

Review Article

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Quality of Service and Student Satisfaction in Higher Education: Relationship, Trends, Convergences, and Gaps

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Abstract

Background/purpose. Higher education institutions face increasing pressure to improve the quality of services offered to students, who are now considered central actors in their academic journey. In this context, student satisfaction has become a key indicator of institutional performance and competitiveness. However, the literature examining the relationship between perceived service quality and student satisfaction remains fragmented and heterogeneous.

Materials/methods. This study adopts a bibliometric approach based on the Scopus database. From an initial search that yielded 485 documents, a final sample of 261 articles (2014–2024) in the fields of Sociology, Business, and Economics was analyzed using VOSviewer. The indicators used include the temporal evolution of publications, co-authorship networks, leading journals, and thematic clusters.

Results. The analysis reveals (1) a steady increase in the number of publications over the last decade, (2) the emergence of three main thematic clusters centered around service quality, student satisfaction, and student experience, and (3) the central role of specific journals, authors, and countries in shaping the field. These findings confirm the growing prominence of research linking service marketing and university management.

Conclusion. This work provides an integrated mapping of research on service quality and student satisfaction in higher education. It highlights dominant trends, identifies research gaps, and offers directions for future theoretical and empirical studies, thereby contributing to a better understanding of institutional performance in universities.



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1. Introduction

Higher education is currently undergoing a profound transformation. In an environment characterized by the globalization of knowledge, increasing competition among universities, and rapidly evolving student expectations, the quality of services provided has become a strategic priority for institutions. Once primarily focused on teaching and research, universities are now expected to operate as service-oriented organizations, capable of delivering a comprehensive academic experience that meets international standards (Altbach, Reisberg, & Rumbley, 2019; Sultan & Wong, 2019; Basha, Siddiqui, & Almubarak, 2022).

In this context, student satisfaction is increasingly viewed as a key indicator of institutional performance and sustainability. It goes beyond assessing the quality of teaching to encompass all aspects of university life, including administrative services, infrastructure, digital learning tools, academic support, and campus climate (Elliott & Shin, 2002; Douglas, McClelland, & Davies, 2008; Al-Kumaim et al., 2021; Chandra & Naorem, 2023). Numerous studies have demonstrated that student satisfaction influences not only academic success and engagement but also the reputation and competitiveness of higher education institutions (Tsinidou, Gerogiannis, & Fitsilis, 2010; Gupta & Kaushal, 2020; Tran, Le, & Nguyen, 2022).

The concept of service quality has been widely explored in management and marketing sciences, particularly through well-established models such as SERVQUAL (Parasuraman, Zeithaml, & Berry, 1988) and HEdPERF (Abdullah, 2006), both of which have been adapted to the university context. These models assess students' perceptions across dimensions such as reliability, tangibility, responsiveness, assurance, and empathy. However, despite abundant research, the literature remains fragmented, dispersed across heterogeneous regional contexts, keywords, and methodologies (Clemes, Gan, & Kao, 2007; Suhartanto et al., 2019; Srivastava & Reddy, 2021). This fragmentation prevents scholars from developing a consolidated, integrative understanding of how service quality contributes to student satisfaction across countries and institutional settings.

Moreover, although several narrative and empirical reviews exist, few studies adopt a bibliometric perspective that can map the global structure, evolution, and intellectual foundations of this research field. Existing works often focus on single-country case studies, limited sets of variables, or narrow methodological lenses, leaving unanswered questions regarding international trends, thematic clusters, collaborative networks, and emerging topics. This clearly reveals a research gap that justifies the need for a comprehensive scientific mapping of the field.

To address this need for clarification, the present study adopts a bibliometric approach. Using the Scopus database—renowned for its comprehensive international coverage (Mongeon & Paul-Hus, 2016)—we identified a corpus of 485 articles dealing with the intersecting themes of service quality, student satisfaction, and higher education. After applying inclusion criteria (2014–2024 period, SOCI/BUSI/ECON subject areas, finalized English-language articles), the final sample was refined to 261 articles, ensuring both focus and representativeness. The choice of the 2014–2024 period is justified by the accelerated digital transformation of higher education during the last decade, which has significantly reshaped student expectations and institutional service processes. Using VOSviewer, this study provides a scientific mapping of the field, identifying major trends, co-authorship networks, influential journals, and dominant thematic clusters.

The central research question guiding this work can therefore be formulated as follows:

How has the international scientific literature addressed the relationship between perceived service quality and student satisfaction in higher education, and what trends, convergences, and gaps can be identified through a bibliometric analysis of Scopus-indexed publications?

This article is structured as follows: after this introduction, the second section presents the theoretical framework and key concepts. The third section details the bibliometric methodology, from data extraction to analysis using VOSviewer. The fourth section reports both descriptive and structural results, highlighting the most influential authors, countries, and journals, as well as emerging themes. The fifth section offers a critical discussion comparing these findings with existing literature. Finally, the conclusion summarizes the main contributions, limitations, and avenues for future research.

2. Literature Review and Theoretical Framework:

2.1. Overview of Research on Service Quality and Student Satisfaction:

The study of the relationship between service quality and student satisfaction in higher education is an evolving field at the crossroads of service marketing, quality management, and educational sciences. Faced with rising competition among institutions, increasingly diverse student profiles, and the digitalization of teaching practices, universities are seeking to better understand the factors shaping students' perceptions of quality and overall satisfaction. Despite the maturity of this research stream, the existing literature still exhibits significant conceptual dispersion and methodological heterogeneity, which prevent the emergence of an integrated and consensus-based view of how service quality affects student satisfaction.

This literature review aims to trace the main theoretical frameworks that have structured the reflection on service quality in higher education, analyze the central role of student satisfaction as an indicator of institutional performance, and highlight the relationship linking these two concepts. It also seeks to identify the theoretical inconsistencies, contextual disparities, and unresolved questions that justify the need for a bibliometric approach capable of mapping global trends, dominant themes, and persistent gaps in this research field.

Research on service quality and student satisfaction in higher education has gradually emerged as a major field of inquiry at the intersection of service marketing, quality management, and education. In a context where universities are called upon to reinvent themselves to meet increasingly demanding student expectations, understanding how perceptions of quality are formed and how they influence satisfaction has become both a strategic and academic challenge. However, the diversity of models, analytical lenses, and regional contexts has led to a fragmented accumulation of knowledge, with limited cross-study comparisons and varying definitions of service quality. To enhance terminological clarity, this review adopts the terms "perceived service quality" and "student satisfaction" in line with the dominant conceptual tradition.

2.2. Overview of Research on Service Quality and Student Satisfaction

The concept of service quality originates in marketing, with the seminal work of Parasuraman, Zeithaml, and Berry (1988), who developed the SERVQUAL model. This model is based on five key dimensions — reliability, tangibility, responsiveness, assurance, and empathy — and aims to measure the gap between users' expectations and their perceptions of the service received. This approach was soon adapted to the education sector, now recognized as a service industry in its own right, where the student is viewed not only as a learner but also as an active participant in their university experience. In this perspective, quality extends beyond classroom teaching to encompass all interactions within the institution, from administrative services to campus life and academic support (Gruber, Fuß, Voss & Gläser-Zikuda, 2010). Yet because SERVQUAL was not originally designed for higher education, its application across diverse academic contexts has yielded mixed empirical results and conceptual ambiguities. These theoretical divergences explain why a mapping approach is needed to compare how different studies mobilize SERVQUAL and its derivatives.

2.3. Adapted Models for the Higher Education Context (HEdPERF, EduQUAL, HiEduQual)

To address the specificities of higher education, Abdullah (2006) developed the HEdPERF model, which adapts SERVQUAL to the university context. It incorporates dimensions specific to higher education, such as academic quality, student life, administrative services, and physical resources. Alternative models, such as EduQUAL (Mahapatra & Khan, 2007) and HiEduQual (Annamdevula & Bellamkonda, 2016), have also been proposed to capture the complexity of students' expectations. These models emphasize institutional responsiveness, teaching competence, and innovation in learning methods. The coexistence of multiple frameworks, each emphasizing different components of the academic experience, contributes to definitional dispersion and complicates cross-study comparisons. This coexistence justifies the need for a bibliometric classification capable of comparing how each framework has influenced global research production.

2.4. The Role of Digital Transformation in Redefining Service Quality

Recent research has also underlined the importance of digital transformation as a driver of perceived service quality (Basha, Siddiqui & Almubarak, 2022; Al-Kumaim et al., 2021; Al-Fraihat, Joy & Sinclair, 2020). The widespread adoption of e-learning platforms, online services, and hybrid teaching systems has profoundly redefined the student experience (Sultan & Wong, 2019; Suhartanto et al., 2019). Digitalization has also reconfigured traditional SERVQUAL dimensions: reliability now depends on system stability, responsiveness on the speed of digital feedback, assurance on data security, and empathy on the usability and accessibility of digital interfaces. Consequently, university service quality today unfolds across academic, organizational, and technological dimensions. These developments reinforce the shift toward multidimensional, technology-enhanced models of quality, which recent bibliometric clusters also highlight.

2.5. Student Satisfaction as a Strategic Outcome

Building on these foundations, student satisfaction has become a central indicator of institutional performance and sustainability. It reflects how students evaluate their overall university experience based on criteria that go far beyond course quality. According to Elliott and Shin (2002), satisfaction arises from the comparison between students' initial expectations and their actual experience of the services provided. It depends on multiple factors such as pedagogy, quality of teacher–student interactions, efficiency of administrative processes, digital tools, campus life, and the feeling of being valued and supported.

Recent studies have highlighted the role of psychological well-being and sense of belonging (Kahu & Nelson, 2018; Tessema, Ready & Yu, 2012), along with institutional trust (DeShields, Kara & Kaynak, 2005) and academic reputation (Chandra & Naorem, 2023), which act as mediators between service quality and loyalty.

2.6. Contextual Variations in the Determinants of Student Satisfaction

However, the forms and determinants of satisfaction differ across contexts. In developed countries, it is strongly correlated with pedagogical innovation, access to technological resources, and modern infrastructure (Sultan & Wong, 2019; Tran, Le & Nguyen, 2022). In developing countries, satisfaction depends more on administrative support, service responsiveness, and equitable access to material resources (Tsinidou, Gerogiannis & Fitsilis, 2010; Al-Kumaim et al., 2021). Comparative studies (Hemsley-Brown & Oplatka, 2016; Martínez-Argüelles & Batalla-Busquets, 2016) have also shown that students' expectations vary according to cultural and socio-economic contexts, underscoring the need to adapt evaluation models accordingly. This diversity highlights the underrepresentation of African, Arab, and Latin American contexts, reinforcing the need for broader comparative analyses.

2.7. Empirical Evidence Linking Service Quality to Student Satisfaction

Studies have consistently shown that perceived service quality is a key antecedent of satisfaction (Clemes, Gan & Kao, 2007; Douglas et al., 2008; Ali et al., 2016). Teaching competence, administrative efficiency, institutional image, and digital experience frequently emerge as core determinants.

More recent studies using structural equation modeling (Hair et al., 2019) or hybrid frameworks (Farahmandian et al., 2013) identify moderating variables (gender, motivation, academic level) and mediating ones (reputation, technological experience, perceived value). The proliferation of mediating and moderating variables further justifies the need for a systematic mapping capable of organizing this conceptual diversity.

2.8. Methodological and Theoretical Fragmentation

Despite this richness, the field remains somewhat fragmented. Studies are dispersed across disciplines — management, education, and economics — and rely on diverse methodologies, making it difficult to establish a coherent overall picture. Research approaches also differ by geographic and analytical context, generating a proliferation of sometimes contradictory findings (Zupic & Čater, 2015; Sultan & Wong, 2019; Chandra & Naorem, 2023). Moreover, most existing reviews are narrative or empirical and do not provide a global, quantitative mapping of the field, leaving unanswered questions about dominant themes, influential authors, collaborative structures, and emerging research fronts. This fragmentation underscores the need for clarification and synthesis to identify the key authors, most active institutions, and emerging themes shaping the international research landscape.

2.9. Positioning of the Present Study

It is in this perspective that the present study is positioned. By adopting a bibliometric approach based on the Scopus database and using VOSviewer, this research provides an integrated scientific mapping of academic production on service quality and student satisfaction. The choice of Scopus is particularly relevant because its broad disciplinary coverage mirrors the multidimensional nature of this research field.

In summary, despite a rich body of work, the literature remains fragmented, heterogeneous, and geographically unbalanced, reinforcing the need for the structured bibliometric mapping undertaken in this study.

3. Bibliometric Research Methodology

3.1. Choice of Database:

This research adopts a bibliometric approach using the Scopus database, which is widely recognized for its reliability and breadth of scientific coverage (Mongeon & Paul-Hus, 2016). Scopus indexes a large number of international journals across various disciplines, making it a key reference for analyzing global academic production.

The choice of this database is justified by its multidisciplinary richness, greater representation of recent publications in management and higher education than Web of Science, and compatibility with specialized mapping tools. Moreover, Scopus indexes a significantly larger number of journals in education, management, and the social sciences than WoS, thereby increasing the comprehensiveness of the corpus.

Furthermore, Scopus ensures methodological reproducibility thanks to its standardized export formats (CSV, RIS) and stable indexing rules, facilitating structured data collection and processing. Its compatibility with VOSviewer (Van Eck & Waltman, 2010) enables reliable extraction and visualization of co-occurrence, co-authorship, and co-citation networks.

Finally, we acknowledge that relying exclusively on Scopus may introduce a coverage bias by excluding relevant regional journals or non-indexed sources. Nevertheless, its scientific rigor and high inclusion standards make it a suitable and widely accepted choice for bibliometric studies.

3.2. Search Strategy:

The data collection was conducted on September 30, 2025, using the following search query:

TITLE-ABS-KEY (("service quality" OR "perceived service quality") AND ("student satisfaction") AND ("higher education" OR "university"))

This initial search identified 485 documents. To ensure the relevance and coherence of the corpus, inclusion and exclusion criteria were applied, resulting in a final sample of 261 articles.

The search strategy followed a systematic protocol:

1. Identification of core keywords based on established frameworks (SERVQUAL, HEdPERF).
2. Construction of Boolean combinations to maximize precision and recall.
3. Execution of several iterative searches to test alternative keyword combinations before selecting the final query, ensuring optimization of both sensitivity and specificity.
4. Justification of TITLE-ABS-KEY: this field was selected because it captures conceptual content without introducing noise associated with searching in full-text fields.

This structured search procedure strengthens the reproducibility and accuracy of the data collection process.

3.3. Inclusion and Exclusion Criteria:

Table 1 presents the inclusion and exclusion criteria applied to construct the bibliometric corpus. A systematic selection procedure was carried out using metadata extracted from Scopus, following clearly defined parameters to guarantee the relevance, consistency, and scientific rigor of the final sample.

In line with PRISMA's logic, the selection process involved identification, screening, eligibility assessment, and final inclusion.

Table 1. Inclusion and exclusion criteria

Criterion	Inclusion	Exclusion	Justification
Time period	2014–2024	Before 2014 / After 2024	Ensure coverage of the most recent decade of research.
Document type	Peer-reviewed journal articles	Conference papers, books, chapters, notes	Guarantee academic quality and comparability.
Language	English	Other languages	Promote standardization and global visibility.
Field	Social sciences, management, economics	Health, engineering, exact sciences	Focus on research aligned with service quality and higher education.
Publication status	Finalized published	Preprints, papers under review	Ensure data stability and reliability.

Source: Prepared by the authors (2025).

Additionally, the inclusion criteria were applied manually to verify that each article explicitly addressed at least one core concept, contained complete metadata, and included usable keywords for mapping analyses.

3.4. Data Extraction and Processing

Bibliographic metadata (authors, titles, keywords, abstracts, affiliations, sources) were exported from Scopus in CSV and RIS formats to enable processing with VOSviewer.

A detailed data cleaning protocol was implemented:

- Removal of duplicates
- Harmonization of keywords (e.g., “higher education”, “HE”)
- Standardization of author names (e.g., initials vs. full names)
- Merging of synonyms (e.g., “student satisfaction” vs. “learner satisfaction”)
- Removal of generic terms that could distort network visualizations

Each step of the cleaning process was documented in a preprocessing log file to ensure full reproducibility.

This process guarantees the terminological coherence and accuracy necessary for valid bibliometric analyses.

3.5. Bibliometric Tools and Indicators

The analyses were conducted using VOSviewer (v. 1.6.20), which is widely used for constructing and visualizing bibliometric networks (Van Eck & Waltman, 2010).

Two complementary analyses were performed:

- Descriptive analysis: examining annual publication trends, most productive authors, countries, institutions, and journals.
- Relational mapping analysis: exploring keyword co-occurrence, author co-citation, source co-citation, and collaboration networks.

The VOSviewer configuration was as follows:

- Minimum keyword occurrence: 5

Justification: this threshold reduces linguistic noise and focuses on recurring and structuring concepts.

- Clustering resolution: 1.0

Justification: allows a balanced identification of thematic clusters without over-fragmentation.

- Counting methods:

- Fractional counting for co-authorship
- Full counting for source co-citation

- Normalization:

Association Strength method (VOSviewer’s recommended normalization technique for detecting conceptual proximities).

These choices ensure the clarity, stability, and interpretability of the bibliometric maps, enabling identification of dominant research fronts, structural gaps, and emerging intellectual trajectories.

4. Results

The bibliometric analysis of a corpus of 261 articles extracted from Scopus provides a structured overview of research on the link between service quality and student satisfaction in higher education.

The results are presented in two stages:

- Descriptive analysis, which highlights major trends in scientific production (annual evolution, contributing journals, influential authors and countries).
- Relational analysis, which explores keyword co-occurrence, co-citation, and collaboration networks among researchers and institutions.

This dual approach not only identifies the quantitative dynamics of the field but also reveals the structural and thematic patterns that shape it. In doing so, it allows not only to describe publication trends but also to understand how the field's intellectual architecture has evolved, which is essential for interpreting the conceptual maturity and fragmentation observed in prior literature.

4.1. Descriptive Analysis

The descriptive analysis constitutes the first step of the bibliometric study. Its purpose is to characterize scientific production in terms of volume, dissemination, and key contributors, in order to understand how the literature has evolved over the last decade (2014–2024).

This step also enables a first comparison with the findings of earlier narrative or empirical reviews, which similarly highlight the growing academic interest in student satisfaction as a driver of institutional performance (Douglas et al., 2008; Sultan & Wong, 2019).

This section successively examines the annual evolution of publications, the distribution of articles by source (journals), the most productive authors, and the geographical distribution of contributions. These results provide an overall view of research dynamics, highlighting the most active regions, specialized journals, and the emergence of an international research community around the topic under study.

This configuration also mirrors the field's multidisciplinary nature, which spans marketing, educational management, and service quality studies, thereby explaining the observed diversity of publication outlets.

4.1.1. Annual Evolution of Publications

Before addressing the field's structural configuration, it is essential to examine the temporal evolution of scientific production. The following figure illustrates the publication dynamics between 2014 and 2024, reflecting the growing academic interest in the topic.

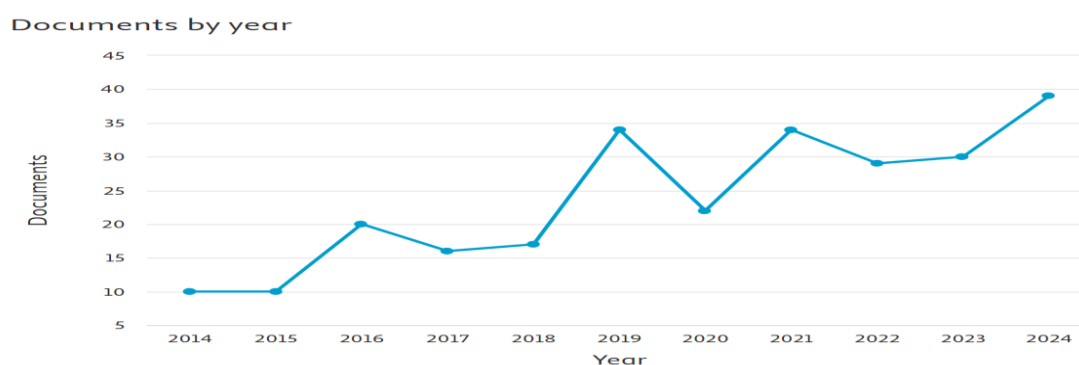


Figure 1. Number of Documents Published per Year (2014–2024)

Source: Scopus data (bibliometric query, September 30, 2025).

The analysis reveals a steady increase in scientific production addressing the theme of service quality – student satisfaction – higher education. From 10 articles in 2014, the number rose to a peak of 39 publications in 2024. Two notable periods of growth can be observed:

- 2016–2019, during which the volume doubled (from 10 to 34 articles),
- 2021–2024, marked by renewed research intensity following a slowdown likely linked to the COVID-19 pandemic.

This trend confirms the growing importance of the topic in international literature, in connection with the digitalization of education and the transformation of student expectations. This upward trend is consistent with previous studies highlighting that, since 2016, universities worldwide have increasingly adopted quality assurance models that integrate both pedagogical and technological dimensions (Tran, Le & Nguyen, 2022).

4.1.2. Distribution by Scientific Journals

Analyzing how studies are distributed across journals is an essential step in identifying the main publication outlets. The following figure presents the distribution of articles by source, highlighting the most active journals in the field of service quality and student satisfaction.

Documents per year by source

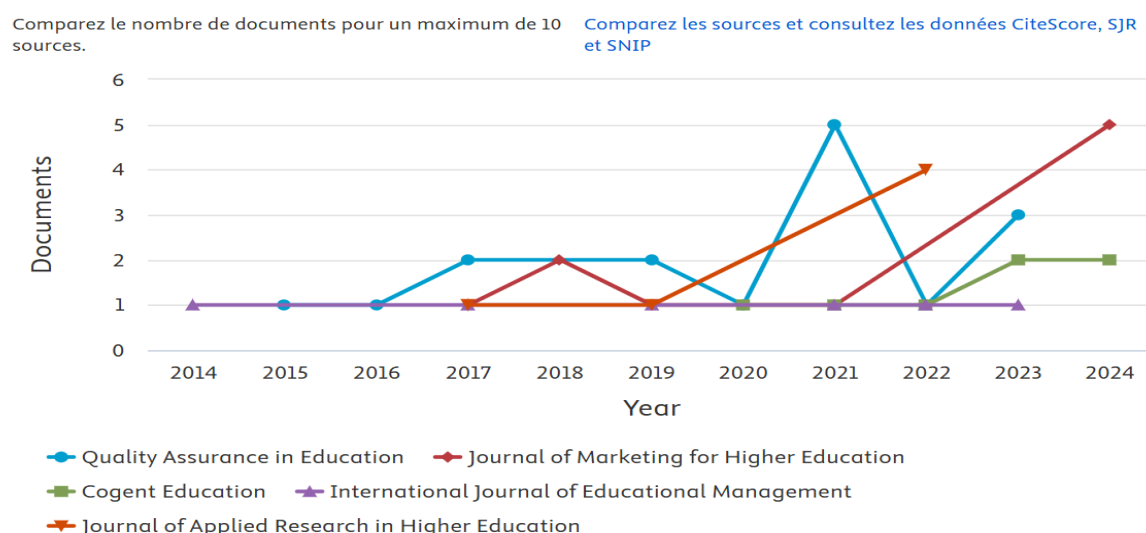


Figure 2. Documents by Year and by Source

Source: Scopus data (bibliometric query, September 30, 2025).

The results show that research is concentrated within a limited number of specialized journals:

- Quality Assurance in Education stands out as the most active journal.
- Journal of Marketing for Higher Education shows a steady increase.
- Journal of Applied Research in Higher Education displays recent consolidation.
- Journals such as Cogent Education and International Journal of Educational Management contribute marginally.

This distribution confirms findings reported by Hemsley-Brown & Oplatka (2016), who observed that research on service quality tends to cluster around journals specializing in higher education management and quality assurance, reflecting a shared conceptual foundation based on SERVQUAL, HEdPERF, and related frameworks.

4.1.3. Most Productive Authors

The analysis of author productivity helps to identify the most active researchers and understand the structure of the academic community. The following figure shows the distribution of publications by author, revealing key individual contributions to the field.

Documents by author

Compare the document counts for up to 15 authors.

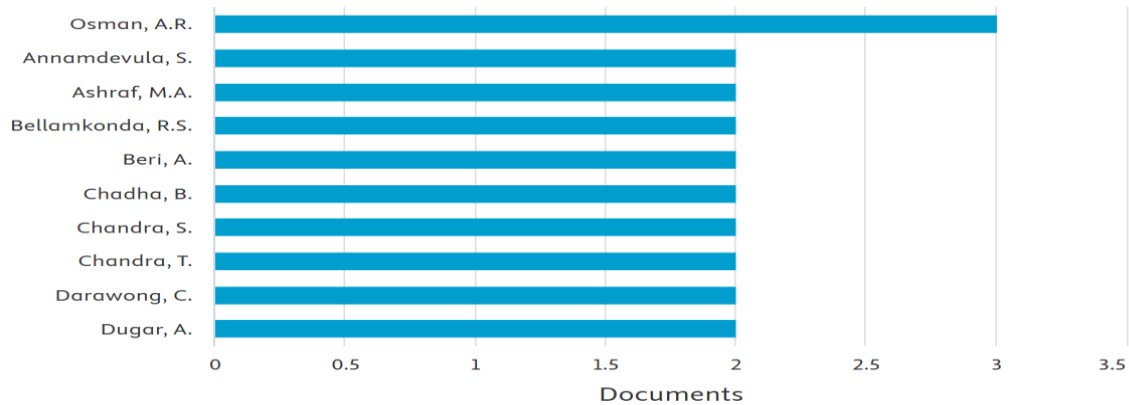


Figure 3. Documents by Author

Source: Scopus data (bibliometric query, September 30, 2025).

The results reveal a dispersed pattern of scientific production. Only Osman A.R. emerges with three publications, while most authors have produced one or two articles. This distribution reflects a diverse yet fragmented research community. The absence of dominant authors suggests that expertise is distributed across multiple localized teams rather than centralized around a few theoretical leaders, a characteristic of fields still in consolidation (Zupic & Čater, 2015).

4.1.4. Geographical Distribution of Publications

Examining the geographical distribution of publications allows for identifying the most dynamic regions in research on service quality in higher education. The figure below illustrates the contribution of different countries, emphasizing the most influential regional clusters.

Documents by country or territory

Compare the document counts for up to 15 countries/territories.

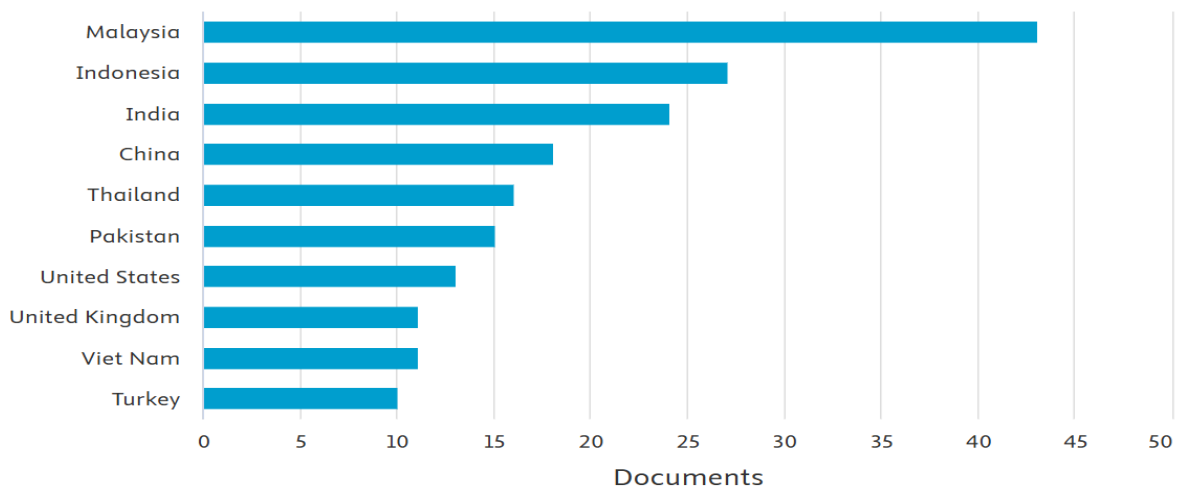


Figure 4. Documents by Country

Source: Scopus data (bibliometric query, September 30, 2025).

The results demonstrate a strong dominance of Asia in research on student satisfaction and service quality in higher education:

- Malaysia leads by a wide margin (≈ 45 articles), followed by Indonesia (≈ 27) and India (≈ 24).
- China and Thailand also show significant dynamism in this field.
- A few Western countries appear as secondary contributors — notably the United States, United Kingdom, Turkey, and Vietnam.

This distribution reflects both:

- The strategic importance of educational service quality in emerging Asian economies that attract large numbers of international students.
- A relative underrepresentation of European and North American research, suggesting potential for cross-cultural comparative studies.
- This strong Asian presence is also aligned with prior studies highlighting how Malaysia, Indonesia, and India have integrated service quality indicators into national higher education reforms, particularly within accreditation, ranking, and internationalization strategies (Chandra & Naorem, 2023).

The descriptive analysis provides a comprehensive overview of scientific production related to service quality and student satisfaction in higher education. The results indicate a continuous growth of publications between 2014 and 2024, confirming the rising academic interest in this topic worldwide. Specialized journals in educational management and quality assurance play a central role in disseminating research, while author-level productivity remains fragmented, with broad dispersion and few dominant scholars.

Geographically, Asia emerges as the leading hub of scientific production, driven by Malaysia, Indonesia, and India, while contributions from the United States, the United Kingdom, and Europe remain more limited. This regional asymmetry underscores the strategic role of emerging countries in the internationalization of higher education and their focus on improving quality standards.

This regional asymmetry also reinforces findings in the literature suggesting that service quality research is often policy-driven in emerging economies, where improving student satisfaction is framed as a lever for institutional legitimacy and competitiveness.

It is also consistent with the expansion of private higher education in Malaysia and India, where student satisfaction metrics have become central to accreditation and quality assurance systems (Chandra & Naorem, 2023). Moreover, this pattern reflects the broader global shift toward market-oriented higher education models, in which student satisfaction is treated as both a performance indicator and a determinant of institutional reputation.

The underrepresentation of African, Arab, and Latin American contexts highlights a significant gap in the literature, reinforcing the importance of future comparative studies. This gap has been repeatedly emphasized in recent review articles, which call for more studies examining how cultural, socioeconomic, and institutional differences shape perceptions of service quality and satisfaction outside dominant Asian and Western contexts.

While this descriptive analysis sheds light on quantitative dynamics (volume, authors, journals, and countries), it does not yet reveal the conceptual and thematic structure of the field. Therefore, the next section (4.2) introduces a relational analysis, using bibliometric mapping techniques (keyword co-occurrence, co-citation, and collaboration networks). This approach will help identify the dominant themes, research clusters, and influential scientific networks, providing a deeper understanding of the intellectual organization of the literature.

In this sense, the geographical distribution highlights not only where research is produced but also where conceptual innovation is likely to emerge, making the relational analysis essential for understanding the intellectual foundations of this regional heterogeneity.

4.2. Relational Analysis

The relational analysis aims to explore the intellectual structure of the field through the connections between keywords, authors, institutions, and cited sources. It allows for the identification of the main research themes, scientific collaboration networks, and theoretical reference points. The maps were generated using the VOSviewer software (Van Eck & Waltman, 2010), based on metadata extracted from Scopus (query performed on September 30, 2025). This relational dimension is essential because it provides interpretive depth beyond the descriptive indicators, revealing how conceptual structures, theoretical influences, and scientific communities interact—an aspect often overlooked in narrative reviews.

4.2.1. Keyword Co-occurrence: Thematic Structuring of Research

The analysis of keyword co-occurrence helps identify the main research themes and conceptual relationships structuring the field. By grouping the most frequently associated terms, this approach reveals dominant trends, emerging axes, and links between subdomains within the corpus.

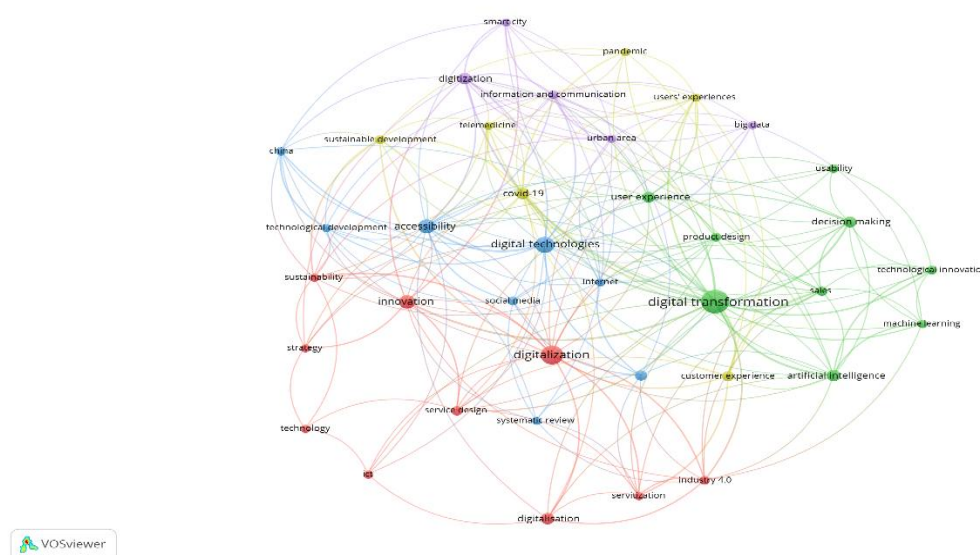


Figure 5. Keyword Co-occurrence Network (VOSviewer)

Source: Scopus data, VOSviewer processing (2025).

The co-occurrence map in Figure 5 highlights several strongly interconnected thematic clusters, reflecting the diversity and complementarity of works published between 2014 and 2024:

- *Green cluster (dominant theme):* centered around digital transformation, decision making, technological innovation, and machine learning, illustrating the increasing integration of digital technologies into the management and evaluation of service quality in higher education.
- *Red cluster:* focused on innovation, digitalization, and strategy, emphasizing the managerial and strategic dimension of service quality, particularly through organizational transformation and modernization of university practices.
- *Blue cluster:* grouping digital technologies, accessibility, sustainability, and technological development, reflecting the growing emphasis on sustainability and digital inclusion, now central dimensions in contemporary educational policies.

- *Purple and yellow clusters*: associating user experience, telemedicine, big data, and pandemic, these clusters demonstrate the impact of COVID-19 on university teaching and the growing prominence of student experience and online learning approaches.

Overall, this thematic mapping shows that recent research has moved beyond the simple evaluation of educational service quality, incorporating broader issues such as digital transformation, pedagogical innovation, and sustainable development. It evidences the field's evolution toward a systemic and interdisciplinary vision of quality in higher education.

These clusters also demonstrate an evolution from classical service quality frameworks (such as SERVQUAL and HEDPERF) toward more holistic, technology-driven and experience-oriented approaches. This shift is consistently highlighted in recent literature, which underlines that digital platforms, UX design, and data-driven learning environments increasingly shape students' perceptions of quality (Sultan & Wong, 2019; Al-Fraihat et al., 2020).

The presence of sustainability-related keywords confirms another emerging trend: the integration of environmental and social responsibility into quality standards, a topic still underexplored but gaining momentum in higher education policies.

4.2.2. Co-author Network: Scientific Collaborations

The co-author network analysis explores the structure of collaborations among researchers active in the field of service quality and student satisfaction in higher education. This mapping approach assesses the density of scientific links, identifies research communities, and highlights the most influential authors.

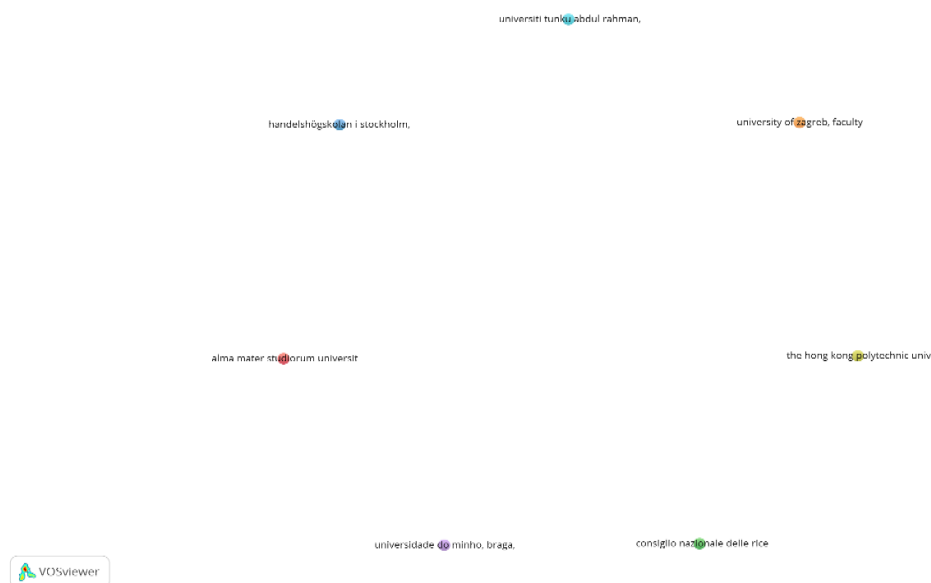


Figure 6. Co-author Network (VOSviewer)

Source: Scopus data, VOSviewer processing (2025).

The co-author network (Figure 6) reveals a highly fragmented structure of collaborations. Few significant connections appear between researchers, suggesting that publications are mainly produced by autonomous teams working independently, with limited international coordination.

A few researchers stand out for their collaborative activity — notably Sergi B.S., Popkova E.G., and Kohtamäki M., who maintain visible bilateral relationships on the map. However, these interactions remain confined to small, localized clusters, without the formation of dense transnational networks.

This pattern indicates a still underdeveloped academic cooperation potential. Asian researchers — particularly from Malaysia, India, and Indonesia — form a dynamic hub that would benefit from stronger exchanges with European and North American teams. Strengthening such collaborations could foster methodological convergence, comparability of results, and greater global scientific visibility.

This fragmentation is consistent with prior bibliometric studies showing that research on service quality tends to be country-bound, often shaped by national educational reforms rather than global research agendas. The lack of dense co-author clusters limits methodological convergence and contributes to the heterogeneity of findings observed in existing literature (Zupic & Čater, 2015).

Stronger international collaboration could support the creation of unified conceptual models and allow for large-scale comparative studies, which are currently rare in the field.

4.2.3. Institutional Network: Academic Production by Universities

The institutional network analysis identifies the universities and research centers most active in producing scientific work on service quality and student satisfaction in higher education. It provides a global overview of research hubs, their connectivity, and their roles in the international dissemination of knowledge.

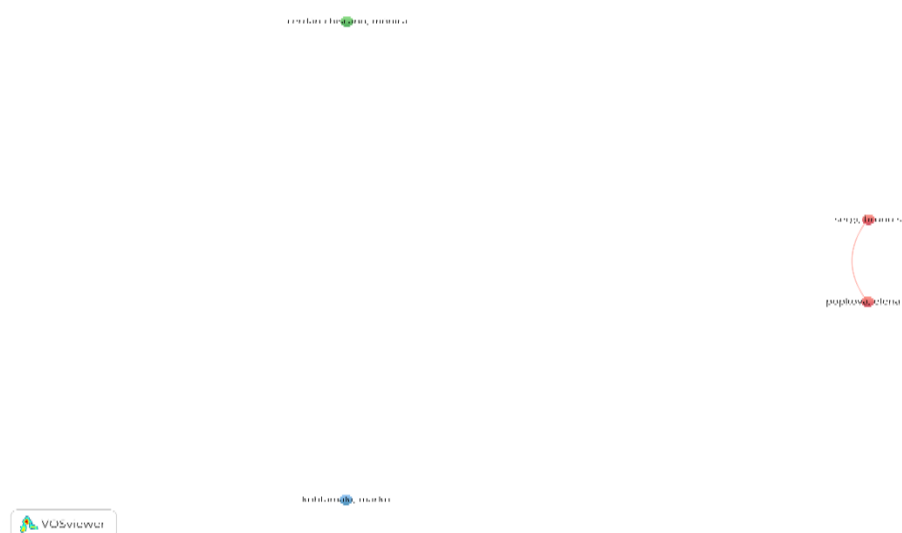


Figure 7. Network of Affiliated Institutions

Source: Scopus data, VOSviewer processing (2025).

The institutional network map (Figure 7) reveals high geographical dispersion of contributions but low interconnection among institutions. Universities appear as independent producers, with limited inter-institutional collaboration.

The most productive institutions are primarily located in Asia:

- Universiti Tunku Abdul Rahman (Malaysia) holds a central position, acting as a driving force in research on university service quality.
- The Hong Kong Polytechnic University, University of Zagreb (Croatia), and Universidade do Minho (Portugal) also show notable activity, though within relatively disconnected networks.

This configuration suggests an internationalized but weakly collaborative field, where each university operates as an autonomous hub of scientific production. The lack of dense institutional links reflects both the young maturity of the field and the predominance of nationally driven projects rather than international collaborations. Strengthening partnerships between universities — for

instance through comparative projects or transnational research networks — could promote a more integrated field structure and a more consistent dissemination of knowledge.

This isolated institutional structure mirrors the co-author fragmentation and highlights a structural limitation: research programs on service quality are often conducted within national boundaries and are rarely coordinated across universities. This reduces theoretical cross-fertilization and reinforces the conceptual fragmentation noted in previous literature.

Developing institutional alliances—such as joint data collection, shared methodological frameworks, or international quality benchmarking—would help build more robust and generalizable models of student satisfaction.

4.2.4. Co-citation Network: Shared Theoretical References

The co-citation network analysis visualizes the intellectual connections among cited references. It highlights the common theoretical foundations structuring the field by identifying the most influential authors and models shared across the scientific community.



Figure 8. Co-citation Network (VOSviewer)

Source: Scopus data, VOSviewer processing (2025).

The co-citation analysis reveals the authors and journals most frequently cited together, delineating the conceptual foundations of the research domain. Three major cores emerge:

- Parasuraman, Zeithaml & Berry (1988): authors of the SERVQUAL model, the seminal reference for measuring perceived service quality.
- Abdullah (2006): developer of the HEdPERF model, specifically adapted to the higher education context.
- Sultan & Wong (2019): who conceptualize the relationship between service quality, student satisfaction, and loyalty in a digitalized perspective.

These studies represent the theoretical pillars of the field, confirming the central role of SERVQUAL and HEdPERF models in assessing university service quality and understanding its effects on student experience and loyalty.

The strong co-citation of Parasuraman, Abdullah, and Sultan & Wong confirms that the field remains anchored in classical service marketing theories while progressively integrating digital and experiential dimensions. This theoretical layering suggests a transition phase: rather than replacing traditional models, recent studies extend them to new technological and organizational contexts.

This finding aligns with literature arguing that SERVQUAL-based frameworks remain relevant but require adaptation to digital, hybrid, and post-pandemic learning environments.

4.2.5. Source Co-citation Network: Core Academic References

The source co-citation analysis identifies the academic journals serving as the main theoretical references within the field. The following figure shows the structure of interconnections between journals, highlighting those most frequently co-cited in the analyzed corpus.

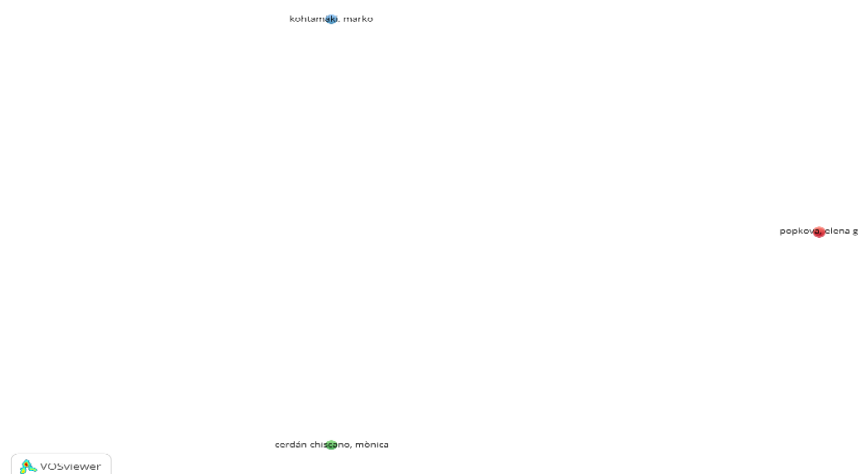


Figure 9. Co-citation Network of Sources in the Corpus (2014–2024)

Source: Scopus data, VOSviewer processing (2025).

The network in Figure 9 illustrates the co-citation links among journals. Each node represents a journal, and its size reflects its frequency of co-citation — that is, how often it is cited alongside others within the analyzed articles.

The analysis reveals a loosely connected structure, indicating the dispersion of references across multiple specialized journals rather than a single unified theoretical core. Among the most visible sources are:

- Journal of Marketing for Higher Education,
- Quality Assurance in Education,
- International Journal of Educational Management,
- Journal of Applied Research in Higher Education,
- and, to a lesser extent, Scientometrics and Total Quality Management & Business Excellence.

This configuration suggests that research on service quality and student satisfaction relies on journals situated at the intersection of management, education, and quality studies, without a single publication dominating the field. The presence of authors such as Kohtamäki M., Popkova E.G., and Sergi B.S. among the most co-cited sources reflects a growing orientation toward organizational and digital approaches applied to higher education. The dispersion of journals also indicates that service quality research is intellectually plural, drawing simultaneously from service marketing, higher education studies, organizational management, and digital learning. This diversity enriches the field but also explains why conceptual fragmentation persists, as journals emphasize different paradigms and methodological preferences.

In summary, this network demonstrates a diverse yet interdisciplinary scientific ecosystem, where research draws upon conceptual frameworks from service marketing, quality management, and educational management studies.

Together, these relational results show that while the field is expanding and diversifying, its intellectual foundations remain anchored in a limited number of seminal theories. The challenge ahead is thus to integrate emerging themes—digitalization, UX, sustainability—into more comprehensive models of service quality and student satisfaction.

5. Discussion

The findings of this research confirm that the question of service quality and student satisfaction in higher education has seen substantial growth in the international literature over the past decade. The bibliometric analysis identifies several structuring trends and shows how the field has progressively organized around consolidated theoretical models and new thematic orientations linked to digital transformation. This study therefore contributes not only by mapping publication patterns, but also by clarifying how conceptual evolutions and regional dynamics reshape the understanding of service quality in contemporary universities.

The annual evolution of publications indicates continuous, steady growth in scientific output, particularly from 2016 onward. This increase is explained by universities' growing interest in perceived quality as a driver of performance and attractiveness. Initially, studies focused on validating and adapting classical models—particularly SERVQUAL (Parasuraman, Zeithaml & Berry, 1988) and HEDPERF (Abdullah, 2006)—which laid the foundation for measuring quality in the academic context. The strong presence of these models in the co-citation network confirms their centrality: SERVQUAL provides the multi-dimensional structure of perceived quality, while HEDPERF adapts it to the specificities of higher education. Their continued influence demonstrates that the field remains theoretically anchored in service marketing, despite the emergence of new paradigms.

More recently, the period marked by the COVID-19 pandemic and the accelerated digitalization of teaching has led to a conceptual reconfiguration: service quality is now conceived as a holistic experience, integrating the responsiveness of digital platforms, pedagogical flexibility, and the personalization of the student journey. This shift is consistent with contemporary studies showing that technological reliability, accessibility, e-learning UX, and digital support services have become central determinants of satisfaction (Sultan & Wong, 2019; Al-Fraihat et al., 2020). Our keyword co-occurrence analysis confirms this evolution by highlighting clusters related to digital transformation, sustainability, and student experience, which now complement classical SERVQUAL dimensions such as reliability and empathy.

Geographically, the results show a strong dominance of Asia, especially Malaysia, Indonesia, and India, which have positioned themselves as genuine research hubs on the topic. This regional concentration is explained by strategies aimed at strengthening universities' competitiveness and attracting international students by relying on quality standards comparable to those in developed countries. This regional focus also reflects the policy environment of Asian countries, where national accreditation bodies and quality assurance systems strongly encourage empirical studies on student satisfaction. Prior literature has noted similar patterns in Malaysia and India, where satisfaction indicators are embedded in funding and evaluation mechanisms.

By contrast, contributions from Europe and North America are fewer in number, though often characterized by more integrated approaches that link service quality to governance, institutional reputation, and pedagogical innovation. This geographical asymmetry thus reflects diverse priorities and educational contexts: in emerging countries, quality is perceived as a tool of institutional legitimacy, while in developed countries it is embedded in a logic of continuous improvement and sustainability. The underrepresentation of African, Arab, and Latin American contexts also emerges clearly from our analysis, confirming a major gap identified by Hemsley-Brown & Oplatka (2016): although service quality is a global concern, research remains concentrated in a limited set of regions.

This study thus underscores the need for cross-cultural comparative work that includes these neglected regions.

The co-citation network analysis confirms the field's conceptual stability, structured around three major references: Parasuraman, Zeithaml & Berry (1988), Abdullah (2006), and Sultan & Wong (2019). These authors constitute the theoretical pillars underlying contemporary research. While SERVQUAL established the foundations of perceived service quality, HEdPERF enabled specific adaptation to the higher education context, integrating dimensions such as pedagogy, administrative support, and the institutional environment. More recently, Sultan & Wong (2019) enriched this framework by introducing the digital dimension and demonstrating the role of service quality in student loyalty and the overall student experience—signaling a shift from a traditional paradigm toward a more dynamic, multidimensional conception of quality in higher education. These theoretical pillars form the backbone of the field, but our findings show that newer contributions remain scattered and lack a unified conceptual framework. This point is crucial: the bibliometric maps reveal theoretical fragmentation and indicate that the integration of digital, experiential, and sustainability-oriented dimensions is still partial. This highlights a contribution of our study: by visually connecting classical and emerging models, the analysis helps clarify how the field is transitioning from traditional quality measurement toward multidimensional and technology-enhanced approaches.

Structurally, the co-author and institutional networks reveal notable fragmentation in scientific collaborations. Most researchers work in small teams, often at the national level, with few enduring transnational ties. Universities appear as isolated production hubs, each developing its own methodological approaches. This dispersion limits both the formation of a unified scientific community and the diffusion of a shared theoretical framework. This weak network density is consistent with the literature, which emphasizes that research on service quality often emerges from isolated projects rather than coordinated multi-country programs (Zupic & Čater, 2015). The absence of strong collaborative clusters reduces methodological standardization and partly explains the diversity—and sometimes inconsistency—of empirical results across regions. Our study highlights this fragmentation as a structural barrier but also as an opportunity: consolidating international networks could foster shared models, pooled datasets, and more robust comparative analyses.

Thematically, keyword co-occurrence maps show a marked shift in focal points. Dominant terms—digital transformation, innovation, user experience, sustainability—indicate a profound renewal in how service quality is approached. Researchers no longer limit themselves to evaluating student satisfaction through traditional indicators; they now examine how digital technologies, online learning platforms, and sustainable practices are redefining the university–student relationship. The COVID-19 pandemic accelerated this shift, raising new questions about accessibility, digital inclusion, and continuity of instruction. As a result, service quality in higher education is increasingly understood as an integrated experience combining technological, human, and organizational dimensions. These findings confirm that higher education institutions increasingly adopt student-centered approaches, where satisfaction is shaped by emotional, technological, and relational factors rather than purely functional attributes. This echoes recent theoretical calls for integrating experiential marketing, UX research, and digital pedagogy into service quality frameworks. Thus, our analysis supports the argument that student satisfaction must now be evaluated through a multidimensional lens, combining technological performance, social interaction, institutional trust, and pedagogical engagement.

Overall, the results show a field that is achieving conceptual maturity while still marked by methodological and geographical gaps. The majority of studies adopt descriptive quantitative approaches, often limited to a single country, without inter-regional comparison or longitudinal validation. Our bibliometric synthesis makes this fragmentation visible and highlights the need for

methodological diversification, including mixed methods, longitudinal tracking, and multi-campus comparative studies.

African, Arab, and Latin American contexts remain underrepresented despite significant educational transformations in these regions. This gap represents a significant opportunity for future research, especially given the rapid expansion of higher education systems in these regions. Including them would not only broaden global understanding but also challenge Western-Asian models by introducing new cultural, economic, and institutional perspectives.

Furthermore, the integration of emerging technologies (artificial intelligence, adaptive learning, big data) into the assessment of university service quality remains insufficiently explored, opening new avenues for research. Our study identifies this as one of the most promising emerging domains, aligning with recent calls for AI-driven quality assurance, predictive analytics for student engagement, and personalized learning pathways. These themes appear in emerging clusters but are not yet central in the field, signaling an important direction for future inquiry.

In short, the discussion highlights a field in expansion at the crossroads of management, marketing, and university pedagogy. Classical theoretical models remain highly relevant, but are now enriched by new dimensions related to digitalization, sustainability, and the student experience. The main contribution of this bibliometric study is to provide a structured and integrative overview that connects these historical and emerging paradigms, offering a clearer conceptual map of how the field is evolving. Consolidating this domain requires stronger international scientific cooperation, greater diversity of studied contexts, and integrative methodologies capable of capturing the complexity of the links between perceived quality, satisfaction, and loyalty in contemporary higher education.

6. Conclusion

Service quality and student satisfaction now constitute an established intellectual field grounded in solid theoretical foundations such as SERVQUAL (Parasuraman, Zeithaml & Berry, 1988) and HEDPERF (Abdullah, 2006), yet undergoing recomposition under the influence of digital transformation and an expanded student experience (Suhartanto et al., 2019; Sultan & Wong, 2019). The decade 2014–2024 marks a “quiet shift”: from a quality measurement focused on expectation–perception gaps to a more comprehensive conception where accessibility, personalization, responsiveness of digital systems, and institutional sustainability enter the equation (Tran et al., 2022; Basha et al., 2022).

This bibliometric mapping confirms this transition by showing how new clusters related to digital transformation, pedagogical innovation, and sustainability progressively complement classical quality models.

In this movement, Asia—driven by Malaysia, Indonesia, and India—appears as the engine of scientific production (Ali et al., 2016; Srivastava & Reddy, 2021), while Europe and North America contribute more through systemic approaches linking quality, governance, and reputation (Brown & Mazzarol, 2009; Tsinidou et al., 2010). The resulting picture is of a dynamic, prolific field, but still fragmented in its research communities and methodological standards (Van Eck & Waltman, 2010; Zupic & Čater, 2015). This study highlights this fragmentation and shows the need for more integrated, collaborative, and comparative research approaches.

These observations entail concrete implications. For institutions, quality no longer means merely “teaching well”: it is experienced across the entire student journey—administrative services, academic guidance, physical and digital infrastructures, support mechanisms, information clarity, and the ability to maintain connection during disruptions such as the pandemic (Al-Kumaim et al., 2021). For researchers, the priority is twofold: (i) stabilize measurement instruments that fully integrate the digital dimension (e-SERVQUAL / e-HEDPERF extensions, UX items, accessibility, inclusion); (ii)

improve contextual comparisons to distinguish what stems from cultural specificities, governance models, or resource levels (Gupta & Kaushal, 2020; Chandra & Naorem, 2023).

These implications reinforce the contribution of this study, which provides an integrated and up-to-date mapping of the theoretical and geographical trajectories shaping the field.

6.1. Limitations

Like any mapping exercise, ours reflects its choices. Exclusive reliance on Scopus introduces a coverage bias (Mongeon & Paul-Hus, 2016); some regional journals or adjacent disciplines may be underrepresented. The 2014–2024 window favors recent work and only partially captures earlier legacies. The English-language filter excludes potentially significant contributions in other languages. Even harmonized, TITLE-ABS-KEY fields and keywords remain sensitive to lexical variations and editorial strategies. Technically, co-occurrence and co-citation indicators depend on thresholds and algorithms (Van Eck & Waltman, 2010), reflecting structural proximities rather than causal relationships. Finally, visibility metrics (citations) suffer from latency: recent articles are mechanically disadvantaged.

Additionally, the limited density of collaboration networks identified in the relational maps suggests that some theoretical or methodological connections may remain invisible due to insufficient cross-country cooperation. This constitutes an inherent limitation of the field itself but also of bibliometric representations.

6.2. Future Research Directions

Several extensions are warranted. First, broaden the database base (triangulate Scopus with Web of Science or Dimensions) and open language coverage (French, Spanish, Arabic) to better capture non-Anglophone scientific arenas (Altbach, Reisberg & Rumbley, 2019). Next, refine search queries (controlled thesaurus, automatic author disambiguation, fine keyword normalization) to reduce omissions and duplicates. Analytically, hybridize bibliometrics with text mining (Blei et al., 2003), meta-analysis, and structural models (Hair et al., 2017) to test antecedence, mediation (e.g., reputation, perceived value), and moderation (e.g., institution type, digital intensity). Finally, favor longitudinal designs to observe post-COVID thematic reallocations and the stabilization of hybrid practices.

Three priority avenues emerge:

1. Fully integrate digital and user experience (UX): perceived quality should capture usability, fluidity, reliability, and personalization of student pathways (Tran et al., 2022).
2. Compare contexts and reduce blind spots: African, Arab, and Latin American regions remain under-studied, calling for North–South and South–South collaborations (Gupta & Kaushal, 2020).
3. Link quality, satisfaction, and institutional impact: beyond immediate satisfaction, evaluate loyalty, achievement, and reputation (Douglas et al., 2008; Gruber et al., 2010).

In addition, future research should develop multi-country and multi-method comparative frameworks that capture cultural differences in students' expectations, explore the role of AI and predictive analytics in quality assurance, and investigate how hybrid and online learning environments reshape the determinants of satisfaction.

6.3. Final Synthesis

In sum, this mapping portrays a field both anchored in proven frameworks and open to contemporary recompositions. Its consolidation will depend on building bridges across disciplines, regions, and methodologies. By systematically identifying dominant paradigms, emerging themes, and geographical imbalances, this study provides a coherent and integrative overview that can guide

future empirical and theoretical developments. Only under these conditions—combining scientific rigor, international comparability, and operational relevance—will research on service quality in higher education continue to usefully inform institutional decisions and enhance the student experience.

7. Suggestion

Although this study provides an in-depth bibliometric overview of research on service quality and student satisfaction in higher education, several methodological and conceptual limitations should be acknowledged. This section extends the reflections presented in the conclusion by offering additional recommendations closely aligned with the gaps identified through the bibliometric and relational analyses.

First, the analysis is based exclusively on secondary bibliometric data extracted from Scopus. This reliance on metadata does not allow for the assessment of contextual nuances such as the pedagogical practices, governance structures, or institutional cultures underlying the observed publication trends. Moreover, the use of a single database may introduce a coverage bias, excluding relevant studies published in non-indexed regional or national journals, particularly in non-English-speaking contexts. This limitation is particularly important given the geographical asymmetries highlighted in our findings, where African, Arab, and Latin American research remains significantly underrepresented.

Second, the study's temporal and disciplinary scope—limited to the 2014–2024 decade and to the fields of Business, Economics, and Social Sciences—may restrict the generalization of results. Expanding the timeframe and integrating additional disciplines such as educational technology, sociology of education, or psychology could provide a more holistic understanding of how service quality and student satisfaction interact within diverse academic ecosystems. Such interdisciplinary expansion would also help bridge the gap between managerial approaches and pedagogical theories, which remain insufficiently connected in current research.

Third, while the bibliometric approach enables a quantitative mapping of research trends, it does not capture the qualitative depth of theoretical development or methodological rigor in individual studies. Combining bibliometric analysis with systematic literature review or content analysis would offer richer insights into the evolution of theoretical frameworks and empirical findings. This triangulation would allow researchers to evaluate not only what themes dominate the field, but also how concepts such as perceived value, trust, institutional image, or digital experience are operationalized across different studies.

Finally, the fragmentation of collaboration networks—both among authors and institutions—suggests the need for greater international cooperation. Strengthening partnerships between universities from different regions could enhance comparative perspectives, foster methodological convergence, and improve the visibility of emerging research communities. This recommendation is reinforced by the low-density relational networks identified through VOSviewer, showing that the field lacks cohesive scientific clusters capable of supporting cumulative knowledge.

In light of these observations, future research should pursue three complementary directions: (1) diversify data sources and languages to better represent global scientific production; (2) integrate qualitative analytical methods to contextualize bibliometric findings; and (3) promote cross-national collaborations to advance cumulative knowledge on how service quality contributes to student satisfaction and institutional performance in higher education. Collectively, these recommendations outline a roadmap for consolidating the field and ensuring that future work addresses current blind spots, thereby enhancing both theoretical robustness and practical relevance.

Declarations

Author Contributions. Achhibat Imane and Ait Elbour Dounia contributed to the literature review, conceptualization, writing, and editing of the manuscript. Tighazri Safaa and Metwalli Olaya were responsible for the methodology, data analysis, and critical revision of the manuscript. All authors have read and approved the final version of the article.

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