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Conceptual Evolution of Higher Education Extension: A Scopus-Based Bibliometric Analysis, 2015–2025

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Abstract

Research on higher education extension is dispersed across university extension, community engagement, outreach, the third mission, sustainability, and university social responsibility, making its development as a coherent field difficult to characterize. This study mapped the global knowledge landscape of higher education extension research from 2015 to 2025, focusing on publication growth, leading contributors and sources, geographic patterns, conceptual structures, thematic evolution, and emerging research directions. A Scopus-based bibliometric design combining performance analysis and science mapping was employed using Bibliometrix/Biblioshiny. From 2,007 identified records, 1,021 documents were retained following subject-category and English-language screening. Analyses included scientific production, citation performance, productivity of authors, sources, affiliations, and countries, Bradford's Law, keyword co-occurrence, thematic mapping, thematic evolution, and trend-topic analysis. Publications increased from approximately 40 in 2015 to 178 in 2025, with an annual growth rate of 16.4%. The United States had the highest corresponding-author output and citation total, while Michigan State University and the University of Guelph were among the most productive affiliations. The conceptual structure centered on the third mission, community engagement, social responsibility, sustainability, innovation, and entrepreneurial universities. Recent themes increasingly connected university extension with community engagement, social responsibility, and sustainable development.

Keywords: *Bibliometric analysis, Community engagement, Higher education extension, Scopus, University social responsibility.*

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INTRODUCTION

Higher education institutions increasingly operate beyond the conventional boundaries of teaching and research. Universities are expected to contribute to social, cultural, economic, and environmental development through forms of engagement that connect academic knowledge with public and community needs. This broader role is commonly discussed through concepts such as university extension, community engagement, outreach, engaged scholarship, knowledge exchange, and the third mission. Compagnucci and Spigarelli (2020) characterize the third mission as a multidimensional and evolving contribution of universities to society, while Bayuo et al. (2020) show that university involvement in social innovation has become a growing field of inquiry. Community-engaged teaching and learning has also been examined as an institutional pathway linking social relevance, experiential education, and sustainable development (Rodríguez-Zurita et al., 2025; Tomasella et al., 2023).

The terminology is consequential because higher education extension is not represented by a single stable label. Traditional extension models often emphasize dissemination, technical assistance, training, and service to external groups, whereas contemporary approaches increasingly emphasize reciprocal engagement, partnership, co-creation, social responsibility, and sustainable development. Reviews of university–community engagement have documented conceptual diversity and persistent difficulties in defining and operationalizing engagement consistently (Koekkoek et al., 2021). Petersen et al. (2022) further argue that effective third-mission activity depends on capabilities on both sides of the university–community relationship and on forms of interaction that can generate mutual learning and development outcomes. Research on collaborative knowledge production further shows that

dialogue, agency, and meaningful participation remain central to co-creation processes in higher education (Omland et al., 2025).

University social responsibility provides another closely related conceptual lens. Ali et al. (2021) show that the literature on university social responsibility links institutional responsibility with stakeholder-oriented activities and sustainability. More recent bibliometric work likewise identifies engagement, sustainability, capacity building, inclusion, governance, and accountability as recurring dimensions of university social responsibility research (Batra et al., 2025). These overlapping strands suggest that higher education extension should be examined not merely as a set of outreach activities, but as part of a broader transformation in how universities understand their societal role. Empirical work has additionally connected universities' social-responsibility activities with regional innovation and sustainability performance, reinforcing the relevance of institutional context (Pedro et al., 2022).

Against this background, a field-level bibliometric analysis is useful because it can examine a large and fragmented body of scholarship through both performance indicators and science-mapping techniques. Bibliometric methods can identify publication trajectories, influential contributors, collaboration patterns, conceptual relationships, and thematic development that may not be visible through narrative reviews alone (Donthu et al., 2021; Zupic & Čater, 2015). The bibliometrix framework provides an integrated workflow for science mapping, including co-word, co-citation, bibliographic coupling, and thematic analyses (Aria & Cuccurullo, 2017). A systematic review of European universities also documents the challenge of operationalizing and measuring the third mission through comparable indicators (Haj Taieb, 2024).

Despite the expanding scholarship surrounding the societal role of universities, the higher education extension literature remains conceptually fragmented. Studies are distributed across education, higher education policy, sustainability, innovation, community development, public engagement, and social responsibility journals. Earlier reviews have examined particular segments of this literature, including the third mission (Compagnucci & Spigarelli, 2020), university–community engagement (Koekkoek et al., 2021), social innovation (Bayuo et al., 2020), and university social responsibility (Ali et al., 2021). However, these strands do not by themselves provide a single longitudinal map of the publication, geographic, conceptual, and thematic development of higher education extension research across the 2015–2025 period. Related bibliometric research has examined student community engagement and its connection to sustainability, providing a useful comparison for the broader field-level scope adopted here (Mittal & Jora, 2023).

The present study addresses this gap by mapping the Scopus-indexed literature at field level. It asks not only how much has been published, but also which countries, affiliations, authors, and sources are most productive; which concepts form the core of the field; how themes have evolved; and which topics are becoming more visible in the recent literature. Such mapping is particularly relevant to educational leadership and management because extension is increasingly connected to institutional strategy, stakeholder relationships, sustainability, innovation, and the public value of higher education. Recent synthesis of community-engaged learning indicates that engagement scholarship contains multiple pedagogical and developmental outcomes, further supporting the need to examine the field's conceptual boundaries (Guanlao et al., 2025).

This study examined the global knowledge landscape of higher education extension research indexed in Scopus from 2015 to 2025 to identify its development, leading contributors, conceptual structure, thematic evolution, and emerging research directions.

Research Questions. The study addressed seven questions: (RQ1) How did publication output and citation performance develop from 2015 to 2025? (RQ2) Which authors, sources, affiliations, countries, and documents were most productive or influential? (RQ3) What concepts constitute the field's principal conceptual structure? (RQ4) How did research themes evolve and what directions emerged? (RQ5) What evidence is available concerning the field's intellectual foundations? (RQ6) What patterns characterize geographic distribution and international collaboration? (RQ7) What substantive gaps and future research directions can be identified from the mapped literature?

The study contributes a longitudinal field-level map of higher education extension research for researchers, academic leaders, extension administrators, and policymakers. For educational leadership and management, the findings provide evidence about the institutional and conceptual vocabulary through which universities describe their societal role. The study also provides a reproducible basis for

identifying dominant themes, emerging areas, and underdeveloped dimensions that can guide future empirical research and institutional evaluation.

RESEARCH METHODS

Research Design

This study employed a retrospective bibliometric research design combining performance analysis and science mapping. Bibliometric analysis was selected because it permits systematic examination of large bodies of scholarly output through quantitative indicators and relational mapping (Donthu et al., 2021; Zupic & Čater, 2015). Performance analysis was used to examine publication growth, citation performance, productive authors, sources, affiliations, and countries. Science mapping was used to examine keyword relationships, thematic structures, thematic evolution, and research trends. The analysis was implemented in the Bibliometrix/Biblioshiny environment, which supports a reproducible workflow for bibliographic data conversion, descriptive analysis, and science mapping (Aria & Cuccurullo, 2017).

The methodological workflow was: research objectives → study design → Scopus search strategy → record retrieval → data extraction → data screening and cleaning → final analytical dataset → bibliometric analysis → interpretation and synthesis. The study used the publication period 2015–2025 and the recorded search date, September 11, 2026. The screening sequence was reported using a PRISMA-style flow diagram (Page et al., 2021).

Data Source

Scopus was used as the sole bibliographic database. Scopus was selected because it provides structured bibliographic and citation metadata and broad international coverage appropriate for interdisciplinary research on higher education, community engagement, sustainability, and the third mission. The use of a single database also reduces technical inconsistencies that can arise when merging records from multiple sources. The resulting dataset contains metadata for publication year, sources, authors, affiliations, countries, keywords, and citation indicators.

The search covered publications from 2015 through 2025. The PRISMA-style flow diagram shows sequential refinement by publication period, subject category, and language, with the corpus ultimately limited to Social Sciences and English-language records. Because the supplied figure does not display a separate document-type exclusion stage, the exact document-type composition should be confirmed from the final Scopus export before submission. Reliance on Scopus also means that records indexed only in other databases are outside the study's scope.

Data Search and Extraction

The Scopus search strategy was constructed around two conceptual domains: higher education institutions and extension/engagement activities. Synonymous and related terms were connected with OR, while the two conceptual domains were connected with AND. The TITLE-ABS-KEY field was used so that relevant concepts could occur in titles, abstracts, or indexed keywords.

```
TITLE-ABS-KEY(
("higher education" OR universit*
OR "tertiary education"
OR "higher education institution*"
OR HEI*)
AND
(extension OR "university extension"
OR "higher education extension"
OR "community extension"
OR "extension service*"
OR "university-community engagement"
OR "community engagement"
OR "community outreach"
OR "outreach program*")
)
```

AND PUBYEAR > 2014
AND PUBYEAR < 2026

The supplied PRISMA-style flow diagram reports 2,007 records identified from Scopus. The time-span stage retained all 2,007 records. Restriction to the Social Sciences subject category reduced the corpus to 1,347 records, excluding 660 records. The English-language filter then reduced the corpus to 1,021 records, excluding 326 records. The final analytical corpus therefore comprised 1,021 documents according to the supplied PRISMA and Main Information outputs.

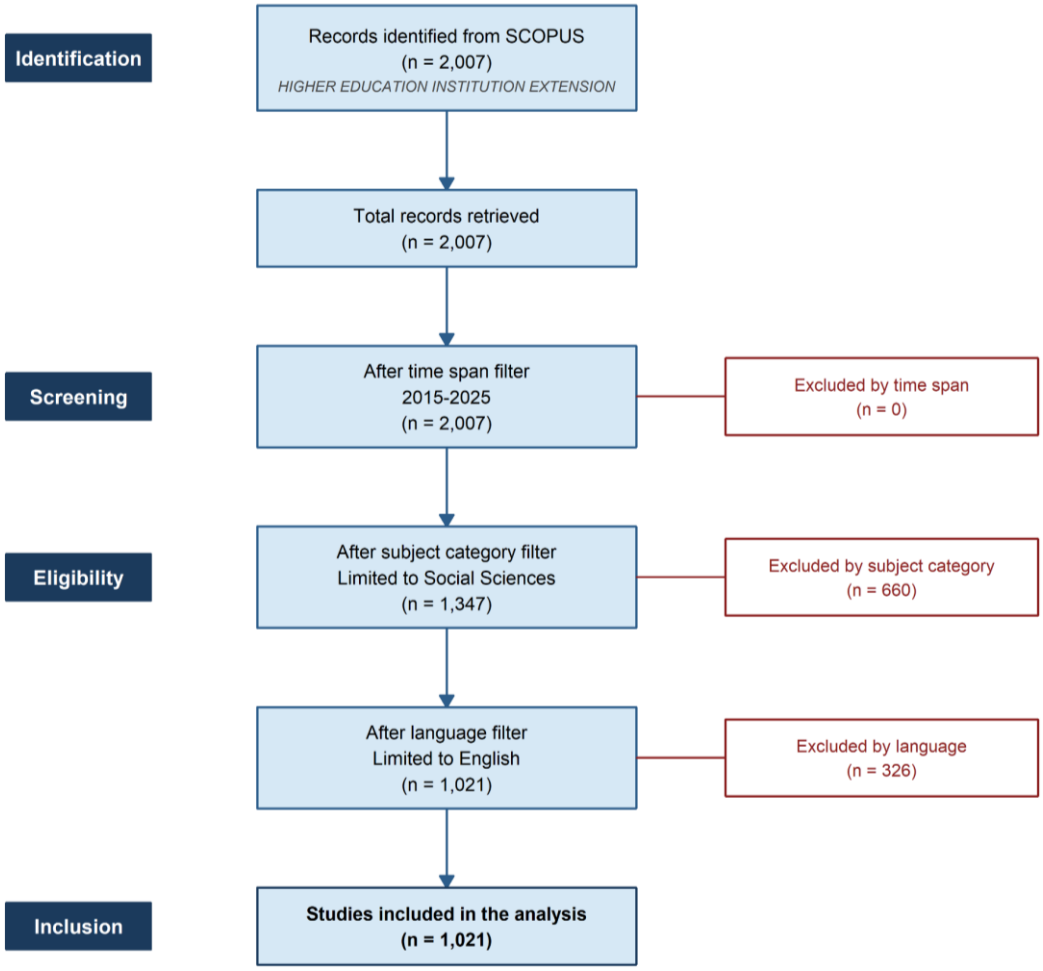


Figure 1. PRISMA-Style Flow Diagram of Record Identification, Screening, Eligibility, And Inclusion For The 2015–2025 Scopus Corpus.

Data Pre-processing and Data Cleaning

Before analysis, the bibliographic records were inspected for duplicate records, incomplete metadata, inconsistent author names, affiliation variants, and synonymous or closely related keywords. Author names were standardized where the metadata indicated obvious variants. Institutional names were normalized to reduce duplication caused by spelling, abbreviation, or naming differences. Keywords were harmonized for synonymy, spelling variants, abbreviations, and closely related expressions before conceptual analyses. Particular attention was given to variants of higher education institution(s), university/universities, university social responsibility, community engagement, and third mission.

The supplied Main Information output reports 1,021 documents, 456 sources, 2,912 authors, 2,948 author keywords, 167 single-authored documents, 18.51% international co-authorship, 3.15 co-

authors per document, a document average age of 4.72 years, and an average of 12.84 citations per document. It also reports zero references. Because a zero reference count is incompatible with reliable co-citation or bibliographic-coupling analysis, reference-based analyses were not interpreted in this manuscript and should be re-run after validating the Scopus cited-reference export.

Data Analysis

Analyses were organized around the research objectives. Annual scientific production and average citations per year were used for RO1. Most relevant authors, sources, affiliations, and countries, together with global citation indicators and Bradford's Law, were used for RO2. Keyword co-occurrence and thematic mapping were used for RO3. Thematic evolution, trend topics, and keyword frequency over time were used for RO4. Citation evidence was reviewed for RO5, but reference-based intellectual mapping was withheld because the supplied Main Information output reports zero references. Country production, corresponding-author country patterns, and the international co-authorship indicator were used for RO6. RO7 was addressed through an integrated synthesis of the observed bibliometric patterns.

The principal software was Bibliometrix/Biblioshiny. The figures supplied in this study were treated as the analysis outputs. Thresholds and period segmentation are therefore reported only where visible in the supplied figures; exact network thresholds and software-version numbers should be inserted from the final analysis log before submission.

RESULTS AND DISCUSSION

Study Selection and Dataset Profile

The study selection process yielded 1,021 documents after the reported subject-category and language filters. The corpus contains 456 sources and 2,912 authors. The annual growth rate is reported as 16.4%, while 167 documents are single-authored. International co-authorship accounts for 18.51% of the corpus, and the average number of co-authors per document is 3.15. The average document age is 4.72 years and the average citation count is 12.84 per document.

Table 1. Main Bibliometric Information For The Final Figure-Derived Dataset

Indicator	Value
Timespan	2015–2025
Sources	456
Documents	1,021
Annual growth rate	16.4%
Authors	2,912
Single-authored documents	167
International co-authorship	18.51%
Co-authors per document	3.15
Author keywords	2,948
Document average age	4.72 years
Average citations per document	12.84
References	0 in supplied Main Information output; validation required

Scientific Production and Citation Performance

Annual scientific production shows an overall upward trajectory across the eleven-year period. Output was approximately 40 documents in 2015 and increased to approximately 46 in 2016, 59 in 2017, and 80 in 2018. Production remained high in 2019 at about 82 documents, declined to approximately 72 in 2020, and then increased to about 101 in 2021 and 117 in 2022. Output fell to about 104 in 2023 before increasing to approximately 143 in 2024 and 178 in 2025. The final year therefore represents the highest annual production shown in the supplied figure.

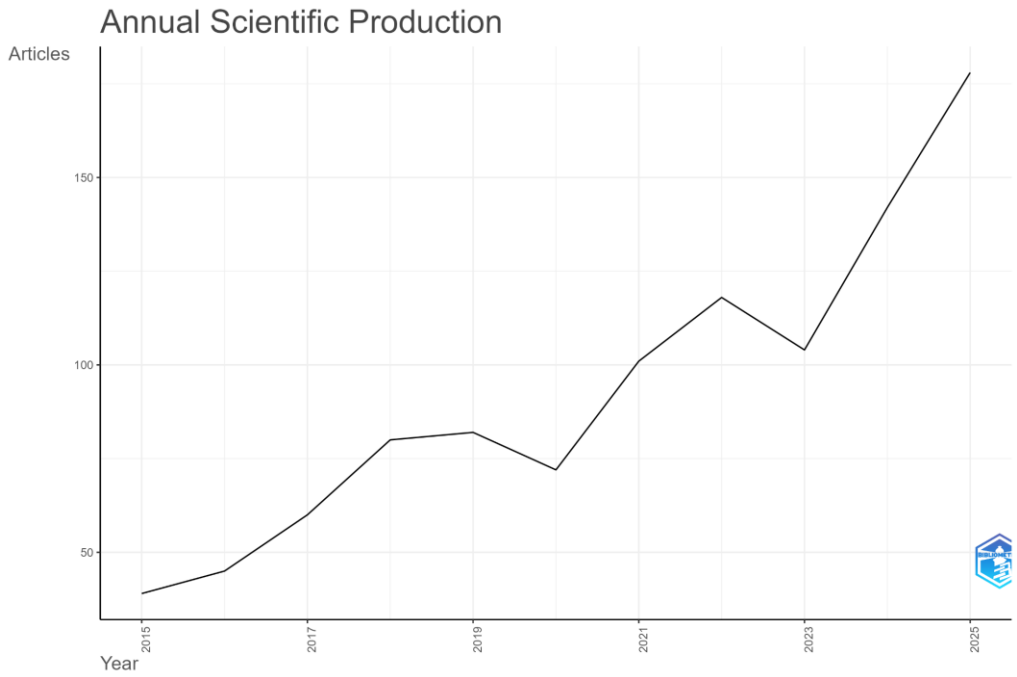


Figure 2. Annual Scientific Production Of Scopus-Indexed Higher Education Extension Research, 2015–2025

Average citations per year fluctuated rather than increasing in parallel with publication volume. The supplied citation curve shows relatively higher citation averages around 2018 and 2021, followed by lower averages in the most recent years. The decline toward 2025 should be interpreted cautiously because recent publications have had less time to accumulate citations.

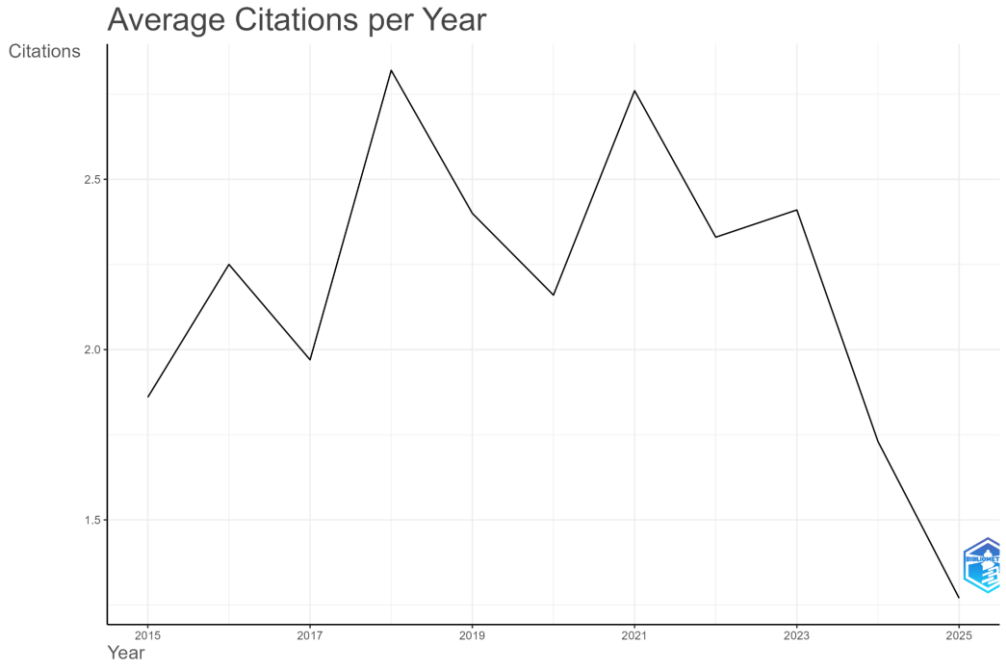


Figure 3. Average Article Citations Per Year, 2015–2025.

Leading Countries, Affiliations, Authors, and Sources

Country-level production is concentrated among a relatively small group of countries. The corresponding-author country output identifies the United States as the largest contributor, followed by Italy, the United Kingdom, Spain, Brazil, China, South Africa, Australia, Canada, and Germany. The

figure also distinguishes single-country publications (SCP) from multiple-country publications (MCP), showing that both domestic and international production contribute to the field.

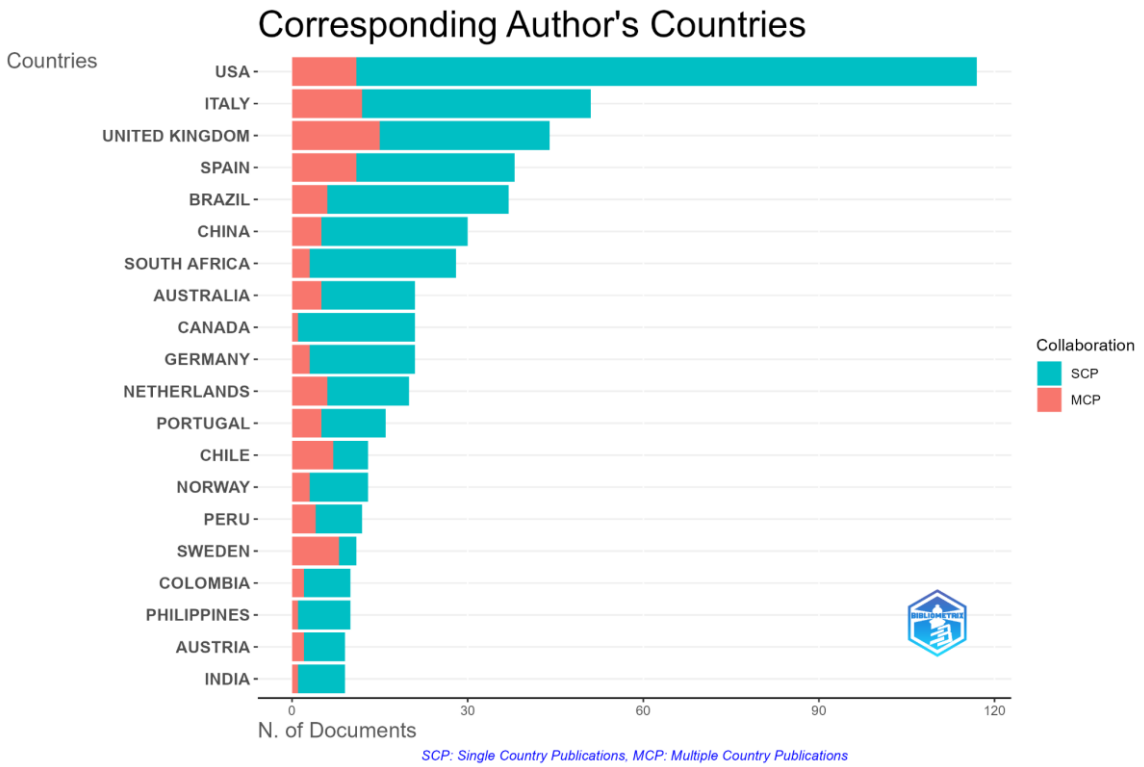


Figure 4. Corresponding-Author Countries and Single-Country Versus Multiple-Country Publications

Affiliation-level productivity is led by Michigan State University and the University of Guelph, with 19 documents each. The University of Florida follows with 16 documents. The University of Georgia, University of Minnesota, and Utah State University each contribute 12 documents. Clemson University, Kansas State University, the University of California, and the University of Porto each contribute 11 documents.

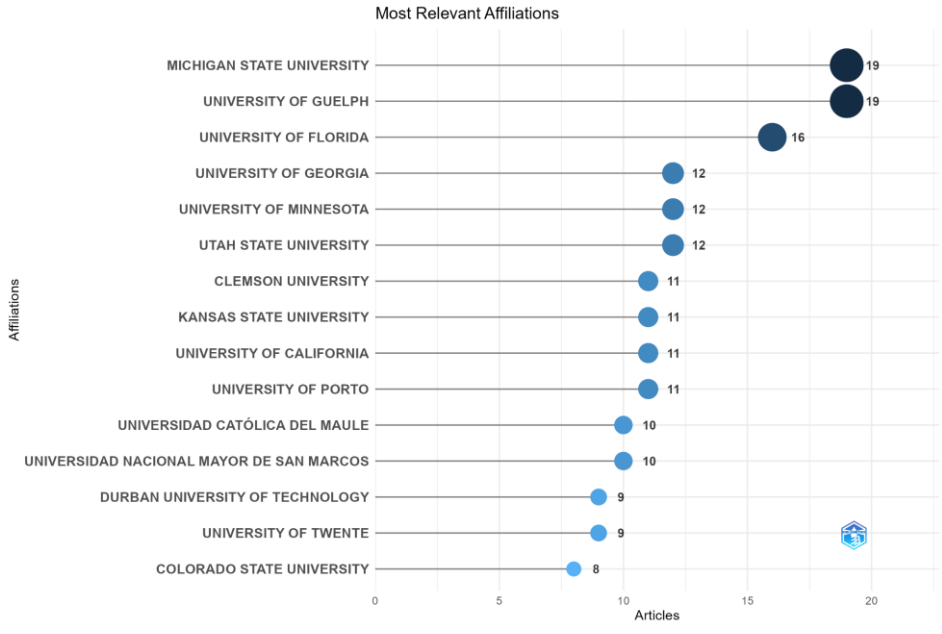


Figure 5. Most Relevant Affiliations By Number of Documents.

At the author level, Severino-González P. is the most productive author in the supplied ranking with eight documents, followed by Pinheiro R. with seven. Benneworth P., Málovics G., and Sarmiento-Peralta G. each have six documents. Five additional authors in the displayed top group have four documents each.

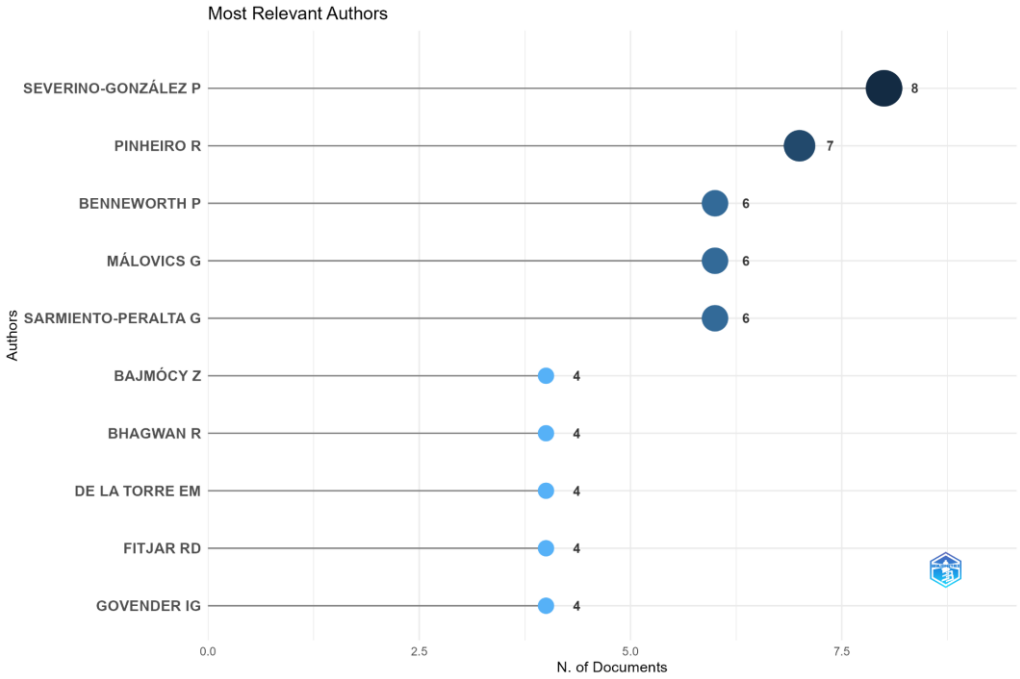


Figure 6. Most Relevant Authors By Number of Documents

Source productivity is similarly concentrated. The Journal of Extension is the leading source with 67 documents, followed by the Journal of Higher Education Outreach and Engagement with 48, Sustainability (Switzerland) with 42, and the International Journal of Sustainability in Higher Education with 27. Science and Public Policy and Industry and Higher Education follow with 21 and 20 documents, respectively.

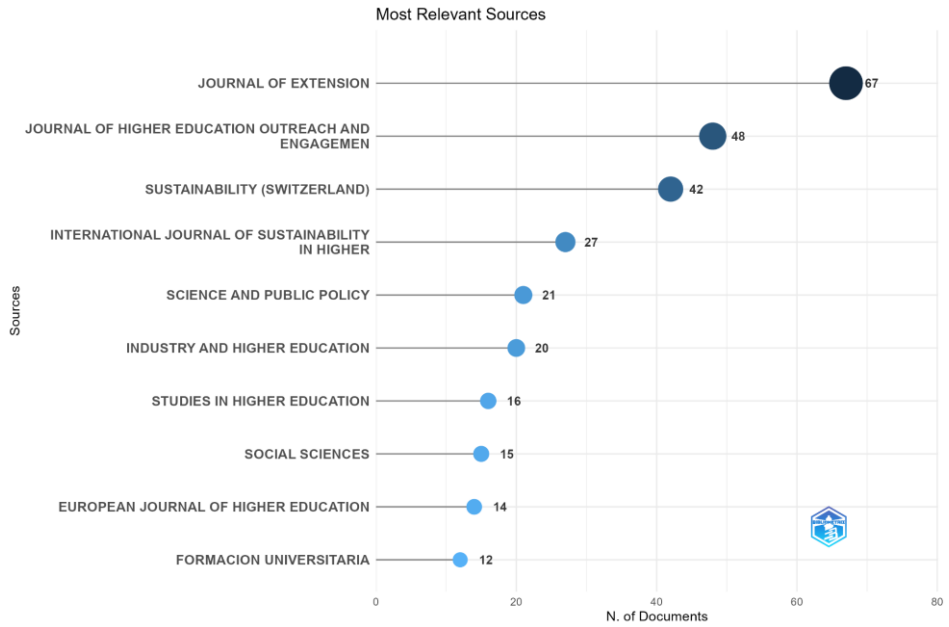


Figure 7. Most Relevant Publication Sources by Number of Documents

Bradford's Law output identified 16 sources in the core zone, 109 sources in Zone 2, and 331 sources in Zone 3. The reported Bradford multiplier was 4.92, with an R^2 of 0.9635.

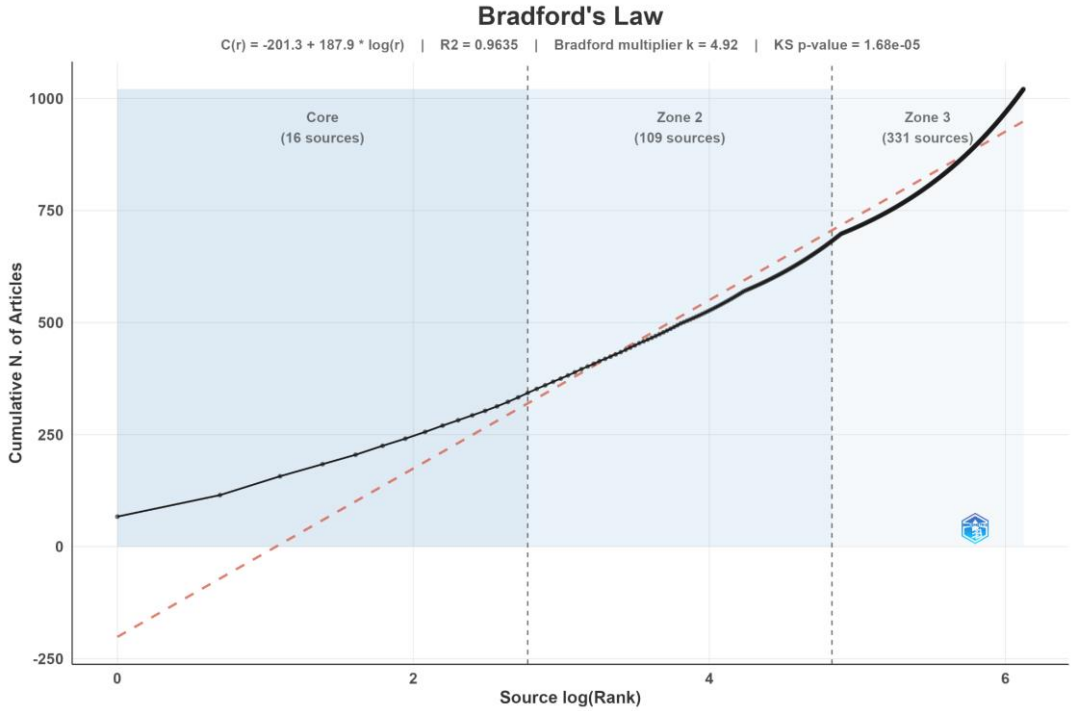


Figure 8. Bradford's Law Distribution of Sources Across The Three Zones.

Geographic And Collaboration Structure

The geographic distribution demonstrates broad international participation but uneven concentration. In the citation output, the United States records the highest total with 1,526 citations, followed by Italy with 1,354 and the United Kingdom with 962. Spain, the Netherlands, Sweden, Australia, Portugal, Germany, and South Africa also appear among the leading countries by citation count. The supplied Main Information output reports 18.51% international co-authorship, indicating that international collaboration is present but does not constitute the majority of authorship relationships.

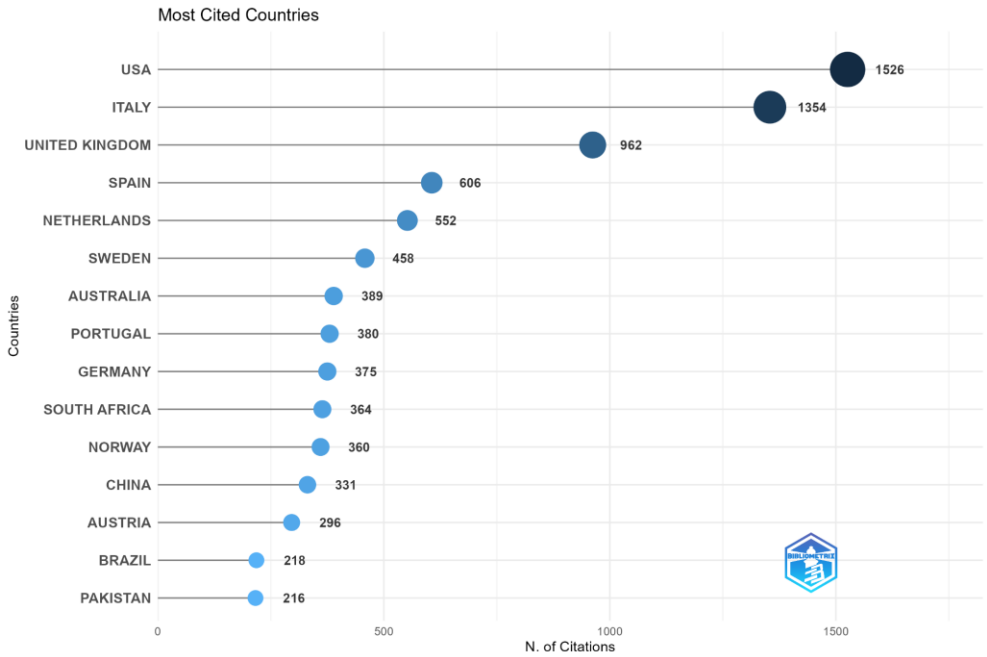


Figure 9. Countries With The Highest Citation Totals in The Supplied Corpus

The corresponding-author country output further shows that the United States has the largest publication volume, while Europe, Latin America, Asia, Africa, and Oceania are all represented. Because a dedicated country collaboration network was not supplied, the present analysis does not infer specific network clusters beyond the international co-authorship indicator and SCP/MCP distribution. Research on universities' contributions to culture-led regional development suggests that institutional identity and local conditions can shape engagement strategies in ways that aggregate country counts cannot reveal (Cinar & Coenen, 2023).

Citation Performance and Intellectual Evidence

The most globally cited documents in the supplied output are led by Jones E. (2021), with 192 citations, followed by Larrán Jorge M. (2017) with 180, Passaro R. (2018) with 169, Pinheiro R. (2015) with 157, and Etzkowitz H. (2016) with 154. The remaining documents in the displayed top ten range from 94 to 119 citations.

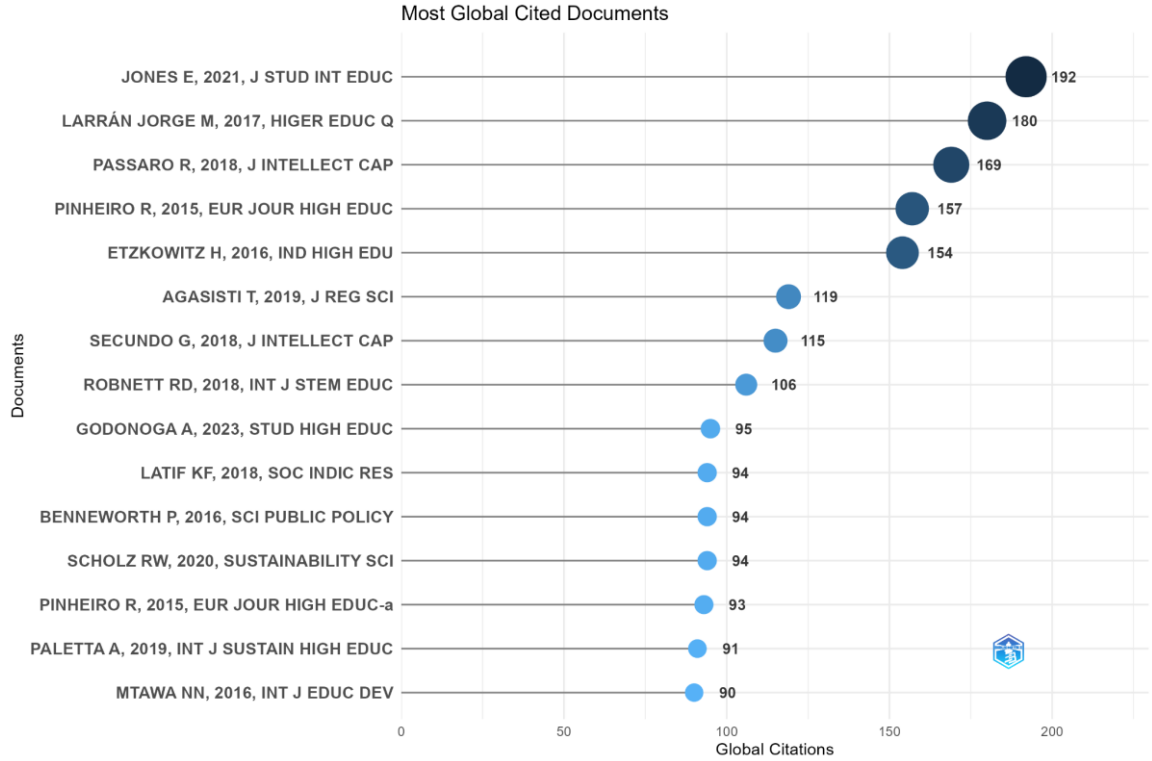


Figure 10. Most Globally Cited Documents Represented in The Supplied Scopus Output

Reference-based intellectual structure could not be reported from the current export because the Main Information output records zero references and no validated co-citation, historiograph, or bibliographic-coupling figures were supplied. This is treated as a data-validation issue rather than a substantive finding. A complete intellectual-structure analysis requires a Scopus export containing the cited-reference field.

Conceptual Structure

The keyword co-occurrence network shows a dense conceptual structure centered on higher education and its societal functions. Prominent terms include higher education, the third mission, community engagement, sustainability, social responsibility, innovation, university sector, entrepreneurial universities, service-learning, and related forms of engagement and knowledge transfer. The network indicates that extension is embedded within a broader conceptual system linking institutional missions, community relationships, sustainability, innovation, and social responsibility.

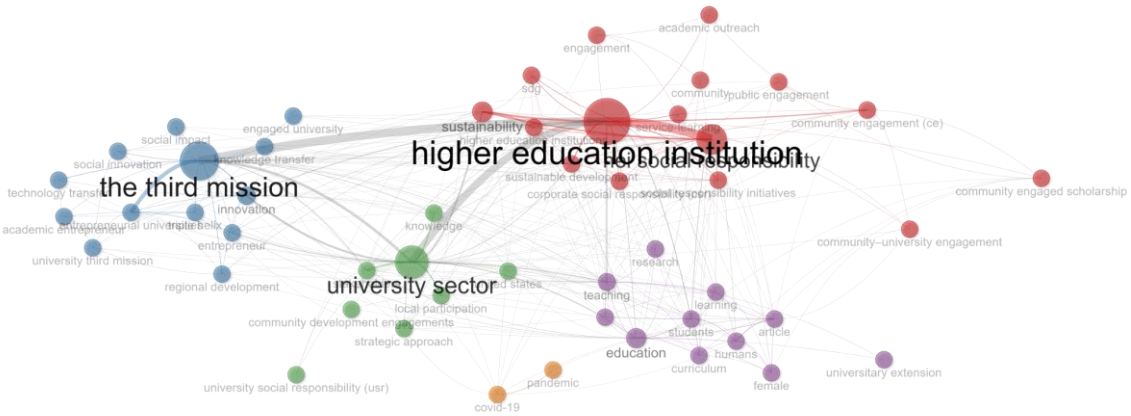


Figure 11. Keyword Co-Occurrence Network Showing The Conceptual Structure of Higher Education Extension Research

The thematic map further differentiates the field according to centrality and density. In the supplied map, themes associated with university-sector activity, innovation, and entrepreneurial universities occupy the more central structure, while higher education institution, HEI social responsibility, and sustainability form another substantial cluster. Community engagement, community-engaged scholarship, and service-learning appear toward the emerging/declining quadrant, while university extension, rural development, and climate change are positioned as more specialized topics. Education and student-related terms also form a highly developed cluster.

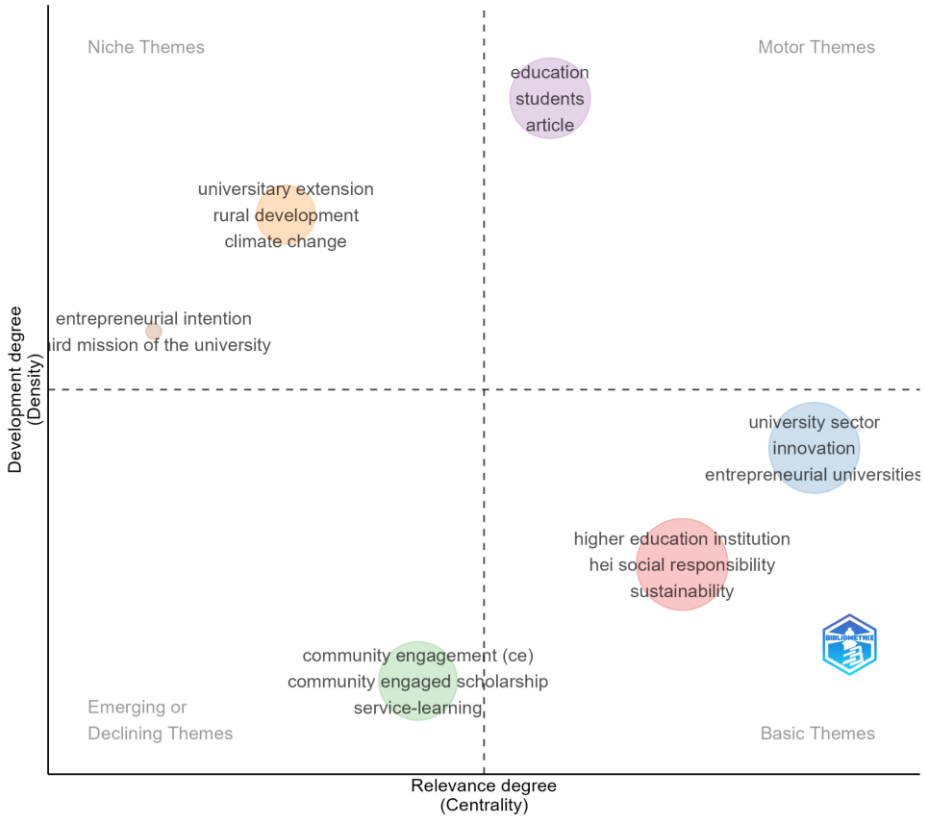


Figure 12. Thematic Map of The Higher Education Extension Research Field Based On Centrality And Density

Thematic Evolution and Emerging Trends

The thematic-evolution map compares 2015–2022 with 2023–2025. The earlier period contains strong representations of third mission, corporate social responsibility, higher education, university,

education, and organization. In the later period, third mission remains visible, while university, university social responsibility, community engagement, university extension, and sustainable development become more explicitly represented. The connections indicate both continuity and differentiation: the third mission persists as a stable conceptual anchor, while the later period contains more explicit engagement- and sustainability-oriented terms.

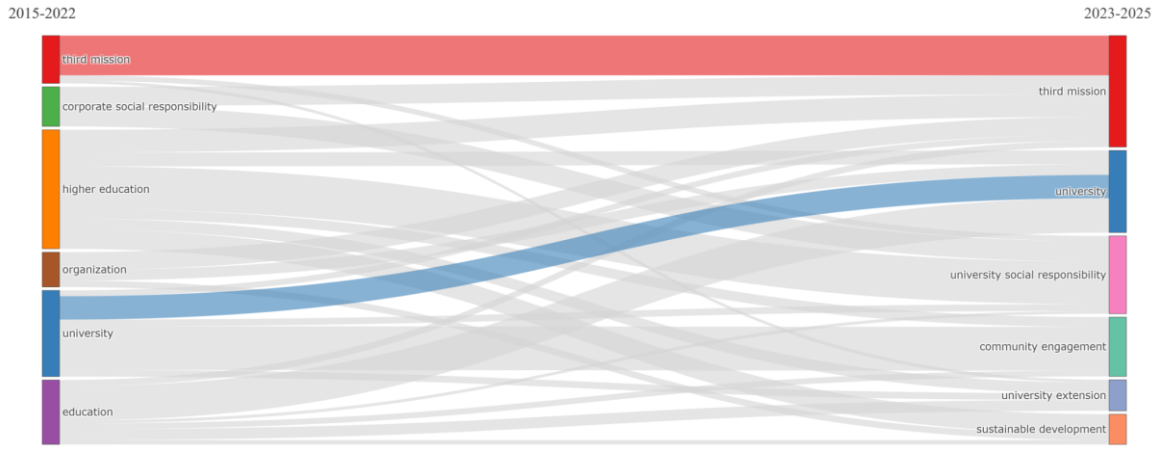


Figure 13. Thematic Evolution of Higher Education Extension Research, Comparing 2015–2022 And 2023–2025

The trend-topic analysis shows a progression from early terms such as government, regional engagement, university third mission, environmental education, schools, and intellectual capital toward terms including institutionalization, engaged scholarship, academic outreach, economic development, education, entrepreneurial universities, innovation, and university sector. More recent terms include higher education institution, community engagement, the third mission, sustainable development, community-engaged scholarship, HEI social responsibility, SDG, higher education institutions, social responsibility initiatives, regional revitalization, technology adoption, and bibliometric analysis. The most recent terms therefore broaden the field from traditional extension and institutional engagement toward sustainability, responsibility, regional development, and methodological self-reflection.

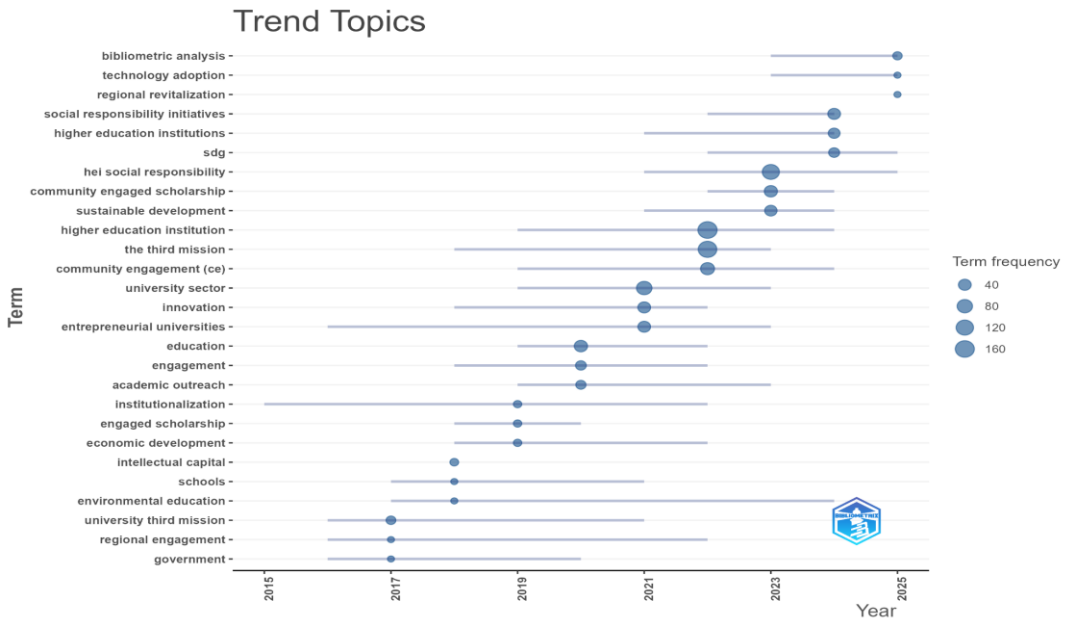


Figure 14. Trend Topics Showing The Temporal Visibility of Major Terms, 2015–2025

Two supplementary descriptive visualizations are retained to provide additional context on the relationships among countries, contributors, and prominent terms. They are interpretive summaries rather than substitutes for validated collaboration-network or cited-reference analysis.

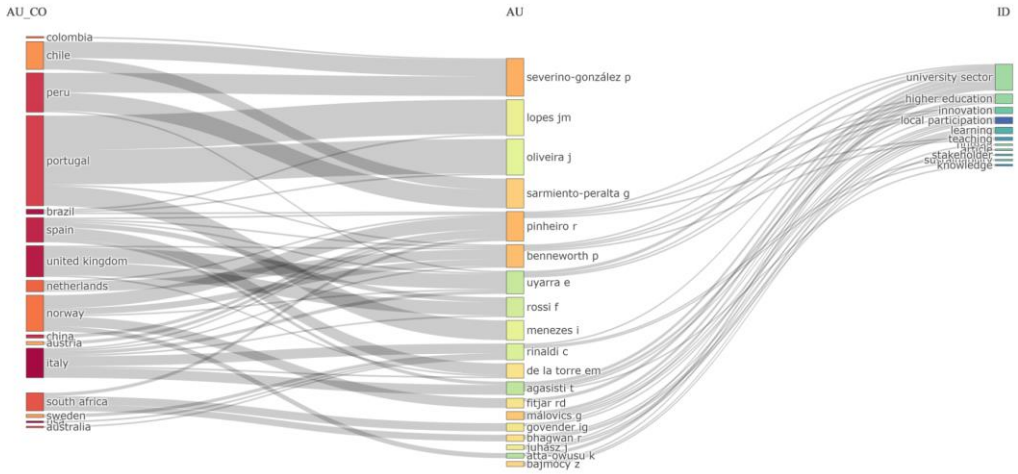


Figure 15. Three-Field Plot Linking Countries, Authors, And Indexed Terms



Figure 16. Word Cloud Of Prominent Terms

The three-field visualization and word cloud offer complementary descriptive views of the corpus, while the substantive interpretation remains grounded in the thematic maps, keyword relationships, and performance indicators presented above.

Table 2. Research-Objective-To-Finding Matrix

Objective	Analysis	Principal finding
RO1	Annual production; citations	Publication output increased substantially from about 40 documents in 2015 to 178 in 2025; annual growth rate = 16.4%.
RO2	Authors, sources, affiliations, countries, Bradford	Productivity is concentrated among a small group of authors, affiliations, sources, and countries; Bradford core = 16 sources.

RO3	Co-occurrence; thematic map	The conceptual field centers on higher education, third mission, social responsibility, community engagement, sustainability, innovation, and entrepreneurship.
RO4	Thematic evolution; trend topics	The field retains the third mission while increasingly differentiating community engagement, university extension, social responsibility, sustainability, SDGs, and regional development.
RO5	Citation evidence; reference validation	Highly cited documents are identifiable, but co-citation/bibliographic-coupling analysis is not valid from the current zero-reference export.
RO6	Country output; international co-authorship	The field is internationally distributed but unevenly concentrated; international co-authorship = 18.51%.
RO7	Integrated synthesis	The literature shows rapid growth, conceptual broadening, and increasing linkage between extension, societal responsibility, engagement, innovation, and sustainability.

The publication trajectory indicates that higher education extension has become a substantially more active research domain during the 2015–2025 period. The rise from approximately 40 publications in 2015 to 178 in 2025, combined with the reported annual growth rate of 16.4%, indicates sustained expansion rather than a short-lived increase. This pattern is consistent with broader scholarship documenting the growing societal expectations placed on universities and the expansion of the third mission beyond conventional technology transfer.

The growth should nevertheless be interpreted as expansion of scholarly attention rather than automatic evidence of conceptual maturity. Compagnucci and Spigarelli (2020) describe the third mission as multidimensional, complex, and evolving, while Koekkoek et al. (2021) identify conceptual diversity within university–community engagement. The present mapping extends those observations by showing that the vocabulary of the field is increasingly distributed across community engagement, social responsibility, sustainability, innovation, and university extension. Comparative research on university research and third-mission efficiency illustrates why growing publication volume should not be equated with demonstrated effectiveness or societal impact (Dipierro & Toma, 2025).

The geographic results indicate an international but uneven research landscape. The United States occupies a leading position in both corresponding-author production and citation totals, while Italy, the United Kingdom, Spain, Brazil, China, South Africa, Australia, Canada, and Germany contribute visible bodies of work. The distribution demonstrates that research on higher education extension is internationally dispersed but unevenly concentrated across countries.

The 18.51% international co-authorship rate shows that cross-border collaboration is established but not dominant. This is important because extension and community engagement are strongly contextual activities. International collaboration can provide comparative learning, but locally grounded research remains essential for understanding community priorities, institutional arrangements, and uneven development conditions. Petersen et al. (2022), for example, emphasize that effective third-mission activity requires capabilities and learning on both the university and community sides.

The citation results demonstrate that the field draws on influential scholarship concerning international higher education, the third mission, intellectual capital, university–society relationships, and related institutional transformations. However, the current export cannot support a valid co-citation interpretation because the Main Information output reports zero references. Consequently, the study does not claim that the displayed highly cited documents constitute statistically derived intellectual clusters. The appropriate next step is to re-export the Scopus records with the cited-reference field and rerun co-citation and bibliographic-coupling analyses.

The co-occurrence and thematic outputs show that higher education extension is conceptually broader than the term extension itself. The central vocabulary combines higher education institutions with the third mission, community engagement, social responsibility, sustainability, innovation, and

entrepreneurship. This configuration is consistent with the literature's movement from a narrow service orientation toward a more strategic understanding of universities' societal role (Ali et al., 2021; Compagnucci & Spigarelli, 2020).

The prominence of sustainability and social responsibility is particularly notable. Ali et al. (2021) argue that university social responsibility encompasses institutional practices and stakeholder-oriented activities that can contribute to sustainability. Batra et al. (2025) similarly identify environmental sustainability, civic and community engagement, capacity building, equality and inclusion, governance, and accountability as major areas within USR research. The present mapping shows these concepts operating alongside, rather than separately from, extension and community engagement. The connection between experiential learning and sustainable development has also been documented in higher education programs that explicitly seek social impact (Tomasella et al., 2023).

The thematic-evolution map indicates continuity around the third mission but increasing differentiation in the later period. The persistence of third mission suggests that it remains a durable organizing concept, while the emergence of university social responsibility, community engagement, university extension, and sustainable development points to a more differentiated research agenda. This pattern is compatible with the argument that the third mission has expanded from economic and knowledge-transfer functions toward broader social and developmental responsibilities.

The trend-topic figure reinforces this interpretation. Earlier topics include government, regional engagement, and university third mission, while later terms include SDG, social responsibility initiatives, technology adoption, and regional revitalization. The observed trend structure is consistent with a widening research agenda from institutional outreach toward questions of societal impact, sustainability, regional development, and the institutionalization of engagement. Evidence on global participation in sustainability initiatives provides a parallel explanation for the prominence of student engagement and SDG-related vocabulary (Leal Filho et al., 2024).

The most recent trend topics suggest several research frontiers. First, social responsibility and SDG-oriented extension indicate stronger alignment between university engagement and global sustainability agendas. Second, regional revitalization and sustainable development point toward territorial and place-based approaches. Third, technology adoption suggests that digital and technology-mediated forms of extension are becoming more visible. Fourth, the appearance of bibliometric analysis itself among recent terms indicates a maturing effort to map and consolidate the field. A recent review of mentoring and university social responsibility further illustrates the expansion of this literature toward developmental and ethical dimensions (Ocupa-Cabrera et al., 2025).

These developments create an opportunity to move beyond counting activities toward evaluating outcomes. Bayuo et al. (2020) identified limited evidence on institutional change, incentive structures, and impact measurement in university social innovation. The present trend structure supports continued attention to these areas, particularly where extension programs are expected to demonstrate community-level value. Measurement-focused studies have proposed sustainability indicators for university–community engagement programs and social-value approaches for evaluating local partnerships, offering concrete directions for future outcome assessment (Compan et al., 2024; Higgins et al., 2024).

The present findings broadly confirm earlier reviews that describe university societal engagement as a heterogeneous and evolving domain. Compagnucci and Spigarelli (2020) identified third mission as a complex field encompassing multiple functions and constraints. Koekkoek et al. (2021) found conceptual diversity and gaps in university–community engagement research. Ali et al. (2021) highlighted the growing relevance of university social responsibility and its relationship with sustainability. The current bibliometric evidence connects these strands within one longitudinal map and shows that they increasingly coexist in the same conceptual space. Literature published after the 2015–2025 corpus window provides contextual, rather than newly analyzed Scopus, evidence: reviews of community-engaged teaching and learning and a separate bibliometric map of civic engagement highlight the continuing diversification of this area (Singh et al., 2026; Mariyani et al., 2026).

The study supports a broader conceptualization of higher education extension as an institutional and relational function rather than a peripheral set of outreach activities. The convergence of third mission, social responsibility, community engagement, sustainability, innovation, and entrepreneurial university concepts suggests that extension is increasingly embedded in the strategic identity of higher education institutions. This interpretation is compatible with Petersen et al.'s (2022) emphasis on mutually beneficial engagement and co-evolution of university and community capabilities.

For educational leaders, the findings suggest that extension should be connected to institutional strategy, research, teaching, and stakeholder engagement rather than treated as an isolated compliance function. Institutions can use the dominant research vocabulary as a benchmark for reviewing their own extension policies, partnership structures, and evaluation systems. In particular, the growing emphasis on sustainability, social responsibility, and community engagement supports evaluation frameworks that measure not only activities delivered but also partnership quality, continuity, community relevance, and outcomes. Participatory sustainability programs suggest one practical route for linking extension activities with students' learning and institutions' public contributions (Leal Filho et al., 2024).

For policymakers, the concentration of research in particular countries and institutions suggests value in strengthening research capacity and international networks in underrepresented contexts. For extension practitioners, the trend toward community engagement and co-creation implies that communities should be treated as knowledge partners rather than passive recipients. These implications align with evidence that effective third-mission activity requires reciprocal capability building and locally responsive engagement (Petersen et al., 2022).

Four priorities emerge from the mapping. First, future research should examine the impact of extension and engagement rather than focusing primarily on activity counts. Second, comparative studies should examine how institutional and community capabilities shape outcomes across high-, middle-, and low-resource contexts. Third, research should clarify how extension, community engagement, and university social responsibility relate conceptually and institutionally rather than using them interchangeably. Fourth, technology-mediated extension and SDG-oriented engagement warrant stronger empirical attention as recent trend topics. A meta-analysis of community-engaged learning illustrates the value of assessing developmental outcomes rather than relying solely on program or publication counts (Guanlao et al., 2025).

A specific agenda can be organized around what, where, who, how, and why. What: evaluate community and institutional outcomes of extension. Where: expand evidence from underrepresented regions and rural or resource-constrained settings. Who: include community partners, faculty, students, administrators, government, and civil-society organizations. How: use longitudinal, comparative, mixed-methods, participatory, and impact-evaluation designs. Why: determine whether university extension creates durable public value and contributes to sustainable development rather than only documenting short-term outputs

CONCLUSION

The study mapped Scopus-indexed higher education extension research from 2015 to 2025 and found sustained growth, with publication output increasing from approximately 40 documents in 2015 to 178 in 2025 and an annual growth rate of 16.4%. The field is conceptually organized around the third mission, community engagement, university social responsibility, sustainability, innovation, and entrepreneurial university concepts. Thematic evolution shows continuity of the third mission alongside increasing visibility of community engagement, university extension, social responsibility, and sustainable development.

For educational leadership and management, the findings support closer integration of extension with institutional strategy, stakeholder engagement, partnership governance, and outcome assessment. Future research should strengthen evidence on community and institutional outcomes, expand comparative work in underrepresented and resource-constrained contexts, and improve cross-country collaboration. Because the current export contains zero references, reference-based intellectual mapping should be conducted only after a validated Scopus cited-reference export is obtained.

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