

Bibliometric Study of Outcome-Based Education (OBE) Curriculum as a Basis for Developing an Entrepreneurial Mindset and Empowering Human Capital in Higher Education

Dian Pertiwi Josua^{1*}, Anan Sutisna¹, Muchlas Suseno¹

¹Jakarta State University, Indonesia

*Corresponding Author, Email: dianpertiwijosua@unj.ac.id

Abstract

This bibliometric study rigorously examines the impact of Outcome-Based Education (OBE) curricula in Indonesian universities on developing an entrepreneurial mindset and human capital. It posits three arguments: (1) OBE enhances academic achievement; (2) OBE strengthens adaptability to industry needs; and (3) OBE aligns graduates' competitiveness with Indonesia's regulatory and economic goals. These points underpin the research focus. Following the establishment of these foundational arguments, the study then adopted a structured bibliometric approach. Specifically, it reviewed Scopus-indexed publications (2020–2025) using PRISMA and Bibliometrix Biblioshiny in R. This analysis revealed a notable increase in research on OBE and the entrepreneurial mindset, reinforcing the study's central claims. Furthermore, the implementation of OBE stimulates outcome-focused learning, interdisciplinary collaboration, and innovation, key factors that enable graduates to adapt successfully to various contexts. Extending these findings to practical applications, the study next examines the challenges of integrating OBE into entrepreneurship curricula. Institutions often encounter hurdles such as insufficient lecturer expertise in OBE pedagogy, a lack of dedicated financial and material resources for program development, and challenges in designing assessment tools that objectively capture creative and non-linear competencies. Nevertheless, experiential learning, business simulations, and collaborative projects continue to foster students' creativity, innovation, and real-world problem-solving skills. The study asserts that OBE-centered curricula are essential for producing entrepreneurial graduates equipped with digital literacy, leadership skills, and self-efficacy. Additionally, cross-border partnerships promise to enhance these outcomes. By focusing on these core competencies, universities not only prepare students for a globalized market but also contribute to national innovation and the development of human capital.

Keywords: *Entrepreneurial Mindset, Human Capital, Outcome-Based Education (OBE), Self-Efficacy.*

INTRODUCTION

Higher education in Indonesia faces complex demands. It must produce graduates who are academically proficient, globally competitive, and adaptable to rapid changes in the industry (Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 73 of 2013 Concerning the Implementation of the Indonesian National Qualifications Framework in the Sector of Higher Education, 2013). The Outcome-Based Education (OBE) curriculum has been adopted as a strategic solution to address these needs.

Government regulations stipulate that graduate learning outcomes (CPL) serve as the key benchmark for educational quality and relevance in Indonesian higher education (Regulation of the Minister of Education, Culture, Research and Technology of the Republic of Indonesia Number 53 of 2023 Concerning Quality Assurance of Higher Education, 2023). The OBE approach emphasizes measurable learning outcomes aligned with market needs, encompassing

digital, innovation, and entrepreneurial skills. The OBE curriculum is not just an academic framework, but also develops an entrepreneurial mindset vital for empowering human capital.

In 2024, the Higher Education Service Institutions (LLDikti) Performance Report for Region III covered DKI Jakarta and its surrounding areas, comprising 258 universities, institutes, colleges, academies, polytechnics, and community colleges (Higher Education Service Institutions (LLDikti), 2024).

This region employs over 22,000 non-civil servant and about 414 civil servant lecturers, and enrolls more than 620,000 students, demonstrating significant human resource potential that should be harnessed for educational and national development. This data underscores the scale of higher education management and development as a strategic investment in human capital. Nationally, statistics from the Central Statistics Agency (BPS) for 2024 cite over 4,500 institutions, more than 9 million students, and 300,000 faculty members (Central Statistics Agency (BPS), 2024).

These figures reveal both challenges and opportunities for advancing Indonesian higher education. A key target is building an entrepreneurial mindset as an essential skill, enabling human capital to compete globally and adapt to change. This situation highlights the need for an Outcome-Based Education (OBE) curriculum that integrates learning outcomes with the development of soft skills and entrepreneurial competencies, aligning with market and national goals. In 2024, Indonesia's GDP grew by 5.03% to IDR 22,139 trillion, with per capita GDP around USD 4,960 (Coordinating Ministry for Economic Affairs of the Republic of Indonesia, 2025). This growth was driven by manufacturing, consumption, and investment (National Bank Association (Perbanas), 2025). The government prioritizes human capital to support productivity, innovation, and entrepreneurially-focused higher education.

People's purchasing power has increased, and 3.59 million new jobs were created in 2024 (Ministry of Finance of the Republic of Indonesia, Ministry of Finance Site Management, 2025). These are positive signs, indicating a strong connection between educational development, entrepreneurial empowerment, and economic growth. While the OBE curriculum is mandated and widely discussed, there is a lack of detailed research on specific methods for systematically and effectively integrating entrepreneurial mindset development into OBE curriculum practices in Indonesia.

Existing literature and practical approaches have not comprehensively identified how such integration can be operationalized or measured, leaving a significant research gap. This bibliometric review aims to outline research trends and literature related to the OBE curriculum. The primary objective is to examine the development of an entrepreneurial mindset and the empowerment of human capital within higher education. This study uses bibliometric analysis to identify research trends, gaps, and opportunities in OBE-based curricula. The primary objective is to inform higher education policy and curriculum development, fostering an entrepreneurial mindset and empowering human capital in Indonesian universities.

METHODS

This study employed bibliometrics (Feng et al., 2024; Gössling et al., 2021; Quaderi, 2023; Salinas-Ríos & García López, 2022; Thelwall et al., 2023) to

map the literature on OBE-based curricula as a foundation for developing an entrepreneurial mindset and empowering human capital in higher education. The bibliometric method provided systematic, replicable quantitative and qualitative insights into trends, collaboration, and key themes, forming the basis for a structured research process.

Stage one involved collecting literature data by searching international and national academic databases. Scopus, Web of Science, and Google Scholar were included in the analysis. Search terms such as "Outcome-Based Education", "entrepreneurial mindset", and "human capital" were applied, using Boolean operators like "AND" to narrow the results. The search period was set from 2020 to 2025 to highlight recent developments. Stage two applied explicit inclusion criteria to select relevant publications. These criteria consisted of topics related to the research, specific document types, and languages. Only research articles, review articles, or conference proceedings in Indonesian or English were included. Stage three excluded duplicates, articles unrelated to curriculum or higher education, and publications lacking full text. This ensured materials remaining in the dataset were strictly relevant to the research scope. Stage four conducted a bibliometric analysis using Bibliometrix Biblioshiny (R-package). Citation patterns, author collaboration networks, and keyword trends were identified. Further steps included clustering research topics, analyzing publication trends, and mapping relationships between key concepts. Stage five involved validating analysis results by retesting with alternative parameters. Consultations were held with experts in education and curriculum policy. A qualitative literature review contextualized findings for OBE-based curriculum development that supports an entrepreneurial mindset and empowers human resources in higher education.

RESULTS AND DISCUSSION

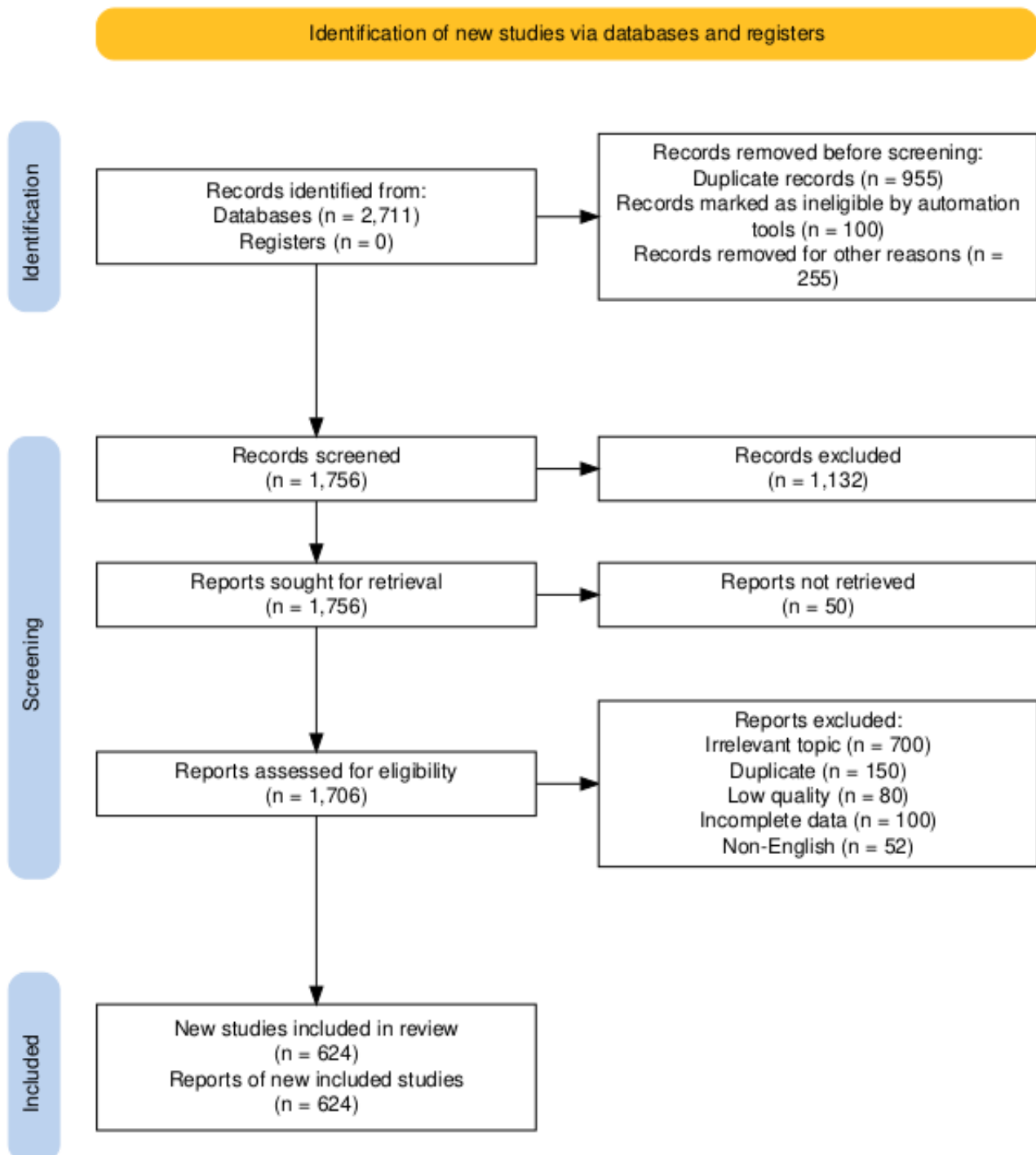
The bibliometric study uses a systematic method to identify literature (Ahadi et al., 2022; Andrade-Arenas et al., 2023; Cabeza-Ramírez et al., 2020; Yudiantmaja et al., 2023). Researchers applied the PRISMA process (Botero-Gómez et al., 2023; Khan & Abonyi, 2022; Samsul et al., 2023; Turzo et al., 2022) and searched academic databases in Scopus. This search found 2,711 articles about Outcome-Based

Education, entrepreneurial mindset, and human capital development in higher education.

From the initial 2,711 articles found, 955 duplicates were removed, resulting in 1,756 unique articles. Of these, 355 were excluded due to inaccessibility, language issues, or insufficient quality, leaving 1,401 articles for screening. Out of the 1,401 articles screened, 1,132 were excluded as not relevant to the research focus. This resulted in 269 articles that

met all inclusion criteria and were selected for bibliometric analysis. Furthermore, an analysis of the 269 selected articles reveals that studies on OBE-based curricula in higher education have increased significantly over the last decade, particularly since 2018 (Figure 1). This increase reflects a shift in the educational paradigm toward a learning outcomes and competency-based approach, which aligns with the needs of the workplace and global demands.

Figure 1. Stages of Article Selection for Literature Review

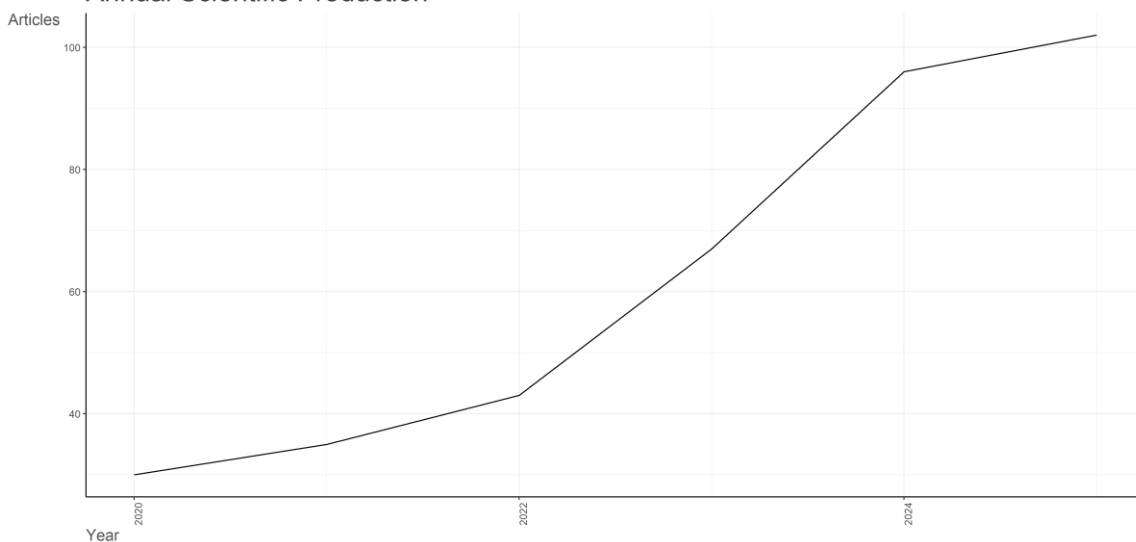


Most research indicates that OBE supports project-based learning, encourages collaboration, and drives innovation, thereby fostering an entrepreneurial spirit on campus. OBE and human capital empowerment are related. This study shows that OBE-based curricula cover more than just competency-based learning and build adaptive, creative, and solution-minded people.

Malaysia, Singapore, Australia, and some European countries lead in research. This analysis demonstrates that combining OBE with entrepreneurial ecosystem development in higher education is an effective approach to enhancing student outcomes. OBE strengthens human capital by focusing on clear

learning outcomes that meet industry needs (Brindha, 2020; Gowra & Hegde, 2021; Hossain, 2023; McCord et al., 2023). An entrepreneurial mindset links learning outcomes and human capital development. These graduates face global challenges. PRISMA-based findings reveal current research trends, highlighting how OBE curricula foster entrepreneurial mindsets (Haddaway et al., 2022) and develop human capital in higher education. The annual production of scientific articles on Outcome-Based Education (OBE)-based curricula that support the development of an entrepreneurial mindset and the empowerment of human capital in higher education has shown an increasing trend year after year (Figure 2).

Figure 2. Yearly Expansion in Scholarly Output
Annual Scientific Production



The most significant increase occurred in the most recent period, indicating a high level of interest and a pressing need for research on this topic.

This growth in publications can serve as a strategic foundation for the development of OBE-based

academic programs, focusing on producing competitive graduates (Ihnatenko et al., 2022; Rahmat et al., 2022; Zeer et al., 2020) who are prepared to face the challenges of the digital economy and the Industry 4.0 era.

Figure 3. Shifting Influence of Leading Journals
Sources' Production over Time

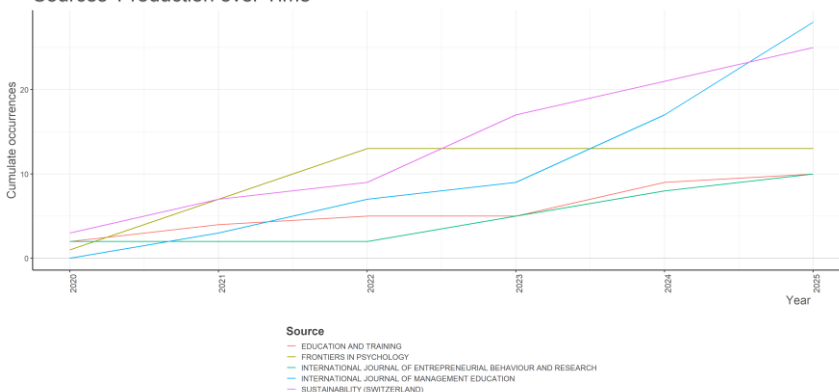


Figure 3 illustrates a notable increase in primary journal sources focused on OBE curriculum, entrepreneurial mindset development, and human capital empowerment in higher education. Leading journals such as “Sustainability (Switzerland)”, “International Journal of Entrepreneurial Behavior and Research”, and “Education and Training” play a central role in driving this trend, underscoring their influence

in advancing these disciplines. This rapid growth in journal publications signals a decisive shift in higher education research toward prioritizing outcomes-based models, innovative thinking, and interdisciplinary strategies for human capital development. The increasing prominence of journals in sustainability, entrepreneurship, and management education demonstrates this significant transformation.

Figure 4. Comparative Growth in Publications
Affiliations' Production over Time



Figure 4 illustrates the growth in article contributions from diverse affiliated institutions, which has increased consistently each year in OBE-based curriculum research, aiming to foster entrepreneurial mindsets and strengthen human capital in higher education. Some institutions experienced substantial jumps in scientific article output, while others displayed steady progress. This trend indicates expanding interest and research capacity in OBE and human capital development worldwide, engaging various higher education institutions. The rising

diversity and volume of publications per affiliate reflect both competition and collaboration among institutions advancing outcome-based education.

A critical implication is that universities with robust publication records can serve as benchmarks for best practices in OBE implementation, while fostering academic cultures that instill entrepreneurial thinking and empower top talent to drive industry and societal impact (Govindan, 2024; Huang, 2023; Jayasuriya & Sims, 2023).

Figure 5. Institutional Research Activity Fluctuations
Country Production over Time

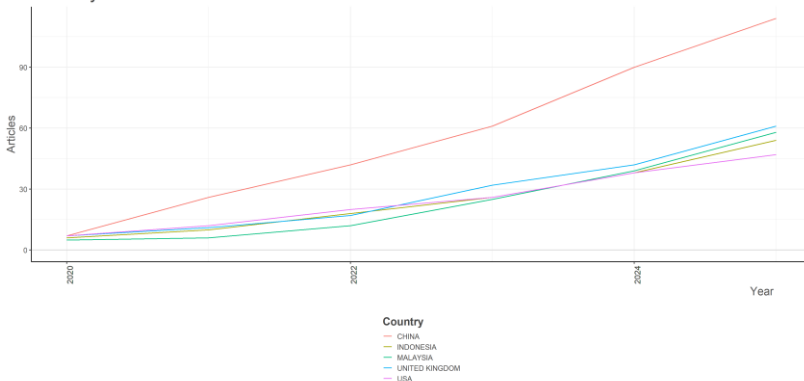
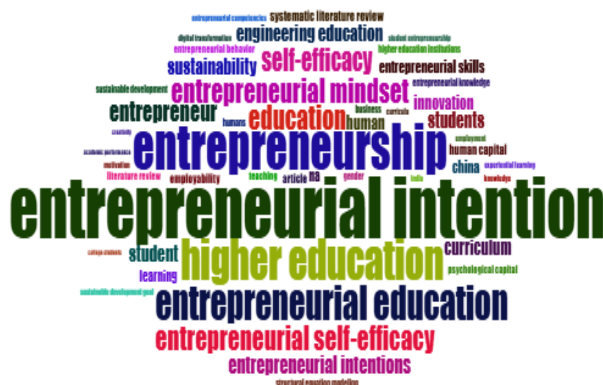


Figure 5 shows the rise in scientific articles on the OBE curriculum, entrepreneurial mindset development, and human capital empowerment in higher education by country. China leads in article production, while Indonesia, Malaysia, the United Kingdom, and the United States also show steady yearly growth. These countries' contributions show that OBE-based higher education is a global focus. China is the main driver of research in this field. Other countries, including Indonesia, are becoming increasingly active in publishing, signaling a shift in the educational paradigm toward producing graduates who are competitive and ready to face global challenges.

The implications of this trend are the transfer of knowledge and the adaptation of best practices between countries to support the implementation of the OBE curriculum, as well as encouraging the creation of an international academic ecosystem that mutually reinforces the development of an entrepreneurial mindset (Arslan et al., 2023; Bodolica & Spraggon, 2021; Cerver-Romero et al., 2022; Cirstea & Anagnoste, 2023; Klein et al., 2021) and human capital (Asmit et al., 2024; Câmara et al., 2024; Gianiodis et al., 2022; Lee & Yan, 2024) in higher education.

Figure 6. Global Research Connectivity Patterns

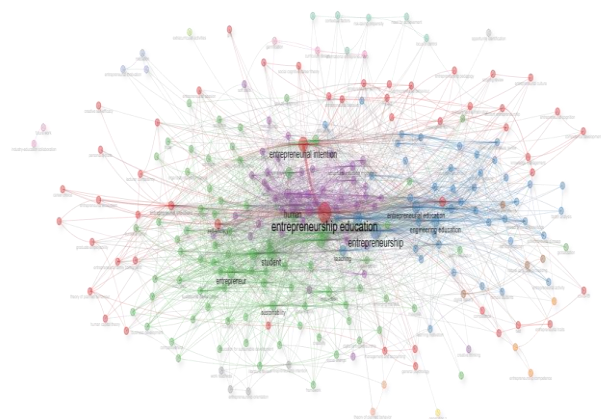


The word cloud visualization (Figure 6) highlights the central themes of the bibliometric study of the OBE curriculum. These include entrepreneurial intention, entrepreneurial mindset, self-efficacy, and entrepreneurship education in higher education. Issues such as higher education, human capital, innovation, and employability are also prominent (Rankhumise & Letsoalo, 2023). This demonstrates that research in this area is linked to the development of adaptive and creative human resources. These individuals are prepared for global demands through outcome-based, entrepreneurial curriculum design.

The word cloud visualization reveals that terms such as “entrepreneurial intention”, “entrepreneurial mindset”, and “self-efficacy” dominate current educational research related to OBE-based curricula, highlighting a shift toward psychological and behavioral factors that influence successful graduate outcomes. This suggests that scholars are increasingly interested in how these factors shape student achievements. Furthermore, the frequent appearance of terms such as “innovation”, “employability”, “learning”, and “human capital” suggests that research trends now extend beyond entrepreneurship education, emphasizing preparation for lifelong learning, adaptability to technological advancements, and readiness for evolving labor markets.

These findings underscore that the future of OBE and entrepreneurial education in higher education should prioritize the development of technical knowledge alongside creativity (Nisa et al., 2020), adaptability (Choong et al., 2023; Kodama, 2019; Suseno & Basrowi, 2023; Zhang et al., 2021), and self-confidence (Enstroem & Benson, 2024; Otache et al., 2021; Tambunan, 2023; Yusoff et al., 2021) in students.

Figure 7. Prominent Concepts in Innovation Studies



The bibliometric visual network of the OBE curriculum (Figure 7) shows the close interconnection among entrepreneurship education, entrepreneurial intention, and entrepreneurship. It also encompasses supporting topics such as self-efficacy, human capital, and innovation. This complex network structure indicates multidisciplinary collaboration and integration. The OBE-based curriculum is a key node. It connects dimensions of higher education, fosters the entrepreneurial mindset (Andruk & Altinay, 2022; Charrón Vías & Rivera-Cruz, 2020; Di Paola et al.,

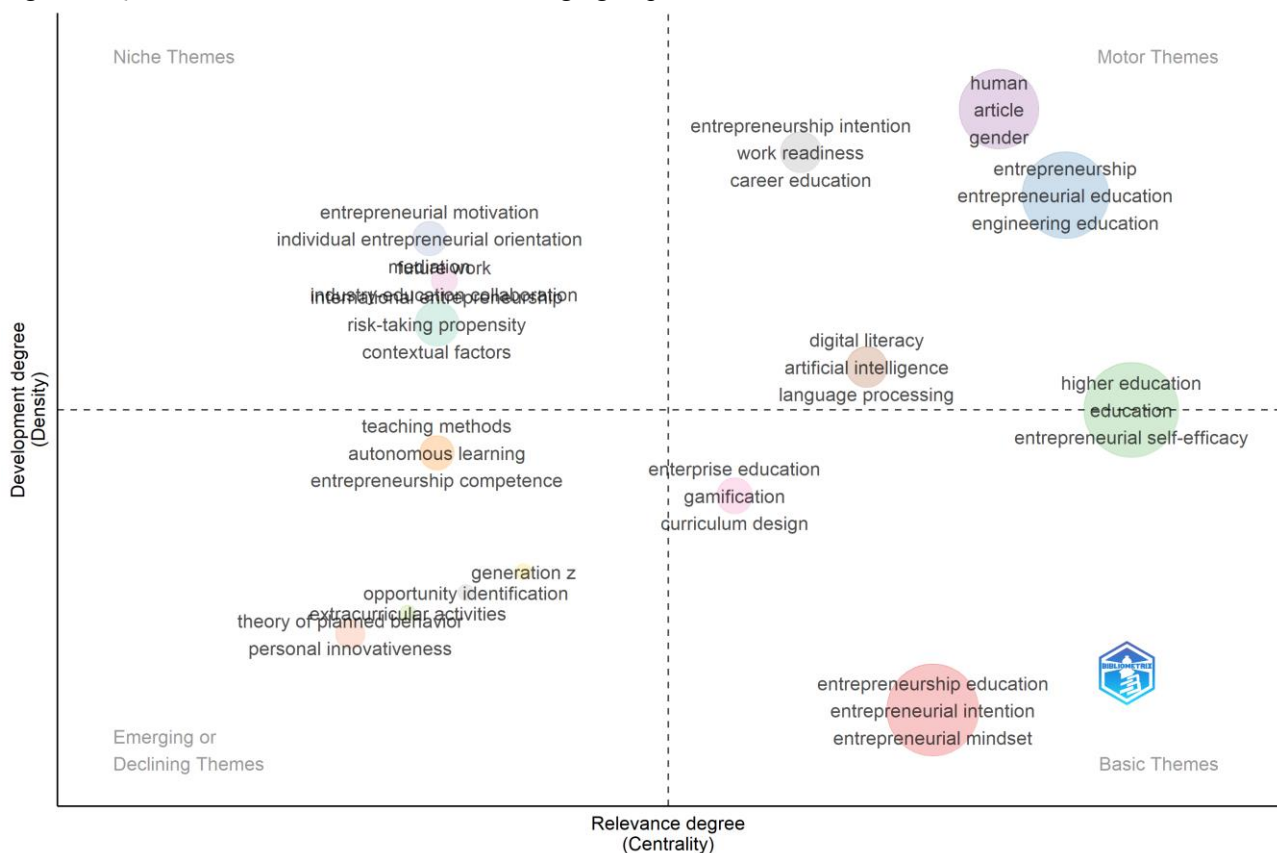
2023; Rahman et al., 2022; Wesarat et al., 2022), and empowers human resources (Kumar et al., 2020; T Kamble & Kariguleshwar, 2023) in higher education.

The visualization of the bibliometric network underscores the pivotal role of entrepreneurship education as an integrating hub across diverse subfields and research streams. The dense interlinking among nodes signals frequent collaboration and citation relationships, as well as core themes such as entrepreneurial intention, mindset, and self-efficacy. Additionally, it highlights the connections between

peripheral yet essential topics, including digital skills, leadership, curriculum design, and employability.

This networked structure supports the view that successful OBE implementation in higher education relies on synergistic multidisciplinary efforts. Furthermore, the map highlights how OBE-centered research transcends traditional academic silos, facilitating knowledge transfer and thematic convergence, which strengthens institutional capacity to produce graduates who are both innovative (da Silva et al., 2021; Vu, 2022) and equipped for complex, real-world challenges.

Figure 8. Quadrant Distribution of Core and Emerging Topics



Thematic map analysis (Figure 8) shows that the primary themes of OBE studies in higher education center on entrepreneurial intention, entrepreneurship education, higher education, and entrepreneurial self-efficacy as driving themes. This suggests that this field is highly relevant and continues to evolve through research. Themes such as curriculum, digital literacy, gamification, and curriculum design are also central and emerging, while niche themes include motivation, entrepreneurial orientation, and risk-taking propensity. These results reinforce the OBE curriculum's position as a strategic foundation for developing an

entrepreneurial mindset and enhancing human capital through the integration of learning innovation and core competency development in higher education.

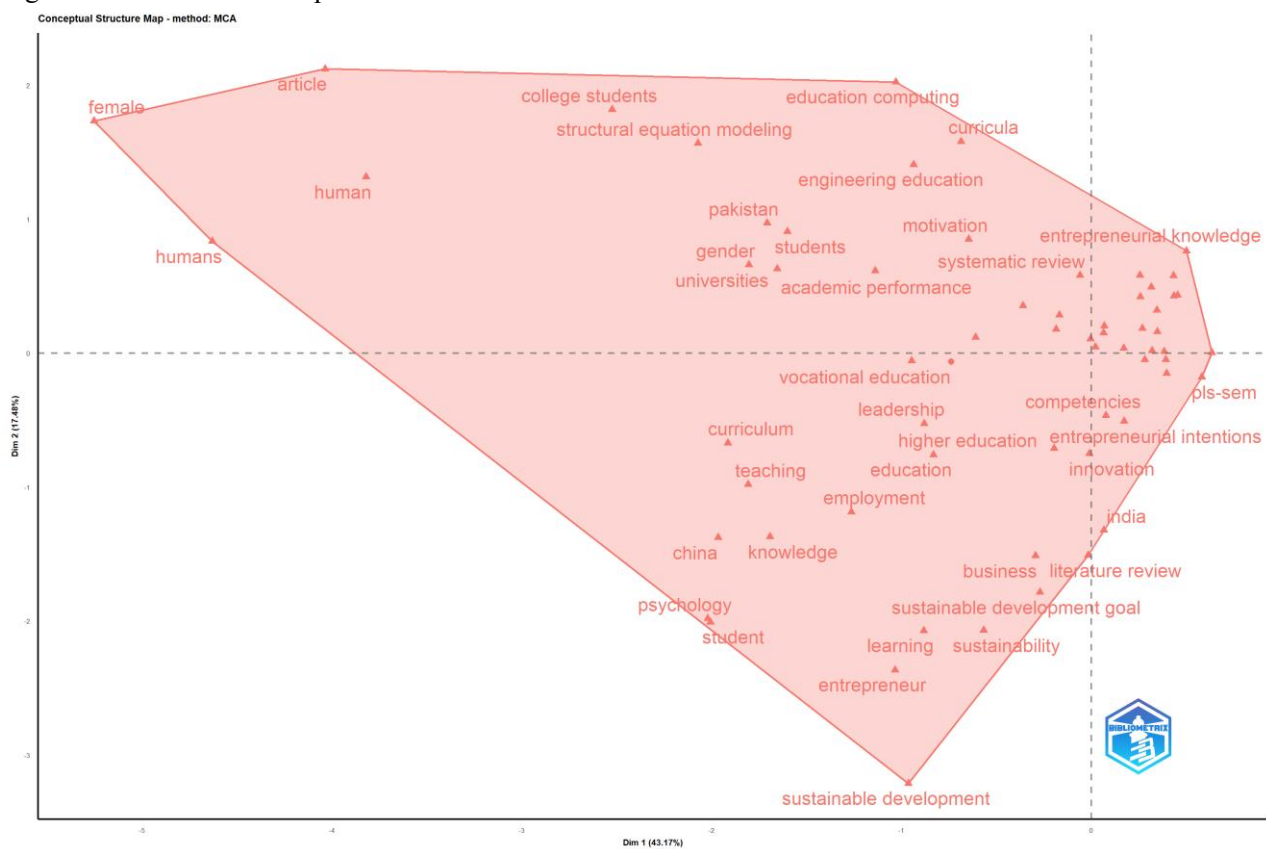
Beyond the previously mentioned driving and niche themes, the thematic map also illustrates the dynamic evolution and interrelation of emerging topics within OBE curriculum research. Notably, the central placement of digital literacy (Mugiono et al., 2020; Rakib et al., 2024; Tondeur et al., 2023; Wardana et al., 2023), artificial intelligence (Enholm et al., 2022; Islam et al., 2024; Perifanis & Kitsios, 2023; Prasanth et al., 2023; Ruiz-Real et al., 2021; Schneider et al., 2023;

Sestino & De Mauro, 2022), and curriculum design (Bruno et al., 2021; Fletcher & Kutar, 2023; Jandrić & Loretto, 2021; Rebelo et al., 2023) signifies their growing influence and integration into entrepreneurial education frameworks.

This pattern demonstrates a shift toward future-ready competencies, where technology and innovation underpin both pedagogy and content. Themes occupying intermediary positions between basic and motor quadrants indicate ongoing adaptation and cross-disciplinary fertilization, reflecting how educators and institutions are increasingly recognizing the need to combine core entrepreneurial elements with

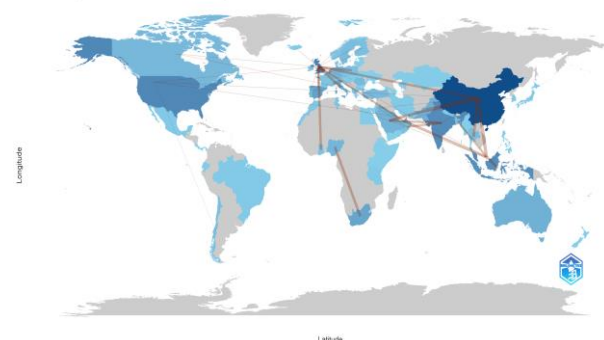
contemporary learning tools. Thematic diversity reinforces the role of OBE curricula as strategic enablers in shaping graduates who are adaptive, creative, and skilled, able to meet complex global and industrial challenges.

The conceptual structure map (Figure 9) illustrates the close relationship between core themes. These include higher education, entrepreneurial intentions, competencies, leadership, and sustainable development goals. It also highlights supporting topics such as gender, motivation, academic performance, teaching, and employment within OBE curriculum research in higher education.



This visualization illustrates a comprehensive research ecosystem, where the development of an entrepreneurial mindset and the empowerment of human capital are fostered through the integration of issues related to education, sustainability, and competencies across disciplines, providing a solid foundation for an outcomes-based higher education transformation strategy (Mikheev et al., 2021; Putri et al., 2023; Schulze & Kleibert, 2021).

Figure 10. Interconnected Academic Networks
Country Collaboration Map



The map of country collaborations in OBE curriculum studies (Figure 10) shows a strong international network. China, India, the United Kingdom, and the United States act as major hubs for research and development of an entrepreneurial mindset and human capital empowerment. This international collaboration (Colombelli et al., 2021) and knowledge sharing boost the global relevance of OBE in higher education. It drives curriculum innovation (Amelina et al., 2022; Ifarajimi, 2023; Underdahl et al., 2023; Wolcott et al., 2020), research partnerships (Chandanabhumma et al., 2023; Hoekstra et al., 2020; Sjölund et al., 2023), and the sharing of best practices. These efforts help build human resource capacity and increase graduate competitiveness in global markets.

CONCLUSION

The study concludes that an OBE-based curriculum in higher education strengthens an entrepreneurial mindset and human capital. Entrepreneurship education directly increases students' self-confidence, creativity, and readiness for workplace and business challenges. An OBE curriculum helps entrepreneurship education raise students' entrepreneurial intentions by building an entrepreneurial mindset. International collaboration, digital literacy, self-efficacy, and institutional support enrich learning and knowledge transfer between countries. This accelerates the empowerment of adaptable human resources in a dynamic global era.

The findings confirm that OBE in entrepreneurship education produces creative, innovative, and outcome-driven graduates equipped with the skills and mindsets necessary to excel and lead in a competitive global environment. International cooperation and digital skills further amplify students' entrepreneurial readiness for global competition. Based on key findings, policymakers are strongly encouraged to enhance institutional support and provide more resources for OBE. This includes ongoing lecturer training and investment in adaptive assessment tools that address the complexity of entrepreneurial competencies.

For future research, scholars should investigate the long-term effects of OBE-based entrepreneurship curricula on graduate outcomes across diverse socioeconomic backgrounds, and also explore how integrating digital and human literacy into the

curriculum impacts entrepreneurial success. These steps ensure a more inclusive, innovative, and evidence-based approach to developing entrepreneurial human capital in higher education.

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