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Article

Mapping customer relationship management research in higher education: Trends and future directions

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Article

Mapping Customer Relationship Management Research in Higher Education: Trends and Future Directions

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Abstract: Customer relationship management (CRM) has become a critical strategy for higher education institutions (HEIs) to enhance student engagement, institutional efficiency, and digital transformation. Despite its growing adoption, the evolution of CRM research in HEIs, including key contributors, dominant themes, and emerging trends, remains underexplored. This study conducts a bibliometric analysis of Scopus-indexed publications (2014–2024) to map the intellectual landscape of CRM research in higher education. Using Biblioshiny with Bibliometrix version 4.0 and VOSviewer version 1.6.20, this study analyzes publication trends, influential authors and institutions, keyword networks, and thematic developments. The findings indicate a transition from early research on service quality and academic reputation to advanced themes such as AI-driven CRM strategies, multi-channel communication, and social media analytics. While the United Kingdom, India, and Indonesia emerge as leading contributors, gaps persist in cross-cultural CRM applications, the integration of emerging technologies, and the development of standardized evaluation frameworks. This study contributes to CRM scholarship by mapping research trajectories, identifying underexplored areas, and offering actionable insights for future studies. It highlights the expanding role of CRM beyond student engagement, encompassing education quality, labor market, employment growth, technological progress and AI-driven decision-making. These findings emphasize the need for interdisciplinary approaches and robust academic performance to maximize CRM's strategic potential in higher education.

Keywords: digital transformation; bibliometric analysis; customer relationship management (CRM); higher education institutions (HEIs); student engagement



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1. Introduction

Customer relationship management (CRM) is a strategic system used by higher education institutions (HEIs) to manage student relationships throughout their academic journey, from recruitment to alumni engagement. CRM allows institutions to understand student needs, deliver personalized services, and enhance communication, ultimately improving student satisfaction and institutional outcomes. For instance, (De Juan-Jordán et al., 2018) emphasize that CRM systems in HEIs facilitate a student-centric approach, allowing institutions to manage relationships throughout the student lifecycle. Experiential learning and university-led challenges have been identified as crucial in shaping student engagement and career preparedness (Fantozzi et al., 2024). This aligns with CRM's objective of fostering stronger student–institution relationships, leading to improved satisfaction and institutional loyalty. This includes attracting new students, providing tailored support,

and enhancing the overall educational experience, which ultimately leads to increased student loyalty and retention. Furthermore, (Rigo et al., 2016) provide empirical evidence that the adoption of CRM strategies in HEIs leads to improved management practices and enhanced relationships with current and prospective students. In today's era of globalization and heightened competition, HEIs face increasing pressure not only to maintain academic standards but also to enhance the overall student experience. CRM systems support this transition by enabling a shift towards a more student-centered approach, centralizing data, and fostering improved interactions across the student lifecycle (Hrnjic, 2016). This aligns with prior research on experiential learning, which emphasizes the role of real-world university challenges in improving student engagement and professional development (Fantozzi et al., 2024). Furthermore, CRM systems extend beyond managing student relationships and can be effectively adapted in organizational contexts for training, competency development, and employee retention. Through analyzing employee needs and preferences, institutions can use CRM technologies to develop personalized training programs, enhance workforce competencies, and strengthen communication between management and staff (Khashab et al., 2022b; Oseni et al., 2018). This strategic application fosters a supportive organizational culture that promotes employee engagement and retention (Bibi et al., 2018; Tyagi, 2021). CRM implementation in HEIs extends its benefits beyond student engagement by fostering a transparent and collaborative organizational culture that enhances employee well-being and satisfaction. By enabling data-driven decision-making, CRM helps institutions effectively address employee needs, promoting inclusivity and improving communication across departments (Hayter & Cahoy, 2016). Moreover, CRM strengthens collaboration, boosting employee engagement and loyalty through better relationships between staff and management (Medjani & Barnes, 2021). This alignment supports both institutional goals and employee outcomes, fostering long-term success for HEIs (Karanika-Murray et al., 2015; Salazar, 2023).

Despite these advantages, CRM implementation still faces several challenges, including system integration and the need to adapt to diverse generational preferences. CRM systems and digital technologies address the unique needs of different generations, such as Generations X, Y, and Z, within HEIs and organizations. By collecting and analyzing generational preferences, CRM enables institutions to tailor their approaches to improve engagement, satisfaction, and competency development across the workforce (Khashab et al., 2020; Rigo et al., 2016). For instance, Generations Y and Z, who prefer digital tools and social media, benefit from CRM-based communication strategies. Additionally, CRM supports data-driven training and development programs, improving workforce competencies and aligning institutional goals with generational demands (Petrov, 2024; Yemini, 2021).

However, while CRM technologies have demonstrated their role in enhancing operational efficiency, there remains a significant research gap in understanding how these tools foster flexibility, autonomy, and employee retention. For example, studies such as those by Panggabean (2023) and Taufiqurokhman (2023) highlight the importance of training and work-life balance in employee retention but do not explore the mediating role of CRM in these areas. CRM could bridge this gap by creating environments that are both transparent and collaborative, enhancing employee satisfaction and well-being. Addressing these gaps through further research will provide valuable insights into integrating CRM and digital technologies for improving employee outcomes.

Trends in CRM adoption show that HEIs are increasingly recognizing the benefits of CRM in improving student services and alumni relationships. With the integration of AI-based analytics, CRM systems now enable institutions to predict student behavior and offer proactive, personalized services, leading to a more holistic student experience (Kosovac et al., 2022). Additionally, compared to sectors such as business and healthcare,

research on CRM in higher education is limited. While CRM is widely adopted in industries to improve customer satisfaction and loyalty, its application in education is still developing. Despite several studies highlighting its effectiveness, such as improving student satisfaction and retention (Wali & Wright, 2016), gaps remain in understanding the long-term impacts of CRM on institutional outcomes in different cultural contexts and its role in adopting emerging technologies like AI and social media in education (Rigo et al., 2016). This gap underscores the need for further research to explore these dimensions comprehensively.

The effectiveness of customer relationship management (CRM) in higher education institutions (HEIs) has been supported by various studies that highlight its role in enhancing student retention, satisfaction, and overall institutional performance. For instance, (De Juan-Jordán et al., 2018) emphasize that CRM systems in HEIs facilitate a student-centric approach, allowing institutions to manage relationships throughout the student lifecycle. This includes attracting new students, providing tailored support, and enhancing the overall educational experience, which ultimately leads to increased student loyalty and retention (De Juan-Jordán et al., 2018). Furthermore, Wali and Wright (2016) found that effective CRM practices significantly influence service quality in higher education, which is directly linked to student satisfaction and advocacy behaviors. Their research indicates that understanding customer expectations and personalizing services are crucial for measuring CRM effectiveness in this sector (Wali & Wright, 2016). Additionally, Rigo et al. (2016) provide empirical evidence that the adoption of CRM strategies in HEIs leads to improved management practices and enhanced relationships with current and prospective students. Their study illustrates how CRM initiatives can promote better communication and engagement, resulting in higher student satisfaction and retention rates (Rigo et al., 2016). Moreover, the research by Daradoumis et al. (2010) highlights the application of CRM in electronic learning environments, suggesting that an e-monitoring system can significantly improve relationships and interactions in online education settings, further supporting the effectiveness of CRM in enhancing student experiences (Daradoumis et al., 2010).

In a broader context, while CRM has shown its potential to improve student engagement, retention, and satisfaction, its broader implications for organizational outcomes, including employee development and institutional culture, remain underexplored. Addressing these gaps requires a comprehensive understanding of the evolution of CRM research, the contributions of influential scholars and institutions, and the recurring themes shaping the field. Therefore, this study is guided by the following research questions:

1. How has the chronological development of customer relationship management (CRM) research in higher education institutions (HEIs) evolved over the past decade?
2. Who are the most influential researchers and institutions in shaping CRM research within HEIs?
3. What are the dominant themes that have shaped CRM research in HEIs, and how have they evolved over time?
4. What are the emerging research trends in CRM studies, particularly those related to employee development and institutional culture?
5. How can the insights from CRM research be applied to enhance institutional resilience and meet the evolving needs of students and employees in a digitally transforming landscape?

By addressing these questions, this study aims to analyze the chronological development of CRM research in HEIs, identify key contributors, and uncover dominant and emerging themes in the literature. The findings contribute to both academic discourse and practical strategies for leveraging CRM to enhance institutional resilience and align with the dynamic needs of students and employees in a digitally transforming landscape.

2. Materials and Methods

This study employs bibliometric analysis to examine the scientific literature on customer relationship management (CRM) in higher education institutions (HEIs). The analysis is based on data collected from the Scopus database, one of the most comprehensive sources for scholarly publications. To conduct the bibliometric analysis, two complementary tools are utilized: Biblioshiny is used with Bibliometrix version 4.0 and VOSviewer version 1.6.20. By combining these two tools, this study ensures a robust bibliometric analysis that captures both the quantitative and relational aspects of the scientific literature, offering a comprehensive view of the progress, trends, and key contributors within the fields of virtual reality, self-efficacy, and interpersonal communication.

2.1. Research Design

This study uses bibliometric analysis to explore research trends related to customer relationship management (CRM) in higher education institutions (HEIs). Bibliometric analysis is a quantitative research method that analyzes scientific literature using various metrics, such as publication trends, citation patterns, and collaboration networks (Zupic & Čater, 2015). This approach provides a systematic overview of the development of research in the field, identifying influential works, key themes, and emerging trends (Donthu et al., 2021). By using bibliometric analysis, this study seeks to identify how CRM research in HEIs has evolved, key contributors, and dominant research themes.

This study employs two complementary tools, Biblioshiny and VOSviewer, to conduct a robust bibliometric analysis, capturing both quantitative metrics and relational aspects of the scientific literature. The approach follows established bibliometric methodologies, such as those applied in Choudhary and Awasthi (2018), to examine CRM's dual role in enhancing student engagement and broader organizational outcomes. By exploring both traditional applications and emerging dimensions, such as employee retention and organizational culture, this research provides a holistic view of CRM's potential in HEIs.

2.2. Data Collection

To ensure a focused and systematic approach, data were collected from Scopus, a comprehensive database known for its extensive coverage of peer-reviewed academic literature. This study was conducted using publicly available Scopus data, accessed through institutional credentials at IPB University, Indonesia. No ethical approval was required as no human subjects or confidential data were involved. The search was conducted using the following advanced query:

(TITLE-ABS-KEY("Customer Relationship Management") AND TITLE-ABS-KEY("Higher Education")) AND PUBYEAR > 2013 AND PUBYEAR < 2025 AND (LIMIT-TO(DOCTYPE, "ar") OR LIMIT-TO(DOCTYPE, "ch") OR LIMIT-TO(DOCTYPE, "bk")) AND (LIMIT-TO(LANGUAGE, "English"))

This search strategy ensured that only documents containing both "Customer Relationship Management" and "Higher Education" in their title, abstract, or keywords were retrieved. The inclusion criteria applied are detailed in Table 1.

This structured search initially retrieved 45 documents, consisting of journal articles, book chapters, and books. To refine the dataset, a systematic screening process was applied based on specific inclusion and exclusion criteria, ensuring alignment with the research focus on CRM applications in higher education institutions (HEIs), particularly in student engagement, alumni relations, and organizational engagement. To ensure the relevance of the selected studies, a systematic screening process was applied based on specific inclusion and exclusion criteria, as shown in Table 2.

Table 1. Search strategy and inclusion criteria.

Criteria	Description
Database	Scopus
Search Query	TITLE-ABS-KEY("Customer Relationship Management") AND TITLE-ABS-KEY("Higher Education")
Publication Period	2014–2024
Document Types	Peer-reviewed journal articles (ar), book chapters (ch), and books (bk)
Language	English

Table 2. Inclusion and exclusion criteria.

Criteria	Inclusion	Exclusion
Document Types	Peer-reviewed journal articles, book chapters, and books	Conference papers, presentations, editorials
Relevance	Studies explicitly discussing CRM strategies in HEIs, particularly in student engagement, institutional management, and digital transformation	Studies focused on commercial CRM applications outside HEIs
Publication Period	2014–2024	Studies published before 2014
Language	English	Non-English studies
Availability	Full-text accessible for in-depth analysis	Studies without full-text availability or insufficient methodological details

Following title and abstract screening, a full-text review was conducted to ensure relevance. After applying these filters, the final dataset comprised 35 documents, including 25 journal articles, 9 book chapters, and 1 book. This dataset captures CRM research relevant to both traditional areas, such as student satisfaction, and emerging themes, including employee engagement and the adoption of digital tools in organizational strategies.

The data were exported in CSV (Comma-Separated Values) format, which facilitates seamless integration with bibliometric tools such as Biblioshiny and VOSviewer. This export format also ensures compatibility with data analysis software, enabling efficient manipulation and visualization of the dataset for further exploration of research trends and thematic development in CRM research within higher education institutions. To ensure procedural consistency with previous literature, this research followed the five-step approach outlined by Capobianco-Uriarte et al. (2019). These steps, illustrated in the research workflow diagram (Figure 1), visually represent the methodology and ensure reliability and transparency in the bibliometric analysis.

2.3. Data Analysis

The data analysis for this study was conducted using Biblioshiny and VOSviewer, with each tool serving specific purposes in the bibliometric analysis.

Biblioshiny, an R-based application that is part of the Bibliometrix package, was employed for descriptive analysis. It facilitated the calculation of key bibliometric indicators, including publication trends, the most prolific authors, the most cited documents, and keyword analysis. Additionally, Biblioshiny generated various visualizations, such as thematic maps and publication trend plots, to explore the intellectual structure and thematic development of CRM research in HEIs.

VOSviewer was specifically used to analyze and visualize keyword co-occurrence networks. This tool provided three primary visualization techniques to map the relationships between keywords in the dataset. The network visualization displayed the connections between frequently used keywords, helping to identify clusters and emerging research themes. The overlay visualization highlighted the temporal evolution of keywords, showing shifts in research focus over time. The keyword network visualization examined

terms related to “customer relationship management”, revealing underlying patterns and thematic developments within the field.

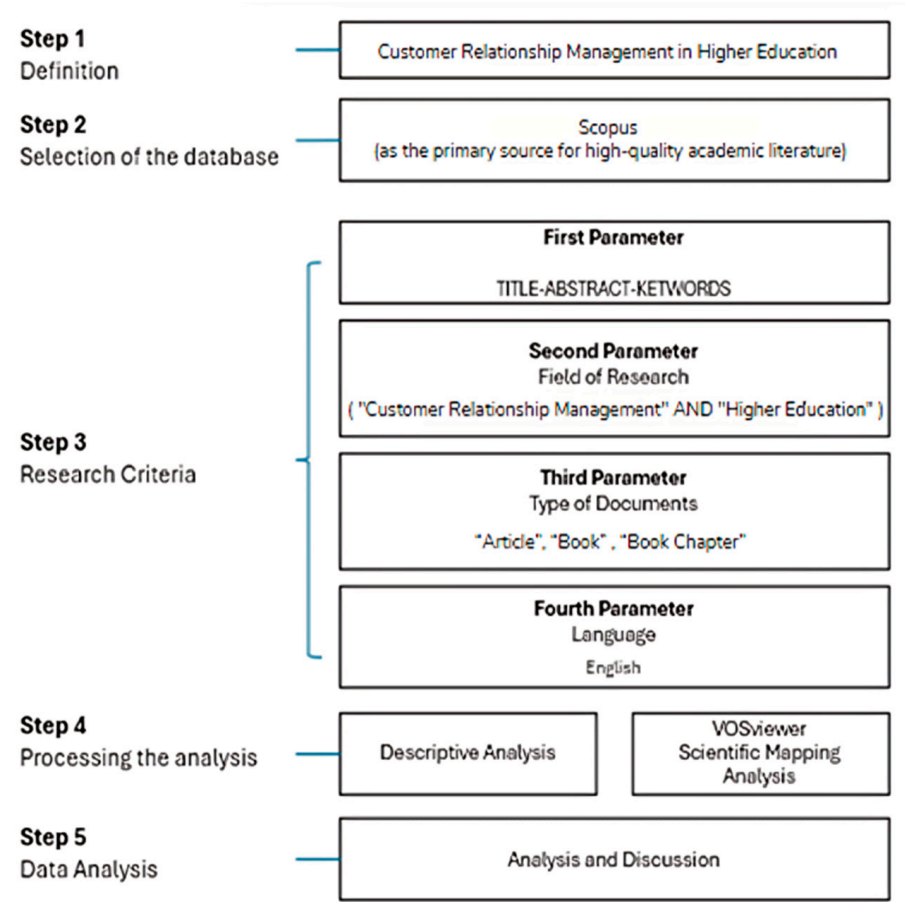


Figure 1. Research methodology framework.

By leveraging VOSviewer for keyword co-occurrence analysis, this study identified thematic clusters and provided insights into the intellectual structure of CRM research in higher education. In addition to traditional applications such as student retention and satisfaction, the analysis revealed emerging topics related to workforce development, digital transformation, and employee retention. These findings align CRM research with broader organizational outcomes and its potential to address dynamic institutional needs. Together, these tools ensured a robust and comprehensive bibliometric analysis, combining descriptive metrics from Biblioshiny with advanced network visualizations from VOSviewer.

2.4. Limitations

This bibliometric analysis provides valuable insights into CRM research in higher education but has limitations. It relies solely on Scopus, which may exclude studies from other databases offering perspectives on workforce development and organizational outcomes. The quantitative focus on citations and co-authorship networks may overlook qualitative insights, particularly on CRM’s role in employee engagement and digital transformation. Additionally, the predefined keywords and focus on publications from 2014–2024 may omit foundational research or interdisciplinary studies. Despite these limitations, the analysis highlights key trends and gaps, offering a foundation for future exploration into CRM’s broader implications for students and employees.

3. Results

This section presents the findings derived from a bibliometric analysis of peer-reviewed academic research on customer relationship management (CRM) within higher education institutions (HEIs). The results encompass a comprehensive exploration of various bibliometric metrics, including the number and types of publications, keywords, authorship, annual research output, citation patterns, impact factors, institutional affiliations, and thematic trends. By examining these dimensions, the study sheds light on the evolution of CRM research in HEIs over the past decade. Through the bibliometric approach, this analysis identifies key developments, trends, and contributions to the field, offering insights into how CRM practices have been integrated and studied in the context of higher education. Additionally, the findings underscore the dual role of CRM in addressing student engagement and broader organizational outcomes, including workforce development and digital transformation. The analysis also highlights significant milestones in research output, correlating them with broader technological and policy advancements.

3.1. Basic Information About the Data Analyzed

This extensive study, spanning a decade from 2014 to 2024, identified a total of 35 documents comprising various forms of academic publications. These included 25 journal articles, 9 book chapters, and 1 book, offering a comprehensive perspective on the research area. The dataset reflects contributions from 91 authors, emphasizing the collaborative efforts dedicated to advancing knowledge on customer relationship management (CRM) within higher education institutions (HEIs). Furthermore, the analysis uncovered 35 distinct keywords, showcasing the wide range of topics investigated and the evolving focus of research in this field. This diversity in focus reflects the increasing recognition of CRM, not only as a tool for student lifecycle management but also as a driver of organizational resilience, employee retention, and strategic alignment.

3.2. Annual Scientific Production and Database-Based Research Output

This section presents an analysis of the annual scientific production on CRM research in Higher Education Institutions (HEIs), based exclusively on publications indexed in the Scopus database. The bibliometric analysis examines publication trends over time, providing insights into the volume and trajectory of research output within this domain. The analysis reveals significant fluctuations in research activity on customer relationship management (CRM) within higher education institutions (HEIs) over the past decade. Research output in 2014 reached four articles, but by 2016, only one article was published, indicating a temporary decline in publication volume. In 2017, the publication count increased noticeably to seven articles, reflecting a growth in academic discussions on CRM topics during this period. Between 2018 and 2019, research activity remained consistent, with three articles published annually, suggesting a focused yet modest progression in the field. In 2020, scholars produced four articles, reflecting a gradual increase in CRM-related studies as institutions responded to evolving challenges and opportunities in higher education. By 2022 and 2024, publication activity peaked at five articles each year, signifying a renewed emphasis on CRM in the context of digital transformation and institutional strategy. This growth highlights the intersection of CRM with technological advancements such as AI, social media, and predictive analytics, which are increasingly leveraged to enhance student engagement and employee well-being. The trend of annual scientific production related to CRM in higher education is shown in Figure 2, highlighting fluctuations in research output over the years.

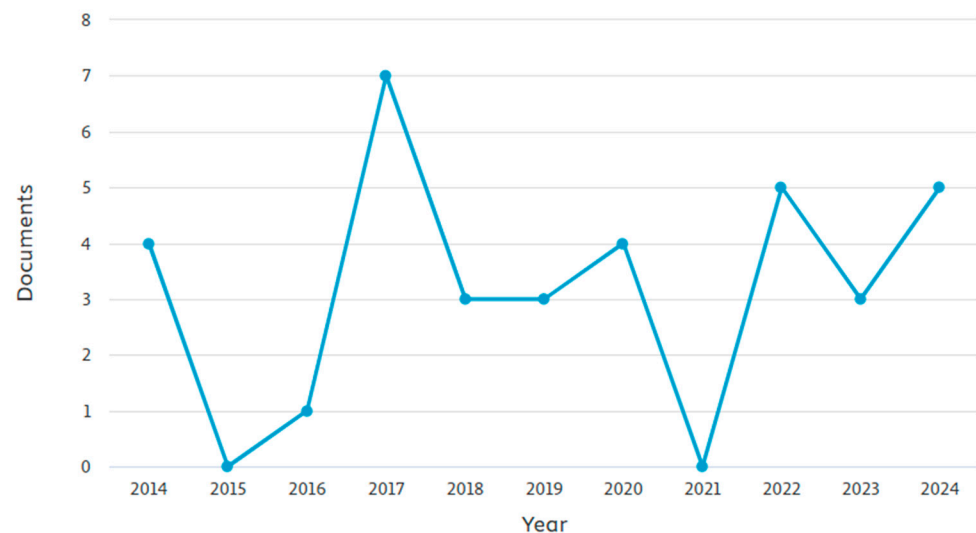


Figure 2. Annual scientific production.

3.3. Documents with the Most Citations and Impact Factors

Table 3 highlights the most relevant sources contributing to research on customer relationship management (CRM) in higher education institutions (HEIs). “Developments in Marketing Science: Proceedings of the Academy of Marketing Science” emerges as the leading source with six articles (17.14%), followed by the “International Journal of Recent Technology and Engineering” with three articles (8.57%), and the “Journal of Strategic Marketing” with two articles (5.71%). Other sources, including “Performance Measurement and Metrics” and “Brazilian Business Review”, contribute fewer publications, reflecting a more focused but diverse set of platforms for CRM research. In terms of citation impact, the leading documents demonstrate foundational contributions to CRM, such as its role in student satisfaction, while more recent works explore its integration with digital technologies and workforce strategies.

Table 3. Most relevant sources as per the number of articles.

Source	Articles	Percentage (%)
Developments in Marketing Science: Proceedings of The Academy of Marketing Science	6	17.14
International Journal of Recent Technology and Engineering	3	8.57
Journal of Strategic Marketing	2	5.71
Performance Measurement and Metrics	2	5.71
Brazilian Business Review	1	2.86
Business: Theory and Practice	1	2.86
Cogent Business and Management	1	2.86
Computers in Libraries	1	2.86
Contemporary Engineering Sciences	1	2.86
Customer Relationship Management: Concepts, Applications, and Technologies, Fifth Edition	1	2.86

In terms of impact, Table 4 presents the most cited documents, with (W.-J. Chen & M.-L. Chen, 2014) in the Journal of Hospitality Marketing & Management leading with 55 citations, showcasing its significant academic influence. (Hrnjic, 2016) in Eurasian Business Review and (Gholami et al., 2018) in Sustainability follow with 21 and 16 citations, respectively. Notably, more recent works, such as (Shah et al., 2024) in the Journal of Marketing for Higher Education, have already achieved 11 citations, reflecting emerging recognition in the field.

Table 4. Documents having maximum citations-Biblioshiny using Scopus database.

Source	Year	Global Citations
Chen W-J, J Hosp Mark Manage	2014	55
Hrnjic A, Eurasian Bus Review	2016	21
Gholami H, Sustainability	2018	16
Khashab B, J Strateg Mark	2020	16
Shah Sa, J Mark High Educ	2024	11
Grieves K, Perform Meas Metr	2014	9
Khashab B, J Strateg Mark	2022	6
Le Qh, J Asian Financ Econ Bus	2020	6
Suhasini B, Int J Recent Technol Eng	2019	5
De Souza M, Brazilian Bus Rev	2018	5

The combination of publication counts and citation impact underscores the critical role of marketing, sustainability, and technology-focused journals in shaping CRM research in HEIs. While highly cited documents demonstrate foundational contributions, the distribution of articles across journals highlights the interdisciplinary nature of this field. A more detailed summary of the most significant works in CRM research, including their citation impact and relevance, is provided in Appendix A.

3.4. Authors and Affiliation

Understanding authorship and institutional contributions is essential to identifying key academic influences in CRM research within higher education. A bibliometric analysis reveals the geographical distribution of research productivity, with leading nations often driven by technological advancements, policy support, and digital transformation in education. Figure 3 presents the top 10 countries with the highest scientific output in CRM research within higher education institutions.

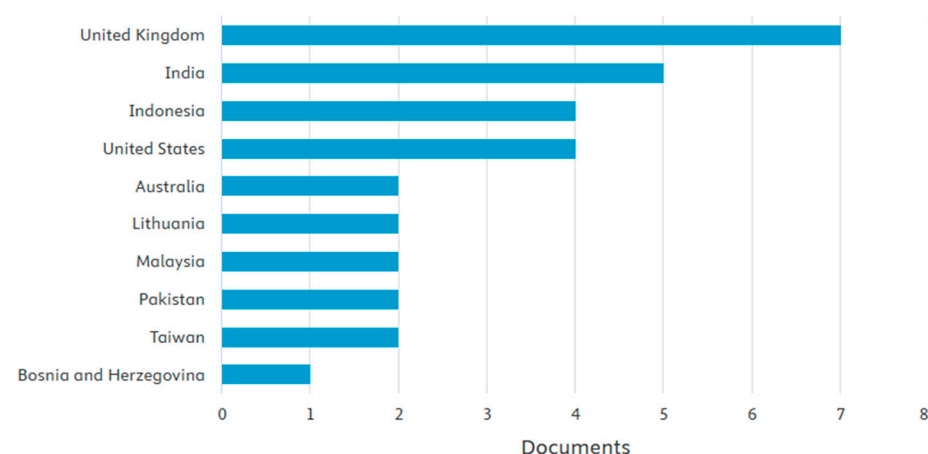
**Figure 3.** Top 10 countries with the highest scientific output in CRM research within higher education institutions.

Figure 3 presents the top 10 contributing countries to CRM research in higher education institutions (HEIs) based on Scopus-indexed publications. The United Kingdom leads with seven documents, followed by India with five, while Indonesia and the United States each contribute four publications. Australia, Lithuania, Malaysia, Pakistan, Taiwan, and Bosnia and Herzegovina have produced between one and three publications.

These publication trends highlight geographic differences in CRM-related research output. The UK and India, with the highest number of publications, show significant academic activity in this domain. Indonesia and Malaysia also contribute to the growing

body of CRM research within Southeast Asia. However, these findings are limited to Scopus-indexed publications, and research contributions from other countries may not be fully represented. The most productive authors in CRM research are presented in Figure 4, highlighting key contributors based on the number of published documents.

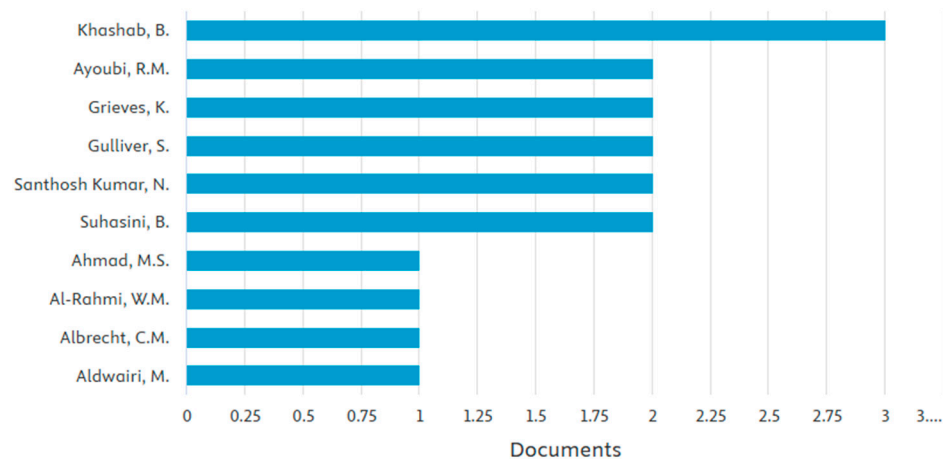


Figure 4. Top 10 of the most productive authors.

Khashab, B. and Ayoubi, R.M. have been identified as leading researchers in CRM research within higher education institutions (HEIs), based on bibliometric analysis. Their work often focuses on developing strategic frameworks for CRM implementation in higher education, providing critical insights for institutions aiming to enhance operational efficiency and student engagement. As highlighted by Khashab, et al. (2022a), effective CRM strategies play a crucial role in improving student retention and institutional management.

3.5. Bibliographic Analysis

Figure 5, depicting the network visualization, identifies “Customer Relationship Management” and “Higher Education” as central nodes, indicating their dominant role in CRM research within HEIs. The strong connections between these terms highlight recurring research themes, particularly in areas such as student engagement, social media, and academic libraries. Keywords like “Student Engagement”, “Social Media”, and “Academic Libraries” appear prominently in the network, suggesting their centrality in CRM applications. The co-occurrence of these terms reflects a research focus on enhancing student satisfaction, optimizing resource management, and leveraging social media for multi-channel communication within HEIs.

Emerging nodes such as “Digital Marketing” and “Multi-channel Communication” further demonstrate a shift towards integrating CRM with advanced technological tools, aligning with institutional strategies to address both student and workforce needs. These themes underscore CRM’s expanding role in digital transformation efforts within HEIs, supporting both operational efficiency and student engagement in a technology-driven academic environment. The colors in Figure 5 represent different thematic clusters in CRM research, where closely related keywords are grouped based on their co-occurrence patterns.

Figure 6, the overlay visualization, illustrates the temporal evolution of research themes. Early research (2016–2018) focused on foundational topics such as “Service Quality” and “Academic Reputation”, establishing the theoretical basis for CRM applications in higher education. During this period, the emphasis was on aligning service quality with global institutional standards, particularly in enhancing credibility and attracting international stakeholders.

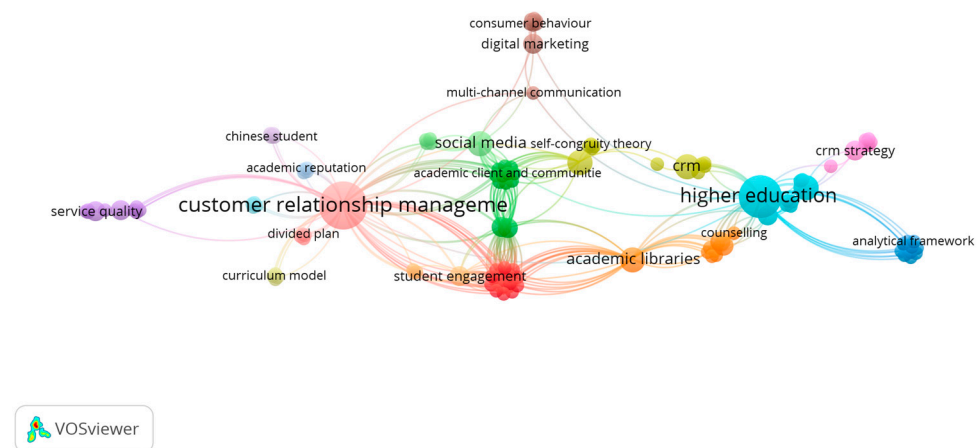


Figure 5. Network visualization with thematic clusters.

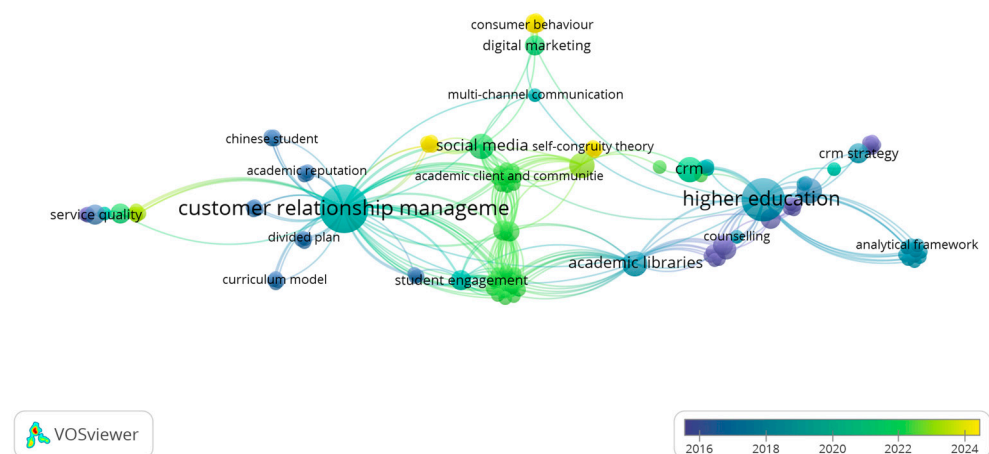


Figure 6. Overlay visualization.

Between 2018 and 2020, operational applications gained prominence, with themes like “Social Media” and “Student Engagement” reflecting the growing reliance on digital tools for proactive and personalized engagement. The inclusion of “Public Relations” and “Academic Libraries” indicates the diversification of CRM applications to encompass broader institutional functions, moving beyond traditional student-centric approaches. This period reflects the growing demand for personalized and proactive engagement, driven by the rise of digital communication platforms and the need to enhance student support systems. “Social media” as a research theme signifies the beginning of CRM’s integration with multi-channel communication strategies, enabling HEIs to maintain consistent and interactive touchpoints with students.

From 2020–2024, advanced themes such as “Digital Marketing”, “CRM Strategy”, and “Multi-channel Communication” emerged, underscoring the strategic integration of CRM with AI-driven analytics and predictive tools. The increasing focus on these themes aligns with the global push towards digital transformation and highlights CRM’s potential in optimizing not only student outcomes but also organizational efficiency. The COVID-19 pandemic likely accelerated this trend, compelling HEIs to adopt digital-first solutions to manage student and employee relationships effectively.

These findings underscore a significant evolution in CRM research, moving from foundational theoretical explorations to sophisticated practical applications. This progression aligns with broader technological advancements and highlights the potential for CRM to address complex challenges in higher education. By integrating emerging tools like AI and

predictive analytics, HEIs can develop more adaptive and data-driven strategies, ensuring resilience in an increasingly competitive and digitalized educational landscape.

The trends identified in Figure 6 provide valuable insights for both researchers and practitioners. For HEIs, these findings indicate a growing emphasis on CRM-related research, particularly in areas such as digital marketing, multi-channel communication, and student engagement. The increasing presence of these themes over time suggests a shift toward the integration of CRM with advanced technological tools, highlighting its evolving role in institutional strategies for enhancing student experiences and operational efficiency.

The overlay visualization shows the evolution of CRM research in higher education, with an early focus (2016–2018) on foundational themes like “academic reputation” and “student engagement”. From 2018 to 2021, attention shifted to operational applications, including “academic libraries” and “public relations”. By 2024, a strong connection between “CRM” and “social media” emerges, highlighting the integration of digital marketing and multi-channel communication into CRM strategies, reflecting a shift toward leveraging technology for student engagement and institutional branding.

The keyword network visualization in Figure 7 reveals the intellectual structure of CRM research in higher education by highlighting the relationships between core concepts. Early clusters (2016–2018) focused heavily on foundational themes like “academic reputation” and “student engagement”, indicating an emphasis on establishing the theoretical underpinnings of CRM in HEIs. These themes reflect the initial exploration of CRM’s role in improving institutional credibility and its capacity to enhance student satisfaction.

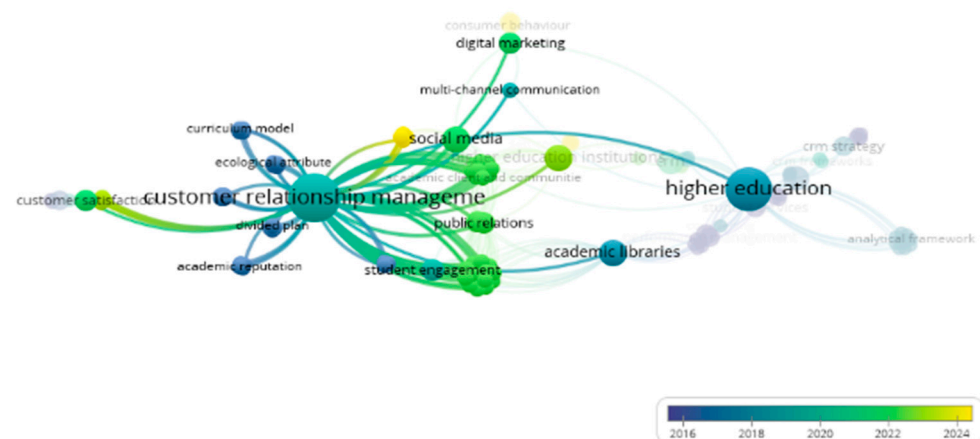


Figure 7. Visualized keyword network (customer relationship management).

From 2018 to 2021, the focus expanded toward operational applications. Keywords like “academic libraries” and “public relations” indicate the increasing adoption of CRM in specific institutional functions. The prominence of “academic libraries” during this phase suggests their evolution into critical hubs for CRM implementation. These libraries began leveraging CRM principles to foster personalized engagement through targeted communication and efficient resource management. Similarly, “public relations” reflects the strategic application of CRM in maintaining relationships with external stakeholders, including prospective students and donors, thereby aligning with institutional branding efforts.

By 2024, the visualized network revealed a significant shift toward integrating digital tools and advanced communication strategies. The strong connection between “CRM” and “social media” indicates the growing reliance on multi-channel communication and digital marketing to enhance student engagement and institutional branding. HEIs increasingly utilize CRM systems integrated with social media analytics to deliver personalized, real-time interactions. This trend aligns with the broader adoption of technology-driven

CRM strategies in higher education, where institutions seek to enhance student engagement, improve alumni relations, and strengthen institutional branding in a competitive academic landscape.

The inclusion of emerging terms like “digital marketing”, “consumer behavior”, and “multi-channel communication” highlights the adoption of CRM as a strategic tool in aligning institutional operations with technological advancements. For instance, “digital marketing” represents HEIs’ efforts to harness CRM systems for tailored outreach campaigns, targeting both prospective students and alumni. Similarly, “multi-channel communication” underscores the integration of various platforms, enabling seamless interaction across email, social media, and institutional portals.

In addition to student-centric strategies, the network also reflects the broader application of CRM in workforce management. Keywords like “analytical framework” and “self-congruity theory” suggest an interdisciplinary approach, bridging CRM with advanced analytics and behavioral sciences. These themes reflect the increasing role of technology in higher education, supporting the development of more flexible, autonomous, and productive environments for both students and employees, as emphasized in this special issue. For instance, the inclusion of “counseling” alongside “CRM strategy”, the co-occurrence of “counselling” and “CRM strategy” in the network visualization, suggests an expanding research focus on the potential role of CRM in supporting holistic services within HEIs, including mental health and career development.

The keyword evolution demonstrates a clear trajectory from foundational research to advanced implementations of CRM, emphasizing its strategic importance in both academic and operational contexts. The transition from “academic reputation” and “student engagement” to “digital marketing” and “multi-channel communication” showcases the increasing relevance of CRM in addressing the dual challenges of enhancing student outcomes and adapting to technological disruptions.

4. Discussion

4.1. Key Findings

The bibliometric analysis of CRM research in higher education institutions (HEIs) highlights three key trends. First, foundational themes such as “service quality” and “academic reputation” dominated the early stages of research (2016–2018), forming the theoretical basis for CRM’s role in enhancing institutional credibility and student satisfaction (Cockrill & Zhao, 2017; Vladimirovna, 2017). These themes reflect the initial focus on aligning CRM with institutional goals, such as improving service delivery and fostering a trustworthy reputation among stakeholders.

Second, between 2018 and 2021, the focus shifted toward operational applications, with themes such as “academic libraries” and “public relations” gaining prominence. This period saw HEIs increasingly adopt CRM systems to enhance personalized student engagement and optimize resource management (Gholami et al., 2018; Khashab et al., 2022a). The integration of CRM principles into library systems highlights their potential to act as central hubs for student interaction, while public relations strategies demonstrate CRM’s utility in building and maintaining external stakeholder relationships.

Finally, the emergence of advanced themes such as “social media”, “CRM strategy”, and “multi-channel communication” from 2020–2024 underscores the growing reliance on technology-driven approaches to strengthen student engagement and institutional branding (Khashab et al., 2022a; Vaičiūtė & Išoraitė, 2023). These themes reflect the integration of digital tools and AI-based analytics into CRM systems, enabling HEIs to personalize student experiences and maintain competitive advantages in a rapidly evolving educational landscape.

Despite these advancements, several gaps remain. The limited exploration of cross-cultural applications underscores the need for comparative studies to address the contextual nuances of CRM implementation in diverse educational environments (Gholami et al., 2018). Additionally, studies on experiential learning highlight the importance of real-world applications in student engagement and career development (Fantozzi et al., 2024). While CRM research has increasingly incorporated digital tools and AI-driven strategies, integrating experiential learning approaches could further enhance its impact on institutional credibility and student success. Furthermore, the underutilization of emerging technologies such as AI and predictive analytics constrains the ability of CRM systems to deliver proactive, scalable support to students (Khashab et al., 2022a). Lastly, the absence of standardized frameworks for evaluating CRM effectiveness poses challenges for benchmarking, continuous improvement, and global alignment of institutional practices (Vaičiūtė & Išoraitė, 2023).

4.2. Implications for Practice

The findings emphasize CRM's strategic potential to support HEIs in addressing both student engagement and organizational goals. Integrating CRM tools with social media platforms offers HEIs an opportunity to expand their outreach and maintain dynamic, real-time interactions with students. For example, the strong association between "academic libraries" and "student engagement" underscores the role of libraries as hubs for personalized communication and targeted resource management (Grieves & Halpin, 2014; Jubinville & Lynch, 2017). By leveraging these capabilities, HEIs can position libraries as centers of innovation that foster meaningful student connections and institutional trust. This is particularly crucial as HEIs navigate the evolving technological landscape, exploring the integration of emerging technologies. Even blockchain, with its potential for secure and transparent record-keeping (Abdullah et al., 2024), is being explored for applications like academic credential verification and secure data management.

Moreover, the focus on "social media" and "multi-channel communication" highlights the importance of adopting digital-first strategies to enhance student and alumni engagement. Recent studies emphasize that integrating innovative university-led challenges fosters student engagement and enhances real-world learning experiences (Fantozzi et al., 2024). Aligning these experiential learning approaches with CRM strategies could strengthen digital-first engagement models, ensuring more meaningful and personalized interactions with students and alumni. CRM systems integrated with AI-driven analytics allow HEIs to track engagement metrics dynamically, enabling a personalized approach to addressing student needs (De Souza Miake et al., 2018; Ibrahim, 2022). These systems can also strengthen alumni relations by providing tailored programs, robust feedback mechanisms, and data-driven loyalty strategies. For HEIs, aligning CRM strategies with broader institutional objectives can streamline operations, improve service quality, and foster a culture of continuous innovation, ensuring competitiveness in an increasingly globalized education market.

Furthermore, CRM systems offer opportunities for enhancing employee engagement and retention, a critical element of the special issue theme on human resource development. By leveraging CRM's data-driven insights, HEIs can create flexible, autonomous work environments that prioritize employee satisfaction and productivity. Hartoyo et al. (2023) demonstrated how segmentation strategies based on consumer motivations, demographics, and reference groups can strengthen brand loyalty in the automotive industry. Similarly, HEIs can apply segmentation approaches to better understand and engage both students and employees, thereby supporting long-term institutional resilience.

4.3. Future Research Directions

To address the identified gaps, future research should focus on integrating advanced technologies, such as AI and machine learning, into CRM systems for HEIs. AI-driven predictive analytics can provide actionable insights into student behaviors and preferences, enabling the delivery of highly personalized and proactive support at scale. For instance, CRM systems equipped with AI can analyze touchpoints across the student journey, enhancing satisfaction and engagement (Suhasini & Santhosh Kumar, 2019a). Additionally, research should explore the potential of CRM-based frameworks in streamlining institutional operations, such as library management and resource allocation (Bahader, 2023).

Cross-cultural studies remain essential for understanding how CRM strategies can adapt to diverse educational and cultural contexts. Research on digital marketing strategies in HEIs demonstrates the importance of localized approaches in effectively targeting specific demographics, underscoring the need to tailor CRM implementations to regional and cultural variations (Vululleh, 2020). Such studies could provide HEIs with valuable insights for optimizing their CRM systems to ensure inclusivity and adaptability across different educational ecosystems.

Another promising area involves the development of standardized frameworks for evaluating CRM effectiveness. These frameworks should encompass multiple dimensions, including student satisfaction, retention rates, employee engagement, and alumni loyalty. For example, incorporating CRM metrics into university library systems has proven effective in enhancing service quality and promoting data-driven decision-making (Grieves & Pritchard, 2018). Such frameworks would enable HEIs to benchmark performance and align CRM strategies with their broader institutional objectives (Joseph et al., 2017).

Finally, future research should investigate the long-term impacts of CRM strategies on institutional outcomes, particularly in the context of digital transformation and global competition. Studies on digitized enrolment engines, such as NoPaperForms, have demonstrated the potential of CRM systems to enhance recruitment and operational efficiency (Mital et al., 2022). Longitudinal studies could provide a deeper understanding of how CRM systems evolve to meet the challenges and opportunities presented by technological advancements and shifting educational paradigms.

5. Conclusions

This study provides a bibliometric analysis of customer relationship management (CRM) research in higher education institutions (HEIs), aligning with its objective to explore the chronological development of the field, identify key contributors, and uncover dominant and emerging themes in the literature. The findings underscore the significant evolution of CRM research, highlighting its progression from foundational concepts, such as service quality and academic reputation, to advanced applications, including social media integration, multi-channel communication, and AI-driven strategies. These advancements reflect the growing recognition of CRM as a transformative tool for addressing both student needs and broader institutional goals.

The study identifies key contributors—authors, institutions, and countries—who have significantly shaped CRM research in HEIs. Notable contributions from countries such as the United Kingdom, India, and Indonesia emphasize the global relevance of CRM and its adaptability to diverse educational ecosystems. For example, research on CRM in Indonesia frequently explores strategies for addressing resource constraints while promoting innovative engagement approaches, providing valuable insights for emerging markets.

Dominant themes such as student engagement, alumni relations, and academic libraries highlight CRM's strategic role in enhancing institutional resilience. These themes demonstrate that CRM systems have evolved beyond operational tools to become central

to fostering trust, personalizing communication, and strengthening institutional branding. However, the analysis also reveals critical gaps, including limited cross-cultural studies, insufficient integration of advanced technologies like AI and predictive analytics, and the absence of standardized frameworks for evaluating CRM effectiveness. These gaps present opportunities for further research to deepen the understanding of CRM's role in addressing both the academic and organizational needs of HEIs.

By addressing these gaps, future research can expand the scope of CRM applications, particularly in areas such as employee development and institutional culture. The study highlights the potential for CRM to support organizational resilience by enabling HEIs to adapt to dynamic technological advancements and shifting stakeholder expectations. For instance, integrating CRM with AI-driven analytics can provide actionable insights for personalizing student and employee experiences, while standardized frameworks for CRM evaluation can facilitate benchmarking and continuous improvement.

In conclusion, this study contributes to the academic discourse and practical strategies for leveraging CRM to enhance both student and employee outcomes in HEIs. By bridging the gaps in CRM research and aligning its applications with broader institutional goals, HEIs can strengthen their resilience and competitiveness in an increasingly digitalized and dynamic educational landscape. The findings serve as a foundation for future research and practice, emphasizing the importance of CRM in fostering inclusive, data-driven, and adaptive strategies that cater to the evolving needs of both students and employees.

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Appendix A

Table A1 presents a selection of the most significant works in customer relationship management (CRM) research within higher education institutions (HEIs), highlighting their relevance and impact based on citation count. The table includes key references, their titles, journals of publication, year of publication, and the number of citations, which serve as an indicator of their academic influence.

The highest-cited work, *Factors Affecting the Hotel's Service Quality: Relationship Marketing and Corporate Image* (W.-J. Chen & M.-L. Chen, 2014), has 55 citations, reflecting its broad relevance to CRM and service quality studies. Similarly, *The Transformation of Higher Education: Evaluation of CRM Concept Application and Its Impact on Student Satisfaction* (Hrnjic, 2016) with 21 citations, emphasizes the role of CRM in student satisfaction and institutional engagement. Another influential work, *A Framework for Customer Relationship Management Strategy Orientation Support in Higher Education Institutions* (Khashab et al., 2020), has been cited 16 times, underlining its contribution to CRM strategic development in HEIs.

These highly cited studies provide a foundational understanding of CRM's role in student engagement, institutional reputation, and service optimization. Their inclusion in

the appendix demonstrates the research base upon which this study builds, reinforcing the credibility and significance of the conducted bibliometric analysis.

Table A1. Significant works in CRM research for higher education.

ID	Reference	Title	Journal	Year	Citations
1	(W.-J. Chen & M.-L. Chen, 2014)	Factors Affecting the Hotel's Service Quality: Relationship Marketing and Corporate Image	Journal of Hospitality Marketing and Management (2014) 23(1) 77–96	2014	55
2	(Hrnjic, 2016)	The transformation of higher education: evaluation of CRM concept application and its impact on student satisfaction	Eurasian Business Review (2016) 6(1) 53–77	2016	21
3	(Khashab et al., 2020)	A framework for customer relationship management strategy orientation support in higher education institutions	Journal of Strategic Marketing (2020) 28(3) 246–265	2020	16
4	(Gholami et al., 2018)	Proposed analytic framework for student relationship management based on a systematic review of CRM systems literature.	Sustainability (Switzerland)	2018	16
5	(Shah et al., 2024)	Role of social media technologies and customer relationship management capabilities 2.0 in creating customer loyalty and university reputation	Journal of Marketing for Higher Education (2024) 34(1) 344–367	2024	11
6	(Grieves & Halpin, 2014)	Developing a Quality Model at University Library Services Sunderland	Performance Measurement and Metrics (2014) 15(1–2) 50–57	2014	9
7	(Le et al., 2020)	Customer Satisfaction in Hotel Services: A Case Study of Thanh Hoa Province, Vietnam	Journal of Asian Finance, Economics and Business (2020) 7(10) 919–928	2020	7
8	(Khashab et al., 2022a)	Scoping and aligning CRM strategy in higher education institutions: practical steps	Journal of Strategic Marketing (2022) 30(7) 627–651	2022	6
9	(Suhasini & Santhosh Kumar, 2019b)	Emerging trends and future perspective of human resource reskilling in higher education	International Journal of Recent Technology and Engineering, 8(2 Special Issue 4), pp. 351–353	2019	6
10	(De Souza Mlake et al., 2018)	Customer knowledge management (CKM): Model proposal and evaluation in a large Brazilian higher education private group	Brazilian Business Review (2018) 15(2) 135–151	2018	5
11	(Khashab et al., 2022b)	Analysing Enterprise Resources for Developing CRM Framework In higher Education Institutions	Journal of Enterprise Information Management (2022) 35(6) 1639–1657	2022	4
12	(Sandhu et al., 2020)	A review of trust and security concerns in cloud computing adoption intention in the higher education sector: Research in progress	IGI Global, (2020), 1–12	2020	4
13	(Prior et al., 2024)	CUSTOMER RELATIONSHIP MANAGEMENT: Concepts, Applications, and Technologies, Fifth Edition	Taylor and Francis, (2024), 1–346	2024	3
14	(Grieves & Pritchard, 2018)	Articulating value and impact through outcome-centered service delivery: The student and learning support experience at the University of Sunderland	Performance Measurement and Metrics (2018) 19(1) 2–11	2018	3
15	(Mater et al., 2024)	Developing a success model of a social student relationship management system	Heliyon (2024) 10(4)	2024	2

Table A1. Cont.

ID	Reference	Title	Journal	Year	Citations
16	(Octavia et al., 2023)	Key factors of educational CRM success and institution performance: A SEM analysis	Cogent Business and Management (2023) 10(1)	2023	2
17	(Ibrahim, 2022)	Social Customer Relationship Management as a Communication Tool for Academic Communities in Higher Education Institutions through Social Media	International Journal of Advanced Computer Science and Applications, 13(5), pp. 401–411	2022	2
18	(Mital et al., 2022)	NoPaperForms: enrolment engine for the education sector	Emerald Emerging Markets Case Studies (2022) 12(2) 1–28	2022	1
19	(Jubinvill & Lynch, 2017)	Special Session: Designing an Integrated 3-Year Marketing Bachelor's Degree Program	Springer Nature, (2017), 1103–1107	2017	1
20	(Marino & Presti, 2017)	Web Communication Strategy and University Public Engagement: An Extended Abstract	Springer Nature, (2017), 1213–1218	2017	1
21	(Joseph et al., 2017)	Branding Universities: An Updated View of Factors Underlying College Choice	Springer Nature, (2017), 370–372	2017	1
22	(Meyliana et al., 2016)	Social Media Adoption for Social CRM in Higher Education: an Insight from Indonesian Universities	International Journal of Synergy and Research (2016) 4(2) 7	2014	1
23	(Lin et al., 2024)	Developing and validating an instrument for assessing E-entrepreneurial idea feasibility	International Journal of Management Education (2024) 22(3)	2024	0
24	(Gurtina & Bormane, 2024)	Managing Social Responsibility for Health: Challenges in Using Digital Marketing for the Promotion of Paid Services of Healthcare Institutions	Springer Science and Business Media B.V., (2024), 95–108	2024	0
25	(Vaičiūtė & Išoraitė, 2023)	TECHNOLOGICAL INTEGRATION OF MARKETING IN THE SUPPLY CHAIN OF A TRANSPORT COMPANY	Business: Theory and Practice (2023) 24(2) 584–593	2023	0
26	(Bahader, 2023)	Analysis of the relationship of CRM-based library services with head librarians' personal and academic variables: a survey of university libraries in Pakistan	Library Management (2023) 44(8–9) 546–565	2023	0
27	(Gray & Starkey, 2022)	LibConnect: What Academic Libraries Need to Know About Implementing a CRM Platform	Computers in Libraries (2022) 42(7) 15–18	2022	0
28	(Vululleh, 2020)	Digital marketing of higher education marketing in Africa: Challenges, prospects, and opportunities	Taylor and Francis, (2020), 45–58	2020	0
29	(Amudha & Saravanan, 2019)	Security advantages of cloud ERP and its databases in higher education	International Journal of Recent Technology and Engineering (2019) 8(2) 1293–1297	2019	0
30	(Suhagini & Santhosh Kumar, 2019a)	CRM service touch points and student perception	International Journal of Recent Technology and Engineering, 8(1 Special issue 4), pp. 832–840	2019	0
31	(Maria, 2017)	Consequences of Decisions and Choices with Respect to the Satisfaction of Individual Needs of Higher Education Consumer	Springer Nature, (2017), 519–523	2017	0
32	(Cockrill & Zhao, 2017)	The UK as an Educational Tourist Destination: Young Chinese' Experiences of the UK	Springer Nature, (2017), 885	2017	0

Table A1. Cont.

ID	Reference	Title	Journal	Year	Citations
33	(Vladimirovna, 2017)	Research of Mass-Media Activity for the Development of Consumers Segment Sensitive to Ecological Attributes of Goods and Services in Russia	Springer Nature, (2017), 61	2017	0
34	(Sudaryo et al., 2017)	Customer relationship management scorecard (CRM scorecard) model to support performance in higher education	Man in India (2017) 97(24) 149–160	2017	0
35	(Pember et al., 2014)	Customer relationship management: A case study from a metropolitan campus of a regional university	Journal of Higher Education Policy and Management (2014) 36(2) 117–128	2014	0

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