

# Understanding the Digital Marketing Knowledge Network: A Co-authorship, Co-occurrence and Co-citation Analysis

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## ABSTRACT

*This study conducts a bibliometric analysis of digital marketing research using Scopus data and VOSviewer for network visualisation. Two thousand six hundred sixty-seven records were analysed to identify key authors, institutions, countries, research themes, and citation patterns. The co-authorship analysis highlights Heikki Karjaluoto, Jennifer Rowley, and Yogesh K. Dwivedi as influential authors, with strong institutional collaborations in Jordan, the UAE, and Finland. The United States and the United Kingdom lead in citation impact, while India has the highest research output but lower citation influence. "Digital Marketing," "Social Media," "Artificial Intelligence," and "Digital Transformation" emerge as dominant research themes. Philip Kotler, Dave Chaffey, and Yogesh K. Dwivedi are among the most frequently cited scholars. The Journal of Business Research and Marketing is a key source shaping the field. Findings emphasise the need for stronger international collaborations and interdisciplinary research. This study offers valuable insights for digital marketing scholars, practitioners, and policymakers.*

**KEYWORDS:** Digital Marketing, Co-authorship, Co-occurrence, Co-citation, Network Analysis, Network Visualisation, VOSviewer.

## 1. INTRODUCTION

The rapid expansion of digital technologies has significantly transformed marketing practices, leading to the emergence of digital marketing as a dominant field in academia and industry. Digital marketing integrates various online platforms, including social media, search engines, email marketing, and artificial intelligence-driven strategies, to enhance consumer engagement and brand visibility (Chaffey & Ellis-Chadwick, 2019). With the rise of data-driven decision-making, businesses increasingly rely on digital tools to optimise marketing campaigns, personalise consumer interactions, and measure performance metrics more effectively (Tiago & Veríssimo, 2014). Consequently, scholarly research in digital marketing has grown substantially, leading to a vast body of literature that explores its various dimensions, including consumer behaviour, technological advancements, and strategic marketing applications (Dwivedi et al., 2020).

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Bibliometric analysis is a powerful approach to systematically examining research trends, influential authors, and scholarly collaborations in a field (Zupic & Čater, 2015). By leveraging bibliometric techniques such as co-authorship analysis, keyword co-occurrence analysis, and co-citation analysis, researchers can identify key contributors, research clusters, and the intellectual foundations of digital marketing (Donthu et al., 2021). Co-authorship analysis provides insights into collaborative networks among scholars and institutions, highlighting the most influential researchers and their connections (Kumar, 2020). Keyword co-occurrence analysis helps identify recurring themes and emerging topics, offering a comprehensive overview of the evolving research landscape (Lamberton & Stephen, 2016). Meanwhile, co-citation analysis reveals the intellectual structure of the field by examining how frequently two documents are cited together, shedding light on the most impactful studies (Verhoef et al., 2017).

Despite the growing body of research in digital marketing, there is a need to systematically map the field's evolution and assess the contributions of various scholars, institutions, and countries. Previous bibliometric studies have primarily focused on general marketing or social media research, with limited emphasis on the broader scope of digital marketing as a discipline (Kaplan & Haenlein, 2010). This study aims to bridge this gap by conducting a comprehensive bibliometric analysis using data extracted from the Scopus database. By analysing the scholarly landscape of digital marketing, this study contributes to a better understanding of the field's evolution, research trends, and collaborative networks. The findings offer valuable insights for researchers, practitioners, and policymakers interested in digital marketing's future directions.

### **2. OBJECTIVES**

- To analyse the authorship and collaboration networks in digital marketing research.
- To assess the intellectual structure of digital marketing research through citation and co-citation analysis.
- To visualise and interpret scholarly networks using bibliometric mapping tools
- To explore emerging research trends and thematic areas in digital marketing

### **3. SCOPE AND METHODOLOGY**

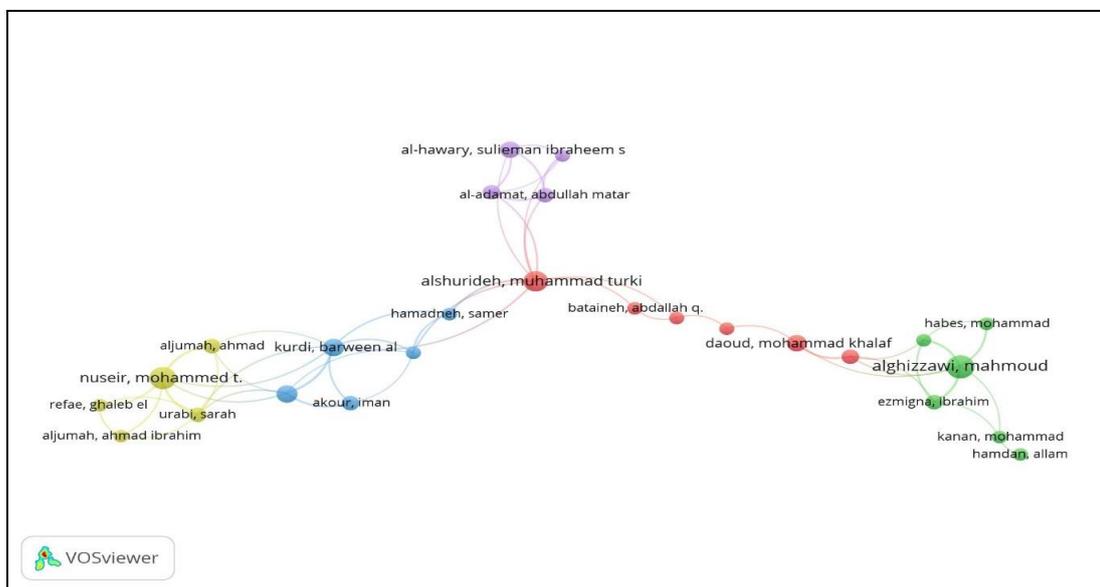
This study aims to provide a comprehensive overview of scholarly research on digital marketing by analysing co-authorship, co-occurrence, and co-citation analysis. The researcher collected Bibliometric data on “Digital Marketing” from the Scopus database to ensure high-quality, peer-reviewed scholarly output. The search was based on the title search using “digital marketing” and retrieved 2667 records. The data from the earliest relevant publications to 2024 was extracted from Scopus in .txt format to enable structured processing and analysis. The raw bibliometric data were imported into Microsoft Excel for preprocessing, including duplicate removal, refinement of publication years, and categorisation of document types. Citation counts and metrics for each record were verified for accuracy before analysis. The VOSviewer software was employed to visualise scholarly networks of co-authorship, co-occurrence, co-citation analysis, etc.

#### 4. Data Analysis and Interpretation

**Table 1.** Co-authorship of the top ten authors

Sl. No	Author	Documents	Citations	Total link strength
1	Karjaluoeto, Heikki	11	1622	2
2	Rowley, Jennifer	5	1428	2
3	Dwivedi, Yogesh K.	6	1238	2
4	Saura, Jose Ramon	6	506	0
5	Kelly, Bridget	7	310	1
6	Alshurideh, Muhammad	6	299	6
7	Chaffey, Dave	6	261	0
8	Kurdi, Barween Al	6	149	8
9	Al-hawary, Sulieman Ibraheem Shelash	5	123	1
10	Sakas, Damianos P.	12	117	7

Table 1 provides insights into the co-authorship patterns of the top ten authors. The result shows that Damianos P. Sakas is the most productive author (12 documents) but has a low citation impact (117 citations). Heikki Karjaluoeto leads in impact with 1622 citations and 11 documents, balancing productivity and influence. Jennifer Rowley (1428 citations) and Yogesh K. Dwivedi (1238 citations) follow closely despite fewer documents. The table indicates that Barween Al Kurdi (link strength = 8) and Damianos P. Sakas (link strength = 7) demonstrate extensive co-authorship. The High-impact authors focus on quality over quantity, while strong collaborators like Sakas and Kurdi prioritise networking.



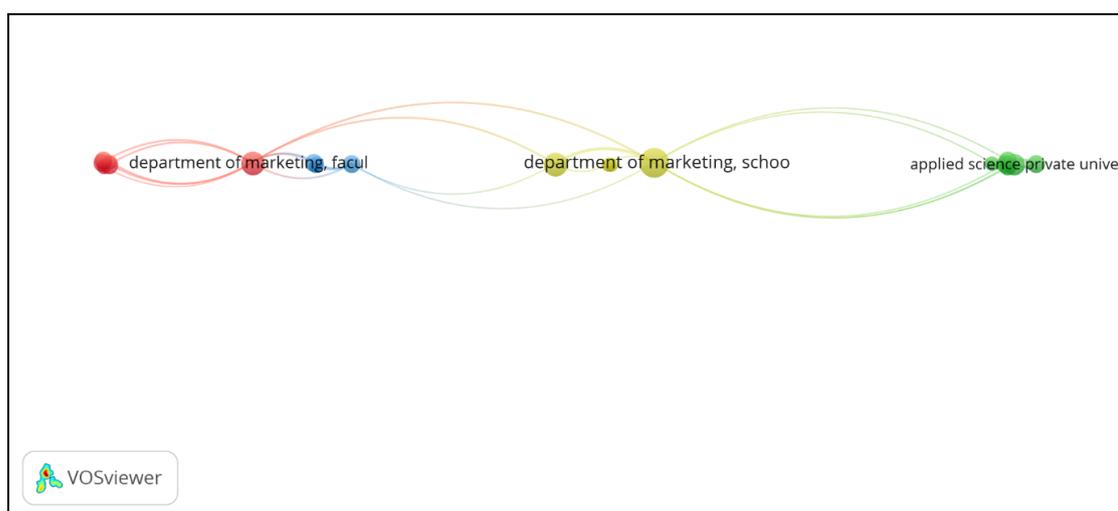
**Figure 1.** Network visualisation of the co-authorship of authors

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**Table 2.** Co-authorship of the top ten organisations

Sl. no	Organization	Documents	Citations	Total link strength
1	School of Business and Economics, University of jyvaskylä, Finland	3	404	0
2	University of Sharjah, United Arab Emirates	3	266	6
3	Department of Marketing, School of Business, The University of Jordan, Jordan	3	208	3
4	Rey Juan Carlos University, Madrid, Spain	3	185	0
5	Department of Marketing, School of Business, The University of Jordan, Jordan	8	171	12
6	Department of Marketing, Faculty of Economics and Administrative Sciences, The Hashemite University, Jordan	5	152	13
7	Department of Management, College of Business, University of Sharjah, United Arab Emirates	5	150	8
8	Babson College, USA	4	122	2
9	Northeastern University, Boston, USA	3	117	2
10	Jaypee Institute of Information Technology, India	3	92	2

Table 2 highlights the co-authorship network of the top ten research organisations based on publication count, citations, and collaboration strength. The University of Jyväskylä, Finland, has the highest citation impact (404) despite minimal collaboration (link strength = 0), while The Hashemite University, Jordan, leads in co-authorship (link strength = 13). Institutions from Europe, the Middle East, North America, and Asia contribute to the research landscape, with varying levels of influence and connectivity. Strong co-authorship networks, such as those in Jordan and the UAE, enhance research visibility, whereas highly cited institutions like Finland and Spain show limited external collaboration.

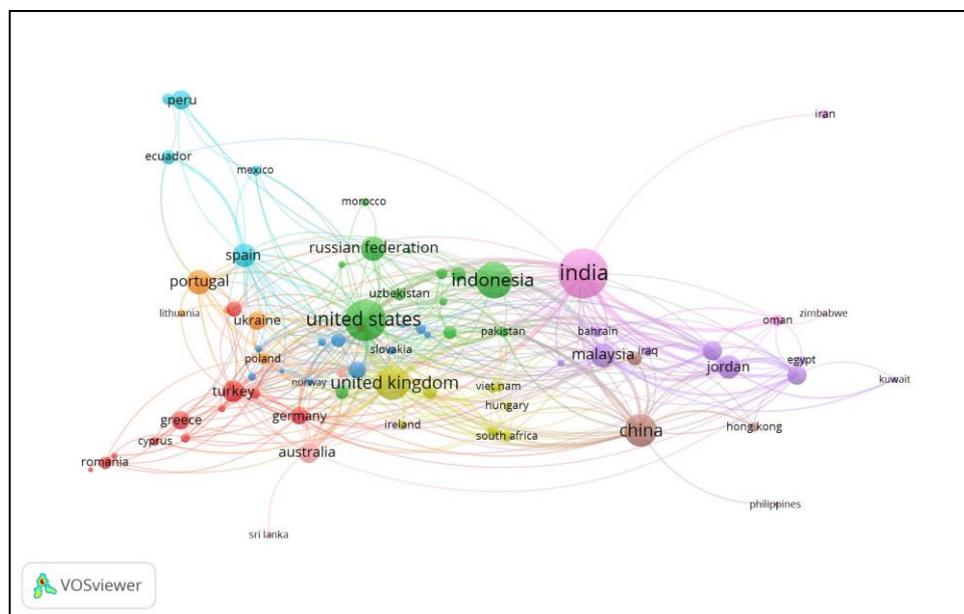


**Figure 2.** Network visualisation of the co-authorship of the organisation.

**Table 3.** Co-authorship of the top ten countries

Sl. No	Country	Documents	Citations	Total link strength
1	United States	278	7000	136
2	United Kingdom	187	6764	157
3	India	387	3396	133
4	Australia	69	2627	50
5	France	36	2488	37
6	Finland	29	1827	16
7	Germany	50	1684	35
8	Canada	33	1664	34
9	Spain	90	1212	48
10	Netherlands	18	1090	25

Table 3 presents data on international research collaboration based on co-authorship among the top ten countries. India leads in research output (387 documents), while the United States and the United Kingdom dominate in citations (7000 and 6764, respectively), indicating higher research impact. Australia and France show strong citation performance despite fewer publications. The UK (157 link strength) has the most extensive international collaborations, followed by the US (136) and India (133). Despite the high citation impact per paper, Finland has weaker global research ties. Overall, the US and UK excel in research impact and collaboration strength, while India leads in output but has a lower citation impact.



**Figure 3.** Network visualisation of co-authorship of countries.

**Table 4.** Co-occurrence of top ten keywords

Sl. No	Keywords	Occurrences	Total link strength
1	Digital Marketing	1207	5757
2	Marketing	725	5115
3	Commerce	472	3703



7	Wang Y.	276	11918
8	Kannan P.K.	256	17844
8	Verhoef P.C.	256	17640
9	Grewal D.	248	15263
10	Buhalis D.	246	8284

Table 5 indicates the co-citation analysis of the top ten most cited authors. It is observed from the study that Philip Kotler (505 citations, 11,890 link strength) remains the most frequently cited author, reinforcing his foundational contributions to marketing. Dave Chaffey (440 citations, 14,958 link strength), known for his expertise in digital marketing, has a higher link strength than Kotler, suggesting stronger co-citation connections in digital research. The author Yogesh K. Dwivedi (417 citations, 29,835 link strength) has the highest total link strength, indicating he is widely cited alongside multiple authors, making him a key figure in digital marketing and technology adoption research. The co-citation network highlights a blend of traditional marketing scholars (Kotler, Kumar) and digital marketing pioneers (Chaffey, Dwivedi, Kannan, Karjaluo). The high link strength values suggest strong interdisciplinary connections, with research integrating digital marketing, AI, consumer behaviour, and data analytics. This reflects a growing emphasis on technology-driven marketing strategies and the evolution of marketing in the digital era.

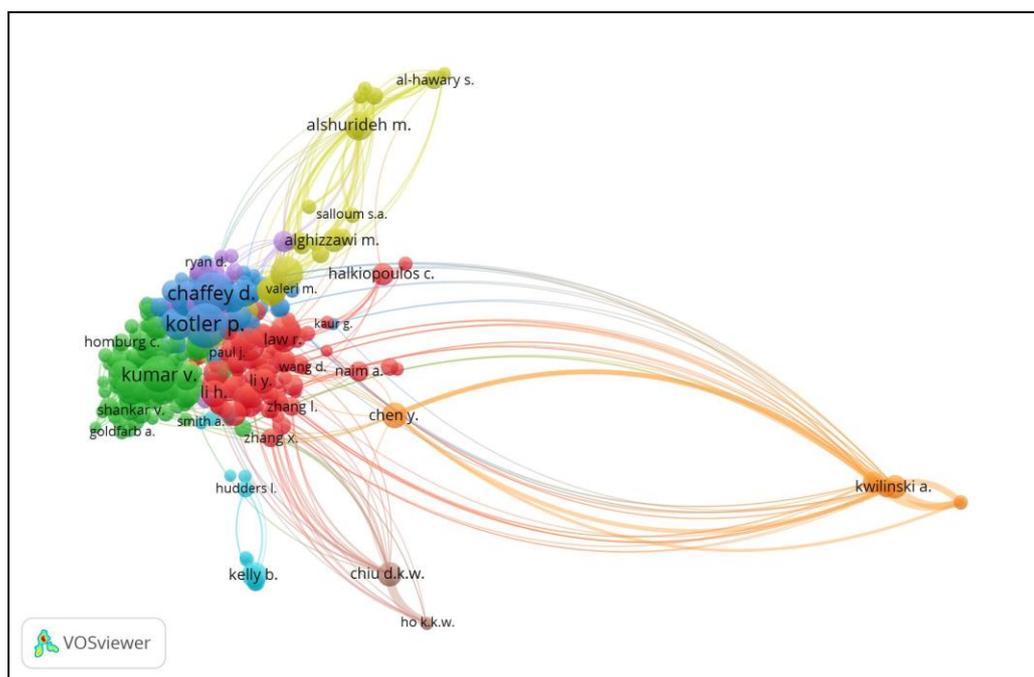


Figure 5. Network visualisation of co-citation of cited authors.

Table 6. Co-citation of the top ten cited sources

Sl. No.	Sources	Citations	Total link strength
1	Journal of Business Research	1636	76597
2	Journal of Marketing	1237	63681

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3	Industrial Marketing Management	1199	53518
4	Journal of the Academy of Marketing Science	827	39397
5	Sustainability	800	20453
6	Journal of Interactive Marketing	712	37041
7	Journal of Marketing Research	618	36403
8	International Journal of Information Management	539	22628
9	Business Horizons	505	18663
10	Journal of Retailing and Consumer Services	492	22538

The co-citation analysis of the most frequently cited academic journals is presented in Table 6.

The *Journal of Business Research* (1636 citations, 76,597 link strength) is the most cited and has the highest total link strength, indicating its central role in business and marketing research.

The *Journal of Marketing* (1237 citations, 63,681 link strength) and *Industrial Marketing Management* (1199 citations, 53,518 link strength) also significantly influence marketing strategy, B2B marketing, and consumer behaviour studies.

The *Journal of Interactive Marketing* (712 citations, 37,041 link strength) focuses on digital and interactive marketing, reflecting the increasing role of technology in the field. *Sustainability* (800 citations, 20,453 link strength) suggests growing academic interest in sustainable business practices and responsible marketing. The *International Journal of Information Management* (539 citations, 22,628 link strength) highlights the intersection of marketing and information systems, emphasising digital transformation and data-driven marketing.

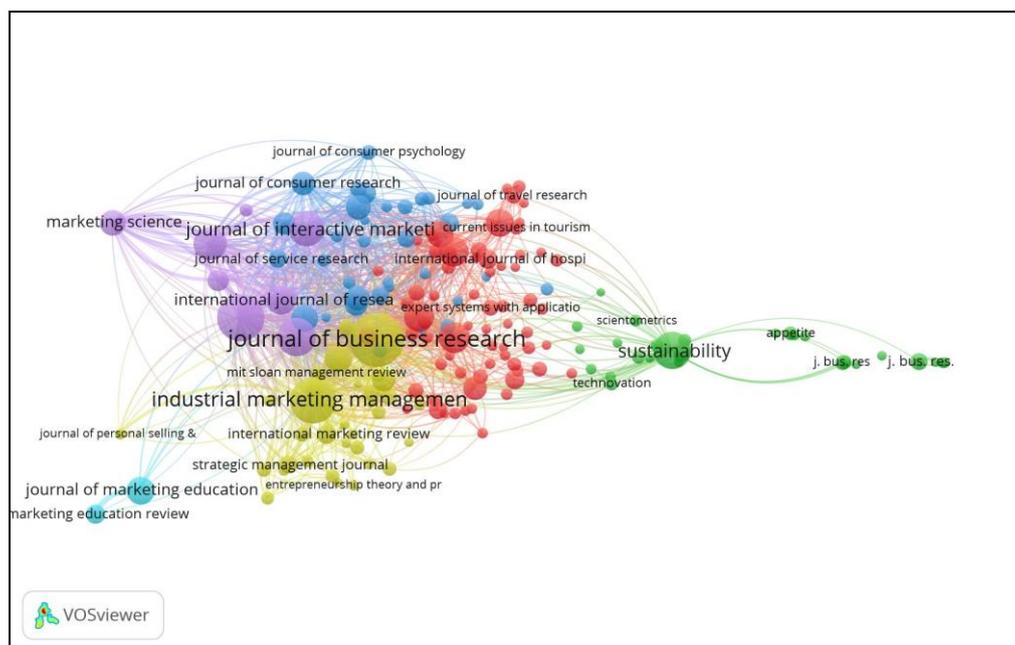
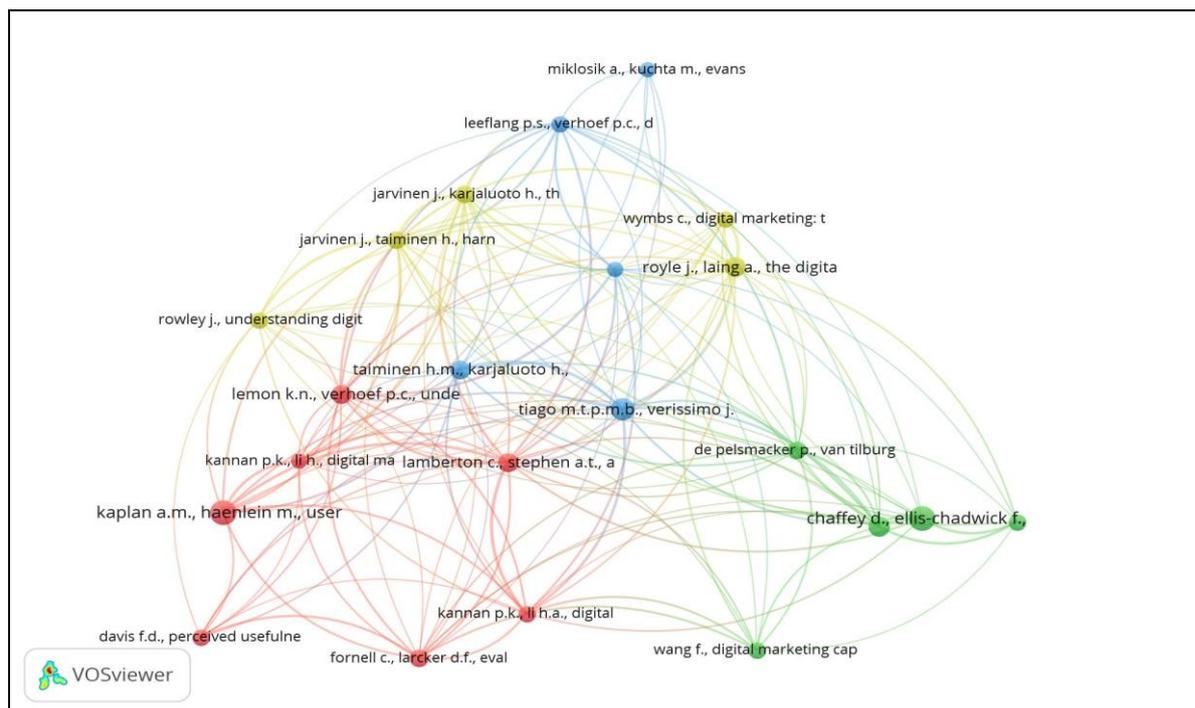


Figure 6. Network visualisation of co-citation of cited sources.

**Table 7.** Co-citation of the top ten cited references

Sl. No	Reference	Citations	Link Strength
1	Chaffey, D., & Ellis-Chadwick, F. (2019). <i>Digital marketing</i> . Pearson UK.	51	25
2	Kaplan, A. M., & Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of Social Media. <i>Business horizons</i> , 53(1), 59–68.	49	38
3	Tiago, M. T. P. M. B., & Veríssimo, J. M. C. (2014). Digital marketing and social media: Why bother?. <i>Business horizons</i> , 57(6), 703–708.	40	45
4	Royle, J., & Laing, A. (2014). The digital marketing skills gap: Developing a Digital Marketer Model for the communication industries. <i>International journal of information management</i> , 34(2), 65–73.	35	44
5	Yasmin, A., Tasneem, S., & Fatema, K. (2015). Effectiveness of digital marketing in the challenging age: An empirical study. <i>International journal of management science and business administration</i> , 1(5), 69-80.	32	31
6	Lemon, K. N., & Verhoef, P. C. (2016). Understanding customer experience throughout the customer journey. <i>Journal of Marketing</i> , 80(6), 69-96.	31	40
7	Taiminen, H. M., & Karjaluo, H. (2015). The usage of digital marketing channels in SMEs. <i>Journal of small business and enterprise development</i> , 22(4), 633-651.	31	34
8	Lamberton, C., & Stephen, A. T. (2016). A thematic exploration of digital, social media, and mobile marketing: Research evolution from 2000 to 2015 and an agenda for future inquiry. <i>Journal of Marketing</i> , 80(6), 146–172.	30	56
9	Järvinen, J., & Karjaluo, H. (2015). The use of Web analytics for digital marketing performance measurement. <i>Industrial Marketing Management</i> , 50, 117-127.	26	48
10	De Pelsmacker, P., Van Tilburg, S., & Holthof, C. (2018). Digital marketing strategies, online reviews and hotel performance. <i>International Journal of Hospitality Management</i> , 72, 47-55.	25	28

Table 7 presents the most frequently co-cited references in digital marketing research. Chaffey & Ellis-Chadwick (2019) is the most cited reference (51 citations, 25 link strength), highlighting its significance as a core textbook in digital marketing education. Kaplan & Haenlein (2010) (49 citations, 38 link strength) is another highly influential study, shaping early discussions on social media marketing. Tiago & Veríssimo (2014) (40 citations, 45 link strength) and Royle & Laing (2014) (35 citations, 44 link strength) discuss the role of social media in digital marketing and the skills gap in the industry, respectively, indicating key areas of academic interest. The article by Taiminen & Karjaluo (2015) (31 citations, 34 link strength) highlights SMEs' adoption of digital marketing, addressing practical challenges in small businesses. The table reflects growing interest in digital transformation, SME marketing, and performance measurement, shaping the future of digital marketing research.



**Figure 7.** Network visualisation of co-citation of cited references.

## 5. SUMMARY, DISCUSSION AND CONCLUSION

This study provides a comprehensive bibliometric analysis of digital marketing research using Scopus data and VOSviewer for network visualisation. 2,667 records were analysed to identify key authors, institutions, countries, research themes, and citation patterns. The co-authorship analysis revealed that Heikki Karjaluo, Jennifer Rowley, and Yogesh K. Dwivedi are among the most influential scholars. At the same time, institutions in Jordan, the UAE, and Finland demonstrate strong collaboration networks. The United States and the United Kingdom lead in research impact, whereas India has the highest publication volume but lower citation influence.

The keyword co-occurrence analysis highlighted "Digital Marketing," "Social Media," "Artificial Intelligence," and "Digital Transformation" as dominant research themes, indicating a growing focus on technology-driven marketing strategies. The co-citation analysis identified Philip Kotler, Dave Chaffey, and Yogesh K. Dwivedi as the most cited scholars, with the Journal of Business Research and Journal of Marketing serving as primary sources of foundational knowledge. The findings reveal that while developed countries dominate research impact, emerging economies contribute significantly to research volume. Expanding international collaboration and interdisciplinary research can enhance the global impact of digital marketing studies. Integrating AI, big data, and automation presents new avenues for future research, emphasising personalised and data-driven marketing strategies. This study maps the evolution, impact, and collaboration networks in digital marketing research, offering valuable insights for scholars, practitioners, and policymakers. Future research should focus on strengthening cross-disciplinary collaborations, exploring emerging technologies, and enhancing the global visibility of digital marketing research.

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