

# Mapping Global Efforts and Advancements In the Internationalization of Higher Education: A Bibliometric Analysis in Support of Quality Education

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## Abstract

This study aims to map the intellectual landscape of research on the advancement of internationalization in higher education, highlighting key themes, influential publications, and emerging trends aligned with Sustainable Development Goal 4: Quality Education. A bibliometric analysis was conducted using data extracted from the Scopus database, covering publications from 2015 to 2024. The search strategy utilized a combination of keywords related to internationalization, advancement, and higher education institutions, resulting in a total of 415 relevant documents. VOSviewer software was employed to perform co-citation analysis and keyword co-occurrence mapping to visualize the intellectual and thematic structures of the field. Inclusion thresholds were set at a minimum of 16 citations per document, 8 citations per cited reference, and 4 keyword co-occurrences to ensure analytical rigor. The results revealed five major thematic clusters, namely policy frameworks, curriculum internationalization, language strategies, student mobility, and sustainability. These clusters represent the diverse and interconnected aspects of internationalization and reflect the evolving nature of global engagement in higher education. Influential works that shaped the field were identified, alongside emerging themes such as virtual mobility and internationalization at a distance in response to the COVID-19 pandemic. The findings provide valuable insights for higher education leaders, policymakers, and practitioners by offering a data-driven foundation for refining institutional strategies toward more inclusive and sustainable internationalization. This study contributes originality and value by offering a comprehensive bibliometric perspective, addressing existing gaps in the literature, and providing a structured overview of developments in the field over the past decade.

**Keywords:** Internationalization of Higher Education, Bibliometric Analysis, Student Mobility, Curriculum Internationalization, Globalization in Education

## Introduction

The advancement of internationalization in higher education has emerged as a defining trend in the 21st-century academic landscape. This development is fueled by various global forces, including the rapid pace of globalization, the rise of digital technologies, and the growing demand for cross-border academic collaboration and student mobility. As a response to these trends, universities and higher education institutions (HEIs) across the world are increasingly adopting and institutionalizing internationalization policies and programs. These efforts typically include initiatives such as student and faculty exchange, transnational education, joint research collaborations, international branch campuses, curriculum internationalization, and the promotion of intercultural competence (Knight, 2004; Hudzik, 2011). However, despite these advancements, significant disparities persist in how internationalization is conceptualized, implemented, and assessed across different regions and institutions. These inconsistencies raise ongoing

concerns related to equity, inclusivity, sustainability, and the quality of internationalization outcomes (de Wit et al., 2015).

Over the years, the literature has offered extensive theoretical and empirical perspectives on the multifaceted nature of internationalization. Foundational contributions from Knight (2008) and Altbach and Knight (2007) provide definitions, rationales, and models of internationalization that continue to shape institutional strategies globally. Further, the works of Leask (2015) and Byram (1997) have highlighted the significance of embedding intercultural competence within curricula, arguing that internationalization must move beyond mobility to transform learning environments. English-medium instruction (EMI), particularly in non-English-speaking countries, has also gained traction as a strategic approach to attract international students and enhance global academic competitiveness (Macaro et al., 2018). More recently, the COVID-19 pandemic has accelerated new modes of internationalization, including virtual exchange, online mobility, and digital partnerships, prompting researchers to explore the concept of “internationalization at a distance” (Mittelmeier, 2021).

Despite these developments, the body of research on internationalization remains somewhat fragmented. Many studies concentrate on specific themes such as policy, curriculum, or mobility, or focus on country- or region-specific practices, thereby limiting the field’s coherence and broader applicability. There is a noticeable lack of comprehensive analyses that capture the overall intellectual structure and trajectory of research on internationalization in higher education. This fragmentation restricts the capacity of scholars, practitioners, and policymakers to fully understand how internationalization is evolving globally, where knowledge is concentrated, and which areas remain underexplored.

To address this gap, the present study undertakes a bibliometric analysis of the scholarly literature on the advancement of internationalization in higher education. Specifically, it analyzes 415 documents published between 2015 and 2024 retrieved from the Scopus database. The study aims to identify key research trends, influential publications, co-citation patterns, and thematic clusters. Through co-word and co-citation analyses using VOSviewer, the study provides a visual and quantitative mapping of the field’s development. The findings aim to inform future research directions, guide policy formulation, and support the development of more integrated and evidence-informed internationalization strategies in higher education.

## **Materials And Methods**

This study employed a bibliometric analysis to examine the advancement of internationalization in higher education, focusing on research trends, influential publications, and emerging themes from 2015 to 2024. Data were collected from the Scopus database, which was selected for its extensive coverage of peer-reviewed scholarly outputs. The search query used was (*internationalization OR internationalisation*) AND (*efforts OR advancement*) AND (*"Higher Education Institutions" OR university OR universities OR HEIs OR HEI*). This combination of keywords ensured the comprehensive retrieval of documents addressing institutional strategies and advancements in the internationalization of higher education. A total of 415 documents were identified, covering journal articles within the specified period. To ensure the quality and relevance of the analysis, specific inclusion thresholds were applied: a minimum of 16 citations per document, at least 8 citations as a cited reference, and a minimum of 4 co-occurrences for keywords. VOSviewer software was used to conduct bibliometric mapping, including co-citation analysis and keyword co-occurrence network visualization. These techniques facilitated the identification of intellectual linkages and thematic clusters in the dataset. Through inductive interpretation of the bibliometric networks, five thematic clusters were identified and labeled based on recurring concepts and patterns in the literature. The analysis provides visual insights into the interconnectedness of research themes, enabling a deeper understanding of the evolving discourse on internationalization efforts and advancements in higher education institutions worldwide.

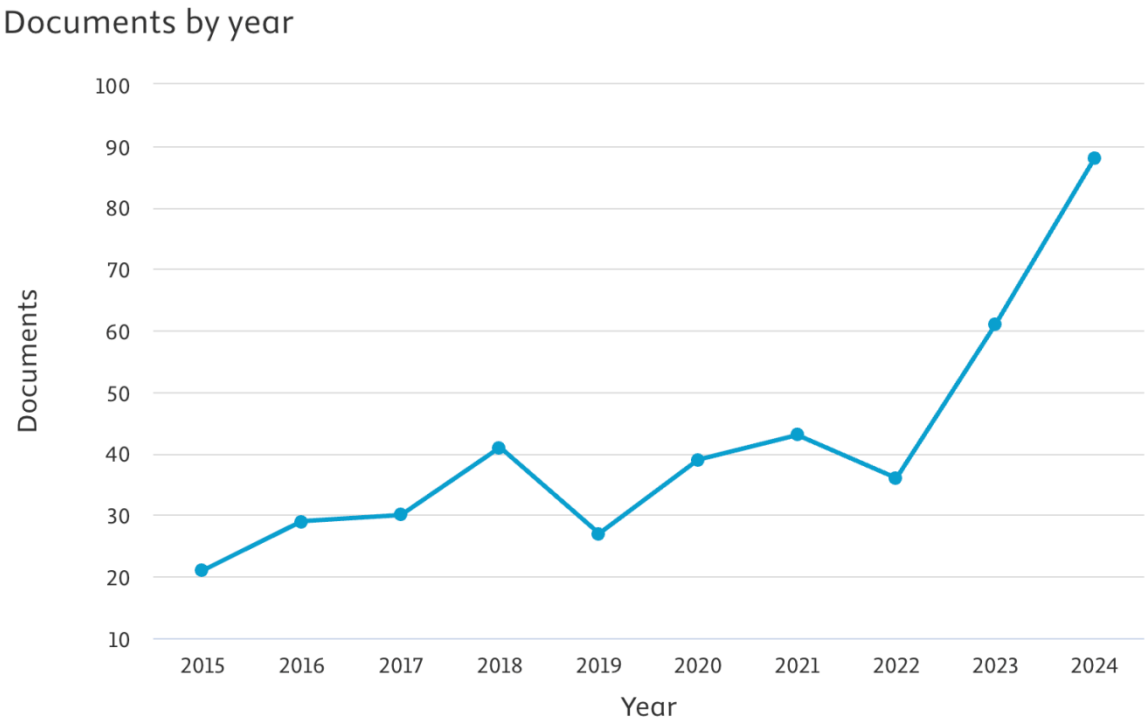
Table 1. Search string used for database search

| Keyword  | Justification   |
|--|---|
| (internationalization OR internationalisation) AND ( efforts OR advancement) AND ("Higher Education Institutions" OR university OR universities) OR ( heis OR hei) | enables a focused yet inclusive retrieval of scholarly works examining internationalization dynamics at the institutional level |

Results

This section presents the findings of a bibliometric analysis of the advancement of internationalization in higher education. The analysis covered document distribution, co-citation networks, keyword co-occurrence patterns, and thematic clusters identified from the dataset. Visual maps and citation data are interpreted to reveal research trends, influential works, and emerging themes that shape the current landscape of internationalization efforts within higher education institutions worldwide.

Fig. 1: Number of publications



(Source: Scopus).

The graph, based on data from the Scopus database, illustrates the trend of research publications from 2015 to 2024 using the keywords (*internationalization OR internationalisation*) AND (*efforts OR advancement*) AND (*"Higher Education Institutions" OR university OR universities OR HEIs OR HEI*). The analysis reveals a generally upward trend, reflecting the growing scholarly interest in internationalization efforts in higher education. Beginning with approximately 21 documents in 2015, publication output gradually increased to approximately 30 in 2017, indicating early engagement with the topic. A notable increase occurred in 2018, reaching approximately 41 documents, likely driven by global discussions on educational collaboration and mobility.

However, 2019 saw a slight decline to approximately 27 documents, possibly due to shifting research priorities or external factors. Between 2020 and 2022, research activity stabilized, averaging around 40

publications annually, despite the disruptions caused by the COVID-19 pandemic. This stability underscores the importance of internationalization strategies in ensuring educational continuity and resilience.

A significant surge was observed in 2023 and 2024, with publications rising sharply to approximately 61 and 90 documents, respectively. This peak highlights the intensified focus on global engagement and academic collaboration as part of the post-pandemic recovery efforts. This upward trajectory aligns with Sustainable Development Goal 4 (Quality Education), emphasizing internationalization as a strategic priority for higher education institutions worldwide. These findings indicate an increasing global commitment to fostering cross-border partnerships and advancing inclusive quality education through internationalization initiatives.

### Citation analysis

Using document citation analysis, Table 2 presents the top cited publications in the dataset. Sabagh et al. (2018) leads the list with 178 citations, followed by Zhang (2018) with 101 citations, and Thompson et al. (2022) with 100 citations. These citation counts demonstrate the substantial influence and academic significance of these studies in the scholarly community.

**Table 2: Top 10 highest-cited documents**

| No | Authors                | Title  | Citations |
|----|------------------------|--|-----------|
| 1  | Sabagh et al. (2018)   | Antecedents, correlates and consequences of faculty burnout  | 178       |
| 2  | Zhang (2018)           | English-medium instruction policies in China: internationalization of higher education   | 101       |
| 3  | Thompson et al. (2022) | Exploring the role of self-efficacy beliefs and learner success in English medium instruction  | 100       |
| 4  | Stein (2017)           | The persistent challenges of addressing epistemic dominance in higher education: Considering the case of curriculum internationalization | 94        |
| 5  | Aktas et al. (2017)    | Institutionalizing Global Citizenship: A Critical Analysis of Higher Education Programs and Curricula                                    | 93        |
| 6  | Mittelmeier (2021)     | Conceptualizing Internationalization at a Distance: A “Third Category” of University Internationalization                                | 87        |
| 7  | Larner W.              | Globalising knowledge networks: Universities, diaspora strategies, and academic intermediaries   | 69        |
| 8  | Stein (2019)           | ‘Beyond 2015’, within the modern/colonial global imaginary? Global development and higher education                                      | 61        |
| 9  | Bautista-Puig (2021)   | Sustainability practices in Spanish higher education institutions: An overview of status and implementation                              | 56        |
| 10 | Hu (2019)              | English-medium instruction in higher education: Lessons from China   | 55        |

### *Trends and Emerging Themes in Advancements in the Internationalization of Higher Education*

The analysis of Table 2, which presents the top 10 highest-cited documents from the Scopus dataset, reveals significant trends and emerging themes in the internationalization of higher education. Sabagh et al. (2018),

with 178 citations, emphasized faculty burnout, indicating the human cost and institutional challenges linked to globalization pressures in academia. Zhang (2018) and Thompson et al. (2022), with 101 and 100 citations, respectively, highlighted the growing focus on English-medium instruction (EMI) in non-native contexts, particularly China, reflecting how language policies are central to internationalization strategies.

Further, Stein's works (2017, 2019), appearing twice in the top 10, underscore persistent concerns about epistemic dominance and the colonial legacies embedded in curriculum internationalization, pointing to the critical need for inclusive global perspectives in higher education (Stein, 2017; 2019). Similarly, Aktas et al. (2017) critically examined how global citizenship education is institutionalized, reinforcing the role of curricula in shaping globally competent graduates.

Emerging themes also include "internationalization at a distance" (Mittelmeier, 2021), which has gained prominence post-pandemic, as universities explore hybrid and virtual mobility models. Bautista-Puig (2021) contributes to sustainability practices in higher education by linking internationalization with broader sustainable development goals. Finally, Larner (n.d.) and Hu (2019) discuss global knowledge networks and further lessons from EMI in China, emphasizing collaboration and policy adaptation.

Collectively, these highly cited works illustrate that language policy, faculty well-being, the decolonization of curricula, and sustainable practices are pivotal in advancing the internationalization of higher education.

#### *Citation Distribution and Implications for the Advancements in the Internationalization of Higher Education*

The citation distribution in Table 2 highlights pivotal scholarly contributions to the discourse on the internationalization of higher education. Sabagh et al. (2018) led with 178 citations, emphasizing the importance of addressing faculty burnout amid increasing demands for global engagement, a reminder of the human dimension in internationalization efforts. Zhang (2018), with 101 citations, and Hu (2019), with 55 citations, both focused on English-medium instruction (EMI) in China, indicating the significant attention given to language policy as a critical mechanism for global academic integration. Thompson et al. (2022), cited 100 times, explored the role of self-efficacy in EMI, underscoring the intersection of language proficiency and learner success in international environments.

Stein's contributions (2017, 2019), with 94 and 61 citations, respectively, point to an ongoing critique of epistemic dominance and colonial structures that persist in curriculum internationalization. These works urge the academic community to engage critically with decolonial perspectives in global education frameworks. Additionally, Aktas et al. (2017) cited 93 times, delving into institutionalizing global citizenship, aligning well with SDG 4's aim of promoting inclusive and equitable quality education.

Mittelmeier (2021) added depth to this discourse by conceptualizing "internationalization at a distance," a timely exploration in the post-pandemic context (87 citations). Collectively, the citation patterns revealed a concentration of scholarly interest in language policy, faculty welfare, global citizenship, and decolonization. These focal areas suggest that successful internationalization must balance academic ambitions with inclusive, sustainable, and human-centered practices.

#### **Co-citation analysis**

The co-citation of the top ten documents shows the theoretical and methodological pillars of research on innovations in higher education. Braun and Clarke's (2006) seminal paper on thematic analysis leads the list with 69 citations and a total link strength of 23. Its visibility shows the extensive use of qualitative methodologies in comprehending intricate themes in educational innovation, particularly in analyzing perceptions, experiences, and contextual factors.

The addition of Transforming Our World: The 2030 Agenda for Sustainable Development (2015), which has 40 citations and a link strength of 20, emphasizes the central role played by sustainability frameworks, especially SDG 4 (Quality Education), in guiding educational reforms and research agendas. This emphasizes that international development agendas have direct implications for innovation strategies in higher education.

Rogers' (2003) Diffusion of Innovations, with 33 citations and maximum total link strength of 27, attests to the long-term applicability of innovation diffusion theory in accounting for the diffusion of educational technologies and pedagogical innovations within educational institutions. This is supported by Lave and



Wenger's (1991) Situated Learning theory (26 citations, link strength 21), which highlights the role of social learning contexts and communities of practice in supporting meaningful educational transformation.

Methodologically, Fornell and Larcker (1981), with 23 citations and a link strength of 19, Cohen's (1988) statistical power analysis, and Ajzen's (1991) Theory of Planned Behavior as a group, all support the linkage of strong quantitative models and behavioral theories in measuring the adoption of educational innovations.

Yin's (2009) Case Study approach (18 citations, link strength 11) captures the priority of rich contextual studies of innovation practice within particular educational environments, and Kolb's (1984) Experiential Learning Theory (18 citations, link strength 9) emphasizes the persistence of active learner-focused models in higher education.

Overall, the co-citation network presents a high convergence of qualitative and quantitative research traditions, learning and behavioral theories, and global development paradigms, reflecting a holistic, transdisciplinary focus in researching educational innovation. The methodological balance coupled with theoretical variation enhances an advanced understanding of the process through which innovations are developed, adopted, and assessed within higher education, thereby contributing in a direct way to the attainment of SDG 4, as well as more general objectives in educational transformation.

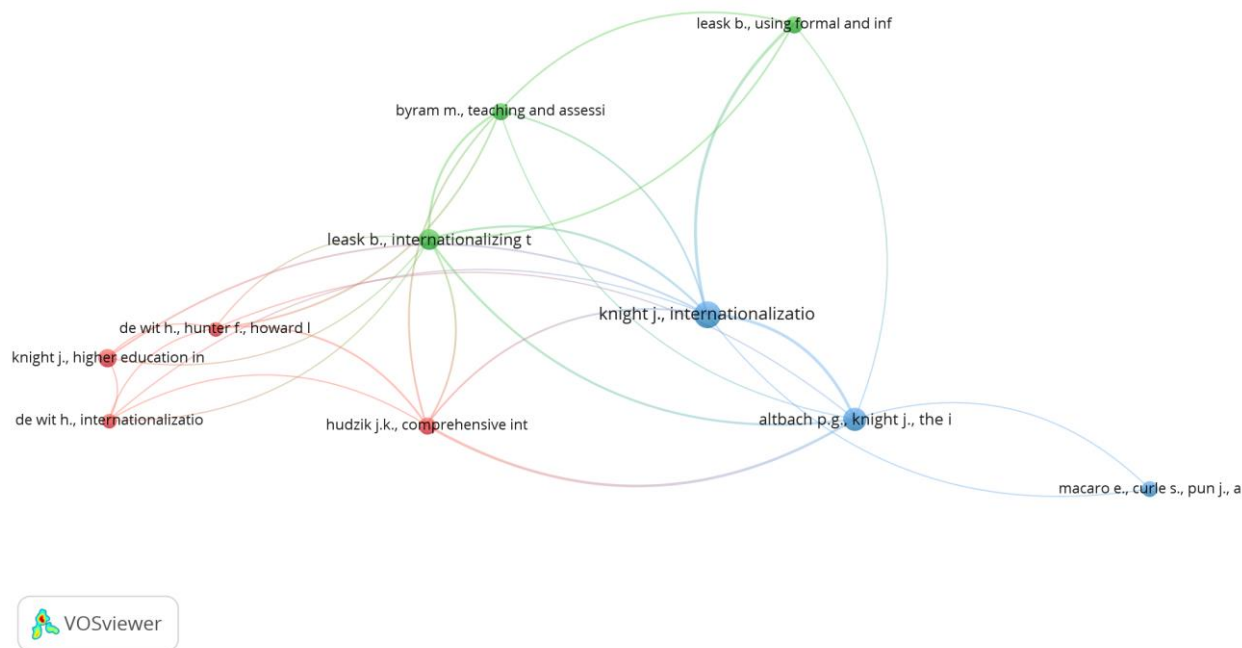
**Table 3. Top 10 documents with the highest co-citation and total link strength**

| <b>Documents</b>   | <b>Citation</b> | <b>Total link strength</b> |
|--|-----------------|----------------------------|
| "knight j., internationalization remodeled: definition, approaches, and rationales, journal of studies in international education, 8, 1, pp. 5-31, (2004)"                                 | 26              | 31                         |
| "altbach p.g., knight j., the internationalization of higher education: motivations and realities, journal of studies in international education, 11, 3-4, pp. 290-305, (2007)"            | 19              | 16                         |
| "leask b., internationalizing the curriculum, (2015)"  | 16              | 16                         |
| "knight j., higher education in turmoil: the changing world of internationalization, (2008)"   | 12              | 5                          |
| "hudzik j.k., comprehensive internationalization: from concept to action, (2011)"  | 10              | 13                         |
| "byram m., teaching and assessing intercultural communicative competence, (1997)"  | 10              | 12                         |
| "leask b., using formal and informal curricula to improve interactions between home and international students, journal of studies in international education, 13, 2, pp. 205-221, (2009)" | 10              | 10                         |
| "macaro e., curle s., pun j., an j., dearden j., a systematic review of english medium instruction in higher education, language teaching, 51, 1, pp. 36-76, (2018)"                       | 9               | 2                          |
| "de wit h., hunter f., howard l., egron-polak e., internationalisation of higher education, (2015)"  | 8               | 8                          |
| "de wit h., internationalization of higher education in the united states of america and europe: a historical, comparative, and conceptual analysis, (2002)"                               | 8               | 5                          |

Source: Author interpretation based on VOSviewer analysis

The network visualization from the co-citation analysis revealed four distinct clusters, as illustrated in Figure 2. Each cluster was identified and described based on representative publications, with labels assigned through the author's inductive interpretation and understanding of the thematic focus within the four clusters.

**Fig. 2: Co-citation analysis of the advancement of internationalization in higher education**



The co-citation analysis map, generated through VOSviewer, illustrates the intellectual structure of scholarship on the advancement of internationalization in higher education. Central to the network is Knight (2004), whose works on the definition and frameworks of internationalization (Knight, 2004) serve as foundational references that link multiple clusters and confirm their pivotal influence in the field. Knight’s connection to Altbach (P.G.) signifies the integration of internationalization theories with global higher education dynamics, particularly in understanding the shifting landscape of academic mobility and knowledge exchange (Altbach & Knight, 2007).

Leask (B.) has emerged as another key scholar, especially in the context of curriculum internationalization and informal learning environments (Leask, 2015). Her prominence, alongside Byram (1997), who focuses on teaching and assessment of intercultural competence (Byram, 1997), suggests a thematic emphasis on embedding global perspectives within teaching practices. These scholars’ interconnections indicate the growing recognition of intercultural competencies as essential to successful internationalization.

De Wit (H.) and Hudzik (J.K.) represent another influential cluster that focuses on comprehensive internationalization strategies and policy development (de Wit & Hunter, 2015; Hudzik, 2011). Their work highlights the importance of institutional commitment and the systemic integration of internationalization practices.

The map also reveals emerging attention to language policy, as shown by the cluster involving Macaro (E.), Curle (S.), and Pun (J.), who examine English-medium instruction (Macaro, 2018). Overall, the co-citation landscape reflects an evolving discourse, balancing strategic, curricular, and linguistic dimensions to advance inclusive and impactful internationalization in higher education.

**Table 4: Co-citation clusters on the advancement of internationalization in higher education**

| Cluster | Cluster label   | Number of articles | Representative publications  |
|---------|---|--------------------|--|
| 1 (red) | Policy Frameworks and Strategic Approaches to Comprehensive | 4                  | de wit h., hunter f., howard l., egron-polak e., internationalisation of higher education, (2015); de wit h., internationalization of higher education |

| Cluster   | Cluster label  | Number of articles | Representative publications   |
|-----------|--|--------------------|---|
|           | Internationalization in Higher Education   |                    | in the united states of america and europe: a historical, comparative, and conceptual analysis, (2002) ; hudzik j.k., comprehensive internationalization: from concept to action, (2011); knight j., higher education in turmoil: the changing world of internationalization, (2008)  |
| 2 (Green) | Curriculum Internationalization and Intercultural Competence in Higher Education             | 3                  | byram m., teaching and assessing intercultural communicative competence, (1997); leask b., internationalizing the curriculum, (2015); leask b., using formal and informal curricula to improve interactions between home and international students, journal of studies in international education, 13, 2, pp. 205-221, (2009)  |
| 3 (Blue)  | Frameworks, Rationales, and Language Strategies for Internationalization in Higher Education | 3                  | altbach p.g., knight j., the internationalization of higher education: motivations and realities, journal of studies in international education, 11, 3-4, pp. 290-305, (2007); knight j., internationalization remodeled: definition, approaches, and rationales, journal of studies in international education, 8, 1, pp. 5-31, (2004); macaro e., curle s., pun j., an j., dearden j., a systematic review of english medium instruction in higher education, language teaching, 51, 1, pp. 36-76, (2018) |

Co-citation cluster analysis provides a structured and insightful view of the intellectual foundations underpinning advancements in higher education. Four distinct clusters were identified, each representing a significant dimension of the field.

**Cluster 1 (Red), " Policy Frameworks and Strategic Approaches to Comprehensive Internationalization in Higher Education,"** encapsulates the foundational discourse shaping institutional and policy-level strategies in global higher education. This cluster, composed of four key publications, represents the intellectual backbone of comprehensive internationalization, offering both theoretical and practical insights.

De Wit et al. (2015) provide a global overview of internationalization policies and practices, critically analyzing evolving models and the need for context-sensitive approaches in an increasingly interconnected academic environment. Complementing this, de Wit (2002) offers a historical and comparative analysis of internationalization in the United States and Europe, highlighting regional distinctions and the evolution of motivations driving international engagement in higher education.

Hudzik (2011) advances this conversation by introducing the concept of *comprehensive internationalization*, emphasizing that successful global integration requires alignment across institutional missions, leadership commitment, curriculum design, and community engagement. His work underscores the necessity of viewing internationalization as a holistic institutional transformation rather than isolated initiatives.



Similarly, Knight (2008) critically examined the shifting dynamics of internationalization amidst global pressures, identifying emerging trends and challenges facing higher education institutions worldwide. Collectively, this cluster underscores that advancing internationalization demands more than operational adjustments; it requires strategic policy-driven frameworks embedded in institutional culture. The concentration of citations in these works signals their enduring relevance, as higher education institutions navigate the complexities of globalization while striving to achieve the objectives of Sustainable Development Goal 4 (Quality Education).

**Cluster 2 (Green), "Curriculum Internationalization and Intercultural Competence in Higher Education"** highlights the pedagogical and curricular dimensions central to advancing internationalization efforts in global academia. Comprising three pivotal publications, this cluster underscores the growing importance of embedding intercultural understanding and global perspectives in educational programs.

Byram's (1997) seminal work, *Teaching and Assessing Intercultural Communicative Competence*, lays the theoretical groundwork for this cluster by defining intercultural competence as an essential goal of internationalized education. Byram emphasizes the necessity of equipping learners with the skills to navigate diverse cultural contexts, an increasingly vital competency in today's globalized academic and professional environments.

Building on this foundation, Leask (2015) expanded the discourse by advocating for the intentional design of internationalized curricula that integrate global perspectives across disciplines. Her work stresses that curriculum internationalization extends beyond content inclusion—it requires fostering meaningful intercultural engagement and critical reflection among students.

Further reinforcing these insights, Leask (2009) explored the potential of both formal and informal curricula to enhance interactions between domestic and international students. She highlights the role of co-curricular activities and informal learning spaces in facilitating intercultural exchanges, thereby enriching educational experience and promoting global citizenship.

Collectively, this cluster emphasizes that curriculum design and intercultural competence development are pivotal strategies for higher education institutions seeking to advance internationalization authentically. The prominence of these works reflects a scholarly consensus that fostering intercultural understanding within the curriculum is integral to achieving the broader goals of inclusive and high-quality global education (SDG 4).

**Cluster 3 (Blue), "Frameworks, Rationales, and Language Strategies for Internationalization in Higher Education,"** integrates foundational theories of internationalization with practical linguistic strategies that facilitate global engagement. The inclusion of three key publications in this cluster reflects a balanced focus on both conceptual underpinnings and operational approaches in the internationalization of higher education.

Altbach and Knight (2007) offer a comprehensive examination of the motivations driving internationalization, categorizing rationales into academic, political, economic, and sociocultural dimensions. Their work highlights how diverse motivations influence institutional strategies, positioning internationalization as both an opportunity and a challenge in the competitive global education market.

Knight (2004), whose work anchors this cluster, expands this discourse by redefining internationalization through evolving definitions, approaches, and rationales. She underscores the dynamic nature of internationalization, advocating for adaptive models that respond to shifting global contexts and institutional priorities. Her contribution provides a crucial framework for understanding how universities conceptualize and implement internationalization strategies.

Adding a linguistic dimension to this cluster, Macaro et al. (2018) conducted a systematic review of English-medium instruction (EMI) in higher education. Their findings reveal EMI's growing prominence as a strategy for attracting international students and expanding the global academic reach. However, they also caution against the complexities of EMI adoption, including pedagogical challenges and concerns about equity.

Together, these works illuminate the interplay between institutional motivations, adaptive frameworks, and language policies, reinforcing the view that effective internationalization requires both strategic clarity and practical language considerations to enhance global academic integration.

## Co-word analysis

Co-word analysis was applied to the same database. From the 4478 keywords, 103 met the minimum of 10 occurrences, resulting in two clusters. The keywords with the highest co-occurrence were higher education (255), innovation (159), and educational innovation (296). Table 5 summarizes the top 15 co-occurring keywords with their number of occurrences and total link strengths.

**Table 5: Top 15 keywords in the co-occurrence of keywords analysis**

| Ranking | Keyword                | Occurrences | Total link strength |
|---------|------------------------|-------------|---------------------|
| 1       | Higher education       | 102         | 247                 |
| 2       | internationalization   | 97          | 184                 |
| 3       | internationalisation   | 51          | 121                 |
| 4       | globalization          | 28          | 93                  |
| 5       | students               | 21          | 19                  |
| 6       | education              | 20          | 94                  |
| 7       | china                  | 19          | 72                  |
| 8       | International students | 18          | 42                  |
| 9       | university             | 12          | 52                  |
| 10      | human                  | 11          | 69                  |
| 11      | quality assurance      | 11          | 58                  |
| 12      | teaching               | 11          | 52                  |
| 13      | universities           | 11          | 35                  |
| 14      | Covid-19               | 10          | 34                  |
| 15      | Student mobility       | 10          | 22                  |

Keyword co-occurrence analysis reveals critical themes and interconnections in the discourse on the internationalization of higher education. Unsurprisingly, *higher education* emerged as the most dominant term, appearing 102 times, with a total link strength of 247, signifying its central role as the thematic core of the research landscape. Closely aligned are *internationalization* (97 occurrences, link strength 184) and its alternative spelling *internationalisation* (51 occurrences, link strength 121), underscoring global engagement as the focal concept across diverse studies (Knight, 2004; de Wit et al., 2015).

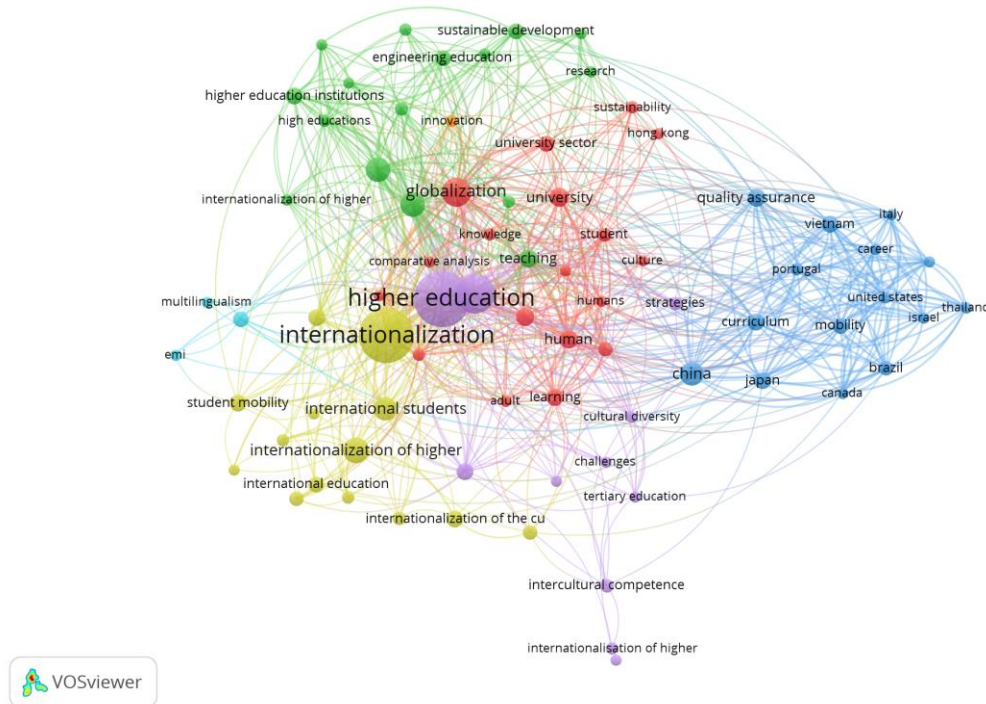
The presence of *globalization* (28 occurrences) reflects the broader contextual forces shaping higher education's international trajectory (Altbach & Knight, 2007). Furthermore, the prominence of *students* (21) and *international students* (18) highlights the centrality of student mobility and experience in driving internationalization efforts (Leask, 2015). *Student mobility* itself, though ranked lower with 10 occurrences, remains critical, as universities prioritize global exchanges, particularly in post-pandemic recovery strategies (Macaro et al., 2018).

Geographically, *China* (19 occurrences) stands out, emphasizing its growing influence as both a host and sender of international students and as a context for English-medium instruction policies (Hu, 2019; Zhang, 2018). The inclusion of *quality assurance* (11) and *teaching* (11) points to increasing attention toward maintaining educational standards amid global expansion (Hudzik, 2011).

Notably, *COVID-19* (10 occurrences) signals the impact of the pandemic, accelerating digital internationalization and reshaping global mobility trends (Mittelmeier, 2021). Overall, the network of keywords reflects an evolving field, balancing student-centric strategies, institutional priorities, and global dynamics to sustain meaningful internationalization.

Figure 3 presents the network map derived from co-word analysis, highlighting five distinct clusters. These clusters were identified and labeled based on the author's inductive interpretation of frequently occurring keywords. Significantly, the clusters exhibited strong interconnections and areas of overlap, indicating partial integration across the themes.

**Fig. 3: Co-word analysis on the innovations in higher education**



- Cluster 1 (red): At the center of the map, the red cluster emphasizes the foundational keywords *higher education* and *internationalization*, both dominating the network in terms of frequency and linkage strength. This reflects the central discourse on global engagement and institutional responses to the demands of a global knowledge economy (Knight, 2004; Altbach & Knight, 2007). Closely associated terms such as *globalization*, *university*, and *teaching* indicate how these concepts underpin discussions on academic mobility and cross-border education.
- Cluster 2 (Green): The green cluster integrates the themes of *globalization*, *innovation*, and *sustainable development*, suggesting a growing research focus on how internationalization strategies align with sustainability goals and innovation imperatives (Maringe & Sing, 2014). Connections with *higher education institutions* and *engineering education* highlight disciplinary expansions and institutional roles in global problem-solving.
- Cluster 3 (blue): This cluster is dominated by terms such as *quality assurance*, *curriculum*, and country names such as *China*, *Vietnam*, *United States*, and *Thailand*. This indicates a strong emphasis on comparative studies of national approaches to internationalization, particularly in ensuring educational quality amidst global expansion (Hudzik, 2011; de Wit et al., 2015).
- Cluster 4 (yellow) centers on *international students*, *student mobility*, and *multilingualism*, reflecting the continued prioritization of student exchanges and cross-cultural experiences as critical drivers of internationalization (Leask, 2015; Macaro et al., 2018). The prominence of *international education* highlights the integral role of mobility programmes in fostering global citizenship.
- Cluster 5 (purple): Finally, the purple cluster focuses on *curriculum internationalization* and *intercultural competence*, emphasizing pedagogical strategies to prepare students for global engagement (Byram, 1997; Leask, 2015). The association between *cultural diversity* and *tertiary education* underscores the efforts to embed global perspectives at all educational levels.

The co-word analysis identified five clusters that shaped internationalization in higher education. The Red Cluster centers on *higher education*, *internationalization*, and *globalization*, highlighting core debates. The

Green Cluster focuses on *innovation* and *sustainability*, and links internationalization with development goals. The Blue Cluster emphasizes *quality assurance* and country-specific strategies, reflecting comparative approaches. The Yellow Cluster highlights *student mobility* and *multilingualism*, underscoring the importance of global student experience. Finally, the Purple Cluster addresses *curriculum internationalization* and *intercultural competence*, focusing on pedagogical strategies. Collectively, these clusters reveal an integrated approach that balances policy, practice, and student engagement in inclusive global education.

Table 6 presents the results of the co-word analysis, outlining each cluster label, number of associated keywords, and selected representative keywords.

**Table 6: Co-word analysis on the advancement of internationalization in higher education**

| Cluster No and color | Cluster label  | Number of keywords | Representative Keywords  |
|----------------------|--|--------------------|--|
| 1 (red)              | Core Themes of Internationalization and Higher Education     | 18                 | adult; article; comparative analysis; globalization; hong kong; human; humans; india; knowledge; learning; motivation; qualitative research; student; sustainability; universities; university; university sector.   |
| 2 (green)            | Sustainability and Innovation in Global Higher Education     | 16                 | accreditation; economic and social effects; education; education computing; engineering education; environmental impact; global competence; high educations; higher education institutions; international cooperation; internationalization of higher educations; research; societies and institutions; students; sustainable development; teaching. |
| 3 (blue)             | Quality Assurance and National Contexts                      | 15                 | brazil; canada; career; china; curriculum; israel; italy; japan; mobility; partnerships; portugal; quality assurance; thailand; united states; vietnam.  |
| 4 (yellow)           | Student Mobility and International Experiences               | 14                 | academic mobility; diversity; globalisation; international education; international higher education; international students; internationalization; internationalization at home; internationalization of higher education; internationalization of the curriculum; pedagogy; student mobility; study abroad; turkey.                                |
| 5 (purple)           | Curriculum Internationalization and Intercultural Competence | 11                 | challenges; covid-19; higher education; intercultural competence; international student; internationalisation; internationalisation of higher education; strategies; technology; tertiary education.   |



## Discussion

### Theoretical Implications

This study advances the theoretical understanding of internationalization in higher education by mapping the intellectual landscape and identifying dominant frameworks, themes, and scholarly networks. Co-citation and keyword analyses confirm that internationalization is a multidimensional concept that is deeply interconnected with curriculum development, intercultural competence, policy frameworks, and language strategies (Knight, 2004; de Wit et al., 2015; Leask, 2015). The emergence of clusters focusing on student mobility, English-medium instruction, and quality assurance further validates and extends the existing theories on global engagement and institutional transformation. Importantly, the prominence of sustainability and post-pandemic shifts, such as internationalization at a distance (Mittelmeier, 2021), suggests an evolving theoretical trajectory that integrates internationalization with global development agenda and digital innovation. Thus, this study contributes to refining theoretical models by highlighting the dynamic interplay between global forces, institutional strategies, and student experiences, thereby offering a more holistic framework for understanding internationalization in the contemporary era.

### Practical Implications

From a practical perspective, the findings offer actionable insights for higher education policymakers, administrators, and educators seeking to strengthen internationalization strategies. The centrality of keywords such as *student mobility*, *intercultural competence*, and *quality assurance* underscores the need for comprehensive policies that prioritize inclusive mobility programs, integrate intercultural learning across curricula, and uphold academic standards in international partnerships (Hudzik, 2011; Byram, 1997). The emerging focus on sustainability and digitalization suggests that institutions should align their internationalization initiatives with broader global goals and embrace virtual mobility to enhance accessibility. Additionally, the strong presence of country-specific terms (e.g., China, Vietnam, and the United States) points to the importance of contextualizing internationalization strategies to national educational systems and cultural contexts. Finally, addressing faculty challenges such as workload and burnout (Sabagh et al., 2018) is crucial for sustaining institutional engagement. Collectively, these practical implications equip higher education leaders with evidence-based directions to effectively navigate the complex global higher education landscape.

## Conclusion

This study provides a comprehensive bibliometric mapping of the advancement of internationalization in higher education, highlighting intellectual structure, thematic trends, and evolving priorities in the field. The findings reveal that internationalization is deeply rooted in institutional strategies, policy frameworks, curriculum innovations, and student mobility programmes. Core themes, such as intercultural competence, quality assurance, and English-medium instruction, emerged prominently, indicating their critical role in shaping global engagement. Furthermore, increasing attention to sustainability and digital internationalization reflects how higher education institutions are adapting to post-pandemic realities and aligning with global development goals, notably SDG 4: Quality Education. Overall, this study contributes to a deeper understanding of internationalization as a multidimensional and dynamic process.

### Limitations

Although this study offers valuable insights, it is not without limitations. First, the analysis is limited to documents indexed in the Scopus database, potentially excluding relevant studies from other databases or gray literature. Second, the keyword search strategy, although comprehensive, may have omitted emerging terminologies that were not captured by the selected keywords. Third, the reliance on bibliometric tools, such as VOSviewer, primarily reflects co-citation and co-word patterns, which, while informative, do not fully capture qualitative nuances, such as policy impact or institutional case studies. Finally, the temporal coverage is limited to 2015–2024, and evolving post-pandemic trends may not yet be fully reflected in the dataset.

### Future Research Recommendations

Future research could expand the scope by incorporating multiple databases (e.g., Web of Science, ERIC) and including gray literature to ensure broader coverage. Integrating qualitative methods such as expert interviews or case analyses can complement bibliometric findings by providing a deeper contextual



understanding of institutional practices. Further, longitudinal studies extending beyond 2024 will help track the long-term impacts of post-pandemic shifts, including virtual mobility and sustainable internationalization strategies. It is also recommended to explore underrepresented regions and perspectives to promote inclusivity and diversity in the global discourse on internationalization in higher education.

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