E-BOOKS IN ACADEMIC LIBRARIES: A BIBLIOMETRIC ANALYSIS BASED ON THE SCOPUS DATABASE

SS Johoran[1]

Abstract

There is a need to identify the use and impact of e-books in academic libraries. The study aims to map the bibliometric patterns of the research publications published on e-books in academic libraries on the Scopus Database. Objectives were to examine the authorship pattern, map the year-wise distribution of papers, determine the degree of author collaboration, identify citation trends, identify the most productive journals on the study topic, and map the keyword occurrence. A bibliometric analysis was carried out on research publications on the Scopus database, which discusses e-books in academic libraries. The search was performed without indicating a specific period. The search string was "E-books" AND "Academic Libraries" and it was searched through titles on 6th March 2025. Publish or Perish Software was used to extract the research publications from the Scopus database. Microsoft Excel and VOS Viewer applications were used for data analysis and visualization. By adhering to the PRISMA flow chart 48 research articles were selected for the study. The study revealed that the majority of the research articles were by multi-authors. The first research article on e-books in academic libraries was published in 2001. The years 2012 and 2015 have been the most productive years with the highest number of publications. There is a declining trend in the publications of e-books in academic libraries. The results indicate that there is a high degree of author collaboration. The most trending research topic is the usage and user attitudes toward e-books in academic libraries. The most cited research paper was single-authored with 195 citations. The authors from the United States of America, Canada, and the United Kingdom have contributed to the top five most cited research publications. The Journal "Library Collections, Acquisition and Technical Services" is the most productive and recognized journal with a higher average of citations per article. The terms "Academic Library" and "e-book" are mostly used keywords in the selected research articles. This assessment would be a valuable resource to the scientific community, funding agencies and policymakers. This study may help those who wish to map the bibliometric patterns of research articles.

Keywords: Academic Libraries, Bibliometric, E-books, Scopus database

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[1]Library, University of Colombo, Sri Lanka.

Email: shabnam@lib.cmb.ac.lk https://orcid.org/0000-0003-2634-1682

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Introduction

E-books have been most prominently used in academic libraries in recent years. During the Covid-19 pandemic, most of the academic libraries were closed and students were unable to access print books, and they had to use e-books for their academic activities. As per the study conducted by Kodama, et al. in 2021 on the usage of e-books in academic libraries during the COVID-19 Pandemic, their study revealed that the pandemic has evoked new needs for e-books in certain fields. Academic libraries around the world consider e-books when developing their collection. E-books are similar to print books, but for a traditional print book, the medium is paper, whereas an e-book is the digital representation of the printed material (print book), the medium can vary from a (laptop) computer to a digital e-book reader, PDA, mobile phone or even (through a desktop printer) traditional paper (Velde and Ernst, 2009, as cited by Kolle et al., 2018, p.119).

Bibliometric analysis will make it possible to know the past, understand the advances of the investigations, and enhance future research. Bibliometric analysis can provide an overall examination and quantitative viewpoint of a particular research topic supported by a large amount of literature information (Kolle et al., 2018, p.120). Moreover, the research trends and popular issues in the study fields may be identified by employing such a method. The resulting information is also useful in decision-making (Albort-Morant et al., 2017, p. 4). A careful evaluation of periodical literature may indicate a complete picture of the discipline, the profession with which it is represented, and everything connected with it (Davarpanah & Aslekia, 2008). Bibliometric analyses helps to map the knowledge landscape by revealing the evolution of research fields and identify emerging areas of interest. It further provides quantitative measures of research productivity. The research issue was the need to identify the research trends of e-books in academic libraries.

Objectives

The study aims to map the bibliometric patterns of the research publications published on e-books in academic libraries.

The objectives of this study were;

1) To examine the authorship pattern
2) To map the year-wise distribution of papers
3) To determine the degree of author collaboration
4) To identify citation trends
5) To identify the most productive Journals on the study topic
6) To map the keyword occurrence

Materials and Methods

A bibliometric analysis was carried out on research publications on the Scopus database, which discusses e-books in academic libraries. The Scopus database was selected for the present study since it is a peer-reviewed, indexed database with a large collection of multi-disciplinary publications. The search was performed without indicating a specific period. The search string was “E-books” AND “Academic Libraries”. It was searched through the titles of the articles on 6th March 2025, since the title of an article indicates the content of an article. Publish or Perish Software was used to extract the research publications from the Scopus database. Microsoft Excel and VOS Viewer applications were used for data analysis and visualization. A total of 65 articles were retrieved. Duplicates were removed, and 64 articles were further evaluated. Only research articles were selected and Books, Book Chapters, Conference Papers, Notes and Reviews were excluded from the study (Table 1). As the purpose of the study was to map the bibliometric patterns of research on e-books in academic libraries, the researcher has considered only research articles for the present study.

Table 01 :Categorization of Publications

Document Type	No. of Publications
Article	48
Book	1
Book Chapter	2
Conference Paper	4
Note	1
Reviews	8
Total	**64**

The PRISMA flow chart suggested by Page et al. in 2021 have been used to select the articles for further analysis (Fig. 1).

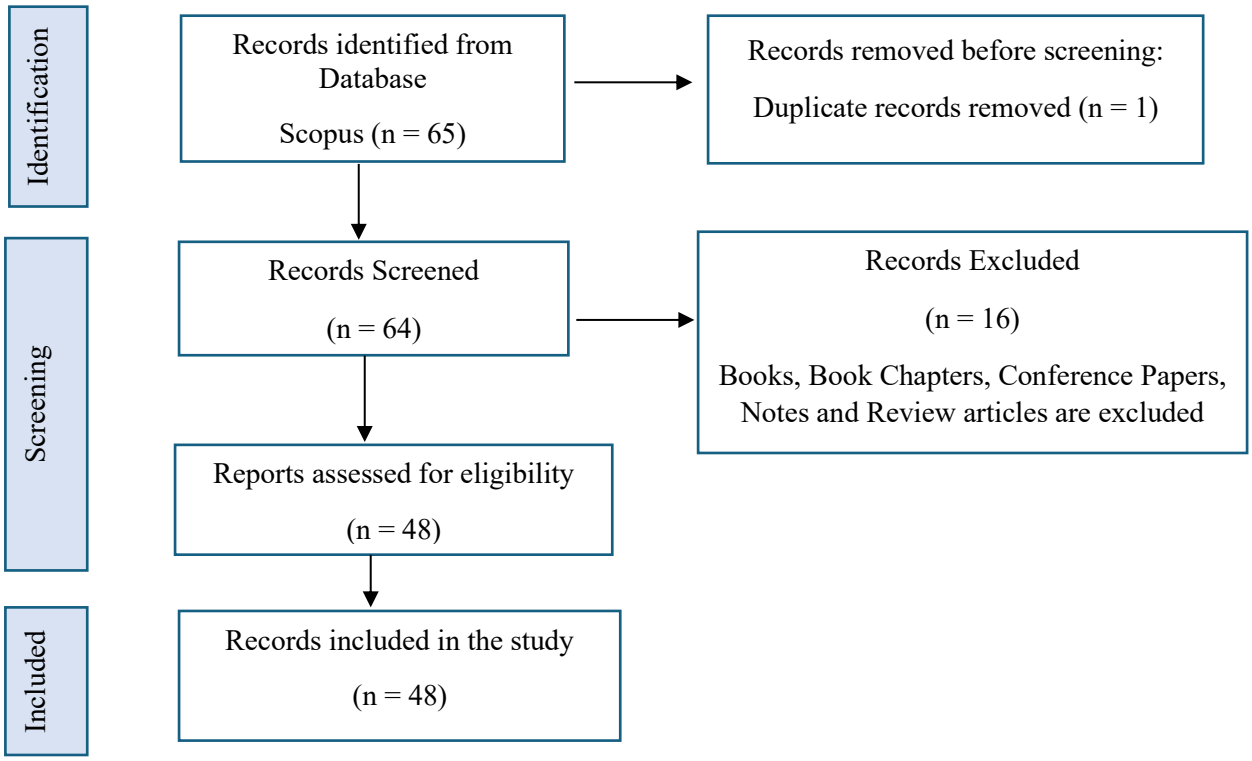

Figure 01: PRISMA Flow Diagram (Page et al. 2020) For Article Selection Process

Results and Discussion

The first objective of the study was to examine the authorship pattern. Table 2 indicates that in total 52% of the articles were multi-authored. Out of 48 articles, the highest number of articles, which is 23 research articles (48%), were single-authored publications followed by 16 research articles (33%) published by two authors. Only 2 research articles were published by four authors. This concludes that during the study period, most of the research publications on the above subject were multi-authored. The finding of the present study contrasts with similar literature available on authorship patterns conducted in bibliometric studies. A study conducted on Bibliometric analysis on the "Electronic Library" Journal by Hussain, et al. in 2011 revealed that most of the publications are single authored and it means there is no well-established research groups on the subject area.

Table 02 : Authorship Pattern

Number of Authors	Number of Research Articles	%
Single	23	48
Two	16	33
Three	7	15
Four	2	4
Total	**48**	**100**

Fig. 2 indicates the authorship pattern by year. It shows that the highest number of single-authored articles (3) was published in 2014. The highest number of multi-authored articles (4) were published in 2012 and 2015 and those years are significant in producing both single-authored and multi-authored articles.

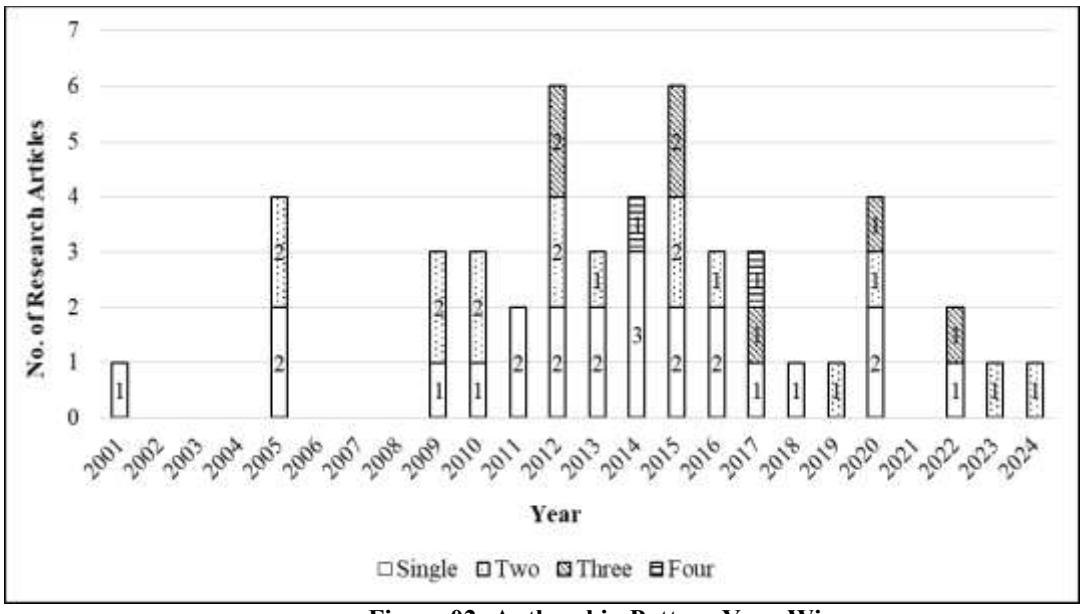

Figure 02: Authorship Pattern Year-Wise

The second objective of the study was to map the year-wise distribution of papers. As per Fig. 3, the first research article on e-books in academic libraries was published in the year 2001 in the Scopus database. There were no articles published on e-books in academic libraries in the years 2002, 2003, 2004, 2006, 2007, 2008, and 2021. The highest number of research articles (6) were published in 2012 and 2015.

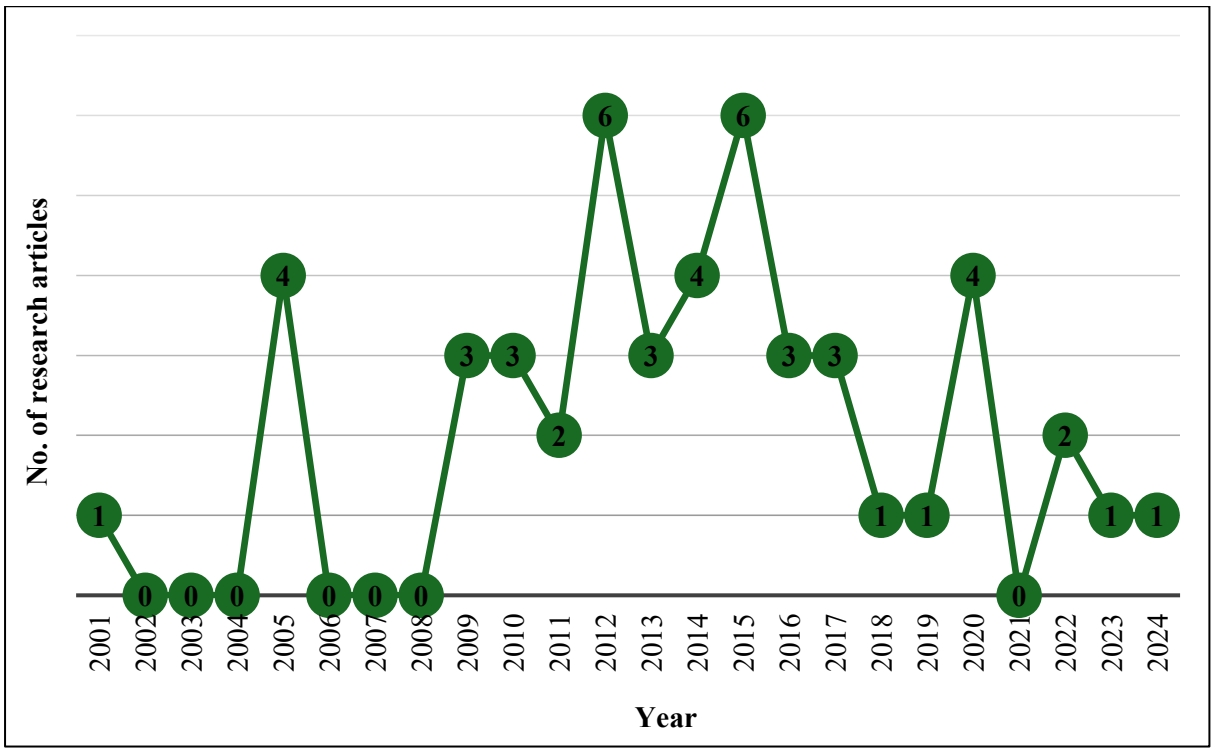

Figure 03: Year-Wise Distribution of Papers

The data indicates a publication span of 24 years from 2001 to 2024. For the study purpose, 24 years were divided into 3 equal groups. The publication trends of each of the three time periods are illustrated in Fig.4. From 2001 to 2008, the first period there were only 5 research articles published on the study topic. From 2009 to 2016 it gradually increased and 30 articles were published during that period. It has been the most prominent period in research publications on e-books in academic libraries and it might be the hot topic for researchers in that period. The literature reveals that in University of Auckland Library, in 1999 there were three e-book titles and it has increased to 30,161 titles in the year 2009 (Ksenija, 2011 as cited by Kolle, et al. 2018, p.121).

From 2017 to 2024 the number of publications has been gradually decreasing and only 13 articles have been published during that period. It clearly illustrates that there is a decline in the research publications on e-books in academic libraries.

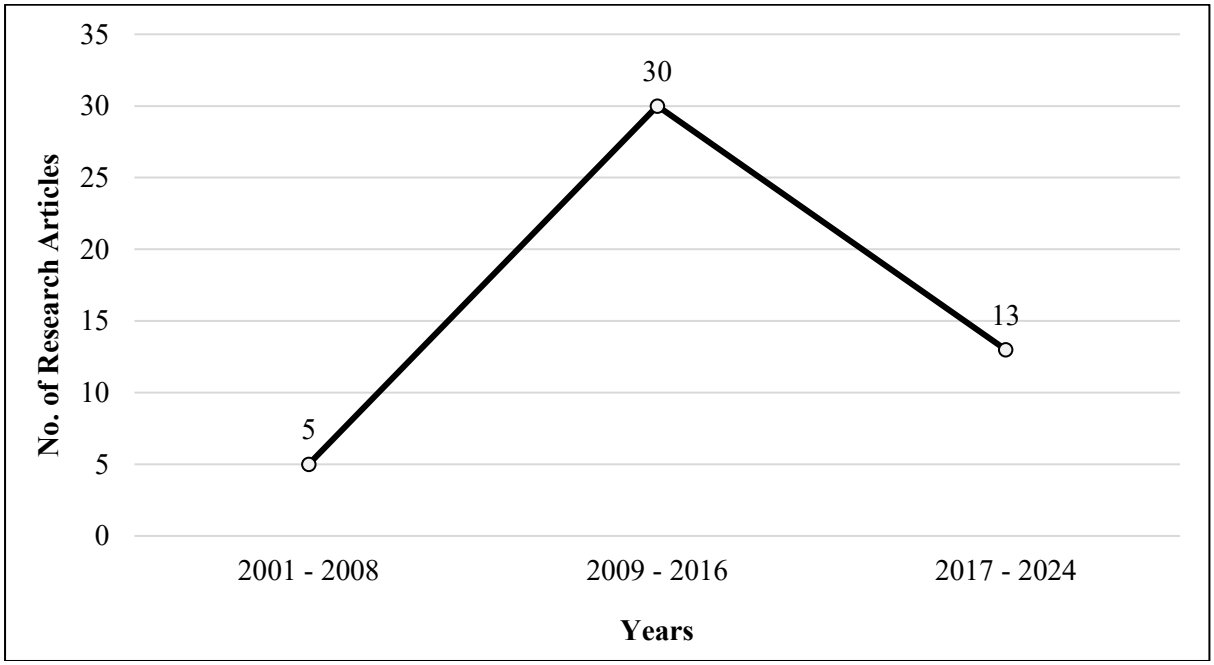

Figure 04 : The Trend of Articles Published from 2001-2024

The third objective of the study was to determine the degree of author collaboration. The formula suggested by Subramanyam in 1983, was utilized to measure the degree of collaboration between authors. The formula is as follows.

$$DC = \frac{Nm}{Nm + Ns}$$

Where;
DC = Degree of Collaboration
Nm = Number of multi-authored papers
Ns = Number of single-authored papers

Table 3 indicates the degree of author collaboration. The DC of authors ranges from 0.00 to 0.67. The average DC is 0.52 from 2001 to 2024 and it clearly shows that there was a high level of collaboration between authors.

Table 03 : Degree of Author Collaboration

Year	Single	Multiple	Degree of Collaboration (DC)
2001	1	0	0.00
2002	0	0	0.00
2003	0	0	0.00
2004	0	0	0.00
2005	2	2	0.50
2006	0	0	0.00
2007	0	0	0.00
2008	0	0	0.00
2009	1	2	0.67
2010	1	2	0.67
2011	2	0	0.00
2012	2	4	0.67
2013	2	1	0.33
2014	3	1	0.25
2015	2	4	0.67

2016	2	1	0.33
2017	1	2	0.67
2018	1	0	0.00
2019	0	1	1.00
2020	2	2	0.50
2021	0	0	0.00
2022	1	1	0.50
2023	0	1	1.00
2024	0	1	1.00
Total	**23**	**25**	**0.52**

The fourth objective of the study was to identify the citation trends. Table 4 indicates the citation trend of research articles published over the years. The total 48 research publications have received 896 citations over the years and the average citation per article is 18.67. The highest average citation per article (75.33) was in the year 2009, followed by the year 2005 (37). The lowest citations (1) are for the recently published articles in 2023 and 2024. Literature reveals that those articles need time to be referred to and, therefore have the lowest citation rate (Kolle, et al. 2018). The three research articles published in the year 2009 have been the most productive research articles with 226 total citations. The 3 publications were on the usage and user attitudes towards e-books in academic libraries. It denotes that the most popular research trend on e-books in academic libraries is about the usage and user attitudes toward e-books.

Table 04: Citation Trend of Research Articles over the Years

Published Year	Total Research Articles	Total Citations	Average Citations per Article
2001	1	24	24
2002	0	0	0
2003	0	0	0
2004	0	0	0
2005	4	148	37
2006	0	0	0
2007	0	0	0
2008	0	0	0
2009	3	226	75.33
2010	3	94	31.33
2011	2	27	13.5
2012	6	78	13
2013	3	96	32
2014	4	73	18.25
2015	6	38	6.33
2016	3	16	5.33
2017	3	25	8.33
2018	1	9	9
2019	1	0	0
2020	4	39	9.75
2021	0	0	0
2022	2	1	0.5
2023	1	1	1
2024	1	1	1
Total	**48**	**896**	**18.67**

Table 5 elaborates on the details of the top five most cited research articles published from 2001 to 2024. As per Table 5, the most cited research paper was a single-authored paper titled, "E-book usage in an academic library: User attitudes and behaviours", published in the year 2009 with a total of 195 citations. Authors from countries such as the United States of America (2), Canada (2), and the United Kingdom (3) have contributed to the top five most cited research publications.

Table 05: Details of Most Cited Papers

#	Title	Publication Year	No. of Authors	No. of Citations	Country of the Author
1	E-book usage in an academic library: User attitudes and behaviours	2009	1	195	The United States of America
2	E-books in academic libraries: Challenges for acquisition and collection management	2013	1	77	The United States of America
3	E-books in academic libraries	2005	2	70	The United Kingdom
4	E-books revisited: Surveying student e-book usage in a distributed learning academic library 6 years later	2010	2	50	Canada
5	E-books in academic libraries: an international overview	2005	1	43	The United Kingdom

The fifth objective of the study was to identify the most productive journals on the study topic. The average citations per article of a particular journal indicate the impact of its research articles. Table 6 denotes the most impactful journals in which at least two research articles have been published on e-books in academic libraries and the average number of citations per article of a particular journal. The Journal "Library Collections, Acquisition and Technical Services" has the highest number of publications (5) relevant to the study topic, and it is the most recognized and productive journal with an average of 46 citations per article. Though The Journal "Portal" has 2 articles published on the study topic, it has an average of 40 citations per article, followed by "New Review of Academic Librarianship" (37.5), "Electronic Library" (27.5), "Journal of Librarianship and Information Science" (21.5), and "New Library World" (21).

Table 06 : Most Productive Journals on the Study Topic

Journal Title	Total Research Articles	Total Citations	Average Citations per Article
Library Collections, Acquisition and Technical Services	5	230	46
Portal	2	80	40
New Review of Academic Librarianship	2	75	37.5
Electronic Library	4	110	27.5
Journal of Librarianship and Information Science	2	43	21.5
New Library World	2	42	21
College and Research Libraries	2	26	13
Serials	2	26	13

Journal of Academic Librarianship	2	12	6
Journal of Electronic Resources Librarianship	2	11	5.5
Collection Management	2	9	4.5
Proceedings of the Association for Information Science and Technology	2	1	0.5

The sixth objective of the study was to map the keyword occurrence. Fig. 5 illustrates the co-occurrence of keywords in the selected research articles. Analysis revealed that "Academic Library" and "e-book" emerged as the most frequently utilized keywords, underscoring their central role in the extant literature. These core terms were closely followed by "Challenge/s," "acquisition", "perception", "marketing", "e-book vendor", and "e-book use". This distinct keyword distribution signifies that there are publications which discuss diverse aspects of e-books within the academic library context. The publications are focused on e-book acquisition strategies for academic libraries, e-book usage patterns in academic libraries, challenges in e-book use, perception of e-book use in academic libraries, the impact of e-books on academic libraries, e-book marketing in academic libraries and e-book surveys in academic libraries. Further, these prominent keywords can be clustered into seven major areas. The first cluster includes publications that discuss the challenges in the use, discovery, and access of e-books within the academic library context. The second cluster indicates publications which discuss the usage of e-books in academic libraries. The third cluster includes publications which discuss the perception of the use of e-books in academic libraries. The fourth cluster elaborates marketing of e-books in academic libraries. The fifth cluster denotes challenges with the e-book vendors in the context of academic libraries. The sixth cluster denotes publications on e-book surveys conducted in academic libraries. The seventh and final cluster denotes publications on the acquisition of e-books in academic libraries.

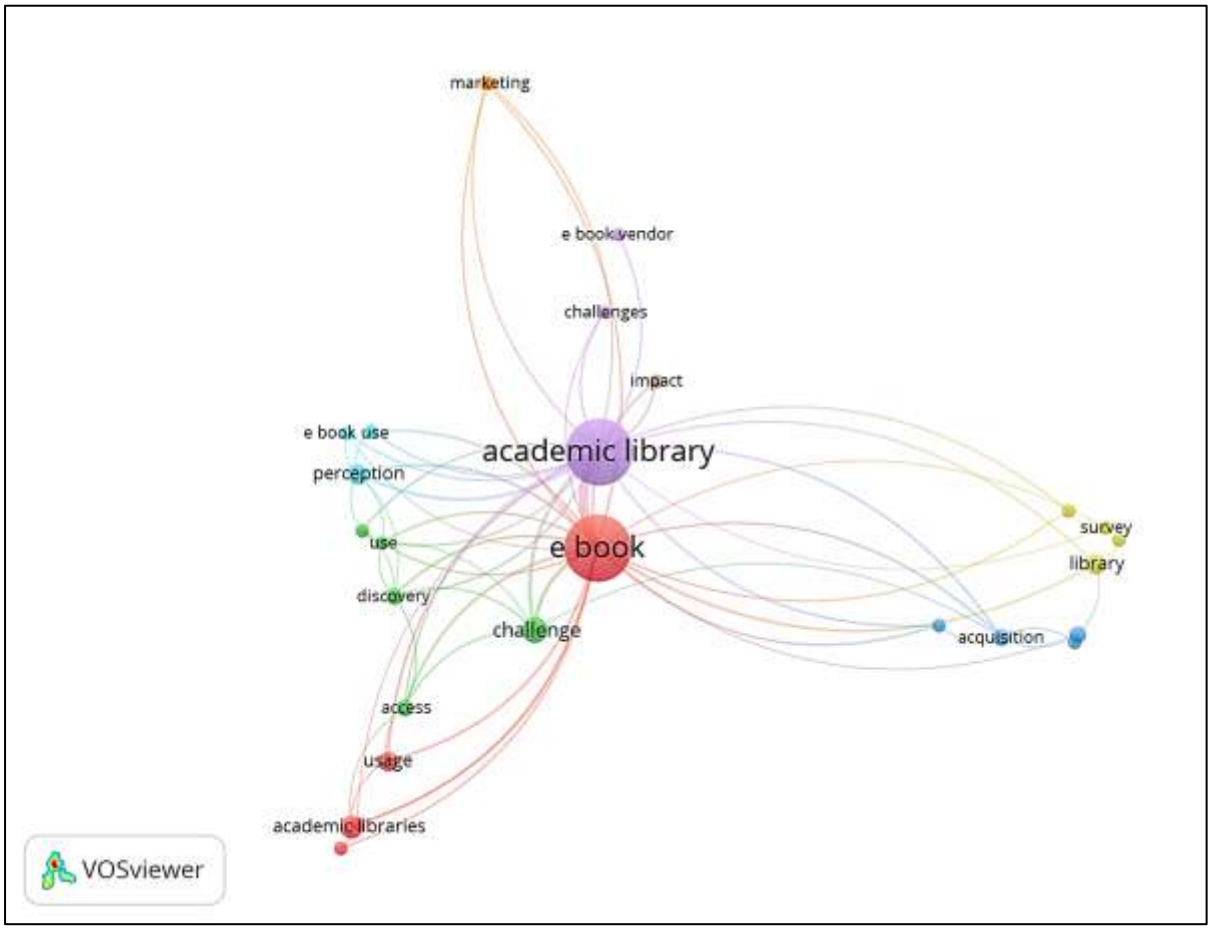

Figure 05 : Co-occurrence Map of Keywords

Conclusion

The present study mapped the bibliometric patterns of research articles published in the Scopus database on e-books in academic libraries. This analysis explores that the majority of the research articles are by multi-authors. The first research article on e-books in academic libraries was published in 2001 in the Scopus database. The data

indicates a publication span of 24 years from 2001 to 2024. The years 2012 and 2015 have been the most productive years with the highest number of publications on the relevant subject. The degree of collaboration indicates a high degree of author collaboration. During the study period from 2001, there were seven years in which not a single article on e-books in academic libraries has been published in the Scopus database. The most prominent period in the publications related to e-books in academic libraries was from 2009 to 2016. There is a decline in the number of research publications conducted on e-books in academic libraries. The average citation per article for the total 48 articles is 18.67. The most trending research topic is the usage and user attitudes toward e-books in academic libraries. The most cited research paper was single-authored with 195 citations so far. The United States of America, Canada, and the United Kingdom have been the most productive countries in research on e-books in academic libraries. The "Journal Library Collections, Acquisition and Technical Services" is the most recognized and productive journal in publishing articles on the study topic with the highest average of citations per article. The terms "Academic Library" and "e-book" are mostly used keywords in the selected research articles.

This assessment would be a valuable resource to the scholarly community since they could incorporate the findings of the present study to bridge the knowledge gap. It would be further useful for the funding agencies since the data can be used to evaluate grant proposals and assess the potential impact of the funded research. Finally, it would be useful for policy makers, in identifying the research strengths and weaknesses in their strategic planning. Further, this study may help those who wish to map the bibliometric patterns of research articles.

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