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Review Article

# Value chain model in higher education as a strategy for effective linking in the labor market

# Modelo de cadena de valor en la educación superior como estrategia para la vinculación efectiva en el mercado laboral

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**ABSTRACT**

**Introduction:** The gap between university education and labor market demands necessitates strategies to enhance employability. The objective was to analyze trends and patterns in scientific literature regarding the value chain model applied to higher education, emphasizing practical skill development and labor market linkages.
**Methods:** A bibliometric and scientometric review was conducted using a mixed-methods approach, a descriptive-explanatory scope, and a non-experimental documentary design. The search was performed in Scopus (2020–2025) using TITLE-ABS-KEY queries covering value chain, higher education, and employability. VOSviewer 1.6.18 was used, alongside Price's, Lotka's, Zipf's, and Bradford's laws. A total of 896 documents were identified: 356 concerning value chain and higher education, and 540 concerning higher education and employability.
**Results:** Scientific output showed sustained growth, peaking in 2024. Business, management and accounting, economics, and social sciences were the predominant fields. Key authors included Jackson, Bennett, Aliasghar, Basu, and Ray; prominent institutions included La Trobe University and the University of Padua; and leading countries included the United States, the United Kingdom, Australia, and Germany. Co-occurrence analysis linked employability, graduates, innovation, sustainability, knowledge transfer, and university-industry linkages.
**Conclusions:** The value chain model in higher education is emerging as a strategic tool to align education with the labor market, bridge skills gaps, and strengthen university-industry partnerships. Promoting dual education, internships, soft skills, and joint projects is recommended to improve graduate integration into the workforce and enhance employability.

**Keywords:** Value chain; Professional competencies; Higher education; Employability; Labour market.

**JEL Classification:** I23; J24; M10.

**RESUMEN**

**Introducción:** La brecha entre la formación universitaria y las demandas del mercado laboral exige estrategias que mejoren la empleabilidad. El objetivo fue analizar las tendencias y patrones de la literatura científica sobre el modelo de cadena de valor aplicado a la educación superior, con énfasis en el desarrollo de habilidades prácticas y la vinculación laboral.
**Métodos:** Se realizó una revisión bibliométrica y cienciométrica con enfoque mixto, alcance descriptivo-explicativo, diseño documental no experimental. La búsqueda se efectuó en Scopus (2020-2025) mediante ecuaciones TITLE-ABS-KEY sobre cadena de valor, educación superior y empleabilidad. Se utilizó VOSviewer 1.6.18 y las leyes de Price, Lotka, Zipf y Bradford. Se identificaron 896 documentos: 356 sobre cadena de valor y educación superior, y 540 sobre educación superior y empleabilidad.
**Resultados:** La producción científica mostró crecimiento sostenido, con un pico en 2024. Predominan las áreas de negocios, administración y contabilidad, economía y ciencias sociales. Destacan autores como Jackson, Bennett, Aliasghar, Basu y Ray; instituciones como La Trobe University y Università degli Studi di Padova; y países como Estados Unidos, Reino Unido, Australia y Alemania. La coocurrencia vincula empleabilidad, graduandos, innovación, sostenibilidad, transferencia de conocimiento y vinculación universidad-industria.
**Conclusiones:** La cadena de valor en la educación superior se consolida como herramienta estratégica para alinear la formación con el mercado laboral, cerrar brechas de habilidades y fortalecer alianzas universidad-industria. Se recomienda impulsar formación dual, prácticas, habilidades blandas y proyectos conjuntos para mejorar la inserción y empleabilidad de los egresados.

**Palabras clave:** Cadena de valor, Competencias, Educación superior, Empleabilidad, Mercado laboral.

**Clasificación JEL:** I23; J24; M10.

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## INTRODUCTION

Global industries face significant barriers, highlighting the need for organizations to undergo a strategic shift to align with their objectives and respond to environmental demands (Suresh et al., 2024). Porter's (1985) value chain model helps companies and institutions identify and optimize activities that generate customer value—distinguishing between primary and support activities—with the aim of achieving a sustainable competitive advantage (Lara Martínez, 2024).

According to Oramas-Santos et al. (2023), no institution is entirely self-sufficient or directs its entire output toward internal consumption; rather, each requires externally supplied goods while simultaneously serving as a supplier to other organizations—whether intermediaries in the distribution channel or end consumers. Consequently, neither institutions nor their operations function in isolation; instead, they are part of a broader process: the chain that delivers the products or services demanded by the customer.

Originally designed as a tool for strategic business management, the value chain methodology has transcended its traditional application and been adopted by various types of organizations, including higher education institutions. Although these institutions have historically maintained a more reserved stance regarding concepts like competitiveness, they now face challenges such as resource optimization, the need to ensure the social relevance of their products and services, and the requirement to guarantee high quality standards; therefore, higher education institutions (HEIs) must transform their practices to respond effectively to societal demands (Muñoz-Ruiz et al., 2020).

The goal of higher education in Honduras is to equip citizens with the competencies needed for effective integration into the labor market; however, this remains a major challenge to address. Despite progress in access and academic offerings, many graduates struggle to secure decent employment that aligns with their skills and competencies. This reflects a disconnect between universities and the needs of the business and productive sectors, thereby limiting job opportunities for graduates and hindering the country's socio-economic development (Ríos et al., 2021).

Over the next ten years, Honduras will need to invest heavily in education and raise the population's academic level while designing a production structure for businesses. According to the INE, the working-age population (PET) stands at 7,036,664 people; of these, 11% have no formal education, 52% completed primary school, 26% completed secondary school, and only 9% have a university education (La Prensa, 2023). This situation hinders productivity and competitiveness in the labor market, as the public education and higher education systems suffer from deficiencies; consequently, they fail to produce the skilled workforce needed for productivity and the diversification of the country's labor supply, resulting instead in the production of goods and services with very little value (Ríos et al., 2021).

An evaluation of the employment problem across various labor market variables reveals that in 2023, the unemployment rate—and the average time spent searching for a job—varied according to education level. Among the unemployed, 4.9% had a primary education and spent an average of 3.4 months looking for work; those with a secondary education accounted for 10.4% of the unemployed and spent 4.2 months searching; and those with a university education—representing 8.1% of the unemployed—faced the greatest difficulty in securing employment, having spent 5.1 months looking for a job (Dirección General de Salarios, 2024).

The labor market is defined as the arena where the supply of and demand for jobs in a country or region intersect—that is, the point where available positions meet job seekers; the balance between these forces determines employment and unemployment levels in that territory (Dirección General de Salarios, 2024). In other words, it is the space where companies create opportunities and where certain groups face obstacles in accessing decent employment. Given this context, how can the value chain model in higher education foster the development of practical skills in students to achieve effective engagement with the labor market?

The primary purpose of this document is to examine the trends and patterns characterizing the scientific literature on the value chain model applied to higher education, specifically regarding the development of practical skills and labor market integration. The aim is to address existing challenges by identifying and optimizing every stage of the educational process—from the admission of secondary school students to their entry into the workforce—in collaboration with key stakeholders (universities, companies, and students). This approach seeks to achieve greater alignment between academic offerings and labor market needs, thereby improving higher education outcomes through more effective professional training, while taking into account Lara Martínez's (2024) observation that the value chain model not only helps companies understand how to create value but also provides a systematic approach for improving their operations and strategies.

### Literature review

*The value chain in university organizations as a mechanism to enhance the employability and competitiveness of graduates*

The value chain concept is based on the idea that companies can achieve a competitive advantage not only through product or service quality but also through the efficient manner in which they carry out and execute their activities (Lara Martínez, 2024). Porter (1985) categorizes business activities into two types: primary activities, related to the production and delivery of goods and services; and support activities—such as human resource management, technological development, and procurement—which enhance the primary activities.

In this context, organizations operate within highly complex and shifting environments. This compels them to monitor economic, political, and social dynamics closely and to align their efforts so that their human capital meets the demands of new markets—markets where making strategic decisions aimed at resource optimization is crucial (Muñoz-Ruiz et al., 2020). Management must remain vigilant in identifying and seizing opportunities that arise even in adverse environments, implementing measures that foster organizational flexibility and allow available resources to be redirected toward established goals.

In university administration, it is common to employ concepts such as strategy, quality management, and competitiveness—terms originally derived from the field of economics. Similarly, the value chain concept originates from this discipline; broadly speaking, it is defined as a business management tool aimed at increasing profitability by generating value to meet societal needs (López & Huamán, 2024). Evidence suggests that universities can provide superior services to society by consistently focusing on the continuous improvement of their service quality (Dorri et al., 2012).

Specifically, quality is a fundamental requirement in university education; in this regard, Cervantes-López et al. (2023) maintain that quality education is that which succeeds in shaping individuals capable of meeting the demands of contemporary society. Thus, quality is linked to the processes and outcomes of student education and is manifested in meaningful learning that contributes to personal and social development—evidenced by a transformation in attitudes, skills, values, and knowledge—ultimately shaping the student into a productive and socially conscious citizen within their context (Muñoz-Ruiz et al., 2020). Universities, for their part, are undergoing processes of change and transformation; in doing so, they foster knowledge in students, enabling them to function effectively in life and preparing them for it (Álvarez Gómez et al., 2021).

Accordingly, the gap between the training graduates receive and employer requirements is a key factor prompting a re-evaluation of higher education objectives (Hawkins et al., 2012; Romanova et al., 2016). Bridging this gap requires assessing the demands of employers and the labor market. By adjusting educational training programs in this way, universities can better prepare graduates to meet sector demands.

It is essential to focus on strategic design and systems that drive innovation beyond the university classroom, develop programs that foster student engagement and collaboration, and ensure students understand the importance of value-chain alliances among partners as a strategy for achieving competitive advantage (Liem, 2009; López et al., 2024). From the perspective of value-chain theory, promoting collaboration between universities, industry, and the productive or business sector is both logical and feasible (Ning & Xue-wei, 2006). In this regard, the value chain acts as a powerful driver of improvement while contributing to the educational system—where education remains a fundamental pillar for capacity building and social development—by facilitating knowledge transfer and fostering a more competitive and innovative market environment (Akintunde, 2007; Lacruhy Enríquez, 2024).

Against this backdrop, higher education institutions (HEIs) are undergoing a transformation toward competitiveness; they face intense pressure to create value and adapt to increasingly demanding environments by ensuring effective innovation and responding to the needs of their surroundings (Pathak & Pathak, 2010). Innovations and knowledge developed within universities are transferred and commercialized for practical applications that generate social impact (Pedraza-Avella et al., 2023). It is worth noting that the evolution of employability skills is reflected in the pedagogical approaches adopted by universities (Aliu & Aigbavboa, 2023b). Accordingly, Aziz and Wafi (2024) propose three strategies to enhance graduate employability: active collaboration with industry stakeholders, specialized career guidance, and early exposure to career opportunities.

*Determinants of employability for higher education graduates*

Based on the foregoing, Abulikemu et al. (2024) assert that acquiring soft skills and behavioral qualities is fundamental to the workforce preparation of graduating students and to enhancing their employability. Thus, it is evident that higher education institutions must equip students and professionals with the necessary soft skills (Arnott, 2022). Furthermore, internships and practical learning experiences are currently becoming a key pathway for students to secure employment—an initiative supported by authorities to facilitate youth labor market integration and boost corporate competitiveness (Ait Razouk & Herveou, 2020).

It is essential to foster interaction with industry partners, commit to nurturing talent, and bridge the skills gap in order

to prepare students for job opportunities both during their studies and after graduation (Alharahsheh & Pius, 2021).

*Challenges regarding youth employability in the face of labor market demands*

Issues regarding student employability have become a serious societal concern, as many students remain unemployable upon completing their studies (Bala & Eke, 2024). Unemployment is a major challenge facing young people, stemming from the deterioration of a country's economic activity—a phenomenon fraught with difficulties, given that finding work is challenging, particularly for the youth (Villalobos Rodríguez et al., 2021). These same authors note that countries with low-quality education systems, weak links to the labor market, and difficulties in the transition from education to employment tend to experience higher unemployment rates.

Consistent with this, Mwita et al. (2024) confirm these factors, citing—among others—a scarcity of job opportunities in their respective countries and the poor quality of education provided by Higher Education Institutions (Okolie et al., 2020). Studies have shown that both educational institutions and the labor market face various challenges, most notably the need for graduates to possess the employability skills required at the time of hiring (Abou Hamad & Abdelrahim, 2024).

The importance of these skills in bridging academic performance and workplace demands is widely recognized. However, there is a significant gap in the effectiveness with which these skills are taught and developed, highlighting a lack of resources, inadequate training, and a misalignment between educational methods and labor market demands. Beyond holding an academic degree and possessing theoretical knowledge, employers in the sector value proficiency in generic skills such as leadership, critical thinking, and analytical abilities (Aliu & Aigbavboa, 2023a). The business sector requires university students to possess specific transferable skills (Ganguli, 2024). In a labor market with a surplus of graduates, employers distinguish between individuals with the same academic qualifications based on their capabilities and employability skills (Anderson & Tomlinson, 2021).

Ensuring that graduates secure meaningful and productive employment presents a challenge. A significant gap exists between the skills, attitudes, and experiences students acquire in higher education institutions and those demanded by the workplace, highlighting graduates' lack of workforce readiness (Al-Abri et al., 2024). According to Mishrif et al. (2023), this mismatch is defined as the divide between educational outcomes, the skills required by organizations, and the demands of an increasingly globalized labor market.

Furthermore, it has been shown that failing to successfully transition into employment can lead to prolonged periods of unemployment, underemployment, low-quality work, poverty, and increased mental health risks (Atitsogbe & Rossier, 2025; Koivisto et al., 2010). Consequently, educational institutions must identify areas where they are failing to provide necessary knowledge and address their limitations (Bala et al., 2024), given that formal education imparts more than just qualifications and seeks to overcome barriers to labor market participation and professional development (Ayentimi et al., 2021).

## METHODOLOGY

This research employs a mixed-methods approach, entailing the collection and analysis of both quantitative and qualitative data, as well as their integration and joint examination; furthermore, it features a descriptive-explanatory scope and a non-experimental, documentary design (Hernández Sampieri & Mendoza Torres, 2018). It is grounded in a scientometric study which, as defined by Cardona and Sánchez (2017), consists of the measurement and quantitative analysis of scientific output.

To this end, the study identifies key actors involved in related research—considering their grouping across various links associated with the variable—and adopts a methodology based on identifying fundamental concepts linked to the higher education value chain and employability. The technical approach utilized Scopus database search strings: TITLE-ABS-KEY ( ( "value chain" AND ( "higher education" OR university OR "tertiary education" ) ) ) AND PUBYEAR > 2020 AND PUBYEAR < 2025 AND ( LIMIT-TO ( SUBJAREA , "BUSI" ) OR LIMIT-TO ( SUBJAREA , "ECON" ) ) y TITLE-ABS-KEY( ( higher AND education, AND employability ) ) AND PUBYEAR > 2020 AND PUBYEAR < 2025 AND ( LIMIT-TO ( SUBJAREA , "BUSI" ) OR LIMIT-TO ( SUBJAREA , "ECON" ) ). Selection criteria were applied to evaluate study relevance based on the research objective and topic, prioritizing recent studies and those offering enriching theoretical perspectives; the scientometric analysis itself followed the five-stage methodology proposed by Michán and Muñoz-Velasco (2013).

To achieve the objective, two tools were integrated: the built-in analysis features of the Scopus database and VOSviewer version 1.6.18. The search was conducted on May 16, 2025. Price's Law (Salazar-Sepúlveda et al., 2023) served as the starting point for analyzing scientific output, enabling an assessment of the scientific community's level of interest in the subject matter.

**Figure 1.**
*Search process*




**Source:** own elaboration.
**Note:** the figure appears in its original language.

Additionally, Lotka's Law was applied to identify the most productive authors within the dataset, distinguishing them from the rest by examining disparities in scientific productivity (Urbizagástegui Alvarado, 1999). To examine thematic areas, Zipf's Law was used to determine the most frequently occurring keywords within the document corpus (Urbizagástegui & Restrepo, 2011).

Bradford's Law was also considered; this law describes the phenomenon of scientific literature dispersion across various sources, allowing for the identification of the most relevant journals (Alvarado, 1996). Data processing and visualization—covering spatial aspects, co-authorship, co-occurrence, countries, and keywords—were carried out using VOSviewer. This tool specializes in creating and visualizing bibliometric networks based on representations of similarities in scientific publications, organizing them into groups or clusters according to nodes and the desired type of link (Saiz Álvarez, 2022).

Inclusion criteria: works published between 2020 and 2025 (excluding those by Porter); texts written in Spanish or English; sources consulted; open-access journals listed in the Directory of Open Access Journals (DOAJ); publications available in the virtual library as UNAH resources; and results retrieved from Google Scholar and Scopus using keywords related to value chain studies in the educational sector or addressing the relationship between higher education and employability.

Exclusion criteria: publications dealing with the value chain solely within the productive sector, with no connection to the education sector.

As a result of the search and filtering process, 896 documents were identified, distributed as follows: 356 related to the value chain and higher education, and 540 related to higher education and employment.

**Figure 2.**
*Article flowchart*




**Source:** own elaboration.

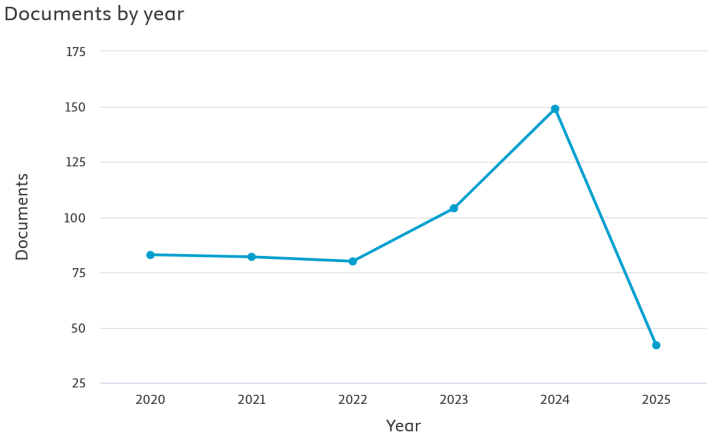
## RESULTS AND DISCUSSION

### Analysis using Scopus

The number of scientific publications has shown an upward trend; around 80 publications were recorded in both 2020 and 2022, rising to 104 in 2023 and reaching a total of 149 in 2024. A notable drop to 42 published documents is observed for 2025, which could be attributed to the fact that the year is still underway and the total record of publications is not yet complete (Figure 3).

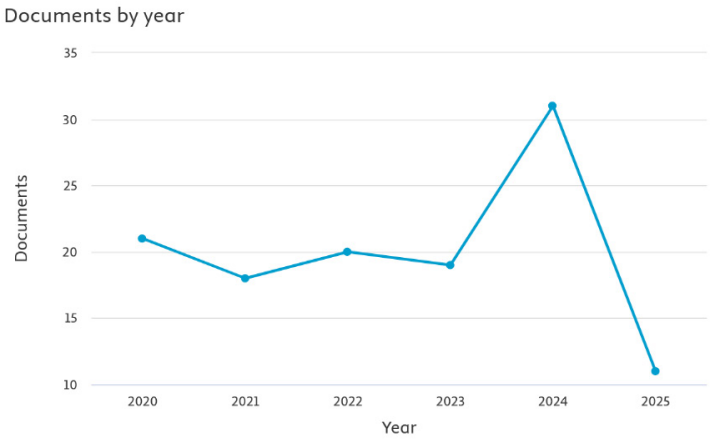
Regarding the variable, the number of publications was 21 in 2020, dropping slightly to 18 in 2021. In 2022, there was a slight increase to 20 scientific outputs, but the figure fell to 19 in 2023. A significant peak is observed in 2024, reaching 31 publications; however, only 11 publications have been recorded so far in 2025 (Figure 4).

**Figure 3.**
*Documents published each year: Higher education and employability*



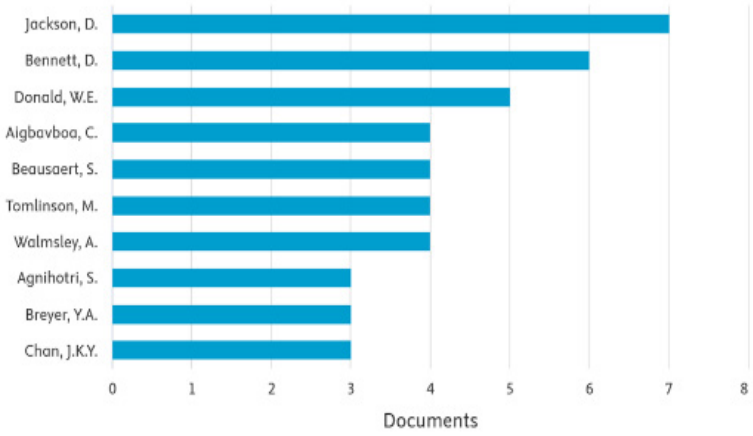

**Source:** own elaboration.

**Figure 4.**
*Documents published each year: Value Chain and Higher Education*




**Source:** own elaboration.

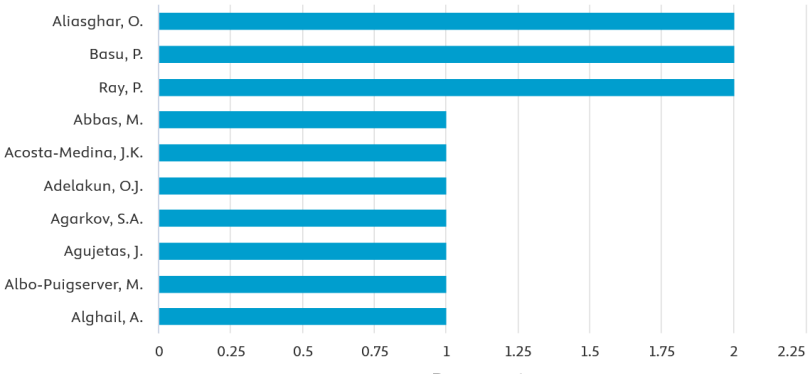
**Figure 5.**
*Documents published by author on higher education and employability*




**Source:** own elaboration.

Of the total 540 published documents, the contributions of various authors to scientific publications stand out; those with the highest number of works include D. Jackson (7), D. Bennett (6), W.E. Donald (5), and C. Aigbavboa (4).

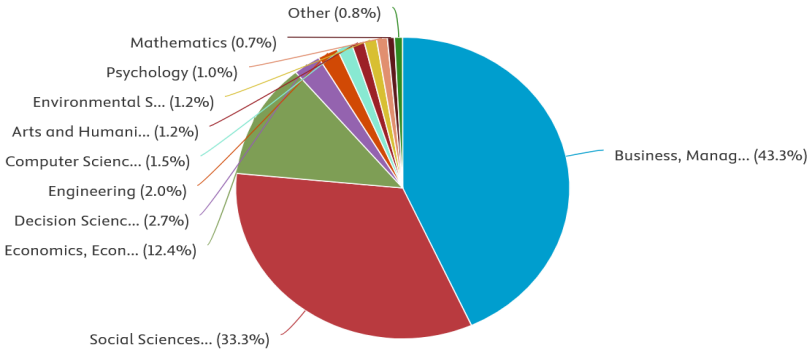
**Figure 6.**
*Documents published by author: Value Chain and Higher Education*




**Source:** own elaboration.

Regarding the variable of value chain and higher education, notable authors among the published documents include Aliasghar, O., Basu, P., and Ray, P., who share the same number of publications, with a total of two each.

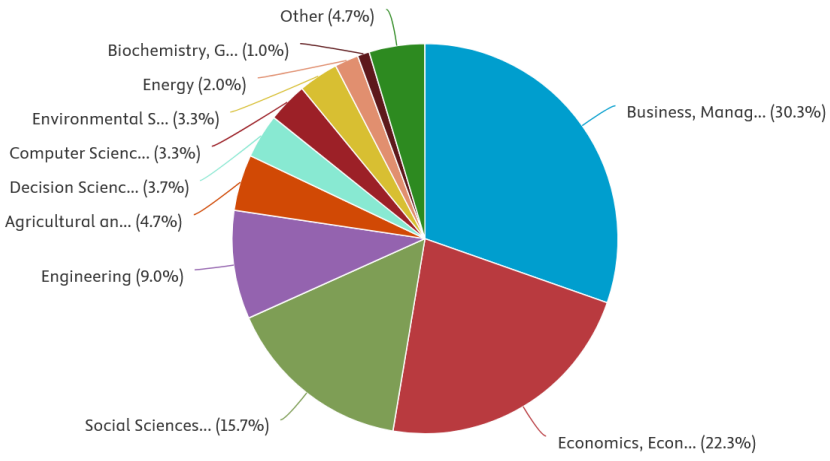
**Figure 7.**
*Thematic area document: Higher education and employability*




**Source:** own elaboration.

The area with the greatest interest in scientific production is business, administration and accounting, with 43.3%, equivalent to 500 documents; followed by social sciences with 33.3%, which includes 385 documents, and economics, econometrics and finance with 12.4%, which highlights a priority focus from management, administration and the social sciences.

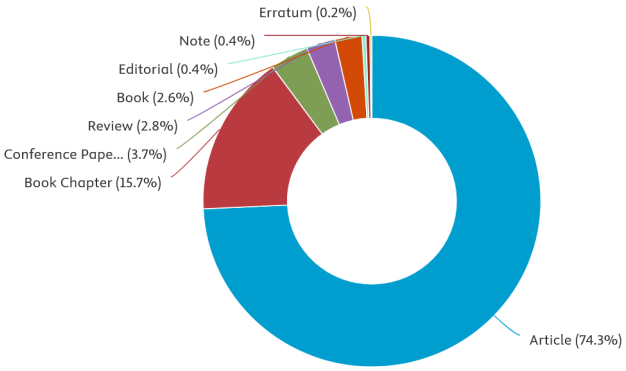
**Figure 8.**
*Document by thematic area: Value Chain and Higher Education*




**Source:** own elaboration.

Regarding this variable, scientific publications with the greatest relative weight come from the fields of business, management, and accounting (30%, or 91 documents); this is followed by economics, econometrics, and finance (22.3%, or 67 documents), while social sciences account for 15.7% of the works. Although an interdisciplinary nature is evident, the subject matter continues to be approached predominantly from an economic-administrative perspective.

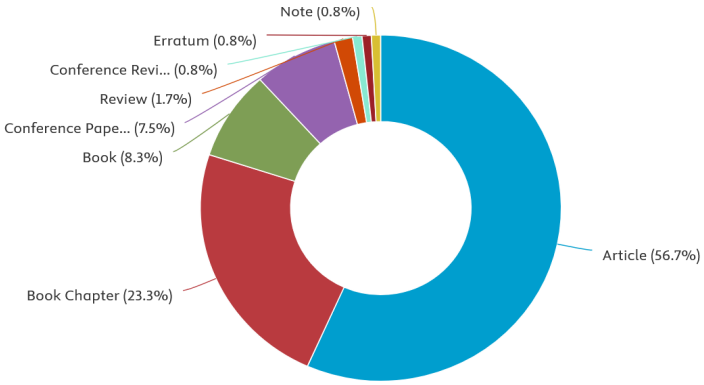
**Figure 9.**
*Documents by type in higher education and employability*




**Source:** own elaboration.

Regarding document types, articles predominate—with 401 documents relating to the variable of higher education and employability—followed by book chapters, with 85 documents published in Scopus.

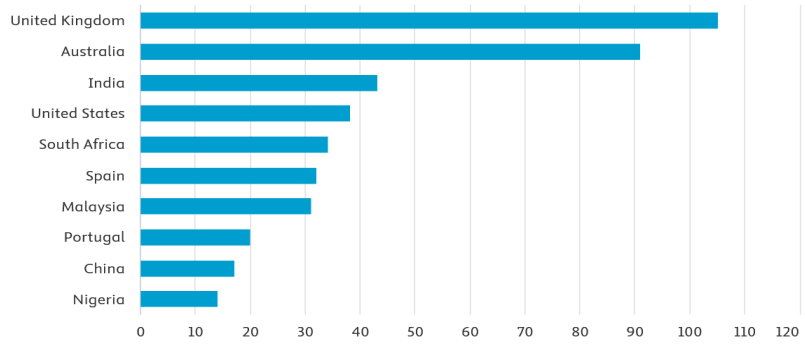
**Figure 10.**
*Documents by type of the value chain and higher education*




**Source:** own elaboration.

Regarding the document types associated with the "value chain and higher education" variable, out of a total of 120 documents, 68 are articles, and 29 are book chapters, while conference papers, editorials, and similar items account for a smaller proportion.

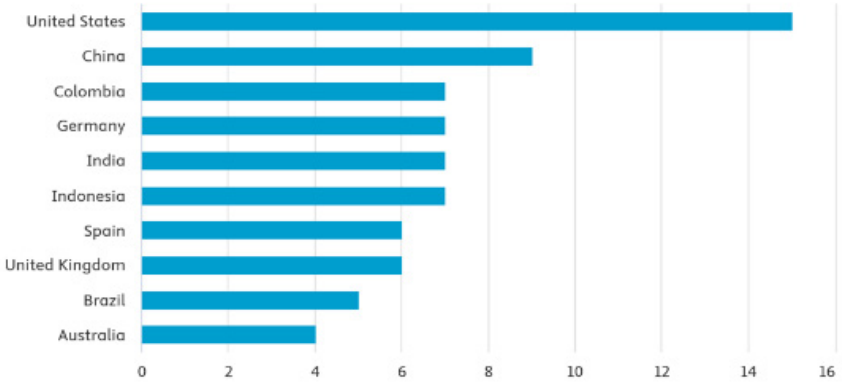
**Figure 11.**
*Documents published by territory: Higher Education and Employability*




**Source:** own elaboration.

Of the 540 documents retrieved from the Scopus database for the 2020–2025 period, the United Kingdom leads in scientific output with 105 publications, followed by Austria with 91; trailing behind are India with 43 and the United States with 38, alongside other countries such as South Africa and Spain, all of which have works indexed in Scopus.

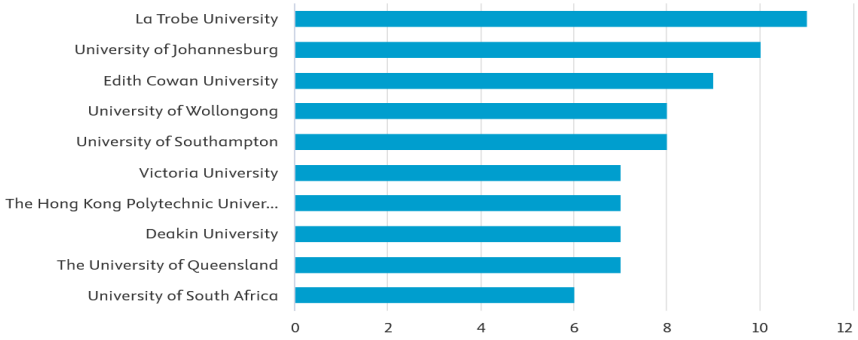
**Figure 12.**
*Documents published by territory, value chain, and higher education*




**Source:** own elaboration.

As shown in Figure 8, among the 342 documents associated with the variables "value chain" and "higher education," the countries leading in scientific output are the United States, China, Colombia, Germany, India, and Indonesia, among others.

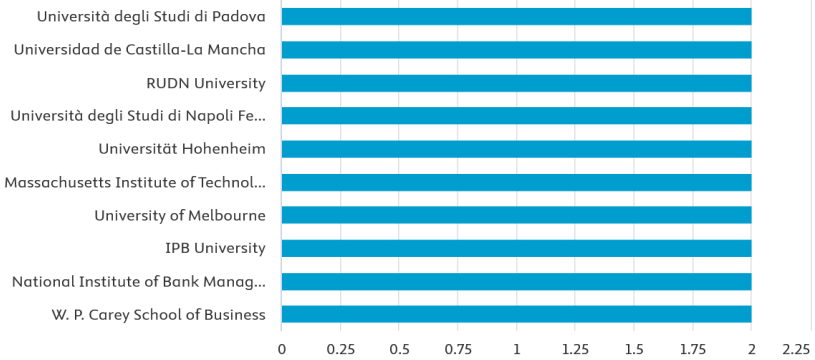
**Figure 13.**
*Documents by affiliation in higher education and employability*




**Source:** own elaboration.

Regarding the distribution of scientific publications by sponsoring organizations between 2020 and 2025, La Trobe University, the University of Johannesburg, and Edith Cowan University stand out, with 11, 10, and 9 publications, respectively, in the field of higher education and employability.

**Figure 14.**
*Documents for affiliation in the value chain and higher education*

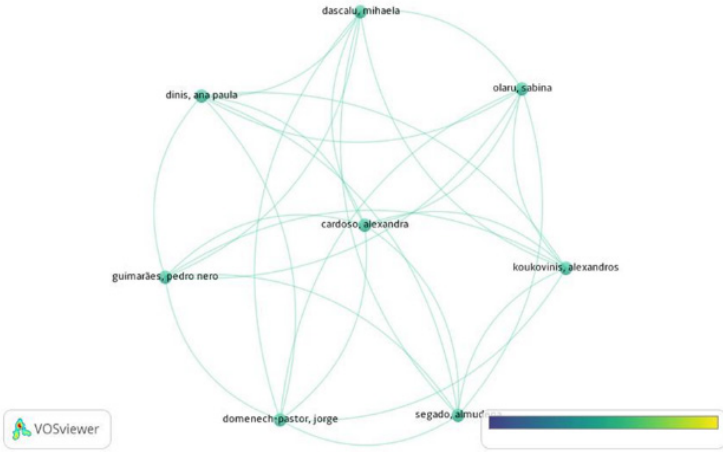



**Source:** own elaboration.

When examining the variable of value chains and higher education within the distribution of scientific publications, the Università degli Studi di Padova, the Universidad de Castilla-La Mancha, and RUDN University stand out—each with two papers—reflecting their significant contribution to academic output alongside other institutions.

## Analysis using VOSviewer

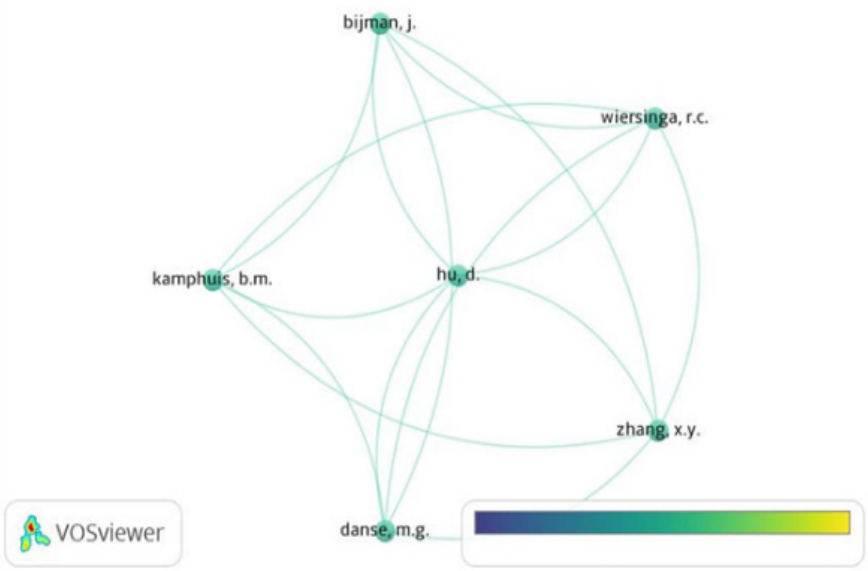
**Figure 15.**
*Author collaborations, publications, higher education, and employability*




**Source:** own elaboration.

The figure highlights the collaboration map among authors researching employability in higher education within the fields of business and economics, based on a threshold of at least two documents per author. Alexandra Cardoso stands out at the central node; due to her numerous connections, she plays a key role in the co-authorship networks, amassing the highest number of links and ties. Collaborative efforts also reveal other significant authors, such as Mihaela Dascalu and Alexandros Koukovinis. In summary, the figure illustrates a cohesive and robust group of researchers, organized around a small core of individuals who serve as the team's nucleus.

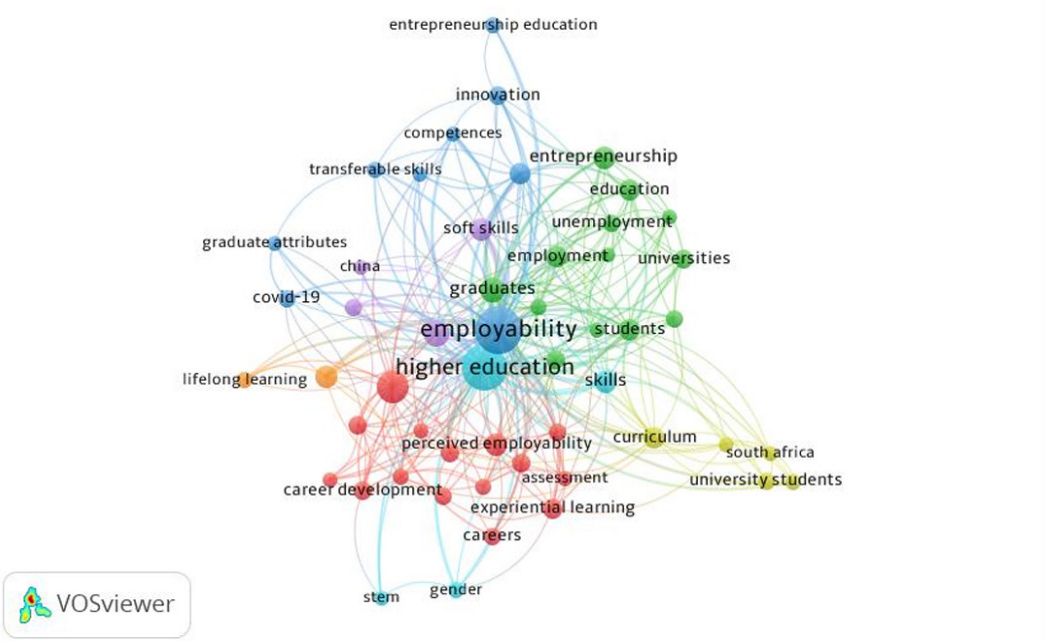
**Figure 16.**
*Author collaborations, publications, the value chain, and higher education*




**Source:** own elaboration.

The network appears notably cohesive and united, demonstrating that the group conducts research collaboratively. Within this structure, D. Hu stands out due to his connections with all the other authors, serving as the central axis of the collaboration; this confirms the existence of a solid, active research team rather than merely a series of isolated collaborations. D. Hu acts as a key connector within the network, linking with other researchers such as J.J. Bijman, X.Y. Zhang, M.G. Danse, and R.C. Wiersinga.

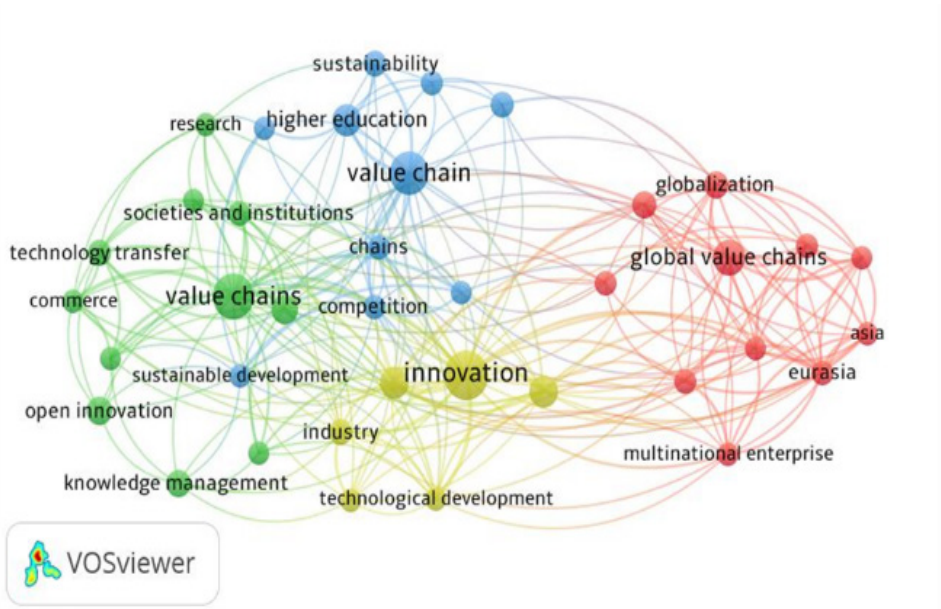
**Figure 17.**
*Term co-occurrence map in higher education and employability*




**Source:** own elaboration.

In the co-occurrence map, the term "employability" occupies the central node, as it appears most frequently and has the highest number of connections; "graduands" figure among its strongest links, reflecting academic interest in exploring the skills, conditions, and strategies that facilitate the entry of graduates into the labor market. Within higher education, the focus of employability is on how curricula and practical methodologies—such as experiential learning—contribute to students' workforce preparation.

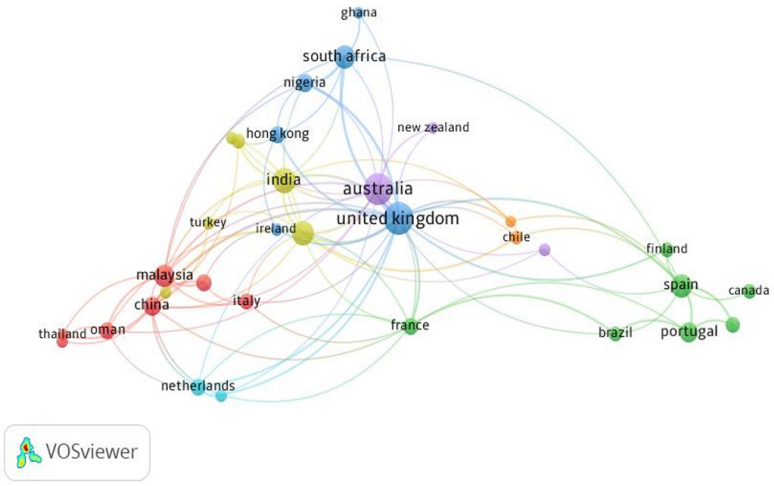
**Figure 18.**
*Co-occurrence map of the terms "value chain" and "higher education"*




**Source:** own elaboration.

Research efforts converge notably on innovation, which serves as a central link connecting concepts such as the value chain, competitiveness, and students; additionally, concepts related to learning systems, the entrepreneurial university, and artificial intelligence stand out, highlighting an interest in digital transformation and the strengthening of entrepreneurial capabilities.

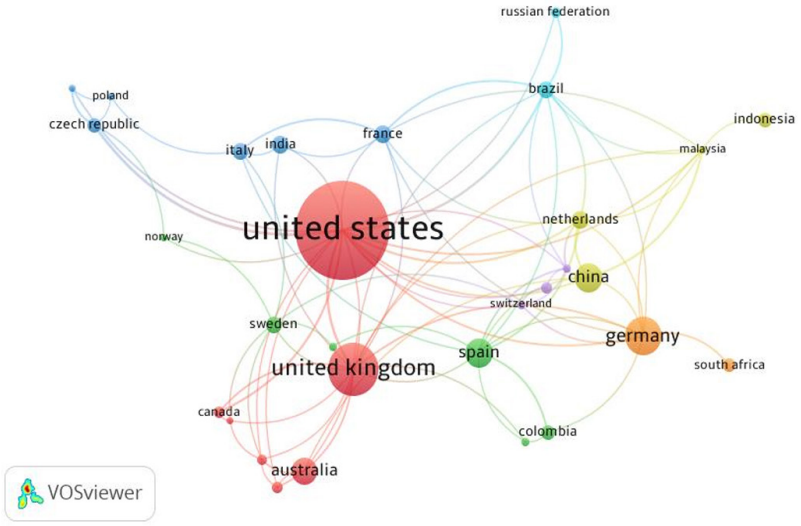
**Figure 19.**
*Cross-country co-authorship of publications on higher education and employability*




**Source:** own elaboration.

The collaboration map displays the co-authorship network among countries, highlighting other clearly visible research hubs. In this regard, Australia and the United Kingdom are the most essential and active nodes, clearly leading the blue cluster alongside other Commonwealth nations such as South Africa and New Zealand. Additionally, other well-defined groups are evident: the red cluster, centered on China and India, and the green cluster, which comprises Ibero-American countries such as Spain, Portugal, and Brazil.

**Figure 20.**
*Cross-country co-authorship of publications on value chains and higher education*




**Source:** own elaboration.

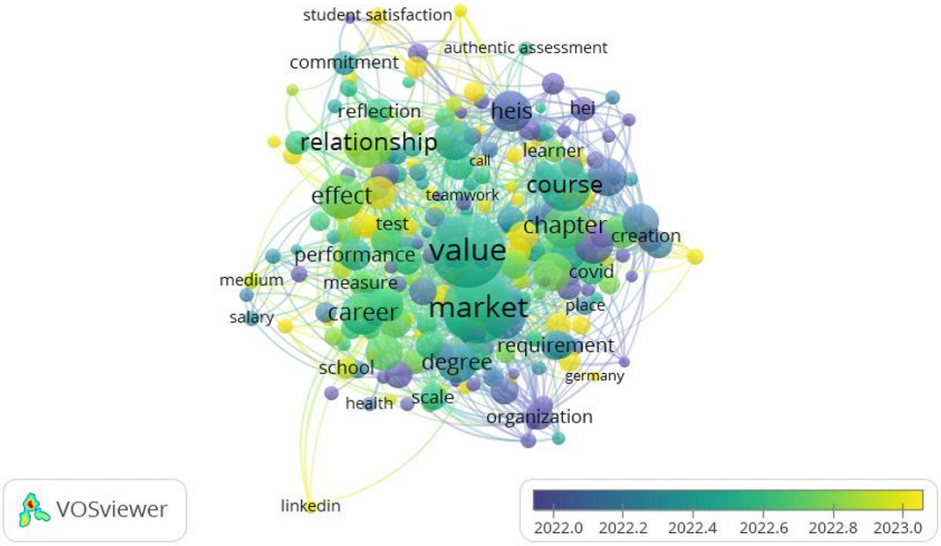
The graph generated in VOSviewer displays a co-authorship network among countries, where the size of each circle reflects the volume of scientific output, and the lines represent research collaboration links. The United States stands out, occupying a central position with a large node and connections to almost all other nations. The United Kingdom and Germany follow in terms of prominence and research output, also playing key roles within this research network.

The co-occurrence map—generated from textual data by extracting terms from titles and abstracts using the full-counting method and a minimum threshold of ten occurrences per term for each variable—reveals a structure of 258 terms meeting this criterion. Prominent among the related concepts are terms such as value, market, relationship, career, and degree, which highlight the interest in examining the link between academic education and employability.

An examination of the key terms appearing most frequently in recent research on the subject highlights organizational efficiency, business management, and policy; these are joined by terms such as sustainability, the labor market, employment,

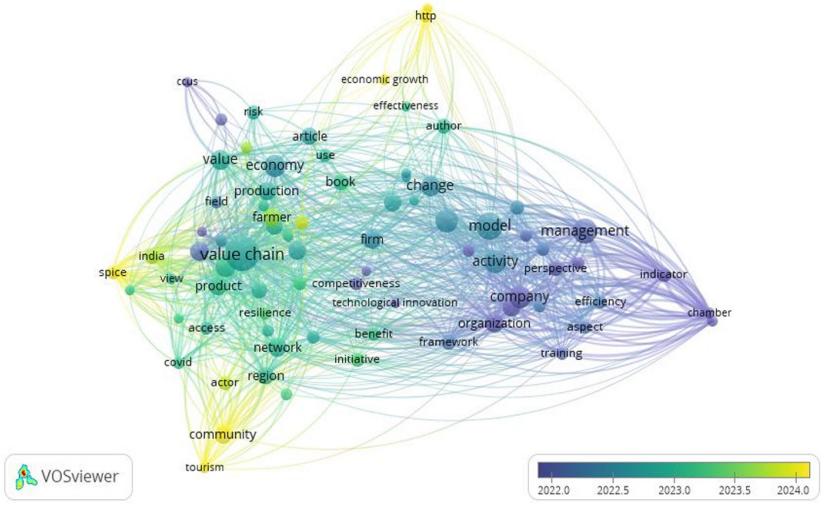
competition, and skills, revealing a focus on the employability of university graduates.

**Figure 21.**
*Terms based on text data in higher education and employability*




**Source:** own elaboration.

**Figure 22.**
*Terms based on text data regarding the value chain and higher education*




**Source:** own elaboration.

The growing relevance of the value chain model within higher education is becoming increasingly evident. Analysis of scholarly output reveals sustained growth in recent years, alongside a notable capacity to generate knowledge in highly relevant fields—including business, management, and accounting. An examination of the co-occurrence of major research lines confirms that the most strongly interconnected concepts are globalization, society and institutions, knowledge management, and sustainable development; this aligns with the findings of Krstić (2021), who confirms a positive correlation between higher education and levels of competitiveness and sustainable development.

Regarding the university and employability, the terms emerging most strongly are graduates, employability, innovation, professional development, and competencies. This highlights the academic community's interest in studying the capabilities, circumstances, and methods that facilitate graduates' entry into the labor market. This perspective resonates with the views of Freire-Seoane et al. (2020), who argue that higher education institutions (HEIs) are no longer viewed solely as knowledge providers; instead, they have progressively adopted an orientation toward labor market demands as an essential component of their institutional strategies.

Regarding co-occurrence, a significant interrelationship is observed between the "value chain in higher education"

variable and employability—a link that connects to areas such as innovation, sustainability, knowledge transfer, skills, and university-industry collaboration. In this context, and in accordance with Cook et al. (2021), it is acknowledged that higher education institutions (HEIs) bear the responsibility of supporting and overseeing academic and professional growth, encompassing both educational aspects and employability. In recent years, the student's relationship with the labor market has gained prominence; this aligns with Flanagan (2025), who maintains that employability is a significant aspect of higher education and that, consequently, it is necessary to implement instructional resources aimed at fostering employability skills in graduating students (Ogunniran et al., 2024).

## CONCLUSIONS

The bibliometric analysis demonstrates that the value chain approach in higher education has gained academic prominence in recent years—evidenced by an increase in Scopus-indexed publications and the strengthening of collaborative networks among key researchers. This reflects a transformation in the role of universities, as the approach emerges as a strategic tool to enhance institutional efficiency and competitiveness while fostering university-industry partnerships and sustainability.

This field still offers opportunities for further research, particularly in areas such as dual education—an educational model combining university-based academic training with practical experience to build skills and prepare students for the labor market.

A significant challenge identified is the gap between academic training and actual market demand. Addressing this requires a comprehensive response from higher education institutions to facilitate workforce entry and contribute to socioeconomic development, underscoring the need to strengthen research and practices aimed at strategically aligning education with employment.

In particular, the research reveals that Higher Education Institutions (HEIs) are increasingly viewed as actors within a value network, actively collaborating with other sectors such as industry. This integration allows educational programs to incorporate practical experiences and joint projects with companies, ensuring alignment with industry needs; the value chain thus helps transform the university into a training environment that meets labor market demands, thereby facilitating more effective workforce entry for graduates. A university's value chain can be viewed as a network of activities centered on its core functions, where each process adds value to the overall educational offering.

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