

# Customer Engagement in Service Ecosystems: A Bibliometric and Thematic Analysis of Emerging Innovation Perspectives

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## ABSTRACT

This study maps the intellectual structure and thematic evolution of customer engagement (CE) research within service ecosystems, tracing its shift from firm-centric to ecosystem-based and innovation-driven perspectives through a longitudinal bibliometric approach. A total of 1,139 peer-reviewed publications indexed in the Scopus database were analyzed using a systematic search strategy. Data cleaning and standardization were performed using biblioMagika® and OpenRefine to ensure consistency in author keywords, source titles, and bibliographic records. Bibliometric techniques, including performance analysis, co-occurrence analysis, thematic mapping, and thematic evolution analysis, were implemented using R-Biblioshiny and IIP Maps. The findings reveal that CE research has experienced sustained growth, with notable acceleration after 2019 reflecting increasingly scholarly interest in engagement as a dynamic and multidimensional concept. CE and loyalty form the field's conceptual core, highlighting the continued importance of relational outcomes in service research. At the same time, emerging digital themes, particularly artificial intelligence (AI), immersive platforms, digital service innovation, and technology-enabled interactions, signal a shift toward innovation-enabled, ecosystem-oriented engagement. Thematic evolution further indicates a transition from relationship-based and customer-focused perspectives toward multi-actor, technology-embedded, and value co-creation perspectives within broader service ecosystems. This study contributes to the CE literature by providing a structured overview of key research trends, dominant themes, and emerging innovation perspectives. It also offers insights for scholars seeking to position future studies within the evolving CE knowledge domain. By integrating co-occurrence, thematic mapping, and thematic evolution analyses, this study provides a theory-informed, longitudinal overview of CE research that informs future innovation-oriented theory and research. The study is limited to publications indexed in Scopus and focuses on structural patterns rather than detailed content analysis. Future research could integrate multiple databases and qualitative approaches to extend these insights.

**Keywords:** Customer Engagement, Service Ecosystems, Bibliometric Analysis, Thematic Mapping, Innovation Research

## INTRODUCTION

CE has become a central concept as firms increasingly shift from transactional exchanges toward interactive, relational, and experience-based value creation. CE describes how customers cognitively, emotionally, and behaviourally invest in interactions with firms across touchpoints and channels, contributing resources that extend beyond simple purchase behavior (Islam & Rahman, 2016; Ubgade & Joshi, 2023). As service ecosystems become more digitally mediated and customer experiences more interconnected, CE has gained strategic importance for understanding relationship development, value co-creation, and long-term value creation (Rasul et al., 2024; Srivastava & Sivaramakrishnan, 2022).

The growing importance of CE has led to a rapid expansion and diversification of research. Influential reviews show that CE research has developed conceptually, expanded across contexts, and incorporated a wide range of theoretical perspectives over time (Islam & Rahman, 2016; Rasul et al., 2024). Despite this progress, the literature remains fragmented. Studies vary considerably in how CE is defined, measured, and examined, resulting in parallel research streams that are weakly connected (Kaur et al., 2023; Roopak & Chakrabarti, 2025). This fragmentation is further reinforced by the growth of context-specific research in areas such as B2B markets, international marketing, and emerging economies, where engagement is frequently examined in isolation rather than as part of a broader service ecosystem perspective (Hollebeek et al., 2022; Marvi et al., 2024; Srivastava & Sivaramakrishnan, 2022).

Digital transformation has further increased both the relevance and complexity of CE research. Engagement increasingly takes place through digital platforms, online communities, and technology-mediated interactions, reshaping how customers connect with firms and each other (Rasul et al., 2024). More recently, advances in AI and automation have introduced new forms of engagement, prompting research on AI-enabled interactions, algorithmic decision-making, and intelligent process automation in marketing and service contexts (Bhandari & Sinha, 2025; Sharma et al., 2024). While these developments open new research opportunities, they also heighten the need for integrative synthesis to clarify how emerging innovation-driven themes relate to established CE theories (Lim & Rasul, 2022; Suraña-Sánchez & Aramendia-Muneta, 2024).

Bibliometric analysis offers a systematic way to address these challenges by mapping the intellectual structure, thematic evolution, and relational patterns within a research field. Although several bibliometric studies on CE exist, most focus on specific industries or thematic domains, limiting their ability to capture the broader evolution of CE research across service ecosystems (Prakash et al., 2025; Rehman et al., 2023; Srivastava & Sivaramakrishnan, 2022). Consequently, a comprehensive and cross-contextual understanding of how CE research has evolved—particularly in relation to emerging innovation-oriented perspectives—remains limited. Addressing this gap, the present study conducts a large-scale bibliometric analysis of Scopus-indexed CE research to examine its intellectual foundations, thematic evolution, and emerging innovation perspectives within service ecosystems. Below are the research questions:

RQ1. What is the intellectual structure of CE research within service ecosystems, as reflected in publication trends, influential sources, and core knowledge domains?

RQ2. How have the key themes and conceptual clusters in CE research evolved over time, particularly in relation to emerging digital and innovation-oriented perspectives?

RQ3. What emerging research directions and innovation perspectives characterize recent CE research within service ecosystems?

## LITERATURE REVIEW

### Historical development of CE

CE has evolved significantly since the early 2000s, becoming a central concept in marketing and brand management. Early CE research primarily emphasized customer acquisition, development, and retention, framing engagement as a behavioral response that extended beyond transactional exchanges to strengthen brand loyalty and advocacy (Bijmolt et al., 2010; Verhoef et al., 2010). From 2000 to 2010, CE research began to take shape, concentrating on understanding customer interactions and their implications for competitive advantage. Theoretical foundations were largely drawn on relationship marketing and service-dominant logic, which conceptualize engagement as an interactive value-creating process (Islam & Rahman, 2016).

From 2010 to 2020, research activity increased markedly, with scholars examining CE as a multidimensional construct encompassing cognitive, emotional, behavioral, and social dimensions (Ubgade & Joshi, 2023). This period marked a conceptual broadening of CE, laying the foundation for later ecosystem-based and value co-creation perspectives, but without yet fully integrating advanced digital and innovation-driven mechanisms.

## Recent Developments in CE Research

Recent CE research reflects a shift toward digital technologies and innovation-oriented practices within service ecosystems. While earlier studies began linking CE to service innovation and co-design practices (Chen & Huang, 2012; Hollebeek & Andreassen, 2018), this stream has expanded significantly with the growth of digital infrastructures. Digital platforms, online communities, and interactive service environments now play a central role in engagement processes (Rasool et al., 2020; Treves et al., 2026). These platforms enable continuous interaction among customers, firms, and other actors, supporting knowledge exchange and value co-creation.

Advances in AI, machine learning, and big data analytics have further transformed CE research. Recent studies show how AI-enabled personalization, predictive systems, and automated service interactions reshape how firms engage customers (Bhandari & Sinha, 2025; Sharma et al., 2024). As a result, CE is increasingly viewed as a dynamic, data-driven process that evolves through continuous feedback and learning within service ecosystems.

From an innovation perspective, CE contributes to service innovation by enabling customers and other actors to participate in the design, testing, and refinement of services, thereby enhancing collaboration and resource integration within the service ecosystem (Anderson et al., 2020; Chen et al., 2018; Hollebeek & Andreassen, 2018). Empirical research further shows that engagement influences organizational performance not only through purchase-related behaviors, but also through non-purchase activities such as innovation co-design, referrals, and advocacy. In many cases, service innovation acts as a key mechanism linking engagement to performance outcomes (Chen & Huang, 2012; Leckie et al., 2019).

## Bibliometric Studies on CE

In addition to conceptual and systematic reviews, bibliometric methods have increasingly been employed to examine the structure, evolution, and thematic composition of CE research. Existing bibliometric studies have mapped publication trends, influential authors, and thematic clusters within specific domains, including international marketing (Srivastava & Sivaramakrishnan, 2022), banking services (Bansal & Pruthi, 2025), tourism and hospitality (Rehman et al., 2023), and AI-enabled engagement (Prakash et al., 2025). While these studies offer valuable domain-specific insights, their focus on particular industries or technologies limits their ability to capture the broader development of CE research.

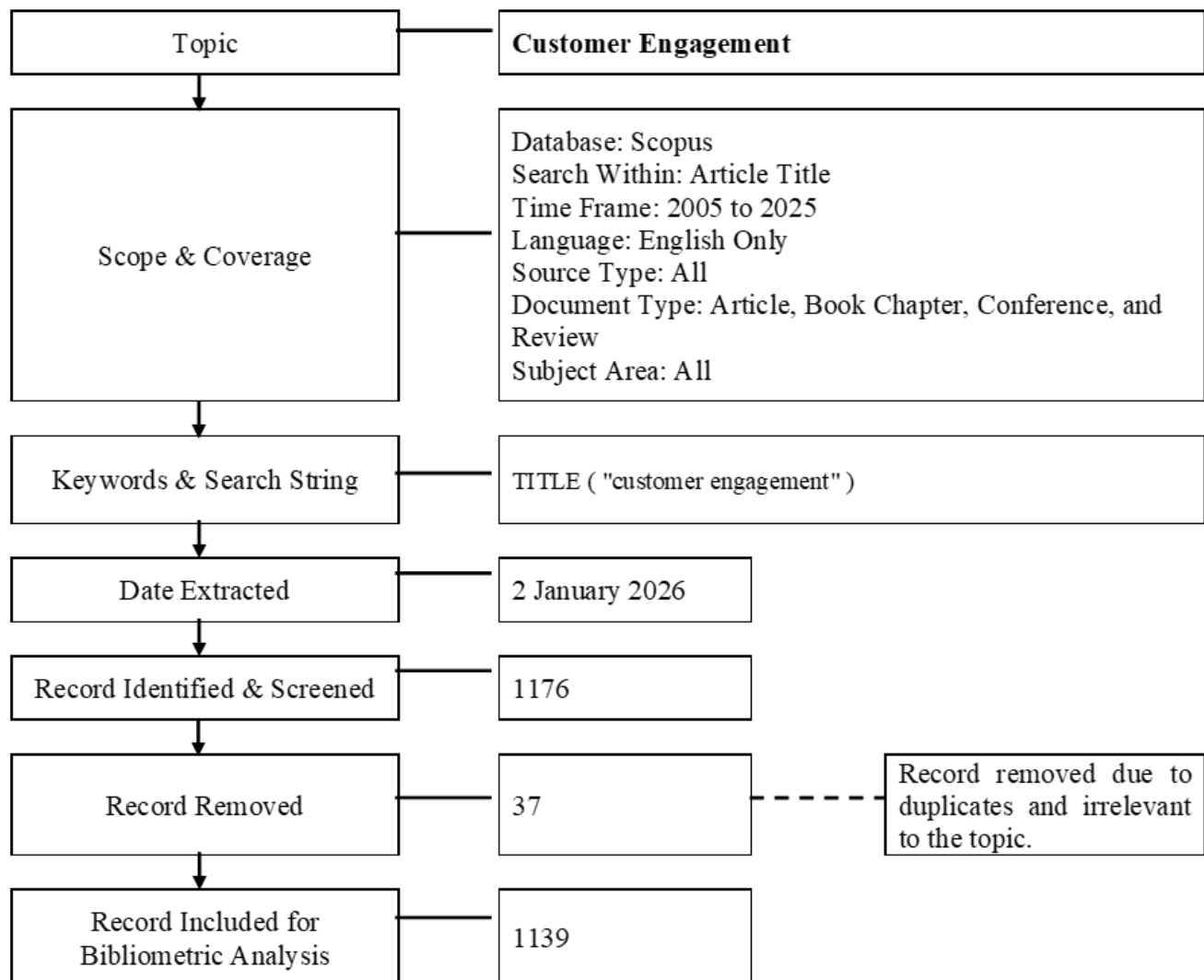
More integrative bibliometric and multimethod reviews acknowledge this limitation and emphasise the need to consolidate fragmented research streams and clarify the intellectual foundations of CE (Kaur et al., 2023; Roopak & Chakrabarti, 2025). Similarly, recent international and cross-contextual bibliometric reviews highlight uneven thematic development across regions and research contexts, calling for a broader synthesis that spans disciplines, industries, and time periods (Marvi et al., 2024). Despite these contributions, existing studies offer only partial views of the field and fail to fully capture the longitudinal evolution of CE or the interrelationships between established and emerging themes. Addressing this gap, the present study undertakes a large-scale bibliometric analysis of CE to provide an integrated and forward-looking synthesis of the field.

## METHODS

### Search strategy

This study employs a bibliometric research design integrating performance analysis and science mapping to examine the intellectual structure of CE research. Bibliographic data were retrieved from the Scopus database, which provides broad coverage of high-quality journals in marketing, service research, and related disciplines, along with consistent citation metadata. Prior studies indicate that Scopus offers broader coverage than Web of Science across many social science fields while maintaining substantial overlap with core outlets, making it suitable for comprehensive bibliometric analysis (Donthu et al., 2021; Visser et al., 2021). To maximise construct precision, the search was restricted to the article title field, using the query: TITLE (“customer engagement”). This approach was adopted to ensure precision by reducing false positives arising from peripheral mentions and polysemous terms, thereby enhancing transparency and replicability in study selection (Zupic & Čater, 2015).

The initial search returned 1,176 records. After removing duplicates, non-English publications, and incomplete records, a final dataset of 1,139 publications was retained for analysis. The data screening and selection process is illustrated in Figure 1. These records formed the basis for subsequent performance analysis and science mapping procedures.



**Figure 1.** Flow diagram of the search strategy

### Data cleaning and harmonisation

Data cleaning and harmonisation are critical steps in bibliometric research, as inconsistencies in bibliographic records can distort citation metrics and network analyses. Rigorous data preparation, therefore, improves the accuracy, consistency, and reliability of bibliometric findings (Aria & Cuccurullo, 2017).

After extracting data from the Scopus database, the dataset underwent a systematic multi-stage cleaning process. First, biblioMagika was used to examine the raw Scopus data, identify missing or incomplete records, and support the preparation of structured bibliometric outputs. The biblioMagika facilitates automated data inspection and generates clean, descriptive tables and summary statistics, thereby improving data quality prior to analysis (Ahmi, 2023, 2026).

Second, OpenRefine was used to standardise and harmonise bibliographic fields, particularly author names, institutional affiliations, and author keywords (Ahmi, 2023) . This step involved correcting spelling variations, resolving inconsistent formats, and merging duplicated representations of the same entities. Keyword harmonisation further addressed singular–plural inconsistencies and synonymous terms, reducing fragmentation in keyword co-occurrence networks. The final cleaned dataset was then exported in formats compatible with bibliometric analysis software, providing a reliable foundation for subsequent performance analysis and science mapping.

### Bibliometric analysis tools

The bibliometric analysis was conducted using two complementary tools: BiblioMagika and Biblioshiny. BiblioMagika was used primarily for data inspection, preprocessing, and the generation of descriptive bibliometric outputs, such as publication counts and citation-based indicators (Ahmi, 2023, 2026). In contrast, Biblioshiny, an interactive web interface of the Bibliometrix R package, was employed for performance analysis and science mapping, including co-authorship networks, co-citation analysis, keyword co-occurrence analysis, thematic mapping, and thematic evolution (Aria & Cuccurullo, 2017). The combined use of BiblioMagika and Biblioshiny enabled systematic, transparent, and reproducible bibliometric analysis by integrating robust data preprocessing with advanced visualisation and mapping techniques.

## RESULTS

### Contemporary landscape of CE research

This section examines the overall citation metrics of publications within the CE research domain. By analysing the distribution of publications across key variables, including citation indicators, document types, and subject areas, the analysis offers insights into the structure, visibility, and influence of the contemporary landscape of CE research.

Table 1 presents a dataset of CE research published between 2005 and 2025, comprising 1,139 publications authored by 3,502 contributors. Of these publications, 893 have received at least one citation, totaling 55,625 citations. The average number of citations per paper is 48.84, while citations per cited paper amount to 62.29, indicating a high level of scholarly visibility and impact within the field.

**Table 1.** Citation Metrics

| Main Information               | Data        |
|--------------------------------|-------------|
| Publication Years              | 2005 - 2025 |
| Total Publications             | 1139        |
| Citable Year                   | 21          |
| Number of Contributing Authors | 3502        |
| Number of Cited Papers         | 893         |
| Total Citations                | 55,625      |
| Citation per Paper             | 48.84       |
| Citation per Cited Paper       | 62.29       |
| Citation per Year              | 2781.25     |
| Citation per Author            | 15.88       |
| Author per Paper               | 3.07        |
| Citation sum within h-Core     | 50,879      |
| h-index                        | 108         |
| g-index                        | 216         |
| m-index                        | 5.143       |

Source: Generated by the author(s) using biblioMagika® (Ahmi, 2026)

The h-index of 108, together with a g-index of 216 and an m-index of 5.14, indicates a substantial number of highly influential publications and sustained citation growth over time. These indices collectively reflect the maturity and continued relevance of CE research. The average of 3.07 authors per paper further supports a collaborative research environment, consistent with the field's interdisciplinary nature.

The subject area distribution shown in Table 2 indicates that CE research is strongly concentrated in Business, Management, and Accounting (76.91%), underscoring its centrality within marketing and service research. Computer Science (25.29%) and Economics, Econometrics, and Finance (22.91%) also contribute substantially, reflecting growing interest in digital technologies, analytics, and economic perspectives. Contributions from Social Sciences (19.40%), along with Decision Sciences, Engineering, Environmental Science, Psychology, and Arts and Humanities, demonstrate the interdisciplinary expansion of CE research.

**Table 2.** Subject Area

| Subject Area                        | Total Publications | Percentage (%) |
|-------------------------------------|--------------------|----------------|
| Business, Management and Accounting | 876                | 76.91%         |
| Computer Science                    | 288                | 25.29%         |
| Economics, Econometrics and Finance | 261                | 22.91%         |
| Social Sciences                     | 221                | 19.40%         |
| Decision Sciences                   | 96                 | 8.43%          |
| Engineering                         | 90                 | 7.90%          |
| Environmental Science               | 55                 | 4.83%          |
| Energy                              | 50                 | 4.39%          |
| Psychology                          | 41                 | 3.60%          |
| Arts and Humanities                 | 37                 | 3.25%          |

Source: Generated by the author(s) using biblioMagika® (Ahmi, 2024)

Table 3 categorises the document types of CE research. Journal articles dominate the literature, accounting for 67.69% of total publications, followed by book chapters (19.32%) and conference papers (10.62%). Review articles represent a relatively small proportion of the dataset (2.37%). This distribution suggests that CE research is primarily disseminated through peer-reviewed journals, while the limited number of review studies highlights the importance of comprehensive bibliometric analyses to synthesise and structure the expanding body of literature.

**Table 3.** Document Type

| Document type    | Total publications | %      |
|------------------|--------------------|--------|
| Article          | 771                | 67.69% |
| Book chapter     | 220                | 19.32% |
| Conference paper | 121                | 10.62% |
| Review           | 27                 | 2.37%  |

Source: Generated by the author(s) using biblioMagika® (Ahmi, 2026)

## Publication Trends

CE research expanded significantly between 2005 and 2025 (Table 4 and Figure 2). During the early period (2005-2010), annual publications were limited, indicating that CE was still emerging as a research topic. Citation

activity during this stage was derived from a small number of foundational studies, a pattern typical of early-stage fields (Zupic & Čater, 2015).

From 2011 to 2017, publication output increased steadily, reflecting consolidation around key theoretical contributions. A sharp acceleration occurred from 2018 onward, with annual publications peaking at 215 in 2024 (Table 4). The lower count for 2025 reflects partial-year indexing rather than reduced research activity. Citation peaks around 2019, followed by a gradual decline in recent years are consistent with citation lag effects (Donthu et al., 2021).

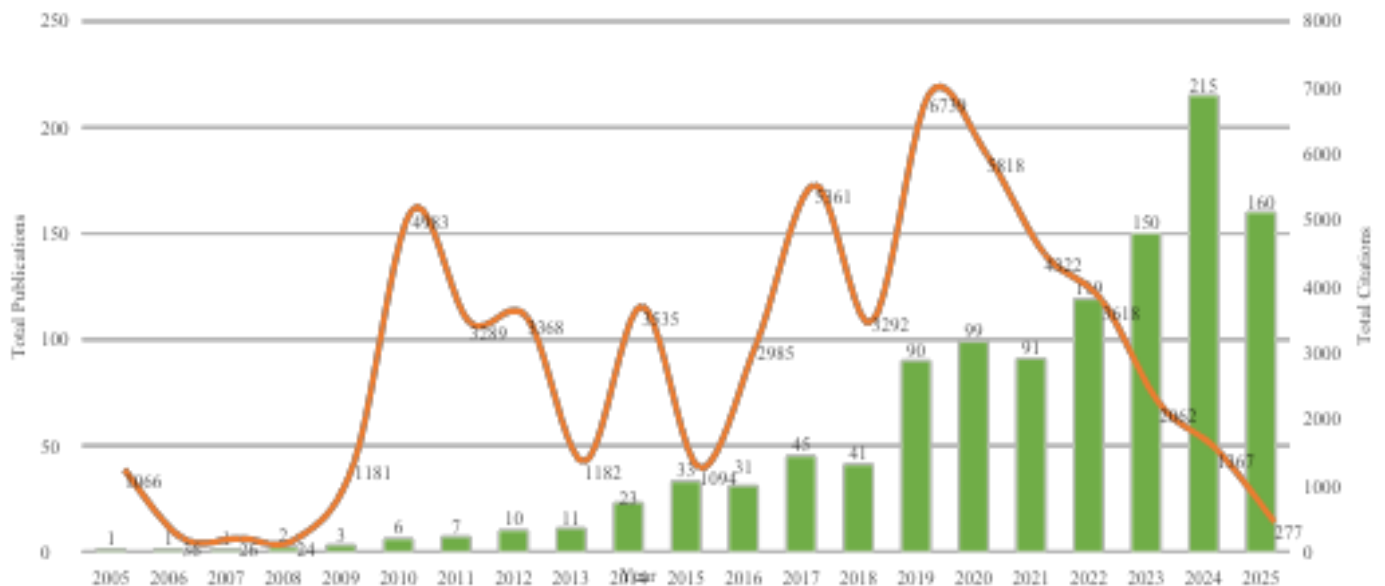
The cumulative growth ( $R^2 = 0.9807$ ) confirms an accelerating and systematic expansion of CE scholarship, suggesting that the field has transitioned from emergence to maturity (Zupic & Čater, 2015).

**Table 4.** Publication by Years

| Year  | TP          | NCA         | NCP        | TC           | C/P          | C/CP         | <i>h</i>   | <i>g</i>   | <i>m</i>     |
|-------|-------------|-------------|------------|--------------|--------------|--------------|------------|------------|--------------|
| 2005  | 1           | 3           | 1          | 1066         | 1066.00      | 1066.00      | 1          | 1          | 0.048        |
| 2006  | 1           | 2           | 1          | 36           | 36.00        | 36.00        | 1          | 1          | 0.050        |
| 2007  | 1           | 1           | 1          | 26           | 26.00        | 26.00        | 1          | 1          | 0.053        |
| 2008  | 2           | 6           | 2          | 24           | 12.00        | 12.00        | 2          | 2          | 0.111        |
| 2009  | 3           | 6           | 3          | 1181         | 393.67       | 393.67       | 3          | 3          | 0.176        |
| 2010  | 6           | 28          | 6          | 4983         | 830.50       | 830.50       | 5          | 6          | 0.313        |
| 2011  | 7           | 14          | 6          | 3289         | 469.86       | 548.17       | 6          | 7          | 0.400        |
| 2012  | 10          | 20          | 8          | 3368         | 336.80       | 421.00       | 6          | 10         | 0.429        |
| 2013  | 11          | 34          | 10         | 1182         | 107.45       | 118.20       | 8          | 11         | 0.615        |
| 2014  | 23          | 72          | 23         | 3535         | 153.70       | 153.70       | 19         | 23         | 1.583        |
| 2015  | 33          | 83          | 26         | 1094         | 33.15        | 42.08        | 14         | 33         | 1.273        |
| 2016  | 31          | 80          | 29         | 2985         | 96.29        | 102.93       | 19         | 31         | 1.900        |
| 2017  | 45          | 140         | 44         | 5361         | 119.13       | 121.84       | 24         | 45         | 2.667        |
| 2018  | 41          | 119         | 39         | 3292         | 80.29        | 84.41        | 25         | 41         | 3.125        |
| 2019  | 90          | 264         | 83         | 6739         | 74.88        | 81.19        | 40         | 82         | 5.714        |
| 2020  | 99          | 291         | 84         | 5818         | 58.77        | 69.26        | 44         | 76         | 7.333        |
| 2021  | 91          | 265         | 85         | 4322         | 47.49        | 50.85        | 36         | 65         | 7.200        |
| 2022  | 119         | 377         | 108        | 3618         | 30.40        | 33.50        | 34         | 57         | 8.500        |
| 2023  | 150         | 466         | 123        | 2062         | 13.75        | 16.76        | 24         | 39         | 8.000        |
| 2024  | 215         | 702         | 155        | 1367         | 6.36         | 8.82         | 20         | 27         | 10.000       |
| 2025  | 160         | 529         | 56         | 277          | 1.73         | 4.95         | 8          | 12         | 8.000        |
| Total | <b>1139</b> | <b>3502</b> | <b>893</b> | <b>55625</b> | <b>48.84</b> | <b>62.29</b> | <b>108</b> | <b>216</b> | <b>5.143</b> |

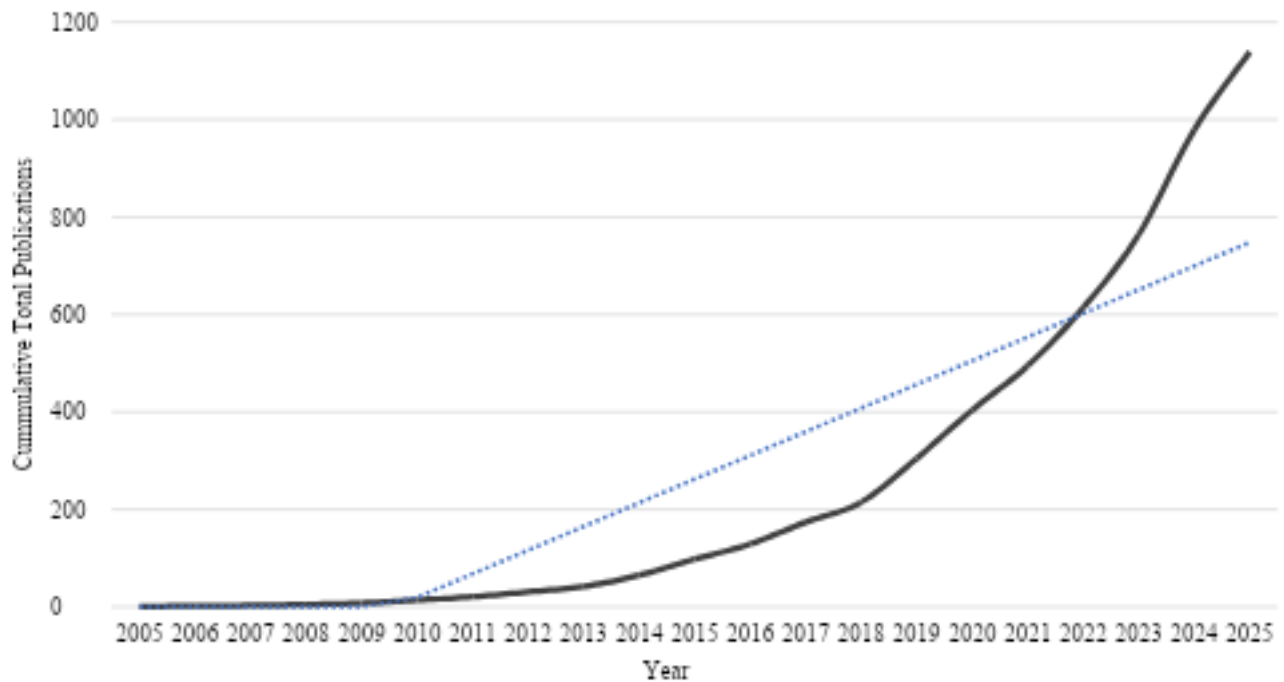
Note: TP=total number of publications; NCA=Number of contributing authors; NCP=number of cited publications; TC=total citations; C/P=average citations per publication; C/CP=average citations per cited publication; *h*=*h*-index; *g*=*g*-index; *m*=*m*-index.

Source: Generated by the author(s) using biblioMagika® (Ahmi, 2026)



**Figure 2.** Total Publications and Citations by Year

Source: Generated by the author(s) using biblioMagika® ([Ahmi, 2026](#))



**Figure 3.** Cumulative Growth of Publications Over Time (2005-2025)

Source: Generated by the author(s) using biblioMagika® ([Ahmi, 2026](#))

### Publications by Authors

Authorship patterns in CE research show a concentrated but expanding structure. As shown in Table 5, authors such as Hollebeek, Rather, and Islam combine sustained publication output with strong citation performance, as reflected in high h- and q-index values. These authors play a central role in shaping the field’s conceptual development.

**Table 5.** Most Productive Authors

| Full Name                      | Current Affiliation                                    | Country       | TP | NCP | TC   | C/P    | C/CP   | <i>h</i> | <i>g</i> | <i>m</i> |
|--------------------------------|--------------------------------------------------------|---------------|----|-----|------|--------|--------|----------|----------|----------|
| Hollebeek, Linda D.            | Sunway University                                      | Malaysia      | 37 | 36  | 5791 | 156.51 | 160.86 | 20       | 37       | 1.333    |
| Rather, Raouf Ahmad            | Scientific Researcher                                  | India         | 17 | 17  | 1299 | 76.41  | 76.41  | 10       | 17       | 1.429    |
| Islam, Jamid Ul                | DCU Business School                                    | Ireland       | 15 | 15  | 1962 | 130.80 | 130.80 | 10       | 15       | 1.000    |
| So, Kevin Kam Fung             | Spears School of Business at Oklahoma State University | United States | 12 | 12  | 1579 | 131.58 | 131.58 | 11       | 12       | 0.917    |
| Bozkurt, Siddik                | Osmaniye Korkut Ata University                         | Turkey        | 11 | 11  | 463  | 42.09  | 42.09  | 8        | 11       | 1.143    |
| Khan, Imran                    | Institute of Management Technology                     | India         | 11 | 11  | 608  | 55.27  | 55.27  | 8        | 11       | 1.143    |
| Carlson, Jamie L.              | Newcastle Business School                              | Australia     | 11 | 10  | 946  | 86.00  | 94.60  | 8        | 11       | 0.667    |
| Gligor, David Marius           | Lutgert College of Business                            | United States | 11 | 11  | 463  | 42.09  | 42.09  | 8        | 11       | 1.143    |
| Loureiro, Sandra Maria Correia | Iscte – Instituto Universitário de Lisboa              | Portugal      | 10 | 10  | 930  | 93.00  | 93.00  | 8        | 10       | 1.000    |
| Bowden, Jana Lay Hwa           | Macquarie University                                   | Australia     | 10 | 10  | 1410 | 141.00 | 141.00 | 9        | 10       | 0.529    |
| Prentice, Catherine            | Griffith Business School                               | Australia     | 10 | 10  | 989  | 98.90  | 98.90  | 9        | 10       | 1.125    |
| Rahman, Zillur                 | Indian Institute of Technology Roorkee                 | India         | 9  | 8   | 1473 | 163.67 | 184.13 | 8        | 9        | 0.800    |
| Wen, Decheng                   | Shandong University                                    | China         | 9  | 9   | 155  | 17.22  | 17.22  | 7        | 9        | 1.000    |
| King, Ceridwyn A.              | College of Health and Human Sciences                   | United States | 9  | 9   | 1362 | 151.33 | 151.33 | 8        | 9        | 0.667    |
| Kumar, V.                      | Huazhong University of Science and Technology          | Canada        | 8  | 8   | 3152 | 394.00 | 394.00 | 7        | 8        | 0.438    |
| Cambra-Fierro, Jesús Juan      | Universidad Pablo de Olavide                           | Spain         | 8  | 6   | 182  | 22.75  | 30.33  | 5        | 8        | 0.357    |
| Jiang, Yushi                   | Southwest Jiaotong University                          | China         | 7  | 5   | 94   | 13.43  | 18.80  | 3        | 7        | 0.500    |
| Han, Xiaoyun                   | Sun Yat-sen Business School                            | China         | 7  | 7   | 392  | 56.00  | 56.00  | 7        | 7        | 1.000    |
| Brodie, Roderick J.            | The University of Auckland Business School             | New Zealand   | 7  | 7   | 3148 | 449.71 | 449.71 | 6        | 7        | 0.400    |

**Note:** TP=total number of publications; NCA=Number of contributing authors; NCP=number of cited publications; TC=total citations; C/P=average citations per publication; C/CP=average citations per cited publication; *h*=*h*-index; *g*=*g*-index; *m*=*m*-index.

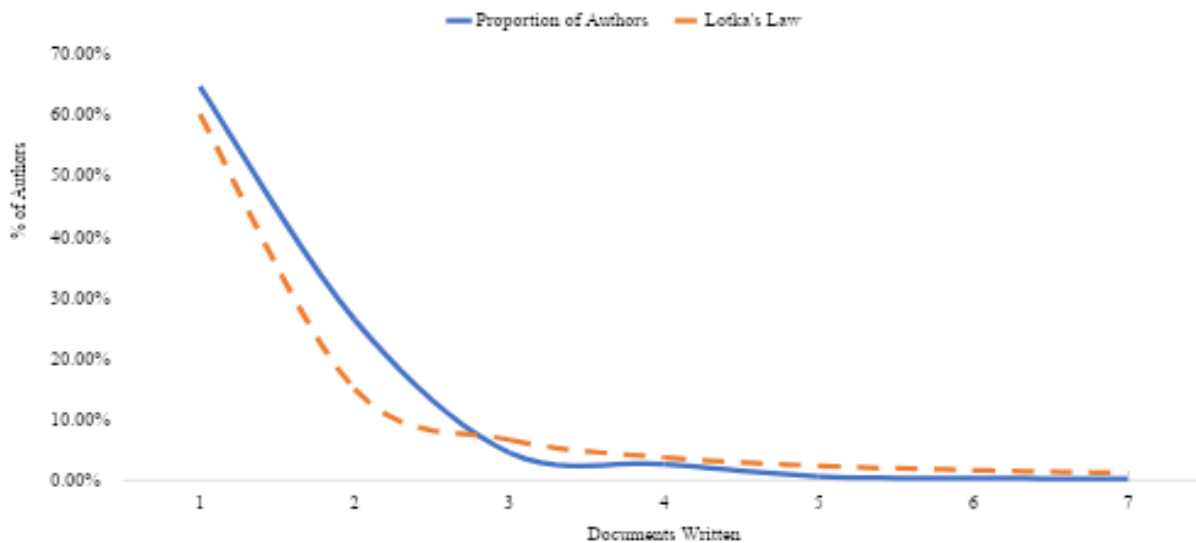
Source: Generated by the author(s) using biblioMagika® ([Ahmi, 2026](#))

The productivity distribution follows Lotka's Law, as shown in Table 6 and Figure 4. Most authors (64.60%) have published only one paper, and the number of contributors declines sharply as publication counts increase. The observed curve closely matches the expected theoretical distribution, particularly among authors with one to three publications. This pattern reflects a typical bibliometric structure, where a small core of highly productive scholars is supported by a large group of occasional contributors. Taken together, the authorship

structure indicates that CE research has matured, anchored by influential scholars, and continues to attract new contributors across diverse contexts.

**Table 6.** Author Productivity through Lotka's Law

| Document Written | Proportion of Authors | Lotka's Law |
|------------------|-----------------------|-------------|
| 1                | 64.60%                | 60.00%      |
| 2                | 26.36%                | 15.00%      |
| 3                | 4.58%                 | 6.67%       |
| 4                | 2.68%                 | 3.75%       |
| 5                | 0.67%                 | 2.40%       |
| 6                | 0.35%                 | 1.67%       |
| 7                | 0.29%                 | 1.22%       |



**Figure 4.** Author productivity distribution and Lotka's law

Source: Generated by the author using biblioMagika® (Ahmi, 2026)

## Publications by Countries

Country-level contributions to CE research reveal a clear distinction between publication volume and scholarly impact. India records the highest number of publications (293), indicating strong research activity in the field. In contrast, the United States demonstrates substantially higher citation impact, with 19,859 total citations and the highest average citations per paper, h-index, and g-index, underscoring its leading role in shaping the field's intellectual development (see Table 7 and Figure 5). Although China and the United Kingdom rank among the top contributors in terms of output, citation-based indicators suggest that research influence remains concentrated within a smaller group of established research systems. These findings indicate that while CE scholarship has become increasingly international, intellectual impact is unevenly distributed across countries.

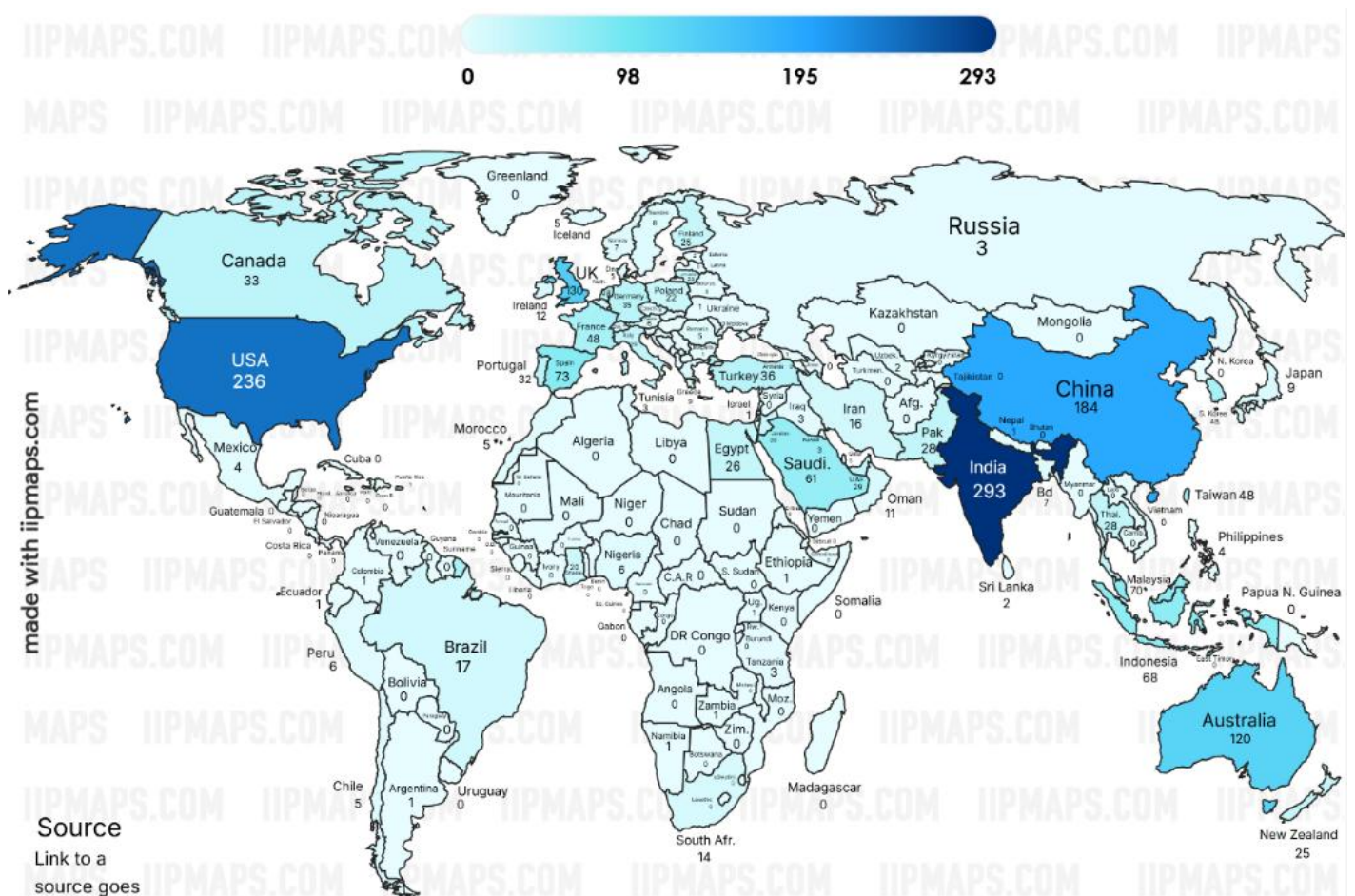
**Table 7.** The top 20 countries contributed to the publications

| Country        | TP  | NCA | NCP | TC    | C/P   | C/CP  | <i>h</i> | <i>g</i> | <i>m</i> |
|----------------|-----|-----|-----|-------|-------|-------|----------|----------|----------|
| India          | 293 | 861 | 198 | 7127  | 24.32 | 35.99 | 38       | 84       | 3.167    |
| United States  | 236 | 614 | 207 | 19859 | 84.15 | 95.94 | 55       | 140      | 2.619    |
| China          | 184 | 627 | 145 | 5746  | 31.23 | 39.63 | 38       | 75       | 2.923    |
| United Kingdom | 130 | 274 | 109 | 6006  | 46.20 | 55.10 | 32       | 77       | 2.000    |

|                             |     |     |     |       |        |        |    |     |       |
|-----------------------------|-----|-----|-----|-------|--------|--------|----|-----|-------|
| <b>Australia</b>            | 120 | 301 | 112 | 10222 | 85.18  | 91.27  | 44 | 101 | 2.588 |
| <b>Spain</b>                | 73  | 204 | 57  | 1951  | 26.73  | 34.23  | 23 | 44  | 1.643 |
| <b>Malaysia</b>             | 70  | 224 | 57  | 2139  | 30.56  | 37.53  | 18 | 46  | 1.636 |
| <b>Indonesia</b>            | 68  | 254 | 48  | 1032  | 15.18  | 21.50  | 13 | 32  | 1.444 |
| <b>Saudi Arabia</b>         | 61  | 121 | 45  | 1753  | 28.74  | 38.96  | 17 | 41  | 1.545 |
| <b>France</b>               | 48  | 79  | 43  | 2332  | 48.58  | 54.23  | 20 | 48  | 1.818 |
| <b>Taiwan</b>               | 48  | 150 | 42  | 1710  | 35.63  | 40.71  | 22 | 41  | 1.571 |
| <b>South Korea</b>          | 48  | 111 | 43  | 1015  | 21.15  | 23.60  | 17 | 31  | 1.417 |
| <b>Turkey</b>               | 36  | 77  | 27  | 1009  | 28.03  | 37.37  | 12 | 31  | 0.923 |
| <b>Germany</b>              | 35  | 62  | 29  | 5614  | 160.40 | 193.59 | 14 | 35  | 0.875 |
| <b>Canada</b>               | 33  | 77  | 27  | 504   | 15.27  | 18.67  | 11 | 22  | 0.579 |
| <b>Viet Nam</b>             | 33  | 121 | 24  | 297   | 9.00   | 12.38  | 11 | 17  | 1.000 |
| <b>Portugal</b>             | 32  | 75  | 29  | 1595  | 49.84  | 55.00  | 14 | 32  | 1.400 |
| <b>United Arab Emirates</b> | 29  | 54  | 23  | 1943  | 67.00  | 84.48  | 11 | 29  | 0.917 |
| <b>Italy</b>                | 29  | 70  | 23  | 1797  | 61.97  | 78.13  | 12 | 29  | 0.571 |
| <b>Pakistan</b>             | 28  | 87  | 25  | 393   | 14.04  | 15.72  | 11 | 19  | 1.000 |

Note: TP=total number of publications; NCA=number of contributing authors; NCP=number of cited publications; TC=total citations; C/P=average citations per publication; C/CP=average citations per cited publication; h=h-index; and g=g-index.

Source: Generated by the author(s) using biblioMagika® ([Ahmi, 2024](#))



**Figure 5. Worldwide scientific production indexed by Scopus on CE.**

Source: Generated by the author(s) using iipmaps.com

## Publications by Source Titles

CE research is concentrated within a relatively small group of marketing and service-oriented journals (see Table 8). The Journal of Retailing and Consumer Services and the Journal of Business Research publish the highest number of CE articles, indicating their central role in disseminating field-specific research.

However, citation-based indicators reveal a different pattern of influence. Journals such as the Journal of Service Research, International Journal of Hospitality Management, and Journal of Services Marketing achieve substantially higher citation impact despite publishing fewer CE articles. This suggests that intellectual influence is concentrated within a select group of high-impact outlets.

Overall, the distribution of source titles confirms the dominance of established marketing and service journals while also reflecting CE's expansion into hospitality, psychology, and technology-oriented outlets.

**Table 8.** Most active source journal publishing CE research

| Source Title                                                                       | TP | NCA | NCP | TC   | <i>h</i> | <i>g</i> | <i>m</i> |
|------------------------------------------------------------------------------------|----|-----|-----|------|----------|----------|----------|
| Journal of Retailing and Consumer Services                                         | 37 | 120 | 35  | 3152 | 85.19    | 90.06    | 25       |
| Journal of Business Research                                                       | 36 | 128 | 32  | 3425 | 95.14    | 107.03   | 23       |
| Developments in Marketing Science: Proceedings of the Academy of Marketing Science | 25 | 71  | 13  | 37   | 1.48     | 2.85     | 4        |
| Sustainability (Switzerland)                                                       | 23 | 74  | 21  | 525  | 22.83    | 25.00    | 10       |
| International Journal of Contemporary Hospitality Management                       | 15 | 55  | 15  | 1043 | 69.53    | 69.53    | 15       |
| Service Industries Journal                                                         | 13 | 37  | 13  | 906  | 69.69    | 69.69    | 11       |
| Journal of Research in Interactive Marketing                                       | 13 | 47  | 13  | 731  | 56.23    | 56.23    | 11       |
| International Journal of Hospitality Management                                    | 13 | 40  | 13  | 1388 | 106.77   | 106.77   | 11       |
| Journal of Services Marketing                                                      | 12 | 41  | 12  | 1159 | 96.58    | 96.58    | 9        |
| Marketing Intelligence and Planning                                                | 12 | 34  | 11  | 362  | 30.17    | 32.91    | 10       |
| Frontiers in Psychology                                                            | 12 | 52  | 12  | 314  | 26.17    | 26.17    | 11       |
| Journal of Service Research                                                        | 11 | 41  | 11  | 9179 | 834.45   | 834.45   | 11       |
| Asia Pacific Journal of Marketing and Logistics                                    | 11 | 35  | 11  | 285  | 25.91    | 25.91    | 7        |
| Lecture Notes in Networks and Systems                                              | 11 | 40  | 5   | 18   | 1.64     | 3.60     | 2        |
| Industrial Marketing Management                                                    | 10 | 28  | 10  | 933  | 93.30    | 93.30    | 9        |
| European Journal of Marketing                                                      | 9  | 24  | 9   | 589  | 65.44    | 65.44    | 8        |
| Smart Innovation, Systems and Technologies                                         | 9  | 30  | 4   | 5    | 0.56     | 1.25     | 1        |
| Springer Proceedings in Business and Economics                                     | 8  | 19  | 5   | 15   | 1.88     | 3.00     | 3        |
| Journal of Service Management                                                      | 7  | 36  | 7   | 981  | 140.14   | 140.14   | 6        |

TP=total number of publications; NCA=number of contributing authors; NCP=number of cited publications; TC=total citations; *h*=*h*-index; *g*=*g*-index; *m*=*m*-index.

Source: Generated by the author(s) using biblioMagika® (Ahmi, 2026)

## Highly Cited Documents

**Table 9.** Top 20 highly cited articles

| No. | Author(s)                                                                                    | Title                                                                                                                   | Source Title                                | TC   | C/Y    |
|-----|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|------|--------|
| 1   | Brodie, R.J.; Hollebeek, L.D.; Jurić, B.; Ilić, A. (2011)                                    | Customer engagement: Conceptual domain, fundamental propositions, and implications for research                         | Journal of Service Research                 | 2899 | 193.27 |
| 2   | van Doorn, J.; Lemon, K.N.; Mittal, V.; Nass, S.; Pick, D.; Pirner, P.; Verhoef, P.C. (2010) | Customer engagement behavior: Theoretical foundations and research directions                                           | Journal of Service Research                 | 2769 | 173.06 |
| 3   | Vivek, S.D.; Beatty, S.E.; Morgan, R.M. (2012)                                               | Customer engagement: Exploring customer relationships beyond purchase                                                   | Journal of Marketing Theory and Practice    | 1597 | 114.07 |
| 4   | Pansari, A.; Kumar, V. (2017)                                                                | Customer engagement: the construct, antecedents, and consequences                                                       | Journal of the Academy of Marketing Science | 1365 | 151.67 |
| 5   | Sawhney, M.; Verona, G.; Prandelli, E. (2005)                                                | Collaborating to create: The internet as a platform for customer engagement in product innovation                       | Journal of Interactive Marketing            | 1066 | 50.76  |
| 6   | Jaakkola, E.; Alexander, M. (2014)                                                           | The Role of Customer Engagement Behavior in Value Co-Creation: A Service System Perspective                             | Journal of Service Research                 | 1025 | 85.42  |
| 7   | Kumar, V.; Aksoy, L.; Donkers, B.; Venkatesan, R.; Wiesel, T.; Tillmanns, S. (2010)          | Undervalued or overvalued customers: Capturing total customer engagement value                                          | Journal of Service Research                 | 1012 | 63.25  |
| 8   | Bowden, J. (2009)                                                                            | The process of customer engagement: A conceptual framework                                                              | Journal of Marketing Theory and Practice    | 1001 | 58.88  |
| 9   | Sashi, C.M. (2012)                                                                           | Customer engagement, buyer-seller relationships, and social media                                                       | Management Decision                         | 951  | 67.93  |
| 10  | Verhoef, P.C.; Reinartz, W.J.; Krafft, M. (2010)                                             | Customer engagement as a new perspective in customer management                                                         | Journal of Service Research                 | 781  | 48.81  |
| 11  | Hollebeek, L.D.; Srivastava, R.K.; Chen, T. (2019)                                           | S-D logic-informed customer engagement: integrative framework, revised fundamental propositions, and application to CRM | Journal of the Academy of Marketing Science | 780  | 111.43 |
| 12  | Harmeling, C.M.; Moffett, J.W.; Arnold, M.J.; Carlson, B.D. (2017)                           | Toward a theory of customer engagement marketing                                                                        | Journal of the Academy of Marketing Science | 772  | 85.78  |
| 13  | Gummerus, J.; Liljander, V.; Weman, E.; Pura, M. (2012)                                      | Customer engagement in a Facebook brand community                                                                       | Management Research Review                  | 739  | 52.79  |
| 14  | Harrigan, P.; Evers, U.; Miles, M.P.; Daly, T. (2017)                                        | Customer engagement with tourism social media brands                                                                    | Tourism Management                          | 613  | 68.11  |

|    |                                                                                                                                                              |                                                                                                                                           |                                                 |     |        |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|-----|--------|
| 15 | Vivek, S.D.; Beatty, S.E.; Dalela, V.; Morgan, R.M. (2014)                                                                                                   | A generalized multidimensional scale for measuring customer engagement                                                                    | Journal of Marketing Theory and Practice        | 573 | 47.75  |
| 16 | Aksoy, L.; Van Riel, A.; Kandampully, J.; Wirtz, J.; den Ambtman, A.; Bloemer, J.; Horváth, C.; Ramaseshan, B.; van de Klundert, J.; Gurhan-Canli, Z. (2013) | Managing brands and customer engagement in online brand communities                                                                       | Journal of Service Management                   | 567 | 43.62  |
| 17 | So, K.K.F.; King, C.; Sparks, B.A. (2014)                                                                                                                    | Customer Engagement With Tourism Brands: Scale Development and Validation                                                                 | Journal of Hospitality and Tourism Research     | 554 | 46.17  |
| 18 | Kang, K.; Lu, J.; Guo, L.; Li, W. (2021)                                                                                                                     | The dynamic effect of interactivity on customer engagement behavior through tie strength: Evidence from live streaming commerce platforms | International Journal of Information Management | 508 | 101.60 |
| 19 | McLean, G.; Wilson, A. (2019)                                                                                                                                | Shopping in the digital world: Examining customer engagement through augmented reality mobile applications                                | Computers in Human Behavior                     | 496 | 70.86  |
| 20 | So, K.K.F.; King, C.; Sparks, B.A.; Wang, Y. (2016)                                                                                                          | The Role of Customer Engagement in Building Consumer Loyalty to Tourism Brands                                                            | Journal of Travel Research                      | 496 | 49.60  |

Source: Generated by the author(s) using biblioMagika® ([Ahmi, 2024](#))

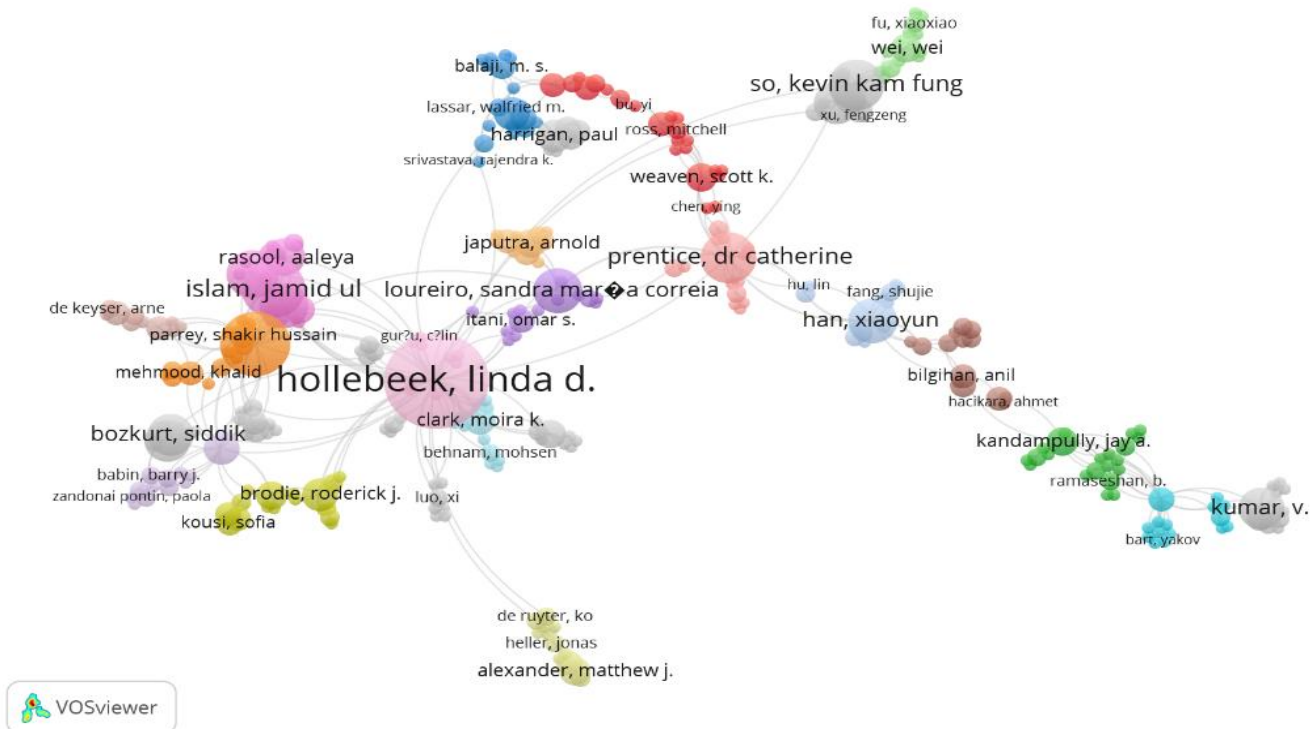
Highly cited publications reveal the main intellectual foundations of CE research (Table 9). Three major streams can be identified. First, foundational conceptual studies establish CE as a multidimensional construct centred on interaction, relationships, and value creation (e.g., Brodie et al. (2011) and van Doorn et al. (2010). Second, subsequent research clarified CE's antecedents, consequences, and measurement approaches (e.g., Vivek et al. (2012) and Pansari and Kumar (2017). These studies strengthened the empirical foundation of CE and linked engagement to outcomes such as loyalty and performance.

Third, more recent influential contributions reflect the expansion of CE into digital and technology-mediated contexts. Highly cited studies on social media, online brand communities, augmented reality, and live-streaming commerce (e.g., Gummerus et al., 2012; Harrigan et al., 2016; Kim et al., 2021; McLean and Wilson, 2019) indicate that technology-enabled engagement represents a major frontier in contemporary research. Overall, the citation structure shows a clear progression from conceptual consolidation to measurement refinement and, more recently, to digital and platform-based applications.

### Co-authorship Analysis

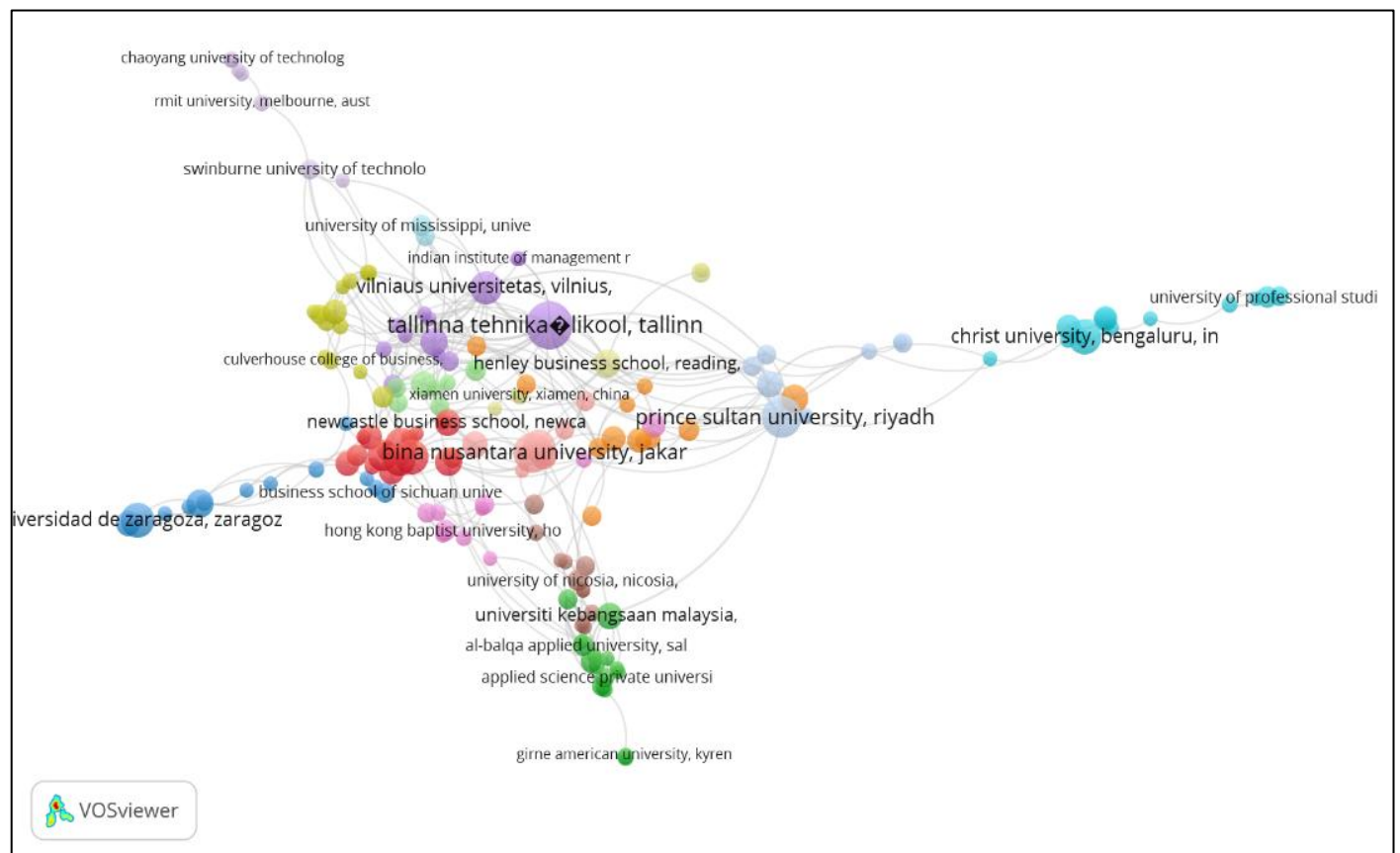
Co-authorship analysis highlights collaboration patterns at the author, institutional, and country levels. At the author level (Figure 6), collaboration is centred around a small group of influential scholars such as Hollebeek, Islam, and Rather, who act as key connectors within the field. Despite this, several clusters remain weakly interconnected, suggesting that CE research is collaborative but not fully integrated.

At the institutional level (Figure 7), research partnerships are concentrated within a few dominant universities, including Bina Nusantara University, Prince Sultan University, and several Australian and European business schools. The collaboration is largely occurring within regions rather than across continents. Similarly, the country-level network (Figure 8) shows that the United States, the United Kingdom, India, China, and Australia function as central hubs, while many countries remain peripheral. Overall, these patterns indicate that CE research is globally distributed but still relies on a limited set of actors to drive international collaboration.



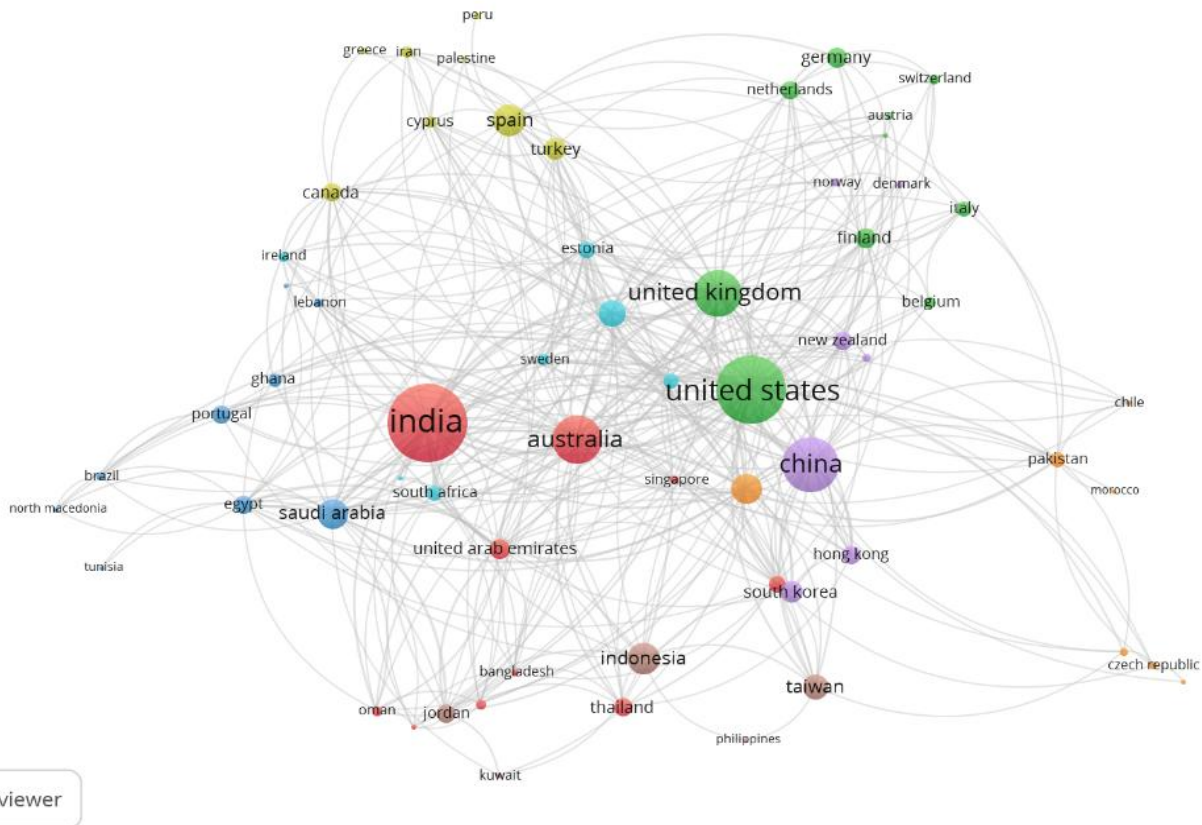
**Figure 6.** Network visualization of the author's co-authorship analysis

Source: Generated by the author(s) using VOSviewer (van Eck & Waltman, 2014)



**Figure 7.** Network visualization of the co-authorship analysis by organization

Source: Generated by the author(s) using VOSviewer (van Eck & Waltman, 2014)



**Figure 8.** Network visualization of the co-authorship analysis by country

Source: Generated by the author(s) using VOSviewer (van Eck & Waltman, 2014)

### Co-occurrence Analysis

Keyword co-occurrence analysis reveals the conceptual structure and thematic organisation of CE research. By examining patterns of co-occurrence among author keywords, this analysis identifies dominant research themes and their interrelationships, reflecting how CE has been framed and developed in the literature.

The analysis was conducted using VOSviewer and Biblioshiny, combining network visualization with thematic mapping. Following established bibliometric practices, the full-counting method was applied, in which each keyword occurrence was weighted equally across documents. A minimum occurrence threshold of five was imposed; out of 2,095 unique author keywords, 96 met this criterion, ensuring conceptual robustness while filtering out idiosyncratic or weakly represented terms. A minimum cluster size of 10 was specified to retain only substantively meaningful thematic groupings.

Figure 9 presents the keyword density map, where node size represents keyword frequency and spatial proximity reflects the strength of co-occurrence relationships. The visualization reveals a dense conceptual core centred on CE, closely connected to loyalty, value co-creation, customer experience, and satisfaction, indicating strong thematic consolidation. Peripheral but increasingly dense regions correspond to technology- and context-oriented themes, suggesting active thematic expansion rather than fragmentation.

To further assess thematic maturity and strategic relevance, Figure 9 and Table 10 present the thematic map based on Callon's centrality and density measures, which respectively capture a theme's importance within the overall research field and its internal conceptual development (Aria & Cuccurullo, 2017; Callon et al., 1991).

This approach classifies themes into basic, motor, niche, and emerging categories, enabling a structured interpretation of the field's intellectual evolution.

**Cluster 1: CE** - The CE cluster exhibits the highest centrality (0.955) and strong internal density, confirming its role as the conceptual nucleus of the field. Its close association with value co-creation, customer experience, and satisfaction reflects a mature understanding of engagement. CE functions as an integrative mechanism through which customers contribute cognitive, emotional, and behavioural resources to value creation. This positioning reinforces CE as a unifying construct at the core of service and relationship marketing, rather than a peripheral outcome (Brodie et al., 2011; Hollebeek et al., 2022).

**Cluster 2: Loyalty** - The loyalty cluster demonstrates high centrality (0.776) and density, indicating both theoretical maturity and strong embeddedness within CE research. Studies in this cluster position loyalty as a primary outcome of sustained engagement, linking engagement behaviours to repurchase intention, advocacy, and long-term relational value (Bowden, 2009; Pansari & Kumar, 2017). Its proximity to the core CE cluster highlights loyalty's continued relevance as a key validation mechanism for engagement effectiveness.

**Cluster 3: AI** - The AI cluster shows relatively high centrality (0.374) and strong density, positioning it as a motor theme driving recent CE research. This cluster captures the integration of AI, machine learning, and analytics into engagement processes, enabling personalization, automation, and predictive interaction (Harmeling et al., 2016; Kumar et al., 2024). Its growing relevance signals a shift toward technology-mediated engagement ecosystems.

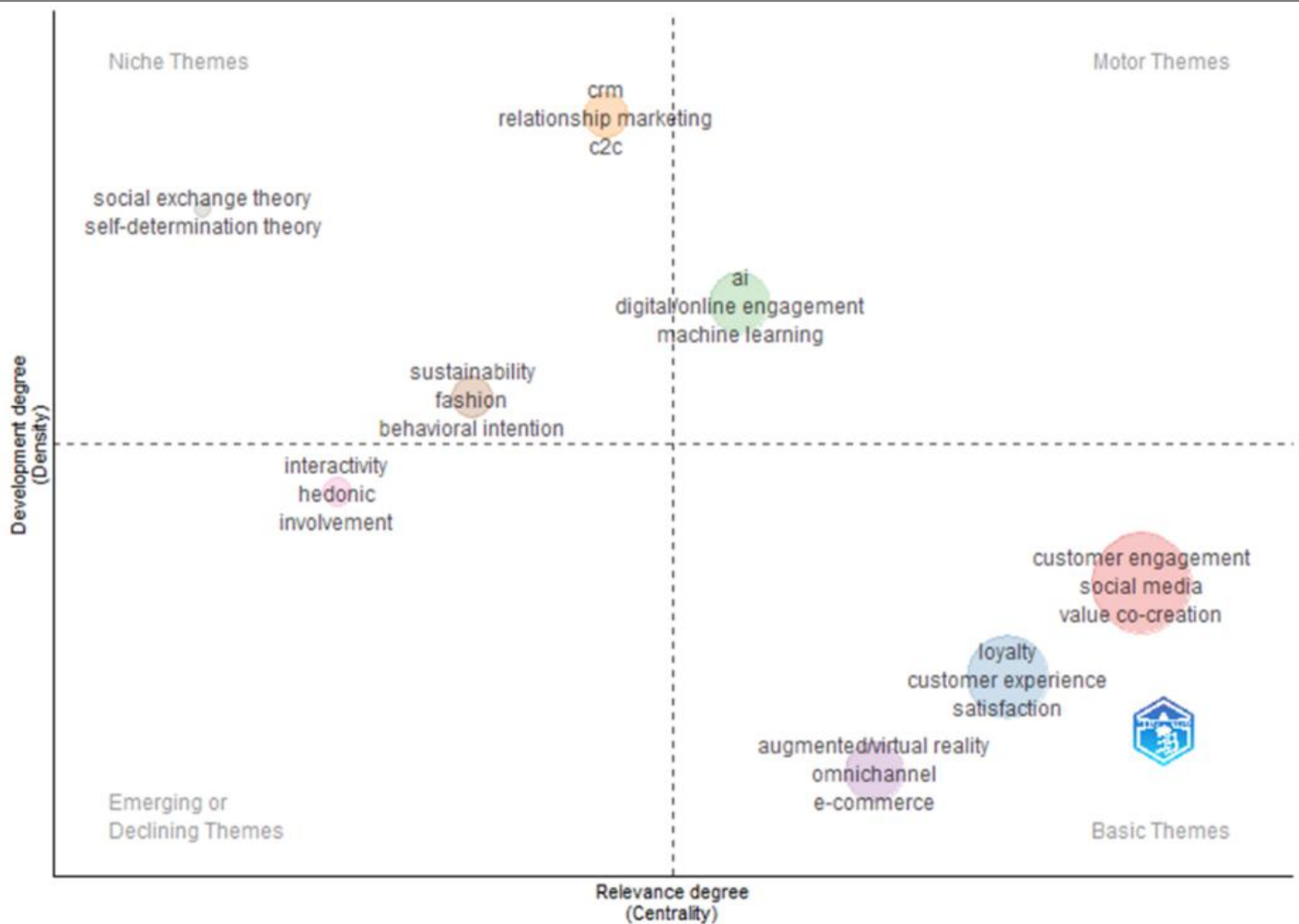
**Cluster 4: Augmented/Virtual Reality** – This cluster exhibits moderate centrality (0.495) but high density, indicating a well-developed yet still expanding research theme. Research in this area focuses on immersive technologies that enhance experiential engagement by increasing interactivity, presence, and emotional involvement (McLean & Wilson, 2019). This suggests that immersive technologies are gaining importance in shaping customer experiences, particularly in service and retail contexts, but they have not yet become central to CE theory.

**Cluster 5: CRM** - The CRM cluster shows high internal density (18.166) but low centrality (0.206), indicating a well-developed yet specialized research stream. Research in this area mainly examines how firms manage CE using data systems, customer lifecycle tools, and firm-controlled processes (Hollebeek et al., 2019). Its peripheral position suggests that CRM-based studies are not yet well integrated with broader engagement research focused on customer experience and relationships, highlighting a continuing gap between theory and practice.

**Cluster 6: Sustainability** - The sustainability cluster shows low centrality (0.117) but moderate internal development, suggesting it represents an emerging research theme. Studies in this cluster focus on linking CE with corporate social responsibility, sustainability, and broader societal value creation. This cluster reflects growing scholarly interest in linking CE to CSR, sustainability, and societal value creation (Hollebeek et al., 2022). While this line of research shows strong potential, it is not yet well integrated into mainstream CE studies, highlighting opportunities for further theoretical development.

**Cluster 7: Interactivity** - This cluster exhibits low centrality (0.094) and moderate internal development, indicating a supporting but still underdeveloped role in CE research. Although interactivity is often discussed as an antecedent or design element of engagement, it is treated inconsistently across digital and service contexts (Vivek et al., 2012). This position highlights the need for clearer and more integrated theoretical explanations.

**Cluster 8: Social Exchange Theory** - Social exchange theory appears as a highly specialized niche theme, characterized by the lowest centrality (0.071) but high density. It offers important micro-level explanations of CE behaviours, focusing on reciprocity, trust, and relational norms. Although it is not central to the field's current thematic structure, it continues to play a key role in providing theoretical grounding for CE research.



**Figure 9.** Thematic map of the author's keywords

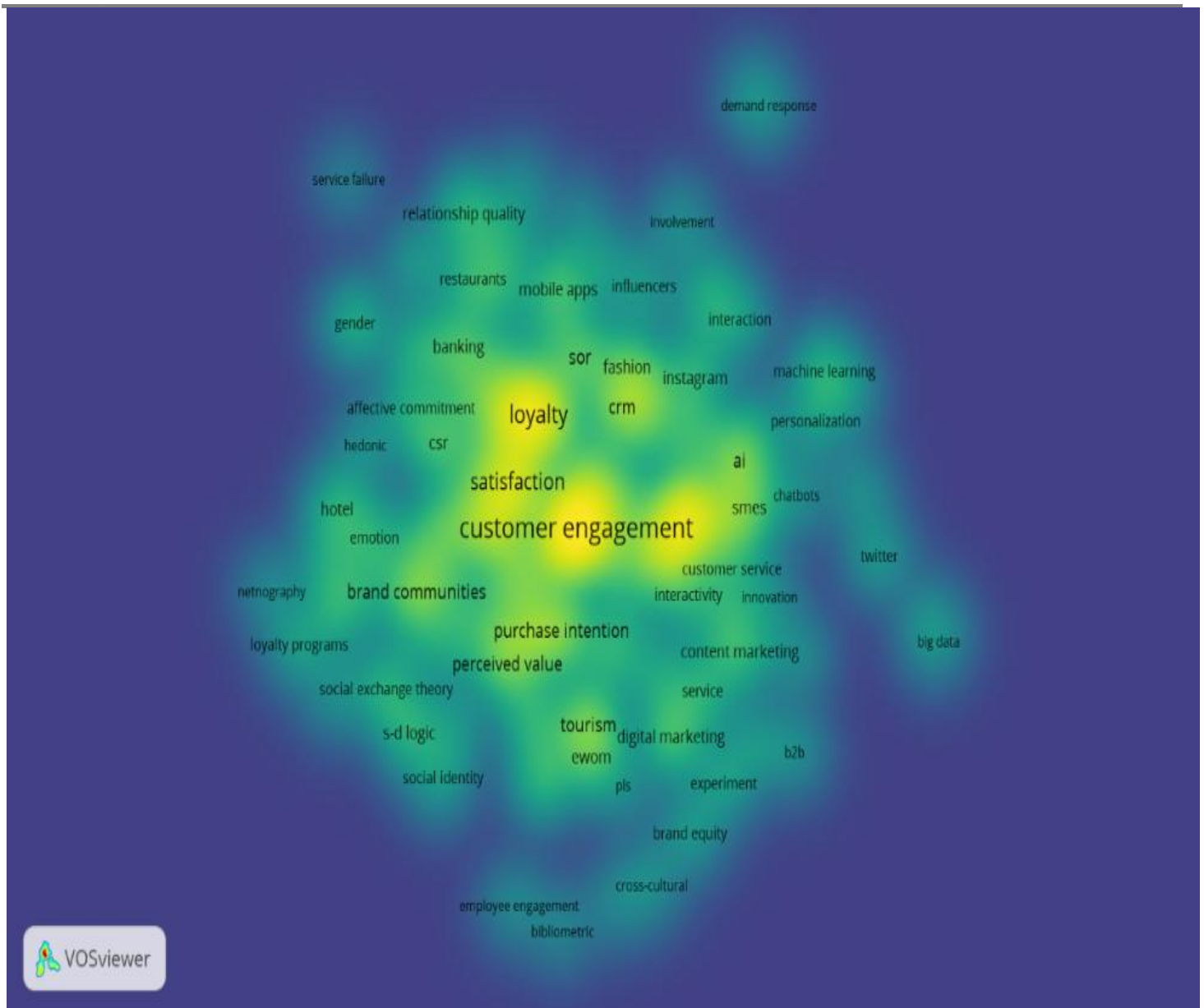
Source: Generated by the author(s) using Biblioshiny (Aria & Cuccurullo, 2017)

**Table 10:** Thematic map of the author's keywords

| Cluster                   | Callon Centrality | Callon Density | Rank Centrality | Rank Density | Cluster Frequency |
|---------------------------|-------------------|----------------|-----------------|--------------|-------------------|
| Customer Engagement       | 0.955226329       | 14.16833005    | 8               | 3            | 1527              |
| Loyalty                   | 0.776329688       | 13.26642761    | 7               | 2            | 543               |
| AI                        | 0.37429658        | 16.97110964    | 5               | 6            | 183               |
| Augmented/Virtual Reality | 0.495069657       | 12.38678504    | 6               | 1            | 159               |
| CRM                       | 0.206393855       | 18.16607803    | 4               | 8            | 68                |
| Sustainability            | 0.116623059       | 16.1453373     | 3               | 5            | 57                |
| Interactivity             | 0.094217687       | 14.76190476    | 2               | 4            | 30                |
| Social Exchange Theory    | 0.070952381       | 17             | 1               | 7            | 15                |

Source: Generated by the author(s) using Biblioshiny (Aria & Cuccurullo, 2017)

Overall, the co-occurrence and thematic mapping results show that CE research has a well-established core, while new themes related to technology, management, and society are developing around it. Rather than becoming fragmented, the field is expanding in a structured way, with emerging topics building on strong theoretical foundations. This pattern indicates that CE research is both mature and evolving, providing a solid platform for future theoretical and empirical studies.



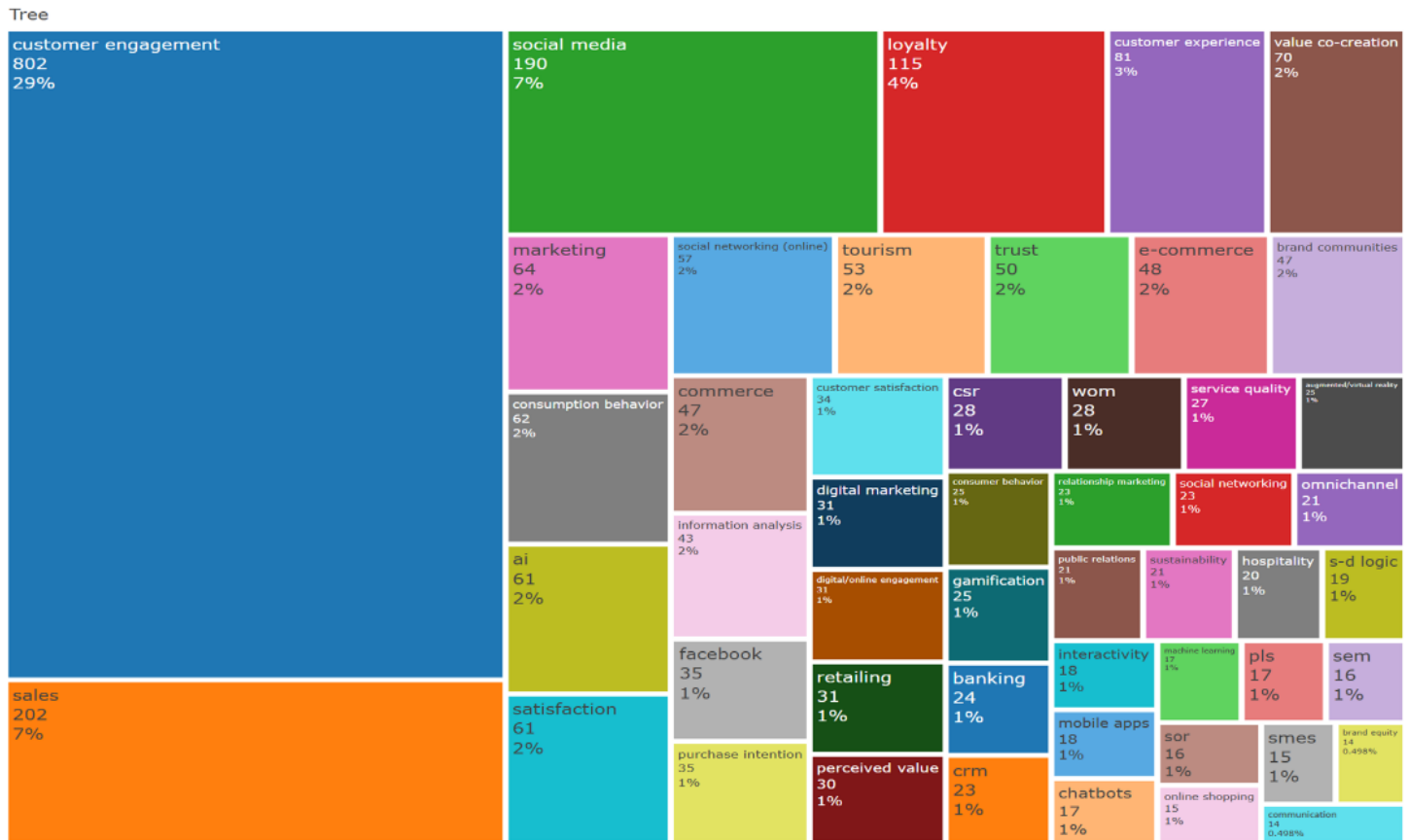
**Figure 10.** Density visualization of the co-occurrence analysis of the author keywords

Source: Generated by the author(s) using VOSviewer (van Eck & Waltman, 2014)

### Treemap Analysis of Author Keywords

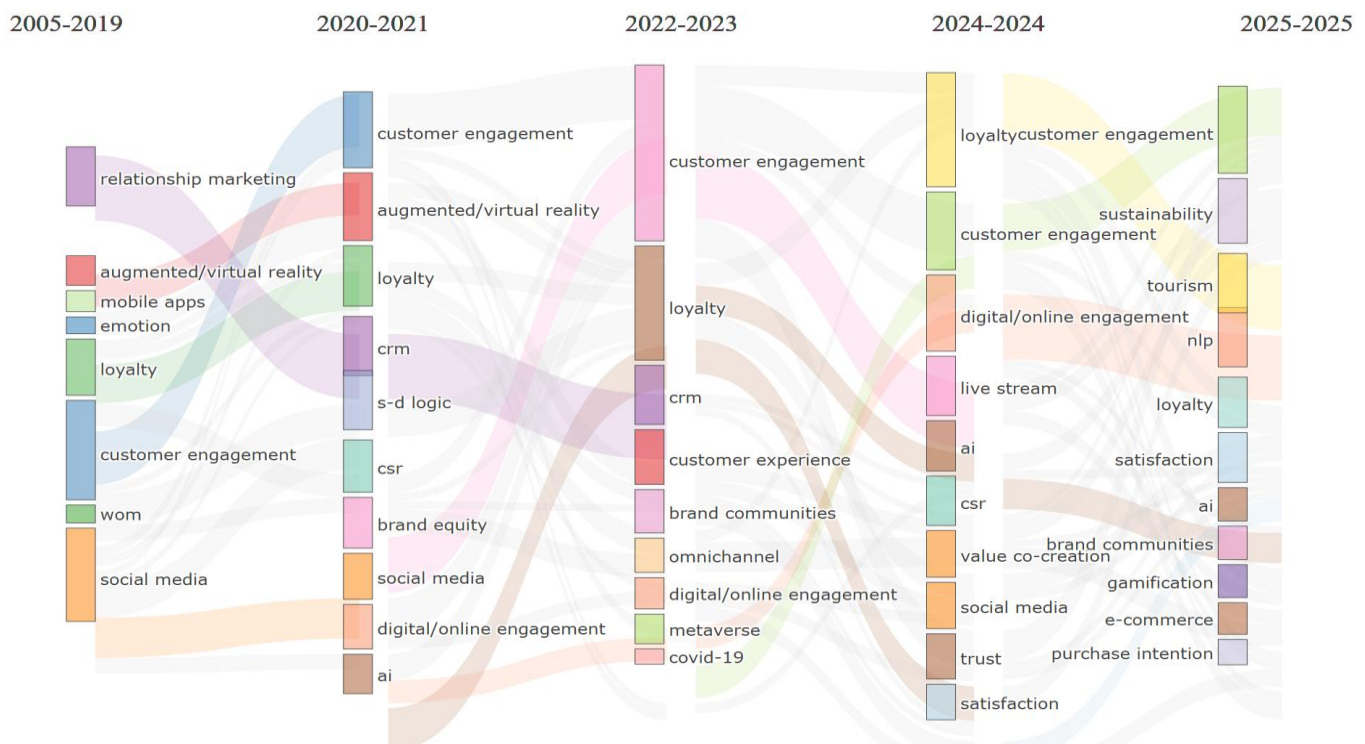
The treemap analysis provides a proportional overview of the most prominent themes in CE literature. The dominance of the term CE highlights its role as the conceptual core of the field, reinforcing its function as a unifying construct linking interaction, experience, and relational outcomes (Brodie & Hollebeek, 2011; Hollebeek et al., 2019), as illustrated in Figure 11.

Closely related themes, including social media, loyalty, customer experience, and value co-creation, occupy substantial areas in the treemap, indicating that engagement research is strongly grounded in digital interaction contexts and outcome-oriented perspectives (Bowden, 2009a; Pansari & Kumar, 2017). The presence of keywords such as AI, digital/online engagement, omnichannel, and augmented/virtual reality further indicates a shift toward technology-enabled ecosystems, extending traditional CE theory into data-driven, immersive environments (Harmeling et al., 2018; McLean & Wilson, 2019).



**Figure 11:** Treemap Analysis of Author Keywords

## Thematic Evolution of CE Research



**Figure 12.** Thematic evolution of CE research based on author keywords (2005–2025)

The thematic evolution analysis shows how CE research has progressed over time, complementing the co-occurrence findings by tracing the development of core and emerging themes (Figure 12).

In the early period (2005–2019), research focused on relationship marketing, loyalty, word of mouth, and social media, establishing CE as a relational and behavioural construct. These themes align with the CE and loyalty clusters that form the conceptual core of the field. From 2020 onward, the literature expanded toward digital and technology-enabled engagement, with increasing attention to AI, augmented and virtual reality, CRM, and digital platforms. This shift reflects a move toward innovation-driven research and corresponds with the rise of technology-oriented clusters identified in the co-occurrence analysis.

In the most recent period (2024–2025), themes such as live streaming, sustainability, tourism, and AI applications gained prominence while remaining closely connected to engagement and loyalty. This indicates growing contextual diversification without disrupting the field's theoretical foundation. In sum, CE research has shifted from its relationship-based roots to a technology-driven, contextually diverse domain, with new themes extending rather than replacing its core framework.

## DISCUSSION

The findings indicate that CE research has evolved from a relationship-oriented construct to a technology-enabled, ecosystem-embedded domain. Early CE scholarship was strongly influenced by relationship marketing and service-dominant logic, which framed engagement as an interactive process of value co-creation between firms and customers (Brodie & Hollebeek, 2011; Vargo & Lusch, 2008). The prominence of loyalty and relational constructs in the co-occurrence analysis reflects this foundational orientation.

Over time, CE research has expanded beyond dyadic customer–firm interactions toward multi-actor service ecosystems. This shift aligns with actor-to-actor engagement perspectives that conceptualise engagement as embedded within networks of interacting stakeholders (Brodie et al., 2019; Finsterwalder, 2018). The thematic mapping results suggest structured expansion rather than fragmentation, with core relational themes remaining central while new technology-oriented clusters emerge.

The growing prominence of AI, immersive technologies, and digital platforms indicates that CE is increasingly intertwined with service innovation processes. Digital platforms function as collaborative arenas that enable resource integration, knowledge exchange, and co-creation among ecosystem actors (Treves et al., 2026; Yuan et al., 2017). In this context, CE operates not merely as an outcome of marketing activities but as a dynamic process supporting innovation and service transformation (Anderson et al., 2020; Hollebeek & Andreassen, 2018).

The thematic evolution analysis further confirms this trajectory. Earlier research emphasised relational and behavioural dimensions of engagement (van Doorn et al., 2010; Vivek et al., 2012), whereas recent scholarship integrates AI-enabled interactions and platform-mediated engagement. Rather than replacing earlier theoretical foundations, these developments extend CE into digitally mediated and innovation-driven ecosystems.

### Theoretical Contributions

This study makes three primary theoretical contributions. First, it provides an integrated and longitudinal synthesis of CE research, consolidating fragmented streams across industries and contexts. By mapping intellectual structure and thematic evolution, the study clarifies CE's conceptual core within service ecosystems (Vargo & Lusch, 2015).

Second, the findings demonstrate a clear transition from firm-centric to innovation-enabled, technology-driven engagement processes. The increasing prominence of AI, immersive technologies, and digital platforms reflects the embedding of CE within broader digital transformation and service innovation trajectories (Anderson et al., 2020; Hollebeek & Andreassen, 2018).

Third, this study advances CE scholarship by positioning engagement as a micro-foundation of innovation within service ecosystems. CE facilitates resource integration, actor collaboration, and knowledge exchange, which are central mechanisms in ecosystem-based innovation (Brodie et al., 2019; Vargo & Lusch, 2015). In this sense, engagement operates as a process-level driver of innovation rather than solely as a relational outcome variable.

### **Managerial Implications**

The findings offer several implications for managers operating within digitally mediated service ecosystems. First, engagement strategies should move beyond transactional loyalty programs toward interactive, technology-enabled experiences that support co-creation and collaboration. Second, investments in AI, data analytics, and platform infrastructures can enhance engagement quality and enable adaptive, personalised interactions. Finally, firms should recognise engagement as an ecosystem-level process involving multiple actors, including customers, employees, and digital intermediaries.

### **Future research**

The findings open several avenues for future research. First, deeper theoretical integration is needed to examine how CE functions within complex, multi-actor service ecosystems. While this study maps structural developments, future research could investigate how engagement dynamics differ across ecosystem roles, including customers, employees, platform intermediaries, and algorithmic systems.

Second, the growing prominence of AI and digital platforms suggests a need for more nuanced inquiry into governance, ethics, and algorithmic mediation in engagement processes. As AI-enabled interactions become embedded in service delivery, future research should explore how data-driven personalization, automation, and intelligent systems reshape power structures, trust, and mechanisms for value co-creation within service ecosystems.

Third, longitudinal and mixed-method approaches could complement bibliometric analyses by examining how emerging themes evolve at the micro level. In-depth qualitative studies and experimental designs may help clarify how engagement contributes to innovation outcomes, organisational learning, and service transformation.

Finally, comparative cross-regional and cross-industry studies would enhance understanding of how institutional environments influence CE trajectories. Such research could reveal whether engagement-driven innovation follows similar patterns across developed and emerging economies or varies according to digital infrastructure, regulatory contexts, and cultural norms.

## **CONCLUSION**

This study offers a systematic bibliometric and thematic synthesis of CE research from 2005 to 2025. The analysis demonstrates sustained growth, intellectual consolidation, and increasing thematic diversification across the field. Core constructs such as loyalty and value co-creation remain central, while newer themes associated with digital technologies and platform-mediated interactions indicate continued expansion into contemporary service contexts.

Beyond mapping structural patterns, this study clarifies the developmental trajectory of CE scholarship. The findings show that CE research has moved from early conceptual formation toward greater theoretical integration and contextual diversification. Rather than fragmenting, the field exhibits coherent growth supported by a stable core of influential scholars and journals.

By identifying dominant knowledge domains, evolving thematic clusters, and emerging research directions, this study provides a consolidated foundation for future inquiry. The results support positioning CE as a key process within service ecosystems, with growing relevance for digitally mediated and innovation-oriented environments.

Several limitations should be acknowledged. The dataset is restricted to English-language publications indexed in Scopus, and bibliometric techniques capture structural relationships rather than deep theoretical nuance. Future studies may extend this work by incorporating additional databases, conducting qualitative synthesis, or focusing on emerging subdomains.

### **Ethical Approval**

The analysis was based entirely on bibliographic records retrieved from the Scopus database. Therefore, ethical approval was not required for this study.

### **Conflict of Interest**

The author(s) declare that there is no conflict of interest regarding the publication of this paper.

### **Data Availability**

The bibliographic data used in this study were retrieved from the Scopus database. Processed datasets generated during the analysis are available from the corresponding author upon reasonable request.

### **Use Of Generative Ai**

During the preparation of this work, the author(s) used Grammarly and ChatGPT in order to do the paraphrasing and some data interpretation. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the publication.

## **ACKNOWLEDGMENT**

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