



Systematic Bibliometric Research Trend of Text Mining on Product Comments in Business Ecosystem

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Abstract

The business ecosystem represents a new paradigm that has gained considerable attention among researchers and practitioners. Despite its popularity, systematic literature reviews utilizing bibliometric analysis within this context remain sparse. This study aims to conduct a comprehensive bibliometric and visualization analysis of business ecosystem research, focusing on the impact of text mining on product comments. Employing VOSviewer for visualization, the study evaluates 95 scientific articles indexed in Scopus quartiles Q1 to Q4 from the Scopus database over the last decade (2001-2024). The bibliometric analysis identifies the most productive publishers, the evolution of scientific articles, and citation patterns. Visualization with VOSviewer reveals prevalent terms in titles and abstracts, author collaboration networks, and assists in identifying novel and underexplored topics within the business ecosystem. The findings provide valuable insights for researchers and practitioners, highlighting key trends and potential research gaps, thus contributing to the advancement of knowledge in the field.

Keywords: Bibliometric, Text Mining, Product Comments, Business Ecosystem

1. Introduction

The concept of the business ecosystem has emerged as a pivotal paradigm in contemporary research and practice, reflecting the complex interdependencies and collaborative dynamics among firms [1]. This paradigm shift is grounded in the recognition that businesses do not operate in isolation but within an intricate web of interactions involving multiple stakeholders, including suppliers, customers, competitors, and other entities [2]. The business ecosystem perspective offers a holistic view of these interactions, emphasizing the importance of co-evolution and symbiotic relationships in fostering innovation and competitive advantage [1], [2].

Recent advancements in text mining techniques have opened new avenues for extracting valuable insights from large volumes of textual data, such as product comments and reviews [3]. These techniques are instrumental in understanding consumer preferences, sentiment analysis, and market trends, thereby enhancing decision-making processes within the business ecosystem. Text mining, as a subset of data mining, involves the application of algorithms to process and analyze unstructured text data, converting it into meaningful and actionable information [4], [5].

The integration of bibliometric analysis with text-mining methodologies has gained traction in academic research, offering a robust framework for evaluating the impact and dissemination of scientific knowledge [6], [7]. Bibliometric analysis involves the quantitative

assessment of academic literature, providing metrics on publication productivity, citation patterns, and research trends. When combined with text mining, it enables a deeper exploration of thematic structures and research trajectories within specific domains [4].

Despite the growing body of literature on business ecosystems and text mining, there remains a scarcity of comprehensive bibliometric studies that synthesize these fields [8], [9]. Most existing research focuses on either the theoretical underpinnings of business ecosystems or the technical aspects of text mining, leaving a gap in the integrative analysis that can bridge these areas. This gap presents an opportunity to contribute to the academic discourse by conducting a systematic bibliometric analysis of text mining applications in the business ecosystem context [6], [10].

Furthermore, the dynamic nature of business ecosystems necessitates continuous monitoring and evaluation to capture emerging trends and shifts in the landscape. The application of text mining techniques to product comments can reveal nuanced insights into consumer behavior and market dynamics, which are crucial for sustaining competitive advantage [9], [10]. Therefore, this study aims to address the identified research gap by providing a comprehensive bibliometric analysis of the impact of text mining on product comments within business ecosystems, utilizing advanced visualization tools such as VOSviewer to enhance the interpretability of the findings [11], [12].

The primary research problem addressed in this study is the lack of comprehensive bibliometric analysis that integrates text mining applications within the business ecosystem framework. Existing literature has largely overlooked the synergistic potential of combining these fields, resulting in a fragmented understanding of their intersection [7]. To address this, we propose a systematic bibliometric and visualization analysis using VOSviewer, focusing on the impact of text mining on product comments within the business ecosystem. This approach aims to identify key trends, prolific authors, and emerging research themes, thereby providing a cohesive overview of the current state of research and highlighting future research directions [13], [14].

Text mining has been extensively studied for its applications in analyzing large datasets, especially in the context of consumer reviews and product comments [4]. One of the significant contributions in this field is the development of sentiment analysis techniques, which aim to classify the sentiment expressed in textual data into categories such as positive, negative, or neutral. A comprehensive overview of sentiment analysis methodologies, emphasizing the importance of feature extraction and machine learning algorithms in improving classification accuracy [15], [16]. Moreover, highlighted the relevance of sentiment analysis in understanding consumer attitudes and behaviors, which can significantly inform strategic decisions within the business ecosystem [17], [18].

The current state of research in text mining and business ecosystems is characterized by several key advancements and emerging trends [7], [8], [10]. Firstly, there has been a significant increase in the application of text mining techniques to analyze user-generated content, such as product reviews, social media posts, and online forums [4], [5]. These studies have demonstrated the potential of text mining to extract valuable insights into consumer behavior, brand perception, and market trends, which are essential for strategic decision-making within business ecosystems [10].

In the context of bibliometric analysis, the use of visualization tools such as VOSviewer and CiteSpace has become increasingly prevalent [19]. These tools allow researchers to map the intellectual structure of a field, identify key research clusters, and track the evolution of research themes over time. The visualization of bibliometric networks provides a comprehensive overview of the research landscape, highlighting influential authors, seminal works, and emerging trends. This approach has been particularly useful in identifying research gaps and guiding future research directions.

Despite these advancements, there remain several challenges and gaps in the current research. One of the primary challenges is the integration of text mining and bibliometric analysis in a cohesive framework that can

provide a comprehensive overview of the research landscape [6], [7]. While there have been studies that utilize text mining to analyze specific aspects of business ecosystems, there is a lack of integrative studies that combine these methodologies to provide a holistic understanding of the field. Additionally, there is a need for more longitudinal studies that can track the evolution of research themes and trends over extended periods, providing insights into the dynamic nature of business ecosystems [1], [8].

The primary objective of this study is to conduct a comprehensive bibliometric analysis of the impact of text mining on product comments within the business ecosystem. This involves identifying key research trends, prolific authors, and emerging themes in the literature, as well as visualizing the intellectual structure of the field using VOSviewer [11], [12]. Additionally, the study aims to provide actionable insights for researchers and practitioners by highlighting potential research gaps and future directions.

This study is novel in its integrative approach, combining bibliometric analysis and text mining to provide a holistic overview of the research landscape. By synthesizing these methodologies, the study offers a unique perspective on the intersection of text mining and business ecosystems, which has been largely overlooked in existing literature [4], [9]. The use of advanced visualization tools further enhances the interpretability and accessibility of the findings, making it easier for researchers to identify new and underexplored areas of research [19].

The scope of this research encompasses a systematic bibliometric analysis of scientific articles on text mining applications in the business ecosystem, indexed in the Scopus database from 2001 to 2024. The analysis includes metrics on publication productivity, citation patterns, and research trends, as well as a thematic analysis of key terms and concepts using VOSviewer [11], [12]. The study focuses on the impact of text mining on product comments, with implications for consumer behavior analysis, market trends, and strategic decision-making within business ecosystems.

2. Analysis Method

This section delineates the bibliometric methodologies employed in this study, aimed at thoroughly examining the landscape of text mining applications on product comments within the business ecosystem. The methodologies are structured into three primary stages, leveraging a combination of bibliometric tools and databases to facilitate a comprehensive assessment of the relevant literature [20], [21].

The initial stage involved a meticulous search for scientific articles using the Scopus database. The search criteria were centered on specific keywords "Text Mining", "Product Comments", and "Business",

covering the publication years from 2001 to 2024. The retrieved articles were stored in both RIS and CSV formats for subsequent analysis. This procedure yielded a total of 1072 items.

From the initial pool of 1072 publications, a refinement process was conducted to select the most relevant studies. This involved a rigorous examination of abstracts and keywords to ensure alignment with the study's focus on artificial intelligence-based emotion recognition in educational contexts. Articles that did not meet the specified criteria were excluded, resulting in a final selection of 95 relevant articles. These articles were similarly stored in RIS and CSV formats for detailed analysis in Table 1.

Table 1. Article Search and Retrived Article in the field of Text Mining on Product Comments for Business Ecosystem

Data	Initial Search	Refinement Search
Data Source	Database Scopus	Database Scopus
Keywords	Text Mining AND Product Comments	Text Mining AND Product Comments AND Business
Number of Publications	1072	95
Number of Citation	13428	727
Citation per Year	583.8	31.6
Citation per Article	12.5	7.6

The third stage entailed an in-depth bibliometric analysis of the 95 selected papers, utilizing VOSviewer, a robust tool for creating and visualizing bibliometric networks. The analysis concentrated on several key aspects [22], [23]: Identifying the most frequently occurring keywords to ascertain prevalent topics and research patterns.; Mapping collaboration networks

among scholars to identify significant authors and research groups.; Evaluating the impact of articles based on citation counts to pinpoint the most influential works in the field.

In addition to VOSviewer, Harzing's Publish or Perish (PoP) software was employed to augment the bibliometric analysis [12]. PoP provided access to a vast database of scientific articles from Google Scholar, enabling a detailed examination of citation metrics and author influence [14], [24]: Retrieved citation metrics and author impact statistics from Scopus.; Facilitated reference management and collaboration among scholars.; Assessed the quality and impact of journals. Key tool for viewing bibliometric networks, including co-authorship and keyword co-occurrence networks.

The integration of these methods and databases ensured a comprehensive and multifaceted approach to the bibliometric study, guaranteeing a thorough and credible examination of the research landscape [23]. To maintain methodological rigor, the study adhered to recognized best practices in bibliometric research [22], [23]: Ensuring consistency in keyword selection and search parameters.; Applying systematic inclusion and exclusion criteria during the refinement stage.; Utilizing multiple techniques and data sources to cross-validate findings and enhance reliability.

By adhering to these rigorous methodological practices, the study presents a thorough analysis of artificial intelligence-based emotion detection research in education, offering significant insights and identifying pertinent trends and gaps for future research. The complete methodological process is illustrated in Figure 1, demonstrating the systematic approach from initial search to detailed analysis.

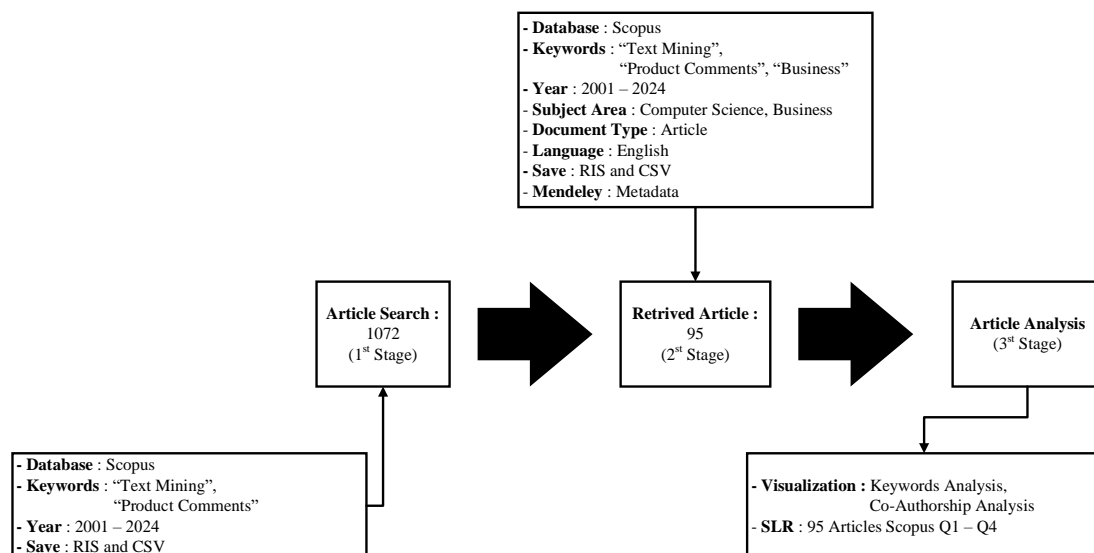


Figure 1. Research Method and Strategy

This figure outlines the sequential stages of the keywords, number of publications, citations, and bibliometric analysis, highlighting the data sources, analytical tools used at each stage. The comprehensive

methodology ensures a robust and reliable assessment of the impact of text mining on product comments within the business ecosystem.

3. Result and Discussion

The bibliometric analysis undertaken in this study provides a comprehensive summary of trends in scientific articles focused on Text Mining on Product Comments in the Business Ecosystem over the past decade. This analysis covers publishing trends, citation metrics, and the influence of different journal quartiles. Figure 2 illustrates significant changes in the number of scientific articles produced between 2001 and 2024. The data reveals a considerable increase in the number of publications in recent years, particularly from 2016 onwards. The number of articles in the Q1 and Q2 quartiles has shown consistent growth, with the most notable increases occurring in 2018 and 2021. This contrasts with patterns in the Q3 and Q4 quartiles, where a significant growth is noted, indicating a shift towards higher-quality publications in this subject.

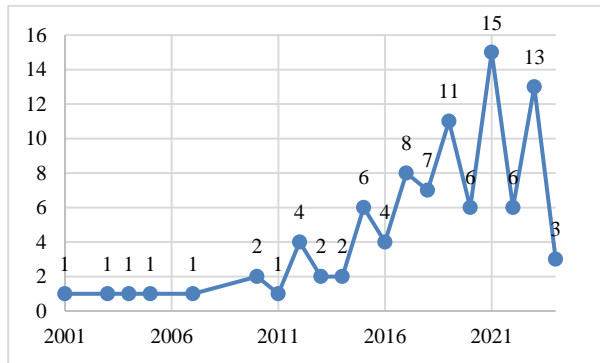


Figure 1. Trends in Scientific Articles in the field of Text Mining on Product Comments for Business Ecosystem indexed by Scopus

A comparison of citation metrics across different quartiles can be observed in the following Table 2. Papers in the Q1 to Q4 quartiles demonstrate much higher citation metrics, with an average of 11.8 citations per paper. This suggests that articles with higher quartiles have a greater impact on subsequent research. Similarly, the authors per paper metric shows higher values for the Q1 to Q4 quartiles, indicating stronger collaboration and the effect of top-tier publications. The research identifies all publishers contributing to the corpus of literature, with the top publishers accounting for the majority of publications in Scopus quartiles Q1-Q4.

Table 2. Trends in Scientific Articles in the field of Text Mining on Product Comments for Business Ecosystem indexed by Scopus

Year	Publication	Cite of Publication	Citation	Cite/ publication
2001	1	1	37	37
2003	1	1	3	3
2004	1	0	0	0
2005	1	1	11	11
2007	1	1	13	13
2010	2	2	14	7
2011	1	1	4	4

Year	Publication	Cite of Publication	Citation	Cite/ publication
2012	4	4	48	12
2013	2	1	7	3.5
2014	2	2	14	7
2015	6	5	38	11.6
2016	4	3	78	19.5
2017	8	7	77	9.6
2018	7	6	89	12.7
2019	11	8	36	3.27
2020	6	6	39	6.5
2021	15	13	153	10.2
2022	6	4	8	1.3
2023	13	11	55	4.2
2024	3	1	3	1

A full evaluation of annual citation metrics can be seen in the table below, showing significant fluctuations in the influence of publications over time. The highest citation count per publication was observed in 2021, with 153 citations over 15 publications, averaging 10.2 citations per item. This peak represents a rise in high-impact research during that year. In contrast, the citation metrics for 2024 reveal a low citation rate with only 3 citations across 3 publications, indicating either a reduction in high-impact publications or the recency of these papers, which may grow significantly over time. The data demonstrates a shifting trend in the number of publications, with a considerable increase in Q1 to Q4 quartile papers, particularly in 2021. This year saw a substantial jump in publications, showing a 30% increase compared to previous years. These results are displayed in Figure 3.

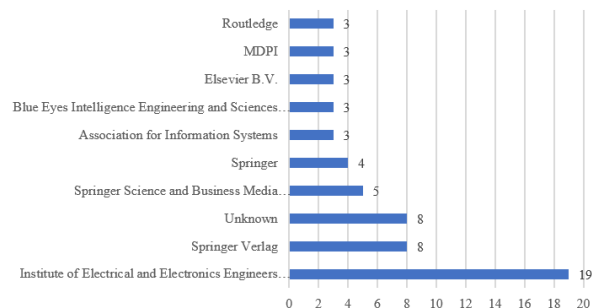


Figure 2. TOP 10 Publishers that Publish Articles in the field of Text Mining on Product Comments for Business Ecosystem indexed by Scopus

An analysis of the obtained data to determine the most productive publishers in terms of related article publications indicates that the top publishers most productive in publishing scientific articles in Scopus quartiles Q1 to Q4 are the Institute of Electrical and Electronics Engineers (IEEE) with 19 articles, Springer Verlag with 8 articles, followed by Springer Science and Business Media with 5 articles. Figure 2 shows the distribution of publications by these publishers. The research also identified the top publishers and journals contributing to the topic. The top publishers, as depicted in Figure 3, include IEEE and Springer, with the former producing 19 publications. Similarly, the top journals, displayed in Figure 4, include Lecture Notes in Computer Science with 4 published papers, followed

by ACM International Conference Proceeding Series with 3 papers.

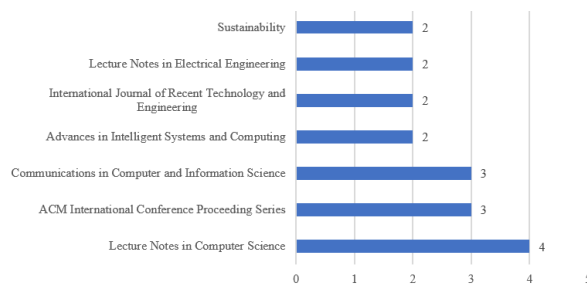


Figure 3. TOP 7 Journals in the field of Text Mining on Product Comments for Business Ecosystem indexed by Scopus

These findings indicate a significant increase in research utilizing text mining on product comments within the business ecosystem, with a rise in publications in high-quality journals. The high citation metrics suggest that research in this field has a significant impact and is widely recognized by the academic community. This trend highlights the importance of this topic in academic literature and its potential for further contributions in the future.

3.1 Citation Analysis

In the systematic bibliometric research on text mining trends in product comments within the business ecosystem, several key findings can be interpreted from the data presented. Based on the table 3 displaying the top twelve articles with the most citations over the past decade, several significant points can be drawn.

First, the article "Predictive business process monitoring with structured and unstructured data" by Teinemaa et al. [25], published by Springer Verlag, ranks first with 67 citations. This article stands out for integrating structured and unstructured data to monitor business processes predictively, demonstrating that a hybrid approach in text mining has a substantial impact on research and practical applications.

Second, the article by Aguwa et al, titled "Modeling of fuzzy-based voice of customer for business decision analytics" [26] and published by Elsevier B.V., ranks second with 49 citations. This study highlights the importance of customer voice-based business decision analytics using a fuzzy approach, indicating that this methodology is well-received in both the scientific community and business practitioners.

Third, the article by Serrano et al, titled "Exploring preferences and sustainable attitudes of Airbnb green users in the review comments and ratings: a text mining approach" [27] and published by Routledge, ranks third with 47 citations.

Furthermore, within the top twelve articles, publishers Springer Verlag and Elsevier B.V. each contributed three publications, indicating the publishing dominance of these entities in the field of text mining on product comments. These articles showcase a wide variety of text mining applications, ranging from "Social media data analysis in the retail pharmacy industry" by Zhan et al. [28].

Recent literature also indicates an increasing trend in the use of text mining techniques across various business domains, reflecting the growing need to analyze large amounts of textual data from diverse sources such as social media, customer reviews, and survey data. Research by Pal et al. on user experience in mobile-health applications [29] and by Halibas et al. on text classification and clustering of Twitter data for business analytics further reinforces the importance of text mining for better and faster business decision-making [30]. This demonstrates that text mining research continues to evolve and significantly contributes to understanding and improving business processes and consumer experiences.

Table 3. TOP 12 Citation Papers in the field of Text Mining on Product Comments for Business Ecosystem indexed by Scopus

Rank	Citation	Authors	Title	Year	Publisher
1	67	Teinemaa I.; Dumas M.; et all.	Predictive business process monitoring with structured and unstructured data	2016	Springer Verlag
2	49	Aguwa C.; Olya M.H.; Monplaisir L.	Modeling of fuzzy-based voice of customer for business decision analytics	2017	Elsevier B.V.
3	47	Serrano L.; Ariza-Montes A.; et all.	Exploring preferences and sustainable attitudes of Airbnb green users in the review comments and ratings: a text mining approach	2021	Routledge
4	37	Li H.; Yamanishi K.	Mining from open answers in questionnaire data	2001	Association for Computing Machinery (ACM)
5	37	Ciasullo M.V.; Troisi O.; Loia F.; Maione G.	Carpooling: travelers' perceptions from a big data analysis	2018	Emerald Group Holdings Ltd.
6	31	Zhan Y.; Han R.; Tse M.; Ali M.H.; Hu J.	A social media analytic framework for improving operations and service management: A study of the retail pharmacy industry	2021	Elsevier Inc.
7	30	Pal S.; Biswas B.; Gupta R.; et all.	Exploring the factors that affect user experience in mobile-health applications: A text-mining and machine-learning approach	2023	Elsevier Inc.
8	28	Halkiopoulos C.; Dimou E.; et all.	The E-Tour Facilitator Platform Supporting an Innovative Health Tourism Marketing	2021	Springer Science and Business Media B.V.

Rank	Citation	Authors	Title	Year	Publisher
			Strategy		
9	27	Halibas A.S.; Shaffi A.S.; Mohamed M.A.K.V.	Application of text classification and clustering of Twitter data for business analytics	2018	Institute of Electrical and Electronics Engineers Inc.
10	26	Rohrdantz C.; Hao M.C.; Dayal U.; et all.	Feature-based visual sentiment analysis of text document streams	2012	
11	20	Perdana A.; Robb A.; Rohde F.	XBRL diffusion in social media: Discourses and community learning	2015	American Accounting Association
12	20	Youn C.; Jung H.J.	Semantic network analysis to explore the concept of sustainability in the apparel and textile industry	2021	MDPI

3.2 Keywords Analysis (Co-occurrence)

This study evaluates 95 scholarly publications on emotion recognition, education, and student learning indexed by Scopus in quartiles Q1–Q4 using VOSviewer software. The analysis found that research in the recent decade in the disciplines of Text Mining on Product Comments for Business Ecosystem is related to roles, actors, collaboration, and dominating platform capabilities. By establishing a minimum co-occurrence number of five, several keywords were discovered and separated into seven clusters, as shown in Figure 5.

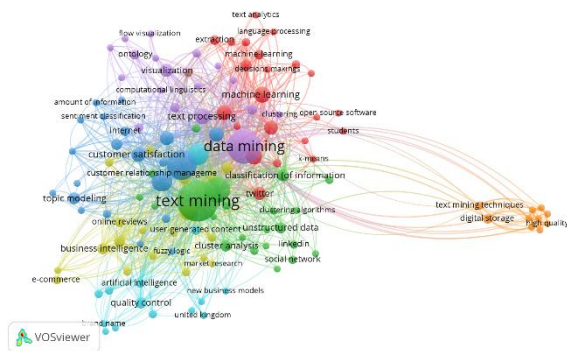


Figure 5. Keywords Co-occurrence Network

The dominant cluster corresponds to the categories of Text Mining on Product Comments for Business Ecosystem. Other clusters comprise numerous research areas, with topics such as sentiment analysis and social networking being the major ones. Based on the VOSviewer visualization results in Figure 2, some study subjects in the fields of Text Mining are still infrequently explored, including certain methodologies. The hue on the map in Figure 2 represents the density of study themes; blue indicates the lowest density, and yellow indicates the highest level.

The lowest density denotes new research themes that are still rarely studied in the business ecosystem field, where these research topics only began to be discussed in recent years, highlighted in yellow in Figure 7. Furthermore, this cluster is composed of eight study subjects, with Text Mining on Product Comments for Business Ecosystem being the most discussed, as represented by the largest node. The larger the node,

the more popular and frequently discussed the topic is relative to other study themes in the same cluster.

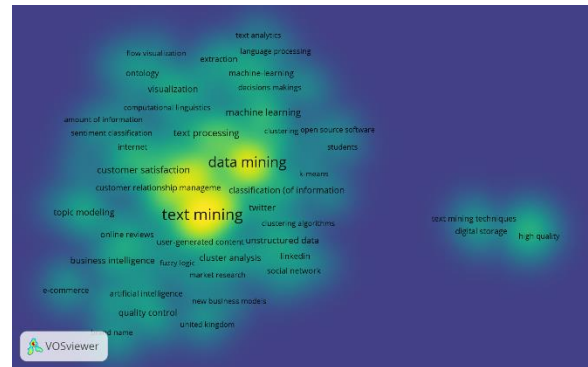


Figure 6. Keyword Density Visualization

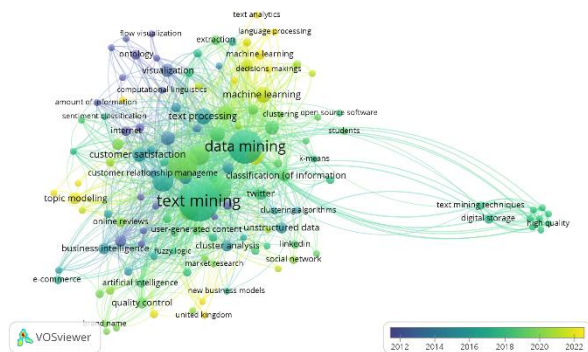


Figure 7. Top Keywords Visualization

Table 4. TOP 11 terms in Text Mining on Product Comments for Business Ecosystem

Keyword	Occurrences
text mining	65
data mining	45
sentiment analysis	35
social networking	26
sales	17
social media	17
commerce	11
machine learning	10
text processing	10
text-mining	10

Overall, of the keywords found, the term text mining was the most commonly found in the title and abstract, followed by the keywords data mining and sentiment analysis respectively, as shown in Table 1. There is an indication that research related to Text Mining on Product Comments for Business Ecosystem, especially

in the context of sentiment analysis and social networking, has started to gain more attention in recent years. This suggests a shift in research focus towards integrating Text Mining on Product Comments for Business Ecosystem, which is expected to enhance Business Ecosystem outcomes and support more innovative and collaborative approaches.

3.3 Co-Authorship Analysis

Visualization analysis using VOSviewer Figure 8 illustrates the interconnection and collaboration patterns among academics in the field of Text Mining on Product Comments for the Business Ecosystem who produce scientific publications indexed by Scopus in quartiles Q1–Q4. The data indicates that five researchers are actively collaborating, producing a total of six scholarly articles over the past decade. The author from Cluster A is the most productive in this subject with three published documents, followed by the author from Cluster B with one document but the highest number of citations, totaling five. The author from Cluster C also submitted one document that earned three citations. Meanwhile, authors from Cluster D and Cluster E each have one document with one and two citations, respectively.

Authors with the largest nodes, such as those from Cluster A and Cluster B, suggest strong links between authors and a significant number of scientific papers. The size of these nodes represents the number of scientific papers produced by each researcher. The distribution of publisher nations also demonstrates a pattern of close links between publishing countries, with considerable contributions from several major states. For instance, authors from the United States and India display excellent co-authorship relationships and high productivity in research on Text Mining on Product Comments for the Business Ecosystem.

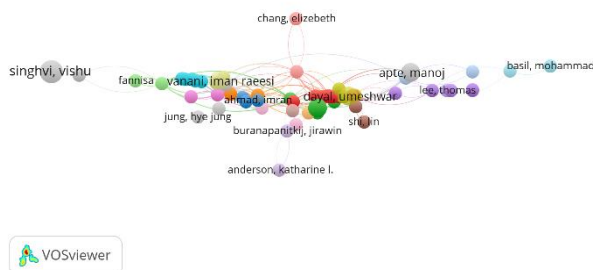


Figure 8. Network Visualization of Text Mining on Product Comments for Business Ecosystem

A literature survey of recent publications supports these findings, indicating similar trends in increasing international collaboration and the significant impact of Text Mining on Product Comments for the Business Ecosystem. This research underlines the importance of cross-disciplinary and cross-national collaboration in creating high-quality research focused on Text Mining

on Product Comments for the Business Ecosystem. The following table highlights the contributions of the primary contributors in this analysis. These data imply that although the number of published documents is rather small, the impact of the citations received is fairly large, reflecting the quality of the study undertaken by these authors.

Table 5. Authors collaborating to Text Mining on Product Comments for Business Ecosystem

Author	Documents	Citations
singhvi, vishu	3	5
srivastava, prateek	3	5
aoe, jun-ichi	2	11
apte, manoj	2	8
dayal, umeshwar	2	35
fuketa, masao	2	11
he, wu	2	9
kadoya, yuki	2	11
kashiji, shinkaku	2	11
morita, kazuhiko	2	11

Visualization analysis with VOSviewer Figure 9 shows that seven countries are actively engaged in research in the field of Text Mining on Product Comments for the Business Ecosystem, producing scientific articles indexed by Scopus in quartiles Q1–Q4. The analysis covers collaboration patterns and productivity over the past decade. The United States emerges as the leading country in this domain, with a total of 15 documents, followed by India with 10 documents. The United Kingdom, Germany, Japan, South Korea, and China also contribute significantly with 7, 6, 5, 4, and 3 documents, respectively. These countries are divided into distinct clusters, indicating collaborative relationships within and across these regions.

The United States, forming a significant cluster, has the most substantial node size, indicating a strong network of relationships among researchers and a high number of scientific publications. This dominance is further reflected in the substantial number of citations received by U.S. publications. India, despite having fewer documents, stands out with the highest number of citations, demonstrating the impactful nature of its research. Similarly, the United Kingdom, with only 7 documents, garners an impressive number of citations, underscoring the high quality and influence of its publications in the field.

Germany, despite producing 6 documents, has a relatively lower citation count, which might indicate recent publications or niche topics with limited immediate impact. In contrast, Japan, with 5 documents, achieves a high citation count, and South Korea, with 4 documents, receives a moderate number of citations, reflecting a moderate influence and engagement in the research community.

The distribution of publisher nations and the pattern of relationships between these countries emphasize the collaborative nature of research in Text Mining on Product Comments for the Business Ecosystem. The

graphic underlines the relevance of worldwide collaboration in furthering research and addressing complex issues connected to Text Mining on Product Comments for the Business Ecosystem. The following table summarizes the main countries' contributions to this analysis. These data suggest that while the number of documents varies across nations, the impact as assessed by citations is large for countries like the United States and India, reflecting the high quality and relevance of their research in the global Business Ecosystem.

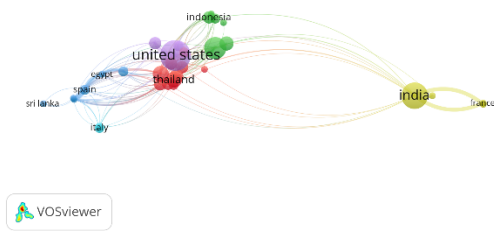


Figure 9. Network Visualization of Country Collaborating to Text Mining on Product Comments for Business Ecosystem

4. Conclusion

This study reveals key findings regarding bibliometric trends in scientific articles focused on the application of Text Mining on Product Comments in the Business Ecosystem over the past decade. The analysis encompasses publication trends, citation metrics, and the influence of various journal quartiles. The data shows a significant increase in the number of publications in recent years, particularly since 2016, with a surge in Q1 and Q2 quartile publications in 2018 and 2021, indicating a shift towards higher-quality publications in this subject. The methods applied in this analysis have identified that articles in the Q1 to Q4 quartiles exhibit higher citation metrics, averaging 11.8 citations per article, indicating a greater impact on subsequent research. Additionally, the authors per paper metric shows higher values for the Q1 to Q4 quartiles, signifying stronger collaboration and the effect of top-tier publications. The contribution of this research lies in mapping the publication trends and scientific collaboration in the field of Text Mining on Product Comments, as well as its impact on the business ecosystem. The results of the analysis also identify the most productive publishers and journals in this topic, such as IEEE and Springer Verlag, which play a dominant role in publishing related articles. This study acknowledges certain limitations, including variations in citation metrics that may be influenced by external factors such as the recency of articles. Further research is recommended to explore these dynamics more deeply, including a more detailed longitudinal analysis to understand the long-term impact of publications in this field.

In conclusion, this study affirms that research on Text Mining on Product Comments in the Business Ecosystem has grown rapidly and has a significant impact, as evidenced by high citation metrics. Future research is expected to continue developing innovative approaches in text mining, strengthening international collaboration, and addressing existing limitations to make greater contributions to academic literature and business practices.

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