



E-Commerce System Success: Decoding the Research Trends in the Last Two Decades

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Abstract

Purpose: Bibliometric analysis is a statistical and computer assisted review methodology to know the evolution of study over the years and also help to recognize modern potential collaborations. In addition to this, it helps to identify weaknesses and its strengths in various dimensions of the study. Furthermore, it has applied to classify modern tendencies, growth of knowledge in specified field and anticipate future research tendencies of a specific field of study at different levels. The aim of this study is to deliver bibliometric analysis on the research papers published on e-commerce system success over a definite period of time.

Methodology: The present study revised 500 documents mined from Web of Science over the time period of 2003-2023. In the methodology of the study two step approach were applied. In the very first step, keywords were selected “e-commerce” OR “ecommerce “AND “Business Finance” OR “Computer science information system” AND “Business Management” etc. The Boolean “AND” “OR” were included in search bar of Web of Science. In the additional step, VOS viewer software were used to apply of data extracted from database for analysis of co-citation analysis, co-authorship analysis and co-occurrence of key-words.

Limitations: The study has some restrictions and limitations that put hurdles in generalizing the results. The first limitation is, the author reviewed articles only taken from Web of Science while other databases like Scopus, Google Scholar and Dimensions etc. were overlook in this study. In addition to this, only published articles were taken into account for review over a specific period of time. Furthermore, only Boolean

were applied while searching the data in search bar, meanwhile the use of other searching tools was ignored like use of question mark, wild card, parenthesis and truncation etc.

Implications: The outcomes of this research study will enlighten the scholars to comprehend the future trends of e-commerce system success in multiple dimensions like e-business, e-social commerce etc.

Originality: The author has faith in that this study is addition to the body of knowledge and grasp the opportunities relating to e-commerce system success.

1. Introduction

Twentieth century had witnessed the dawn of internet revolution that has changed the ways of business activities, its expansion and development (Jamshidogli *et al.*, 2020). The introduction of world Wide Web and wide adoption of internet had revolutionized the field of ecommerce and shifted this sector to internet; dated back to 1991(Sima *et al.*, 2020). The business activities in the arena of Information Technology (IT) has empowered many businessmen to expand their business from limited regional geographical borders to global market and enabled consumers to shop anywhere anytime (Beaumont, 2022). The internet is being utilized in almost every field across the globe including education, entertainment, science and tourism etc. Apart from the said activities internet has provided a valuable tool for businesses to run business smoothly (Chawla & Kumar, 2022). Additionally, it has provided an easy access to interact with one another through platforms owned by the business that has not only reduce the running and operational cost, but has also enabled the business to run its activities in effective ways. Internet provides marketing convenience to sellers and buyers. Thus industries and sellers make use of internet to communicate with their customers and provide wide range of not only products but also services (Santo *et al.*, 2019). While, on the other hand buyers use internet due to provision of diversity of services such as availability of large range of products even before making buying decision and delivery of products at their doorsteps. It is suitable for many reasons as it avoids travelling, save time and resources (Dhir, 2020). There are several steps that can be helpful in achieving high end e-commerce results (Joseph, 2023). E-commerce could operate 24/7 without any disruption and irrespective of the tradition barriers, where consumers can access the product of their choice easily, order their product and payment can be done online or at the time of delivery (Bargavi *et al.*, 2022). Furthermore, e-commerce is

an untapped resource to strengthen economy in various parts of the world mostly in least developing countries (Kedah, 2023). E-commerce is an integral part of the macro and micro economics. It has changed the fate of many developed nations as e-commerce is representing the whooping figures of success across the globe (Dolfen *et al.*, 2023) However, there is dearth of research between the concepts discussed in paper. In this said study, the researcher's objective to conduct bibliometric analysis on e-commerce system success, evolution of the study, analyze the trends, limitations, gaps and future directions. This will be accomplished through bibliometric analysis to determine the quantitative information in the field. The research study will also generate a visual map to present an overall framework of the research field, present trends, its evolution and future trajectory. The following research questions will be addressed in this paper to achieve its goals.

2. Literature Review

The information systems have been adopted by many industries that has grasped the researchers' consideration to the various fields and dimensions of Information system success. Multiple number of studies and models have previously used to recognize significant dimensions. Previous studies show that assortment and attention of the said dimensions depend upon the nature of the designed system (Seddon *et al.* 1997; Peter *et al.*, 2008; Sun & Teng 2017). In addition to this, the IS model suggested by Delone & Mclean (1992) has received attention by the researchers as it provides the much needed dimensions of IS success. It has been widely used by the researchers to comprehend IS success in their desired fields and varied contexts (Delone & Mclean, 1992).

The prominent researchers in the field of IS success model are William H. DeLone and Ephraim R. McLean as both the researchers have contributed to the most accepted model of IS success model. Furthermore, the authors have tried their best to provide a comprehensive model in response to the questions raised up by Peter keen at International Conference on Information System Success. The authors had made multiple attempts over the years from 1992 to 2003 to classify key variables that make the model more comprehensive and adoptive.

They gave their first model in 1992 and the key dimensions were System quality, Information Quality, Usage, User Satisfaction, individual and organizational impacts; widely used by the

researchers in various fields. There are many studies that criticized different dimensions of IS Success measurement. Later on, it was suggested that service quality is an essential dimension for measuring IS success and should be part of the D&M model (Pitt et al., 1995). Work group effects should also be included in this model of success measurement suggested by social studies (Mayers et al., 1997; Ifaendo, 2006). It was also a critique on the use of the Delone and Mclean Model. Furthermore, it was also recommended that System Usefulness is also an accurate dimension as an alternative of System Usage or Use (Seddon, 1997). However, it was additionally claimed by Seddon, 1997 that System Usefulness drives from Information system and System Quality based on the criticism of renowned researchers, many empirical and conceptual studies modified dimensions of D&M model. After the extensive analysis built on Delone and Mclean Model over the period of ten years from 1992 to 2002 (Gable et al., 2003).

After more than a decade Delone & Mclean amended the existing model into an efficient advanced and updated IS Success model (Delone & Mclean, 2003). In addition to this, they claimed authentication of earlier model with the suggestions of more than three hundred applied Delone and Mclean Model for IS Success Model in diverse sets over the period of ten years from 1992 to 2003 in referred Journals. Furthermore, the response to the disparagement on first Delone and Mclean model, the researchers of the original model included Service Quality as a novel dimension of IS Model. There are five dimensions of Service Quality to measure it through an instrument. Parasuraman, *et al.*, 1988 argued about the different dimensions of service quality that are five in number are; assurance, empathy, responsiveness, reliability and tangibles.

3. Materials and Methods

The present research showed bibliometric Analysis of the literature review on e-commerce system success by extracting the data from database Web of Science (WOS). In this current study, the authors dig out articles from 2003 to 2023, that involved the terms, "Information System", "E-Business", "E-Commerce", "Business Finance", "Management Science", "Business or Management" and "Operation Research Management" in the title as key words. In this research bibliometric analysis has applied through VOSviewer software for different types of analysis like co-citation analysis, bibliometric coupling analysis, co-authorship

by country analysis, co-occurrence analysis and citation analysis. The time duration in this study is from 2004-2023.

The following figure shows the sequence that how to obtain data from database and how it has been sorted. At first hand, only the original papers and reviews are included. The book chapters, books, editorial material online incomplete publications, conference proceeding papers are excluded. The articles that are not in English language are also excluded (Lee et al., 2019). Furthermore, all the irrelevant articles were excluded. A sum of 500 articles are added in the final study that are more relatable to the current study.

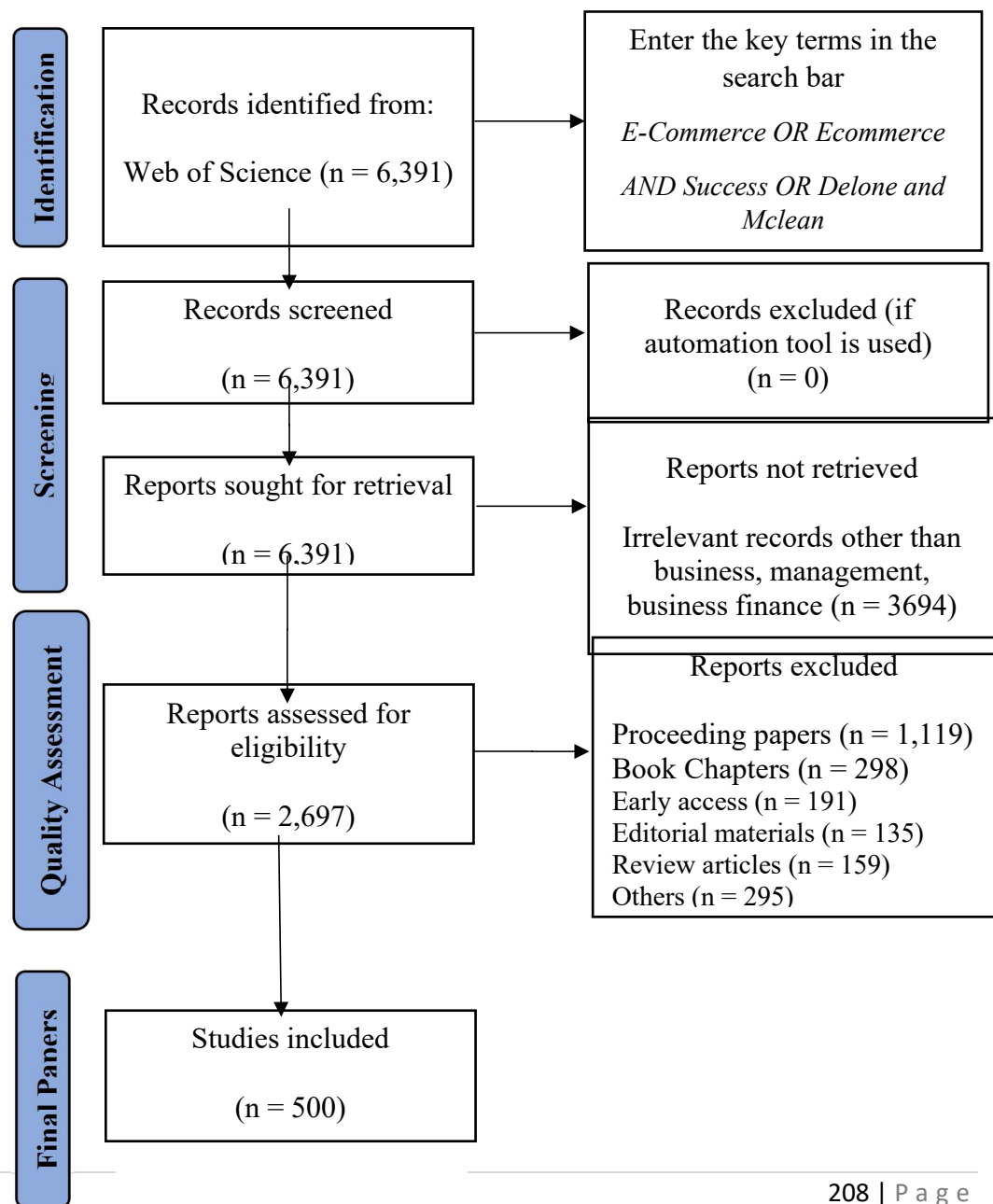


Figure 1 : PRISMA Flowchart

4. Results

The present study unveiled numerous key trends in literature on e-commerce, Delone and Mclean and information system. There is increasing importance in the relationship between e-commerce and information system, while on the other hand many studies suggested that the combination can be used with new theories of augmented reality and psychological theories. The analysis of the current study has identified numerous gaps in the literature. For example, there is room for theoretical integration with the current study that ultimately help the economy of the country at large.

5. Co-Citation Analysis

The method used in bibliometric analysis as co-citation analysis is commonly used to discover the rational relationship between the most cited authors in the similar area of research (Pilkington & Teichert, 2006). In addition to this the most frequently cited documents that are co-cited means that these documents are almost same in the same research field (Culnan, 1987). The table no 1 shows the top ten co-cited authors in the literature of e-commerce system success. The data was extracted from WOS. The results indicate that Wang, Y is the top cited author with 55 citations and 254 link strength.

Ranks	Keyword	Citations	Total link Strength
1	Wang, Y	55	254
2	Gefen, D	42	416
3	OECD	36	196
4	Zhu, K	35	293
5	Hair, Jf	32	248
6	Mcknight, Dh	31	375
7	Venkatesh, V	31	249
8	Turban, E	30	131
9	Statista	29	103
10	Wang, Y	55	254

Source: Web of Science

Table 1: Top 10 co-cited authors

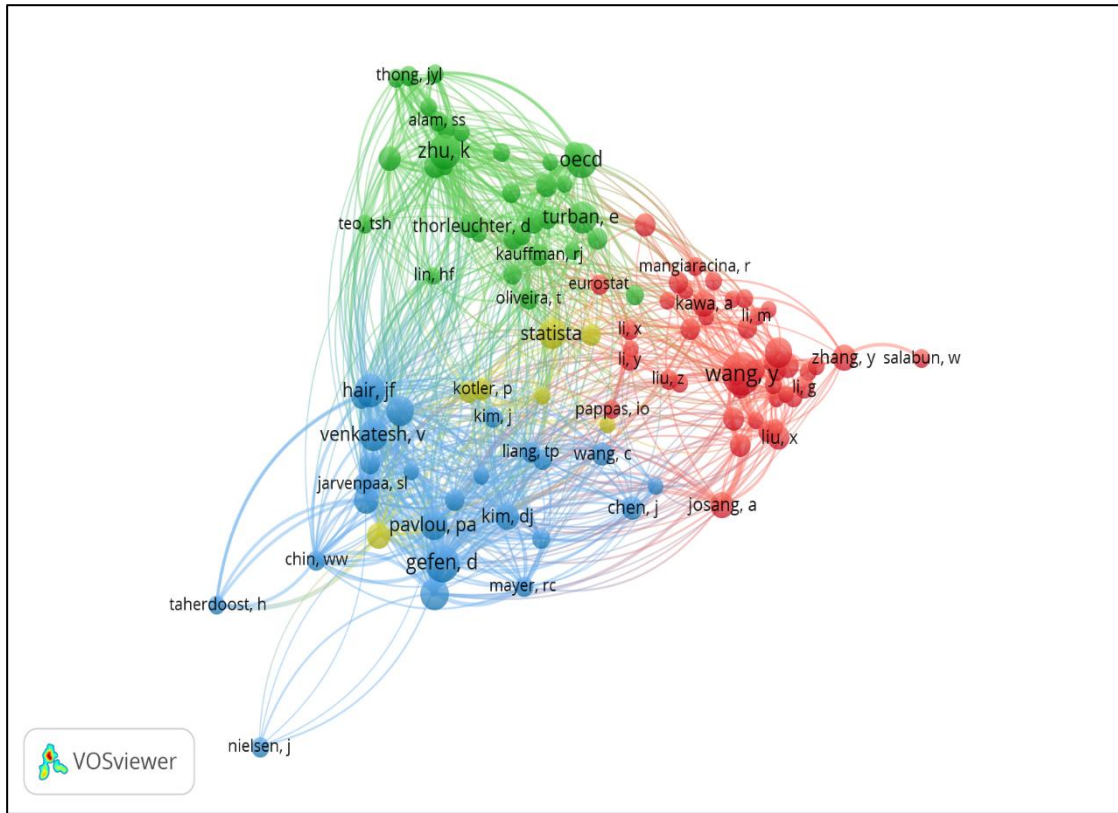


Figure 2: Co-Citation Analysis

The above mentioned figure shows the visualization of network of top ten co-cited authors. The nodes represent the authors and the thickness of the node is linked with the strength of co-citation relationship. Thus, the co-citation analysis can give the in-depth and insight intellectual overview of the overall anatomy of filed and the top cited authors who contributed a lot in the said research field. It can also provide research gaps, current trends, important themes also provide the directions for future research.

6. Co-Occurrence Analysis

Co-occurrence analysis defined as the frequency of occurrence of keywords in the literature. The below mentioned table shows the top ten keywords that are commonly used in the literature of e-commerce system success based on the WOS database. The most frequent key word is E-Commerce that occurred 190 times and total link strength is 172.

Ranks	Keywords	Frequency	Total Link Strength
1	E-Commerce	190	172
2	Electronic Commerce	24	42
3	SMES	18	24
4	Machine Learning	14	29
5	Trust	12	18
6	Customer Satisfaction	9	12
7	Online Shopping	9	9
8	B2C E-Commerce	8	5
9	Business	8	25
10	E-Commerce	190	172

Source: Web of Science

Table 2: Top 10 frequently used keywords

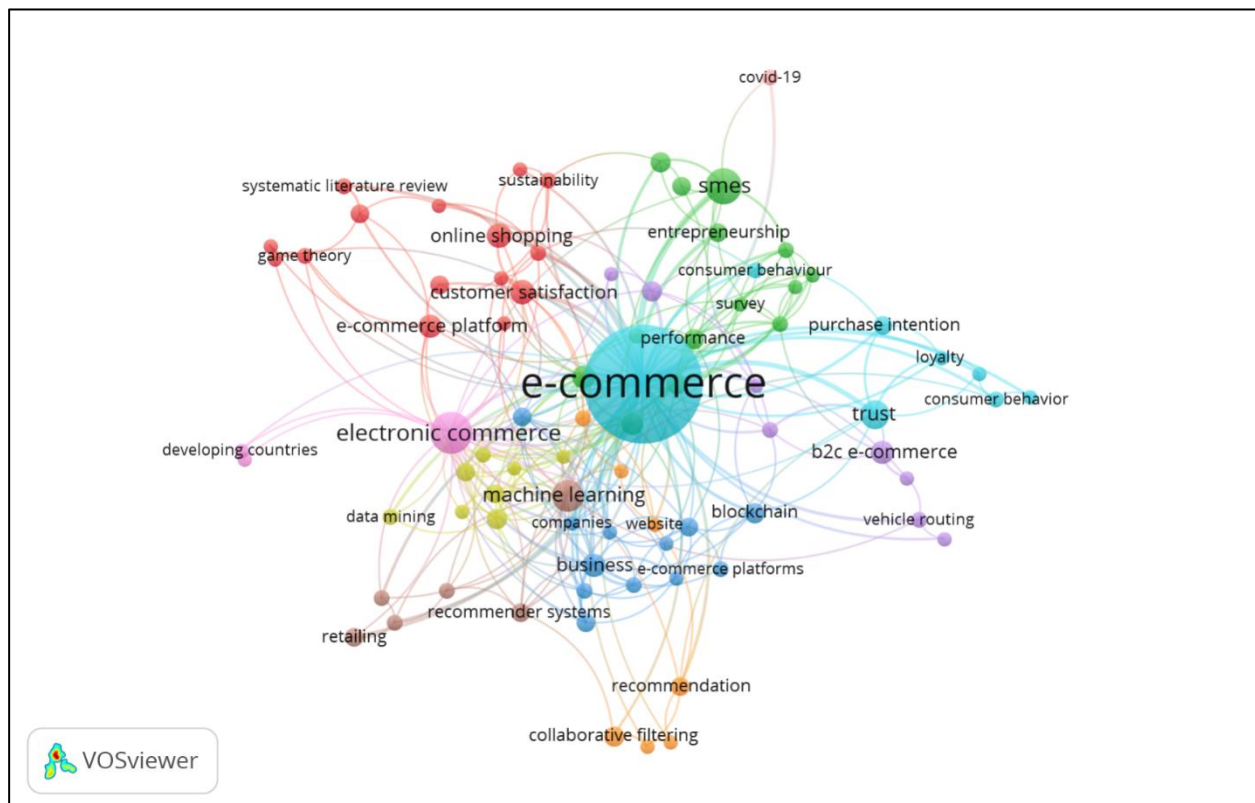


Figure 3: Co-Occurrence of key words Analysis

The above mentioned figure presents the visualization of co-occurrence of the key words and the relationship of frequently occurred keywords. Every word is represented by node and its thickness shows the frequency of co-occurrence of key words. The clusters show that these words are closely linked with the research field and literature on e-commerce system success. Co-occurrence visual map helps to visualize the relationship between the key words and in-depth analysis to help in current trends and future directions.

7. Citation Analysis

The citation analysis in the bibliometric analysis is defined as the most cited document in the said research field. The below mentioned table displays the top ten most cited documents in the field of E-Commerce system success based on the WOS database. The top cited document is Tsay (2004) with 654 as total number of citations. Kim (2009) is the second top most cited document with 454 as total no of citations.

Ranks	Keywords	Citations	Total link Strength
1	Tsay (2004)	654	3
2	Kim (2009)	454	3
3	Fang (2014b)	366	5
4	Moe (2004)	263	4
5	Palvia (2009)	193	5
6	Kshetri (2007)	123	3
7	Huang (2004)	121	2
8	Zhao (2016)	112	3
9	Kumia (2015)	109	2
10	Tsay (2004)	654	3

Source: Web of Science

Table 3: Top ten cited documents

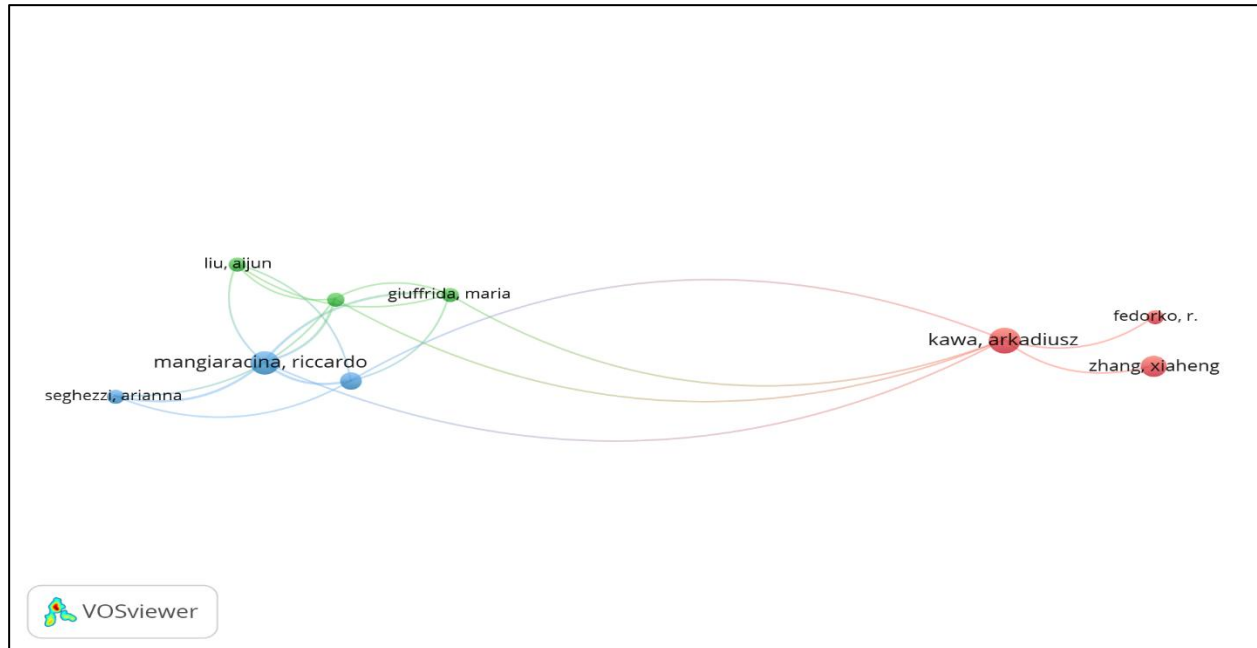


Figure 4: Citation Analysis

The above mentioned figure shows the highly sighted documents that made significant contribution in the field of e-commerce system success. The citation analysis overall provides the most influential documents in literature in the said field. Through analyzing the content of the most cited documents, the researchers can provide detailed overview of the intellectual structure of the said field.

8. Co-Authorship by Country Analysis

Co-authorship by country analysis depicts the collaborations among researchers from different country (Kalhor *et al.*, 2022). The below mentioned table shows the top ten countries and co-authored documents in the literature on e-commerce system success based on the WOS database. The results show that the top ten countries in co-authored documents are china with whopping number of co-authored documents of 192 followed by USA 54, England 38, Poland 26 and Australia 24 etc. All the above mentioned countries are active in research collaborations in the said field and interestingly all are geographically diverse. Furthermore, the presence of diverse countries shows that the research contribution comes from wide range of countries and regions that promote diversity and generalizability.

Ranks	Keywords	Documents	Total link Strength
1	China	192	48
2	USA	54	45
3	England	38	4
4	Poland	26	25
5	Australia	24	8
6	India	21	9
7	Malaysia	20	6
8	Spain	16	6
9	Italy	14	48
10	China	192	45

Source: Web of Science

Table 4: Top ten co-authorship by countries

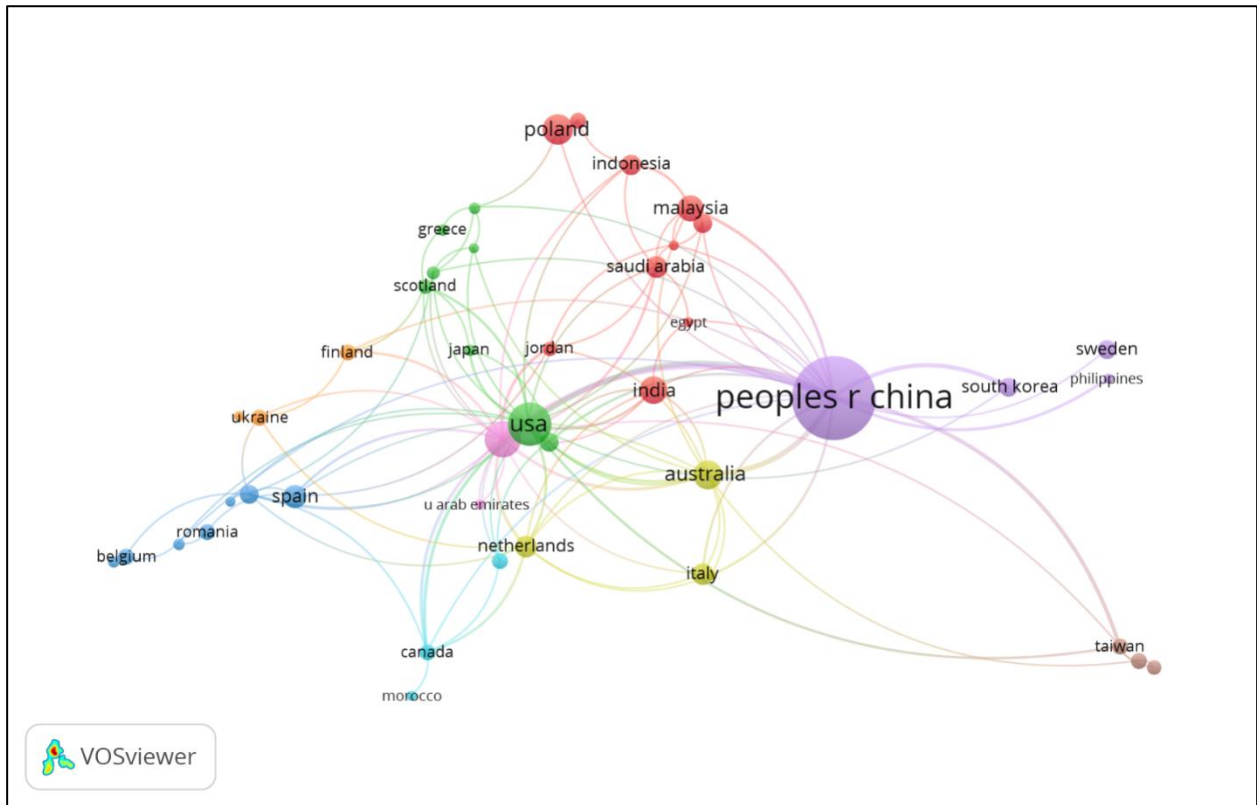


Figure 5: Co-authorship by country analysis

The above mentioned figure shows the visualization of co-authorship by top countries analysis. This depicts the collaboration and interest of researchers in the same field from different parts of the world and regions that promotes diversity and enhance generalizability. The strong nodes show the most productive and active countries in research collaborations. This can foster the further research collaborations among researchers from different parts of the world.

9. Bibliographic Coupling Analysis

In bibliometric analysis, there is bibliographic coupling analysis that could be defined as the relation between documents established on shared references (Najera *et al.*, 2020). The below mentioned table shows the top ten most cited authors in literature of e-commerce based on WOS database. Yang, Li is the most cited author with 161 citations and total link strength is 8. This depicts that Yang, Li has made significant contribution in the field of e-commerce.

Ranks	Keyword	Citations	Total link strength
1	Yang, Li	161	8
2	Wang, Xuequn	90	35
3	Liu, Wei	81	102
4	Mangiaracina, Riccardo	78	729
5	Kotabe, Masaaki	62	18
6	Perego, Alessandro	59	466
7	Liu, Zheng	55	127
8	Zhao, Yuanjun	55	127
9	Bacik, Radovan	54	79
10	Kawa, Arkadiusz	45	76

Source: Web of Science

Table 5: Top 10 cited authors

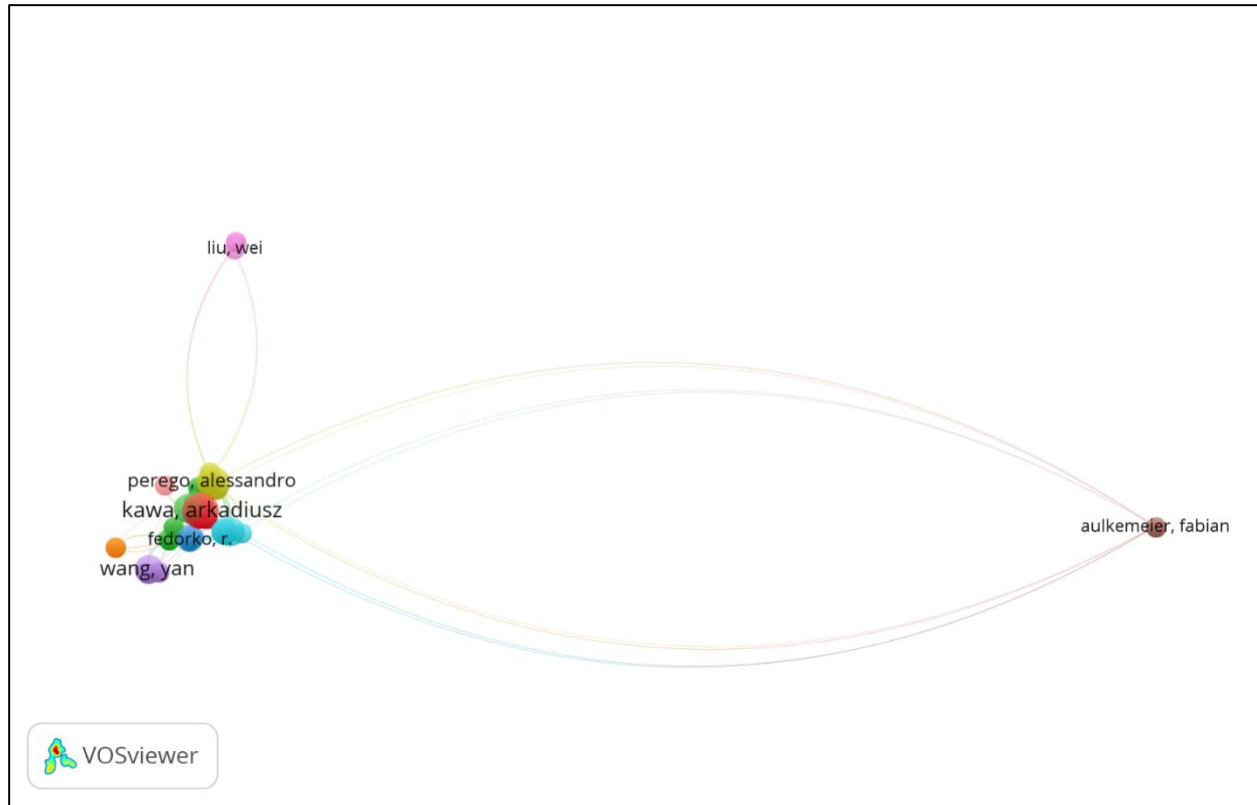


Figure 6: Bibliographic coupling analysis

The above mentioned figure shows highly cited authors which include Yang, Li, Wang, Xuequn, Liu, Wei, Mangiaracina, Riccardo and Kotabe, Masaaki etc. These researchers made significant contribution in the said field as depicted in the network visualization. The most cited authors and their relationship with each other provide better understanding and in-depth overview that ultimately help in future research directions.

10. Research Implication

E-Commerce, information system and Delone and Mclean are three important themes that have been extensively used in the literature that are inter-related. The most citations, co-cited authors and key term analysis provide inside analysis of the field that can help in future research studies. The co-authorship country analysis depicts that there are several key authors from different countries joined their hands and contributed significantly to the field of e-commerce system success. Their collaborations in the field of research can guide the development of theory that will be helpful in future research.

11. Conclusion

The present research study highlights the evolution of study, presents trends in the field e-commerce and information system through bibliometric analysis using VOSviewer software. Many bibliometric analyses such as citation analysis, co-authorship by country analysis, co-occurrence analysis and bibliometric coupling analysis were implemented to analyze the research articles extracted from Web of Science over the period of 2004-2023. The results extracted from this research study can help to develop theory in the said field. The present research study has some limitation as article extracted from WOS database while other databases were ignored. Furthermore, only published articles were taken into account. The results provide the detailed in-depth and insight overview that will help the researchers to understand the current trends and future instructions in the field of e-commerce system success.

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