENERGIES	139	23,2
ERBAS M	2018	ENERGY	117	19,5
XIONG Y	2018	IEEE TRANS INTELL TRANSP SYST	107	17,8
WANG X	2017	IEEE TRANS INTELL TRANSP SYST	91	13

Document Co-Occurrence and Bibliographic Coupling and Co-Citation Analysis

Co-Occurrence Analysis

Keyword Co-Occurence Analysis is frequently used in bibliometric literature studies. Fundamental research issues are identified with Keyword Co-Occurence Analysis (Aria & Cuccurullo, 2017; Leung, Sun & Bai, 2017; Vallaster, Kraus, Lindahl & Nielsen, 2019; Foroudi, Akarsu, Marvi & Balakrishnan, 2021). There are a total of 858 keywords in our study. Twenty keywords were repeated at least five times. As a result of the analysis, a total of 20 items, 4 clusters and 70 links were identified. Each Cluster's keywords are assumed to have a strong relationship with one another and fewer connections with other clusters (Xu et al., 2018). The co-occurrence analysis is shown in Figure 5. There are eight items in the first cluster (red). These are distribution generation, Distribution Systems, Electric Vehicle Charging Stations, Electric Vehicle Charging stations (EVCS), Location Problems, Sensitivity Analysis, Site Selection and Sustainability. The second cluster (Green) has six items. These are Charging Stations, Electric Vehicle Charging, Electric Vehicles, Immune Algorithms, Optimization and Renewable Energy Sources. The third cluster consists of 4 items. These are Charging Stations, Distribution networks, Electric Vehicle and Optimal Placement. The fourth and last cluster (Yellow) consists of 2 terms: GIS and Electric Vehicle Charging Station.

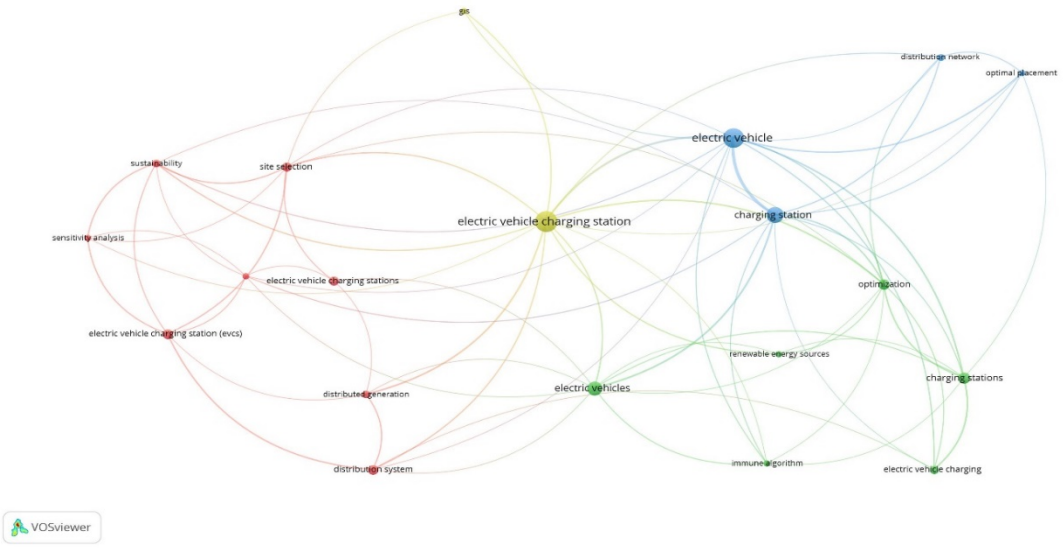

Figure 5: Co-Occurrence Analysis

"Electric Vehicle" Keyword has been repeated 45 times and has 52 links Strength (Table 5). The highest total link strength after the "Electric Vehicle" is "Charging Station". "Charging Station" has been repeated 31 times and has 42 link strengths. The third place is the "Electric Vehicle Charging Station" keyword. "Electric Vehicle Charging Station" has been repeated 52 times and has 41 link strengths.

Table 5: Co-Occurrence Analysis

Rank	Keyword	Occurrences	Total Link Strength
1	Electric Vehicle	45	52
2	Charging Station	31	42
3	Electric Vehicle Charging Station	52	41
4	Optimization	13	25
5	Charging Stations	14	21
6	Electric Vehicles	24	19
7	Electric Vehicle Charging Station (Evcs)	12	15
8	Site Selection	10	15
9	Sustainability	7	15
10	Distribution System	11	13

Bibliographic Coupling and Co-Citation Analysis

Using both accuracy measures, bibliographic coupling slightly outperforms co-citation analysis. Links between documents that cite the same group of cited sources are known as bibliographic coupling. While co-citation clustering does the opposite and clusters the older papers but is unable to cluster the most recent papers that have not yet been cited, the bibliographic coupling can cluster very recent papers but clusters fewer of the very old papers in a longitudinal data set where links are restricted to those within the set. (Boyack & Klavans; 2010). In this section, both bibliographic coupling and co-citation analysis are examined. The Vosviewer program makes bibliographic coupling analysis. The results have shown in Figure 6. The articles identified with the first author's last name are represented by the nodes (circles). While the articles' weight determines each node's size, the position of each node and its colour are applied to group the articles within the same cluster (citations of each article). Bibliographic coupling analysis consists of 20 items, 3 clusters, 185 links and 888 total link strength. According to the results shown in Figure 6., there are 3 clusters. When the studies in the first cluster (red) are examined, it is seen that the optimal placement and distribution system of electric charging stations has been optimized, and a mathematical model has been developed. The studies in the second cluster (green) aim to determine the optimal locations of electric vehicle charging stations using multi-criteria decision-making (MCDM) methods. In the third cluster (blue), models were created using MCDM and optimization methods, considering stochastic processes where demand is elastic.

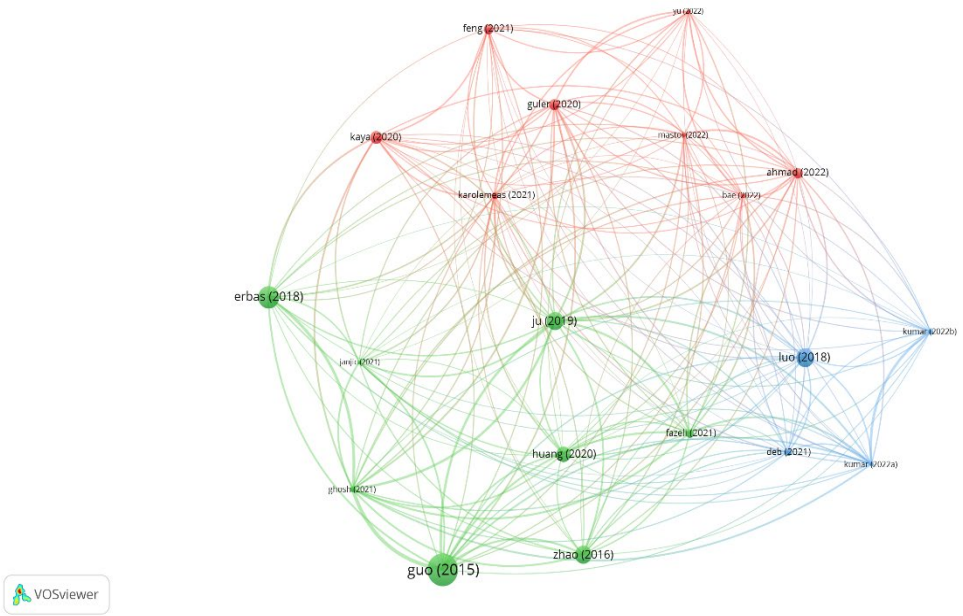

Figure 6: Bibliographic Coupling

Co-citation analysis reveals that co-cited studies may change over the years and the change in the field (Ardito, Scuotto, Del Giudice & Petruzzelli, 2019). Figure 7 shows the relationship between the authors' works citing the same study. The figure is made up of studies with more than ten citations. Figure 7 consists of 3 clusters and 24 points.

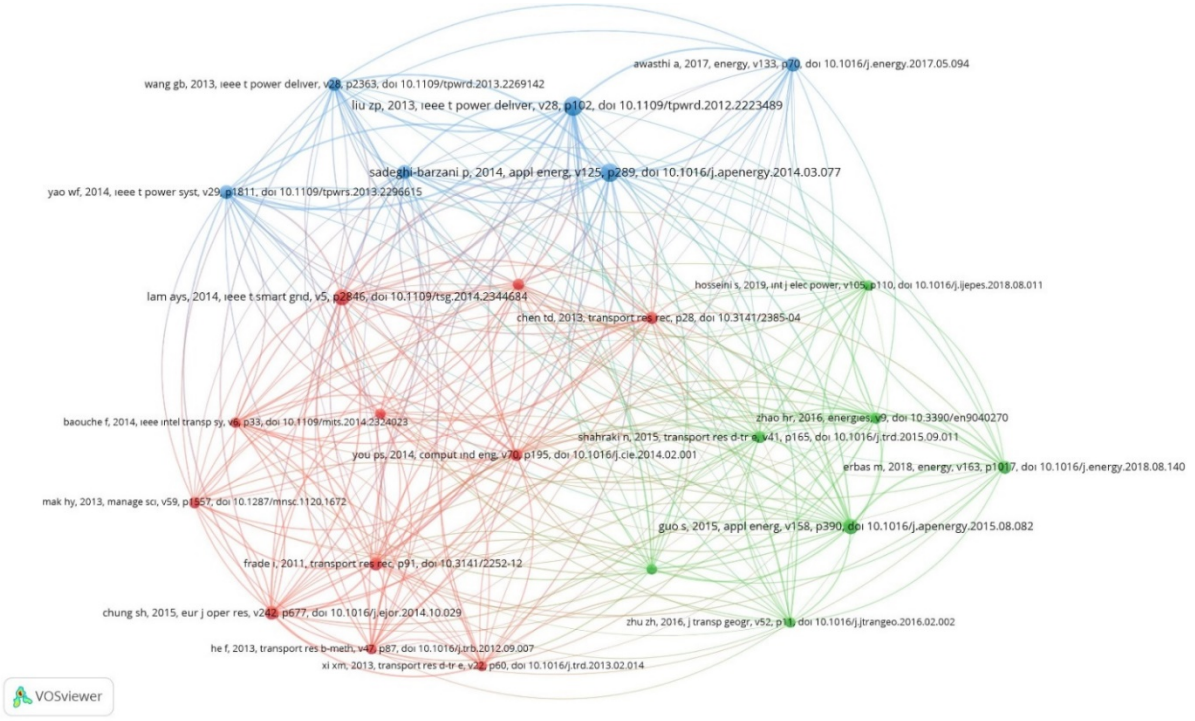

Figure 7: Co-Citation Analysis

The studies in the first cluster determined that the researchers developed their mathematical models with the assumption that the number of vehicles charged at electric charging stations is uncertain. Mak, Rong and Shen (2013) created a forecasting model to eliminate the uncertainty in the number of vehicles charged and developed a robust optimization model using the demand forecasts obtained from it. In their study, Pashajavid and Golkar (2013) used a Monte Carlo-based stochastic model to estimate the total load demand. In the study, randomly generated demands and stochastic scenarios were used as the inputs of the optimization procedure. Baouche, Billot, Trigui, and El Faouzi (2014) applied the household travel questionnaire to determine vehicle demand and created the OD matrix with its data. The results obtained here were determined as the input parameters of the developed optimization model. Frade, Ribeiro, Gonçalves, and Antunes (2011) divided vehicle demands into daytime and nighttime and created different formulations for estimating these demands. In their study, Sathaye and Kelley (2013) used a case-study-based heuristic method to estimate undetected demands due to a lack of data. With the demand forecasts obtained in the study, the optimal station density locations were tried to be determined. He, Venkatesh and Guan (2013) developed an effective scheduling strategy for EV charging and discharging using a convex optimization model. The study results show that the locally optimum scheduling scheme may perform as well as the globally optimal one. In order to select the best locations for EV charging stations, Chen, Kockelman and Khan (2013) created a novel mixed integer program model. The algorithm charges unmet demand while reducing the costs of station access for EV users. The best locations for installing a constrained number of charging stations within 10 miles of Seattle, Washington's downtown are identified using this functional specification, demonstrating how the access costs of charging location schemes react to parking demand and station location. You & Hsieh (2014) developed a mixed-integer programming model to increase the variety of round-trip itineraries that can be completed. To solve this model, a hybrid heuristic approach has been proposed. According to numerical results, the proposed heuristic approach achieves satisfactory solutions with minimal CPU time. Chung and Kwon (2015) developed a multi-period optimization model based on a flow-refuelling placement model to locate charging stations strategically. They also build a case study based on actual traffic flow data from the Korean Expressway network 2011 and offer two narrow-minded approaches. In order to maximize the use of electric vehicle chargers by privately owned electric vehicles, Xi, Sioshans, and Marano (2013) developed a simulation-optimization model that indicates the best locations for electric vehicle chargers. Applying this model to the central Ohio region shows that a combination of level-one and level-two chargers is preferable to level-two chargers individually. They demonstrate that while the overall service levels are less susceptible to the optimization approach, the ideal site is sensitive to the particular optimization criterion.

The research determined that sensitivity analyses were made by creating different scenarios in all of the studies included in Cluster 2. Most of the studies in this cluster chose the locations of electricity stations using MCDM, considering several parameters. In these studies, subjective criteria were determined for

the evaluation of alternatives. Fuzzy logic was utilized to remove uncertainty from the investigations because the subjective criteria contain uncertainty. Hosseini and Sarder (2019) used the Bayesian network model to determine the electric charging station location and used economic, social and environmental sustainability criteria to compare alternatives. On the other hand, Guo and Zhao (2015) employed the Fuzzy TOPSIS technique, which assesses the alternatives while considering sustainability factors and choosing the location of the electric vehicle charging station. Erbaş, Kabak, Özceylan & Çetinkaya (2018) determined charging facility locations for electric vehicles using the fuzzy analytical hierarchy process and TOPSIS methods. Besides, Zhao and Li (2016) made the criteria for choosing where to place electric vehicle charging stations they determined with the fuzzy Delphi method in fuzzy VIKOR method and VIKOR method with grey relational analysis.

The common feature of the studies in the third cluster is the use of heuristic and metaheuristic methods in solving the models developed for the location of electric vehicle charging stations. Dong, Liu and Lin (2014) employed a genetic algorithm to locate public charging stations in the best possible way. For the best positioning and sizing of fast charging stations, Sadeghi-Barzani, Rajabi-Ghahnavieh and Kazemi-Karegar (2014) created a Mixed Integer Non-Linear Programming (MINLP) model, which was then solved using a genetic algorithm. Awasthi, Venkitusamy, Padmanaban, Selvamuthukumaran, Blaabjerg, and Singh (2017) developed a mathematical model for optimal planning of the charging station infrastructure in Allahabad, India and solved the model using a hybrid algorithm based on genetic and particle swarm optimization algorithms. Yao, Zhao, Wen, Dong, Xue, Xu and Meng (2014) utilised a multi-objective evolutionary algorithm to find integrated power distribution and electric vehicle charging stations. Liu, Wen and Ledwich (2012) developed a method combining a two-step scanning method with a modified primal-dual interior point algorithm (MPDIPA) for the optimal location of charging facilities for electric vehicles. Data envelopment analysis was utilized by Wang, Xu, Wen and Wong (2013) to solve a multi-purpose EV charging station planning model that can provide charging service while lowering power losses and voltage variations of distribution systems.

Conclusion

The rapid depletion of energy resources with the increase in population has led to the orientation to alternative energy sources. In recent years, using electrical energy in many areas has become widespread to increase energy efficiency and reduce carbon emissions. Electric vehicles are considered the most used means of transportation in the coming periods. With the use of electric vehicles, new issues such as range distance, charging time, battery, and battery type have emerged. These issues have become prominent issues for researchers in recent years. In order to use electric vehicles, the batteries of electric vehicles need to be charged. The need for more electric vehicle charging stations has arisen as the number of electric vehicles has increased. In this study, the focus is on the studies on the determination of the charging stations of electric vehicles. In this study, the Web of Science database was searched using keywords (“location”, “allocation”, “site”, and “placement”) about the location of electric vehicle charging stations, and the studies that were returned from the search were analyzed bibliometrically.

Descriptive statistics were run using the Web of Science database for this investigation. The Vosviewer and R programs were employed in this study to do network analysis, even though each has advantages and disadvantages and is frequently used in the papers examined. In this context, descriptive data are first supplied. In the section on descriptive statistics, basic facts about the studies are shown along with the annual scientific output, the most productive countries, the total number of citations per country, country collaboration, the most productive countries and authors, and the total number of citations per country. The Web of Science database search for "electric vehicle charging station" and “location” revealed 212 studies on this subject. The first study was conducted in 2011, according to the search results utilizing the appropriately defined keywords. The number of studies has tended to rise since this time. In 2019, the number of studies rose to 30. Twenty-five studies were completed in 2021 and 2022. It is observed that the studies on the location of electric vehicle charging stations have been on an increasing trend, especially since the second half of 2010. However, it is seen that this increasing trend has deteriorated in 2020, and there has been a decrease in the number of publications. This may be because researchers focused on different subjects with the COVID-19 epidemic that shook the whole world. Moreover, 600 authors in total contributed to works in this area. Five thousand two hundred eighty-nine different studies were cited in total. 18.35 citations were found to be the average number per study. Notably, the journals in which the most cited studies are published are those on energy and transportation issues. 3.55 years is the average age of the research that has been done. This demonstrates that there has been an increase in the number of studies done in this area in recent years. Most of the studies in the literature consist of articles, and there are only a few publications in the review type. In

the coming periods, as the number of publications on this subject increases with the increase in the number of electric vehicles and the required charging stations, it is thought that the studies in the form of compilations examining these publications will also increase. In addition, it has been determined that there is no study about bibliometric analysis in the literature. As far as is known, this study is the first study on the bibliometric analysis of studies on the location of electric charging stations. This study will contribute to the literature by informing the researchers working on charging station locations about which methods and studies should be examined.

Most publications on the location of electric vehicle charging stations were made in China, India and the USA, respectively. The fact that the number of electric vehicles is high due to the population in these countries may have been effective in the publication of the charging station. Although the use of electric vehicles is given importance in the countries of the European Union, and even incentives are given for the purchase of electric vehicles in some countries, no country from the European Union is included in the list of countries with the highest number of publications. It is thought that with the increase in the use of electric vehicles in the countries of the European Union in the coming years, researchers will also focus on this issue.

With the help of keyword co-occurrence analysis, fundamental research problems are found. There are a total of 858 keywords in our study. Twenty keywords were repeated at least five times. The co-occurrence analysis found 20 units, four clouds and 70 links between them. The terms in each cluster are presumptively strongly associated with one another and weakly associated with other clusters. There are eight items in the first cluster, 6 in the second cluster, 4 in the third cluster and 2 in the last cluster. Electric Vehicle, which has the total link strength in these keywords. “Electric Vehicle” Keyword has been repeated 45 times and has 52 links strength. Except for the words used in the search, "Optimization", "Sustainability", and "Distribution System" are among the most preferred keywords. Since most mathematical models are used in studies on the location of charging stations, the word "Optimization" has taken place among the most used keywords. Using electric vehicles will be effective in ensuring environmental sustainability, as it will reduce the carbon footprint and the use of fossil fuels. Therefore, the word "Sustainability" is among the most preferred keywords. Recently, "Distribution System" has become one of the most used keywords since electric vehicles have started to be used in companies' distribution networks.

Bibliographic coupling links documents that quote the same set of cited sources. Bibliographic coupling analysis consists of 20 items, 3 clusters, 185 links and 888 total link strength. When the studies in the first cluster (red) are looked at, it can be seen that a mathematical model has been created, and the best location and distribution system for electric charging stations has been optimized. The research in the second cluster (green) tries to identify the best sites for charging stations for electric vehicles using MCDM techniques. The research in the second cluster (green) tries to identify the best sites for charging stations for electric vehicles using multi-criteria decision-making techniques. Models were developed for the third cluster (blue) using MCDM and optimization techniques, accounting for stochastic processes with elastic demand.

According to co-citation analysis, co-cited studies may alter as the field changes. In the co-citation analysis, three clouds and 24 points were formed. In the first cluster of investigations, it was found that the researchers built their mathematical models with the presumption that the number of vehicles charged at charging stations for electric vehicles is uncertain. The study found that all of the studies included in Cluster 2 performed sensitivity analyses by generating several scenarios. Most of the studies in this cluster used MCDM methods to select the sites of energy generation facilities. This research established subjective standards for assessing alternatives. Using heuristic and metaheuristic methods in solving the models created for the location of electric car charging stations is a common trait of the studies in the third category.

This study examined studies on the "location of electric vehicle charging stations" in the Web of Science database. Studies scanned in different databases were not examined in the study. Bibliometric analyses can be performed again in future studies by including different databases.

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References

Ahmad, F., Iqbal, A., Ashraf, I., & Marzband, M. (2022). Optimal location of electric vehicle charging station and its impact on distribution network: A review. Energy Reports, 8, 2314-2333.

Afshar, S., Macedo, P., Mohamed, F., & Disfani, V. (2021). Mobile charging stations for electric vehicles — A review. Renewable and Sustainable Energy Reviews, 152(September), 111654. https://doi.org/10.1016/j.rser.2021.111654

An, Y., Gao, Y., Wu, N., Zhu, J., Li, H., & Yang, J. (2023). Optimal scheduling of electric vehicle charging operations considering real-time traffic condition and travel distance. Expert Systems with Applications, 213(PB), 118941. https://doi.org/10.1016/j.eswa.2022.118941

Araújo, C. C. S. de, Pedron, C. D., & Picoto, W. N. (2018). What's Behind CRM Research? A Bibliometric Analysis of Publications in the CRM Research Field. Journal of Relationship Marketing, 17(1), 29–51. https://doi.org/10.1080/15332667.2018.1440139

Ardito, L., Scuotto, V., Del Giudice, M., & Petruzzelli, A. M. (2018). A bibliometric analysis of research on Big Data analytics for business and management. Big Data Analytics, 57(8), 1993-2009.

Awasthi, A., Venkitusamy, K., Padmanaban, S., Selvamuthukumaran, R., Blaabjerg, F., & Singh, A. K. (2017). Optimal planning of electric vehicle charging station at the distribution system using hybrid optimization algorithm. Energy, 133, 70-78.

Baouche, F., Billot, R., Trigui, R., & El Faouzi, N. E. (2014). Efficient allocation of electric vehicles charging stations: Optimization model and application to a dense urban network. IEEE Intelligent transportation systems magazine, 6(3), 33-43.

Biancone, P. pietro, Saiti, B., Petricean, D., & Chmet, F. (2020). The bibliometric analysis of Islamic banking and finance. Journal of Islamic Accounting and Business Research, 11(9), 2069–2086. https://doi.org/10.1108/JIABR-08-2020-0235

Boyack, K. W., & Klavans, R. (2010). Co-citation analysis, bibliographic coupling, and direct citation: Which citation approach represents the research front most accurately?. Journal of the American Society for information Science and Technology, 61(12), 2389-2404.

Carra, M., Maternini, G., & Barabino, B. (2022). On sustainable positioning of electric vehicle charging stations in cities: An integrated approach for the selection of indicators. Sustainable Cities and Society, 85(April), 104067. https://doi.org/10.1016/j.scs.2022.104067

Chawla, R. N., & Goyal, P. (2022). Emerging trends in digital transformation: a bibliometric analysis. Benchmarking, 29(4), 1069–1112. https://doi.org/10.1108/BIJ-01-2021-0009

Chen, T. D., Kockelman, K. M., & Khan, M. (2013). Locating electric vehicle charging stations: Parking-based assignment method for Seattle, Washington. Transportation research record, 2385(1), 28-36.

Chung, S. H., & Kwon, C. (2015). Multi-period planning for electric car charging station locations: A case of Korean Expressways. European Journal of Operational Research, 242(2), 677-687.

Dervis, H. (2019). Bibliometric analysis using bibliometrix an R package. Journal of Scientometric Research, 8(3), 156–160. https://doi.org/10.5530/JSCIRES.8.3.32

Dong, J., Liu, C., & Lin, Z. (2014). Charging infrastructure planning for promoting battery electric vehicles: An activity-based approach using multiday travel data. Transportation Research Part C: Emerging Technologies, 38, 44-55.

Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. Journal of Business Research, 133, 285–296. https://doi.org/10.1016/j.jbusres.2021.04.070

El-Hawary, M. E. (2014). The smart grid—state-of-the-art and future trends. Electric Power Components and Systems, 42(3-4), 239-250.

Erbaş, M., Kabak, M., Özceylan, E., & Çetinkaya, C. (2018). Optimal siting of electric vehicle charging stations: A GIS-based fuzzy Multi-Criteria Decision Analysis. Energy, 163, 1017-1031.

Foroudi, P., Akarsu, T. N., Marvi, R., & Balakrishnan, J. (2021). Intellectual evolution of social innovation: A bibliometric analysis and avenues for future research trends. Industrial Marketing Management, 93, 446-465.

Frade, I., Ribeiro, A., Gonçalves, G., & Antunes, A. P. (2011). Optimal location of charging stations for electric vehicles in a neighborhood in Lisbon, Portugal. Transportation Research Record, 2252(1), 91-98.

Gao, P., Meng, F., Mata, M. N., Martins, J. M., Iqbal, S., Correia, A. B., Dantas, R. M., Waheed, A., Xavier Rita, J., & Farrukh, M. (2021). Trends and future research in electronic marketing: A bibliometric analysis of twenty years. Journal of Theoretical and Applied Electronic Commerce Research, 16(5), 1667–1679. https://doi.org/10.3390/jtaer16050094

Groos, O. v., & Pritchard, A. (1969). Documentation notes. In Journal of Documentation (Vol. 25, Issue 4, pp. 344–349). https://doi.org/10.1108/eb026482

Guo, S., & Zhao, H. (2015). Optimal site selection of electric vehicle charging station by using fuzzy TOPSIS based on sustainability perspective. Applied Energy, 158, 390-402.

Hagman, J., & Stier, J. J. (2022). Selling electric vehicles: Experiences from vehicle salespeople in Sweden. Research in Transportation Business and Management, 45(PC), 100882. https://doi.org/10.1016/j.rtbm.2022.100882

Han, J., Kang, H. J., Kim, M., & Kwon, G. H. (2020). Mapping the intellectual structure of research on surgery with mixed reality: Bibliometric network analysis (2000–2019). In Journal of Biomedical Informatics (Vol. 109). Academic Press Inc. https://doi.org/10.1016/j.jbi.2020.103516

Hao, H., Cheng, X., Liu, Z., & Zhao, F. (2017). Electric vehicles for greenhouse gas reduction in China: A cost-effectiveness analysis. Transportation Research Part D: Transport and Environment, 56, 68–84. https://doi.org/10.1016/j.trd.2017.07.025

He, Y., Venkatesh, B., & Guan, L. (2012). Optimal scheduling for charging and discharging of electric vehicles. IEEE transactions on smart grid, 3(3), 1095-1105.

Hensley, R., & Knupfer, S. (2018). Charging Ahead: Electric- Vehicle Infrastructure Demand (Issue 1).

Herubel, J.-P. V. M. (1999). Historical Bibliometrics: Its Purpose and Significance to the History of Disciplines. Libraries & Culture, 34(4), 380–388.

Hosseini, S., & Sarder, M. D. (2019). Development of a Bayesian network model for optimal site selection of electric vehicle charging station. International Journal of Electrical Power & Energy Systems, 105, 110-122.

Huang, J., Mao, L. X., Liu, H. C., & Song, M. shun. (2022). Quality function deployment improvement: A bibliometric analysis and literature review. Quality and Quantity, 56(3), 1347–1366. https://doi.org/10.1007/s11135-021-01179-7

IEA. (2022). Global EV Outlook 2022 - Securing supplies for an electric future. In Global EV Outlook 2022.

Islam, M. M., Shareef, H., & Mohamed, A. (2015). A review of techniques for optimal placement and sizing of electric vehicle charging stations. Elect. Review, 91(8), 122-126.

Jordán, J., Palanca, J., Martí, P., & Julian, V. (2022). Electric vehicle charging stations emplacement using genetic algorithms and agent-based simulation. Expert Systems with Applications, 197(March), 116739. https://doi.org/10.1016/j.eswa.2022.116739

Kizhakkan, A. R., Rathore, A. K., & Awasthi, A. (2019). Review of electric vehicle charging station location planning. In 2019 IEEE Transportation Electrification Conference (ITEC-India), 1-5.

Kocak, M., García-Zorita, C., Marugán-Lázaro, S., Çakır, M. P., & Sanz-Casado, E. (2019). Mapping and clustering analysis on neuroscience literature in Turkey: a bibliometric analysis from 2000 to 2017. Scientometrics, 121(3), 1339–1366. https://doi.org/10.1007/s11192-019-03259-w

Koç, E., & Şimşek, A. İ. (2021). A Bibliometric Analysis of Green Productivity Concept. The Journal of Business Science, 9(3), 393–418. https://doi.org/10.22139/jobs

Kore, H. H., & Koul, S. (2022). Electric vehicle charging infrastructure: positioning in India. Management of Environmental Quality: An International Journal, 33(3), 776–799. https://doi.org/10.1108/MEQ-10-2021-0234

Leung, X. Y., Sun, J., & Bai, B. (2017). Bibliometrics of social media research: A co-citation and co-word analysis. International Journal of Hospitality Management, 66, 35-45.

Liu, Z., Wen, F., & Ledwich, G. (2012). Optimal planning of electric-vehicle charging stations in distribution systems. IEEE transactions on power delivery, 28(1), 102-110.

Luis, E. C., & Celma, D. (2020). Circular economy. A review and bibliometric analysis. Sustainability (Switzerland), 12(16). https://doi.org/10.3390/SU12166381

Mak, H.-Y., Rong, Y., & Shen, Z.-J. M. (2013). Infrastructure Planning for Electric Vehicles with Battery Swapping. Management Science, 59(7), 1557–1575. http://www.jstor.org/stable/23443870

Mastoi, M. S., Zhuang, S., Munir, H. M., Haris, M., Hassan, M., Usman, M., Bukhari, S. S. H., & Ro, J. S. (2022). An in-depth analysis of electric vehicle charging station infrastructure, policy implications, and future trends. Energy Reports, 8, 11504–11529. https://doi.org/10.1016/j.egyr.2022.09.011

Mehrjerdi, H. (2020). Dynamic and multi-stage capacity expansion planning in microgrid integrated with electric vehicle charging station. Journal of Energy Storage, 29(March), 101351. https://doi.org/10.1016/j.est.2020.101351

Merigó, J. M., & Yang, J. B. (2017). A bibliometric analysis of operations research and management science. Omega (United Kingdom), 73, 37–48. https://doi.org/10.1016/j.omega.2016.12.004

Nagariya, R., Kumar, D., & Kumar, I. (2021). Service supply chain: from bibliometric analysis to content analysis, current research trends and future research directions. Benchmarking, 28(1), 333–369. https://doi.org/10.1108/BIJ-04-2020-0137

Narasipuram, R. P., & Mopidevi, S. (2021). A technological overview & design considerations for developing electric vehicle charging stations. Journal of Energy Storage, 43(June), 103225. https://doi.org/10.1016/j.est.2021.103225

Nettle, D., & Frankenhuis, W. E. (2019). The evolution of life-history theory: a bibliometric analysis of an interdisciplinary research area. Proceedings. Biological Sciences, 286(1899), 20190040. https://doi.org/10.1098/rspb.2019.0040

Pashajavid, E., & Golkar, M. A. (2013). Optimal placement and sizing of plug in electric vehicles charging stations within distribution networks with high penetration of photovoltaic panels. Journal of Renewable and Sustainable Energy, 5(5), 053126.

Requia, W. J., Mohamed, M., Higgins, C. D., Arain, A., & Ferguson, M. (2018). How clean are electric vehicles? Evidence-based review of the effects of electric mobility on air pollutants, greenhouse gas emissions and human health. In Atmospheric Environment (Vol. 185, pp. 64–77). Elsevier Ltd. https://doi.org/10.1016/j.atmosenv.2018.04.040

Ruiz-Real, J. L., Uribe-Toril, J., Valenciano, J. D. P., & Gázquez-Abad, J. C. (2018). Worldwide research on circular economy and environment: A bibliometric analysis. International Journal of Environmental Research and Public Health, 15(12). https://doi.org/10.3390/ijerph15122699

Sadeghi-Barzani, P., Rajabi-Ghahnavieh, A., & Kazemi-Karegar, H. (2014). Optimal fast charging station placing and sizing. Applied Energy, 125, 289-299.

Sathaye, N., & Kelley, S. (2013). An approach for the optimal planning of electric vehicle infrastructure for highway corridors. Transportation Research Part E: Logistics and Transportation Review, 59, 15-33.

Sharifi, A. (2021). Urban sustainability assessment: An overview and bibliometric analysis. In Ecological Indicators (Vol. 121). Elsevier B.V. https://doi.org/10.1016/j.ecolind.2020.107102

Shekhar, Gupta, A., & Valeri, M. (2021). Mapping research on family business in tourism and hospitality: a bibliometric analysis. Journal of Family Business Management, 12(3), 367–392. https://doi.org/10.1108/JFBM-10-2021-0121

Srivastava, M., & Sivaramakrishnan, S. (2022). A bibliometric analysis of the structure and trends of customer engagement in the context of international marketing. International Marketing Review, 39(4), 836–851. https://doi.org/10.1108/IMR-06-2021-0204

Su, X., Li, X., & Kang, Y. (2019). A Bibliometric Analysis of Research on Intangible Cultural Heritage Using CiteSpace. In SAGE Open (Vol. 9, Issue 2). SAGE Publications Inc. https://doi.org/10.1177/2158244019840119

Tutak, M., & Brodny, J. (2022). Renewable energy consumption in economic sectors in the EU-27. The impact on economics, environment and conventional energy sources. A 20-year perspective. Journal of Cleaner Production, 345. https://doi.org/10.1016/j.jclepro.2022.131076

Vallaster, C., Kraus, S., Lindahl, J. M. M., & Nielsen, A. (2019). Ethics and entrepreneurship: A bibliometric study and literature review. Journal of Business Research, 99, 226-237.

Wang, G., Xu, Z., Wen, F., & Wong, K. P. (2013). Traffic-constrained multi-objective planning of electric-vehicle charging stations. IEEE Transactions on Power Delivery, 28(4), 2363-2372.

Wang, Q., & Su, M. (2020). Integrating blockchain technology into the energy sector - From theory of blockchain to research and application of energy blockchain. In Computer Science Review (Vol. 37). Elsevier Ireland Ltd. https://doi.org/10.1016/j.cosrev.2020.100275

Wang, Y., Lai, N., Zuo, J., Chen, G., & Du, H. (2016). Characteristics and trends of research on waste-to-energy incineration: A bibliometric analysis, 1999–2015. Renewable and Sustainable Energy Reviews, 66, 95–104. https://doi.org/10.1016/j.rser.2016.07.006

Xi, X., Sioshansi, R., & Marano, V. (2013). Simulation–optimization model for location of a public electric vehicle charging infrastructure. Transportation Research Part D: Transport and Environment, 22, 60-69.

Xu, J., Zhong, L., Yao, L., & Wu, Z. (2018). An interval type-2 fuzzy analysis towards electric vehicle charging station allocation from a sustainable perspective. Sustainable Cities and Society, 40(August 2017), 335–351. https://doi.org/10.1016/j.scs.2017.12.010

Yao, W., Zhao, J., Wen, F., Dong, Z., Xue, Y., Xu, Y., & Meng, K. (2014). A multi-objective collaborative planning strategy for integrated power distribution and electric vehicle charging systems. IEEE Transactions on Power Systems, 29(4), 1811-1821.

You, P. S., & Hsieh, Y. C. (2014). A hybrid heuristic approach to the problem of the location of vehicle charging stations. Computers & Industrial Engineering, 70, 195-204.

Yu, Z., & Li, M. (2022). A bibliometric analysis of Community of Inquiry in online learning contexts over twenty-five years. Education and Information Technologies, 27(8), 11669–11688. https://doi.org/10.1007/s10639-022-11081-w

Yu, Z., Wu, Z., Li, Q., & Bai, Q. (2022). A map matching-based method for electric vehicle charging station placement at directional road segment level. Sustainable Cities and Society, 84(May), 103987. https://doi.org/10.1016/j.scs.2022.103987

Zhang, J., Wang, Z., Miller, E. J., Cui, D., Liu, P., & Zhang, Z. (2023). Charging demand prediction in Beijing based on real-world electric vehicle data. Journal of Energy Storage, 57(5), 106294. https://doi.org/10.1016/j.est.2022.106294

Zhang, Y., Liu, X., Zhang, T., & Gu, Z. (2019). Review of the electric vehicle charging station location problem. In Dependability in Sensor, Cloud, and Big Data Systems and Applications: 5th International Conference, DependSys 2019, Guangzhou, China, November 12–15, 2019, Proceedings 5 (pp. 435-445). Springer Singapore.

Zhao, H., & Li, N. (2016). Optimal siting of charging stations for electric vehicles based on fuzzy Delphi and hybrid multi-criteria decision making approaches from an extended sustainability perspective. Energies, 9(4), 270.

Zhou, G., Zhu, Z., & Luo, S. (2022). Location optimization of electric vehicle charging stations: Based on cost model and genetic algorithm. Energy, 247, 123437. https://doi.org/10.1016/j.energy.2022.123437