

EVALUATING ENTREPRENEURSHIP EDUCATION IN EUROPEAN UNIVERSITIES: INSTITUTIONAL PRACTICES AND PERFORMANCE INDICATORS

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Abstract

Entrepreneurship education has become a strategic priority for higher education institutions (HEIs), responding to the growing demand for innovation, adaptability, and value creation among graduates. This paper investigates how 14 universities from 13 European countries evaluate the impact of their entrepreneurship education programs, aiming to identify effective practices and institutional strategies. To explore evaluation practices, our research employs a dual qualitative methodology - content analysis and thematic analysis - applied to institutional reports submitted through the HEInnovate initiative. Data collection focused on three core dimensions: evaluation methods, impact indicators, and educational outcomes. Specific attention was given to formative and summative assessments, student self-evaluation, peer feedback, and strategic tools aligned with institutional goals, also considering indicators such as entrepreneurial intention, competency development, startup creation, and integration into entrepreneurial ecosystems. Our findings reveal a diverse range of evaluation approaches, highlighting both informal feedback mechanisms and structured strategic frameworks. The study underscores the importance of extracurricular activities and stakeholder collaboration in reinforcing entrepreneurial behavior and practical skill acquisition. The research contributes to the theoretical understanding of entrepreneurship education and calls for coherent, standardized evaluation models, emphasizing that effective impact assessment is essential for improving program relevance, institutional accountability, and alignment with societal and economic needs.

Keywords: Entrepreneurship education, Impact evaluation, Higher education institutions, HEInnovate.

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1. INTRODUCTION

Evaluating the impact of entrepreneurial education in higher education institutions (HEIs) is essential for understanding how these programs contribute to the development of entrepreneurial competencies and the stimulation of innovation among students. In a global context marked by rapid economic changes and the need for innovative solutions, entrepreneurial education plays a crucial role in preparing young people to become leaders and value creators in society. Through their entrepreneurial education programs, universities not only provide theoretical knowledge but also create practical opportunities for students to develop the skills needed to launch and manage successful businesses. The importance of impact evaluation lies in its ability to measure the effectiveness of these programs and identify areas for improvement.

Using both quantitative methods - such as the number of start-ups founded, jobs created, and funds raised, and qualitative methods - such as interviews and participant feedback, universities acquire a comprehensive picture of how entrepreneurial education influences students' careers and mindsets. This enables universities to continuously adapt and improve their programs to better meet the needs of students and the market. Therefore, evaluating the impact of entrepreneurial education is a vital tool for ensuring the relevance and effectiveness of these programs in shaping future entrepreneurs.

In this paper, we aim to explore three major aspects of impact evaluation in entrepreneurial education: evaluation methods, impact indicators, and educational outcomes. The analysis is based on reports from 14 European universities participating in the joint initiative of the European Commission and the OECD - HEI Innovate (HEI Innovate, 2024a; HEI Innovate, 2024b; OECD, 2022; OECD/EU, 2018). Following this introduction, we will present a literature review discussing various evaluation methods used to assess program effectiveness, impact indicators, educational outcomes, and long-term effects on graduates' careers and local economies. This will be followed by a presentation of the research methodology, the results and discussion section, and finally, the main conclusions and future research directions on this topic.

2. LITERATURE REVIEW

Evaluating the impact of entrepreneurial education in universities is essential for understanding the effectiveness of programs and for continuously improving these initiatives. In this literature review section, we explore various evaluation methods used by universities to measure the impact of entrepreneurial education, discussing specific indicators used to assess program effectiveness and outcomes, including measurements of entrepreneurial intentions, acquired competencies, and even economic results.

2.1 Frameworks for evaluating entrepreneurial education

Surveys and questionnaires are among the most common tools used to collect data from students and graduates regarding their experiences in entrepreneurial education programs. These may include questions about acquired competencies, entrepreneurial intentions, and satisfaction with the courses. For example, studies by Venesaar et al. (2011) and the Institute of Corporate Governance and Sustainability (2022) use questionnaires to assess changes in students' metacognitive awareness after participating in entrepreneurship courses.

Formal evaluations such as exams and semester projects, as well as informal assessments like peer and instructor feedback, are also used to measure entrepreneurial competencies and the applicability of acquired knowledge - often serving as predictors of future entrepreneurial intentions (Fayolle & Gailly, 2008; Venesaar, Ling, & Voolaid, 2011).

The literature also emphasizes the importance of longitudinal studies, which track students and graduates over extended periods to assess the long-term impact of entrepreneurial education (Haas & Hadjar, 2020; Young, Miller, Urban, & Petrescu, 2024). These studies provide valuable insights into long-term entrepreneurial careers and the success of graduate-founded ventures (Nabi, Liñán, Fayolle, Krueger, & Walmsley, 2017). Bibliometric analysis by Fagadar et al. (2024) highlights the fragmented nature of entrepreneurship education research and the need for clearer evaluation frameworks.

Case studies offer detailed perspectives on how specific entrepreneurial education programs are implemented and evaluated across different universities (Banha, Coelho, & Flores, 2022; OECD, 2022; OECD/EU, 2018). These may include interviews with students, faculty, and local entrepreneurs to assess the programs' impact on the entrepreneurial ecosystem (Rasmussen & Sørheim, 2006; Liu, 2021). In specific national contexts, Badulescu et al. (2024) emphasize that educators need targeted support and training to effectively to promote and systematically evaluate the results of entrepreneurial education.

Specific tools - such as those promoted by HEInnovate (OECD, 2022; HEI Innovate, 2024a), are used to guide strategic evaluation and measure institutional performance in entrepreneurial education. These tools

provide a framework for assessing various dimensions, including leadership, governance, and impact measurement (Gibb & Hannon, 2006; HEI Innovate, 2024a; HEI Innovate, 2024b).

Universities use both quantitative data (e.g., number of startups founded, jobs created, funds raised) and qualitative data (e.g., interviews and participant feedback) to evaluate the impact of entrepreneurial education (Pittaway & Cope, 2007; Nabi, Liñán, Fayolle, Krueger, & Walmsley, 2017; Dissanayake, Iddagoda, & Popescu, 2022). They often collaborate with incubators, innovation centers, and startup support organizations to assess impact and, according to Wright et al. (2004) and Rossoni et al. (2024), such partnerships provide valuable insights and additional resources for evaluation, supporting the development of university-based entrepreneurship.

2.2 Indicators of educational impact in entrepreneurship programs

Building on the evaluation frameworks discussed above it is important to explore the specific indicators used to measure impact. Thus, evaluating the impact of entrepreneurial education in universities involves using specific indicators to measure program effectiveness and outcomes, and these indicators often include assessments of entrepreneurial intentions, acquired competencies, and economic results.

A common indicator is entrepreneurial intention, which reflects students' desire to start a business after graduation (Deng & Wang, 2023). The study by Nabi et al. (2017) emphasizes the importance of measuring entrepreneurial intentions as a key indicator of educational success. Additionally, acquired entrepreneurial competencies are essential, Fayolle and Gailly (2008) highlighting the need to assess both practical and theoretical skills gained by students.

Other indicators include the number of startups created, their survival rate, and economic growth. Rideout and Gray (2013) suggest that the number of businesses launched and their long-term success are critical measures of impact (Hahn, Minola, Bosio, & Cassia, 2020). Furthermore, Martin et al. (2013) stress the importance of evaluating the performance of graduate-founded ventures (Amaral, Nieuwenhuizen, & Schachtebeck, 2024).

2.3 Outcomes of entrepreneurial education/ educational outcomes and long-term effects of entrepreneurial learning

Following the identification of key impact indicators, we now turn to the outcomes and long-term effects observed in entrepreneurial education and these could be measured through various methods, including surveys, interviews, and longitudinal studies. These approaches help capture the long-term impact of programs on graduates' careers and local economies (Mensah-Williams & Derera, 2023). Pittaway and Cope (2007) show that entrepreneurial education can increase the number of startups and improve

students' entrepreneurial skills (Amaral, Nieuwenhuizen, & Schachtebeck, 2024), meanwhile Rasmussen and Sørheim (2006) emphasize the importance of collaborating with local entrepreneurs to provide students with practical experience and to assess medium- and long-term impact.

Wright et al. (2004) and Gibb and Hannon (2006) found that graduates of entrepreneurial education programs are more likely to start businesses and succeed in their careers, underlining the need to evaluate the impact of entrepreneurial education on regional economic development.

Therefore, a deep understanding of the medium and long-term impact of entrepreneurial education is essential to ensure the effectiveness and relevance of university programs in this field. Using a combination of evaluation methods - surveys, formal and informal assessments, longitudinal studies, case studies, specific tools, quantitative and qualitative data - and collaborating with external stakeholders can provide a comprehensive picture of the impact of entrepreneurial education, enhancing program content and its relevance to students and the local economy (Nabi, Liñán, Fayolle, Krueger, & Walmsley, 2017).

3. METHODOLOGY

In this analysis, we employed two distinct qualitative methods - thematic analysis and content analysis - to identify and assess the impact of entrepreneurial education on students and on the entrepreneurial ecosystem of each university. The analysis is based on reports from 14 European universities participating in the joint initiative of the European Commission and the OECD, namely HEI Innovate (HEI Innovate, 2024a; HEI Innovate, 2024b; OECD, 2022; OECD/EU, 2018). Specifically, we collected and analyzed all institutional reports on entrepreneurship education that were available as of 1 June 2025 on the HEInnovate website (Resources section). These reports represent the complete set of publicly accessible documents at that time and constitute the empirical basis of the study. Through thematic analysis, we aimed to synthesize relevant information from the attached document, focusing on the evaluation methods used by each university, the impact indicators, and the reported outcomes. This approach allowed us to gain an overview of the diversity and effectiveness of entrepreneurial education strategies implemented across 14 universities from 13 European countries (both EU and non-EU members). Content analysis complemented the thematic analysis by offering a detailed examination of how each university measures and reports the impact of entrepreneurial education. This involved evaluating specific assessment methods, the indicators used, and the reported results, providing a deeper understanding of each HEI's practices and achievements.

The combination of these two qualitative methods aimed to deliver a comprehensive yet comparative evaluation of the impact of entrepreneurial education, highlighting best practices and identifying opportunities for improvement among the analyzed universities.

The summarized steps were as follows (see Figure 1):

1. Data Collection: Gathering relevant information from the 14 university reports across 13 European countries.
2. Familiarization with the Data: Reading and re-reading the documents to understand their context and content, identifying initial ideas and emerging themes.

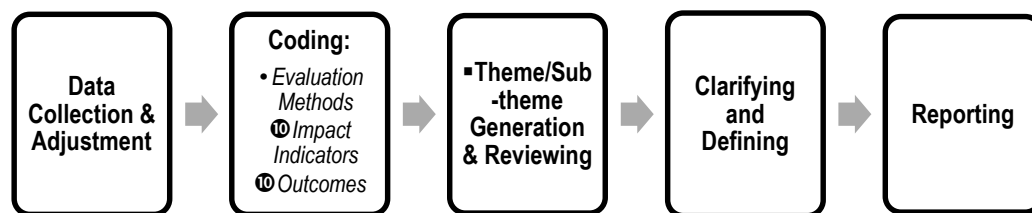


FIGURE 1. MAIN STEPS OF THE ANALYSIS

Source: Authors' elaboration

3. Coding: Identifying and labeling relevant text segments with descriptive codes, focusing on 3.1. Evaluation methods, 3.2. Impact indicators, and 3.3. Outcomes (Braun & Clarke, 2006), (Krippendorff, 2019).

For 3.1. Evaluation Methods, we looked for: 3.1.1. Formative Evaluation (ongoing assessment and feedback during the educational process); 3.1.2. Summative Evaluation (final or cumulative assessments of student performance); 3.1.3. Self-Assessment (methods through which students evaluate their own performance) and 3.1.4. Peer Assessment (evaluations conducted by fellow students).

For 3.2. Impact Indicators, we identified: 3.2.1. Entrepreneurial Competency Development (skills and competencies developed through entrepreneurial education); 3.2.2. Increase in Entrepreneurial Intentions (segments describing students' growing desire to start their own businesses); 3.2.3. Academic Performance (impact of entrepreneurial education on academic results) and 3.2.4. Integration into the Entrepreneurial Ecosystem (how students engage with entrepreneurial networks and communities).

For 3.3. Outcomes, we searched for: 3.3.1. Successful Entrepreneurial Projects (examples of student-initiated projects that achieved success); 3.3.2. Positive Student Feedback (student feedback on entrepreneurship courses); 3.3.3. Business Collaborations (partnerships between universities and the business sector) and 3.3.4. Innovations and Patents (innovations and patents resulting from student projects).

4. Theme/Sub-theme Generation: Grouping codes into broader themes (thematic analysis) or specific sub-themes (content analysis) that reflect significant patterns, such as evaluation methods, impact indicators, and reported outcomes (Nowell, Norris, White, & Moules, 2017); (Hsieh & Shannon, 2005).

5. Reviewing Themes/Sub-themes: Verifying and refining the identified themes and sub-themes to ensure their accuracy and relevance, making sure they reflect the data and research objectives (Guest, MacQueen, & Namey, 2012).

6. Clarifying and Defining: Renaming themes and sub-themes where necessary to better reflect their core content, such as “Evaluation Methods,” “Impact Indicators,” and “Outcomes.”

7. Reporting: In the final stage, the themes and sub-themes were presented in a final report, including relevant examples from the analyzed university reports.

4. RESULTS AND DISCUSSION

In this analysis, we addressed the theme “Evaluating impacts of the entrepreneurship education approach” based on the HEI reports of 14 European universities, using two distinct methods: thematic analysis and content analysis. The main objective was to identify and assess the impact of entrepreneurial education on students and on each university’s entrepreneurial ecosystem.

Thematic analysis revealed the following insights:

- Autonomous University of Barcelona (UAB) implements entrepreneurship education at all academic levels, including elective undergraduate courses and postgraduate programs. Impact is informally assessed through student feedback surveys, and the university participates in the GUESSS project to measure entrepreneurial intentions. The research park of this institution tracks spin-off success, funding, and strategic alliances.
- Erasmus University Rotterdam (EUR) offers comprehensive entrepreneurship programs and a diverse portfolio of extracurricular training. Impact is evaluated through longitudinal surveys and monitoring of startups and scale-ups, with findings published in the Top 250 Scale-Up Awards and ScaleUp Monitor.
- Kozminski University, Poland focuses on ambitious entrepreneurship and trains entrepreneurship educators from other Polish universities. Impact is assessed through the success of extracurricular programs and the national SEIPA network, which has introduced entrepreneurship courses in over 40 non-business universities.
- Johannes Kepler University Linz (JKU) offers challenge-based courses like Patent-based Business Planning and Innovation Lab. Impact is measured through student participation in business plan competitions and regional startup support networks.

- University of Ljubljana applies the Design Thinking method and evaluates impact through course feedback and the success of student business ideas. Although it does not systematically track graduate startups, it promotes successful alumni ventures.
- University of Southern Denmark (SDU) established the IDEA Entrepreneurship Center to coordinate entrepreneurship education. Impact is measured through student participation rates and entrepreneurial self-efficacy. Participation increased by 47% between 2012 and 2013.
- University of Huddersfield, UK supports entrepreneurship through the 3M Buckley Innovation Centre (3MBIC) and partnerships with innovation hubs. Impact is assessed by the number of students supported in launching businesses and the survival rate of those ventures.
- Lund University, Sweden created SKJCE to coordinate entrepreneurship education. Impact is measured through course feedback and the success of student-generated business ideas, in collaboration with science parks and technology transfer centers.
- Technical University of Kosice (TUKE) emphasizes extracurricular entrepreneurship education in collaboration with external stakeholders. Impact is assessed through business plan competitions and monitoring of student business ideas.
- Instituto Politécnico do Porto (IPP) has undergone a strategic transformation using the HEInnovate tool, emphasizing integrated and collaborative entrepreneurship education. The creation of Porto Design Factory has enhanced interdisciplinary skills and industry collaboration, strengthening the regional entrepreneurial ecosystem.
- Leuphana University of Lüneburg promotes a comprehensive and integrative approach, offering a wide range of curricular and extracurricular activities. External partnerships and regional ecosystem integration have strengthened the university's entrepreneurial profile and supported knowledge transfer and startup development.
- Politecnico di Milano (Polimi) adopts an experiential approach, involving students in real business model development, mentoring, and practitioner collaboration. Entrepreneurship courses are offered at all levels, and extracurricular activities are supported by the PoliHub incubator, contributing significantly to the local entrepreneurial ecosystem.
- Josip Juraj Strossmayer University in Osijek (SUO) has developed a robust entrepreneurial ecosystem in a challenging economic and cultural environment. It offers entrepreneurship programs at all academic levels and complements them with consulting and business plan competitions, fostering proactive and responsible entrepreneurial mindsets.
- University of Cambridge (UC) focuses on the Centre for Entrepreneurial Learning (CfEL), which offers innovative programs like the Postgraduate Diploma in Entrepreneurship (PGDE),

Enterprise Tuesday, Ignite, and EnterpriseWISE. Teaching is practice-oriented, involving entrepreneurs as lecturers, mentors, and facilitators. CfEL also collaborates with students to align educational planning with their needs.

Content analysis of the theme “Evaluating impacts of the entrepreneurship education approach” across the 14 universities was structured around three key dimensions (see 3.1., 3.2. and 3.3 above):

- a. Evaluation Methods: Use of surveys, formal and informal assessments, and specific tools for impact measurement.
- b. Impact Indicators: Number and success of valuable business ideas.
- c. Outcomes: Collaborations with science parks and technology transfer centers to support entrepreneurship.

TABLE 1. UNIVERSITIES USING INFORMAL OR FEEDBACK-BASED EVALUATION METHODS

University	Evaluation methods	Impact indicators	Outcomes
University of Ljubljana, Slovenia	Impact is measured through course feedback and the success of student-generated business ideas.	Number and success of valuable business ideas.	The university does not systematically monitor graduate startups, but successful examples include companies like KIBUBA, Printbox and Optiprint.
Autonomous University of Barcelona (UAB)	UAB does not have formal mechanisms for measuring impact. Impact is measured informally through student feedback surveys.	Number of requests received, success of created spin-offs, funds obtained, strategic alliances, and growth of existing spin-offs.	UAB publishes an annual report discussing key indicators of its teaching, research, and entrepreneurship agendas.
University of Huddersfield, UK	Impact is evaluated by the number of students supported in launching a business and the survival rate of those businesses.	Number of students supported and survival rate of startups.	The university collaborates with innovation centers and incubators to support entrepreneurship.
University of Southern Denmark (SDU)	SDU evaluates EE through IDEA Centre using student feedback, peer reviews, and visual logbooks for personal progress. Educators and external partners offer input during real-case projects. An entrepreneurial self-efficacy (ESE) survey is used to assess skills: creativity, planning, and resource management, helping refine course content and teaching methods.	SDU tracks student participation in EE and ESE levels. Between 2012 and 2013, participation rose by 47%, 2,588 students, 10% of the total. ESE scores are highest among students in entrepreneurship -focused programs, indicating stronger confidence/readiness for entrepreneurial action.	Student participation in entrepreneurship courses increased by 47% between 2012 and 2013 (almost 10% of all SDU students attended at least one EE course).
Technical University of Kosice (TUKE), Slovakia	Evaluation of student startup projects and business planning efforts through business plan competitions.	Number and success of business ideas presented in competitions.	The university collaborates with innovation centers and incubators to support entrepreneurship.

Source: Compiled by the authors using data extracted from HEInnovate university reports

To facilitate a clearer comparative analysis of institutional practices, the universities included in this study have been grouped into three distinct categories based on their predominant approach to evaluating entrepreneurship education. Each category reflects a specific orientation - whether methodological, strategic, or outcome-driven - and allows for a more structured interpretation of how higher education institutions assess the impact of their entrepreneurial programs.

TABLE 2. UNIVERSITIES USING STRATEGIC TOOLS OR INSTITUTIONAL FRAMEWORKS

University	Evaluation methods	Impact indicators	Outcomes
Instituto Politécnico do Porto, Portugal (IPP)	IPP uses the HEInnovate tool for strategic review and institutional performance evaluation.	Number of students participating in various programs, level of international involvement, number of return projects, number of projects and services for industry, number of new ideas generated within IPP.	IPP considers impact measurement a weak dimension and has implemented new methods to systematize impact measurement - Porto Design Factory (PDF). This has led to a fundamental reevaluation of IPP's educational vision and mission.
Leuphana University of Lüneburg (LUL), Germany	LUL applies a structured quality management system, developed within the EXIST IV program, to assess its entrepreneurial education. This includes participant feedback, internal reviews of incubator-supported projects, and benchmarking with external partners to ensure continuous improvement	The university monitors several key indicators: number of student-led innovation projects, patent applications, startups launched, external funding attracted, and jobs created. These metrics reflect both academic and economic impact.	Through collaboration with science parks and technology transfer centers, Leuphana University has facilitated the creation of successful startups and spin-offs. These initiatives have enhanced research commercialization, student engagement, and regional innovation capacity.
Milan Polytechnic University, Italy (Polimi)	Polimi specifically measures the impact of entrepreneurial education initiatives. Course evaluations are conducted through standardized forms.	Approximately 4.6% of graduates involved in founding startups, 13% of MBA graduates contributed to the creation of new companies.	Of 62,492 graduates (2000-2009), 2,852 founded 3,115 new companies (mid-2014), 80% of which are located in the Lombardy region.
Erasmus University Rotterdam	The university and Erasmus Centre for Entrepreneurship (ECE) use various tools, including the GUESSS survey and their own longitudinal survey.	Student participation in entrepreneurship courses, entrepreneurial self-efficacy, and number of startups and scale-ups.	ECE annually publishes research results in the Top 250 Scale-Up Awards and ScaleUp Monitor.
Kozminski University, Poland	Impact is evaluated through the success of extracurricular programs and the national network of academic entrepreneurship educators (SEIPA).	Number of entrepreneurship courses launched in non-business universities in Poland.	The university has launched entrepreneurship courses in 40 non-business universities in Poland.

Source: Compiled by the authors using data extracted from HEInnovate university reports

The first group includes universities that primarily rely on qualitative and non-standardized evaluation methods such as student feedback, peer reviews, self-assessment tools, and informal surveys (see Table 1). These approaches emphasize the experiential and reflective dimensions of entrepreneurship education, focusing on student perceptions and developmental progress rather than rigid performance metrics. Although these methods offer flexibility and contextual sensitivity, they may lack comparability and consistency across institutions.

The universities in the second cluster (see Table 2) employ structured and strategic evaluation instruments, such as the HEInnovate framework, internal quality management systems, or benchmarking tools. These approaches reflect a more formalized and institutionalized commitment to assessing entrepreneurship education, often integrated into broader governance and performance review mechanisms. They enable systematic tracking of progress, alignment with strategic goals, and cross-institutional comparability, contributing to long-term program development and policy coherence.

TABLE 3. UNIVERSITIES EVALUATING BASED ON ECONOMIC AND ENTREPRENEURIAL OUTCOMES

University	Evaluation methods	Impact indicators	Outcomes
Lund University, Sweden	Impact is evaluated through course feedback and the success of student-generated business ideas.	Number and success of valuable business ideas.	In 2013, the university generated 110 new innovation ideas and 56 projects, with 27 patent applications and 14 companies formed. The university's innovation system has invested in over 70 companies, generating over 2,500 jobs and over SEK 700 million in tax revenues since 1999.
Johannes Kepler University Linz, Austria	Student participation in business plan competitions and monitoring of created startups.	Number of startups and their success in competitions.	The university collaborates with regional institutions to provide ongoing support to academic entrepreneurs.
University of Cambridge, United Kingdom	CfEL has not announced precise impact evaluation methods, but the overall regional impact is significant.	Number of new businesses founded by CfEL graduates, number of people employed by these businesses, and funds raised by graduates.	In 10 years, CfEL has contributed to the founding of 250 new businesses employing 2,500 people. CfEL graduates have raised approximately £120 million in funding over the past two years. The number of students at CfEL has increased from around 200 per year to 1,500-2,000 per year.
Josip Juraj Strossmayer University in Osijek, Croatia	The university uses two surveys for students (undergraduate and master's), conducted by the university and the Faculty of Economics.	Number of students who start their own business and improvements or strategic repositioning of existing businesses.	Of the 360 students in the EE programs, 39 have their own business, 16 of which were founded during or immediately after the program.

Source: Compiled by the authors using data extracted from HEInnovate university reports

This third group (see Table 3) comprises universities that assess the impact of entrepreneurship education through tangible economic indicators, including the number of startups founded, jobs created, funding

raised, and patents registered. These outcome-based evaluations prioritize measurable results and emphasize the contribution of educational programs to regional innovation ecosystems and graduate entrepreneurial success. While highly relevant for demonstrating external impact, such evaluations may overlook softer educational dimensions like mindset development or interdisciplinary collaboration.

5. CONCLUSIONS

Evaluating the impact of entrepreneurial education in higher education institutions (HEIs) is essential for understanding how these programs contribute to the development of entrepreneurial competencies and the stimulation of innovation among students. The analysis of reports from 14 European universities highlighted the diversity and effectiveness of implemented strategies, emphasizing the importance of evaluation methods, impact indicators, and achieved outcomes.

The evaluation methods used range from surveys and questionnaires to formal and informal assessments, as well as specific tools such as those promoted by HEInnovate. These methods enable the collection of both quantitative and qualitative data, offering a comprehensive view of how entrepreneurial education influences students' careers and mindsets. Impact indicators - such as the number of startups founded, their survival rate, and the entrepreneurial competencies acquired - are essential for measuring program effectiveness.

The results show that entrepreneurial education can lead to an increase in startup creation and the enhancement of students' entrepreneurial skills. Some universities demonstrated the success of their programs through startup monitoring and national educator networks, while others emphasized the importance of collaboration with science parks and technology transfer centers to support entrepreneurship. The comparative analysis revealed three distinct institutional profiles in evaluating entrepreneurship education: those relying on informal feedback mechanisms, those employing strategic frameworks, and those focusing on measurable economic outcomes, enhancing our understanding of how universities align evaluation practices with pedagogical goals, institutional strategies, and regional innovation impact, sustaining broader role of education in fostering regional development across EU countries (Dzitac et al., 2024), reinforcing the strategic importance of aligning entrepreneurship education with territorial innovation policies.

From a theoretical perspective, this study contributes to the literature on entrepreneurship education by offering a structured comparative analysis of impact evaluation practices across European universities, highlighting the coexistence of informal, strategic, and outcome-based assessment approaches. It extends existing frameworks by linking evaluation methods, indicators, and outcomes within an integrated analytical model grounded in institutional reports. From a practical perspective, the findings could provide

valuable insights for university managers and policymakers by identifying best practices and gaps in impact measurement. The results support the adoption of coherent and transparent evaluation systems, such as HEInnovate, to enhance program effectiveness, strategic alignment, and accountability within entrepreneurial HEIs.

In conclusion, evaluating the impact of entrepreneurial education is a vital tool for ensuring the relevance and effectiveness of these programs. Using a combination of evaluation methods and collaborating with external stakeholders can provide a comprehensive picture of the impact, improving program content and its relevance to students and the local economy. This enables universities to continuously adapt and improve their programs to better meet the needs of students and the market.

Despite the valuable findings, this research has some limitations. First, the variability in evaluation methods and impact indicators across universities may affect the comparability of results. Additionally, the lack of detailed quantitative data in some reports limits the ability to conduct robust statistical analyses. Future research directions could include the development of standardized evaluation frameworks for entrepreneurial education and the exploration of long-term impacts on graduates' careers and local economies, as well as investigating the influence of cultural and economic contexts on the effectiveness of entrepreneurial education.

DECLARATION OF COMPETING INTEREST

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

DECLARATION OF GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

The authors declare that they have not used any Generative AI and/or AI-Assisted technologies during the preparation of this work.

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