

# Entrepreneurial orientation in Brazilian public graduate programs: Strategizing for professional training and societal impact



Keila Pierre Oliveira<sup>a</sup>  | Josiel Lopes Valadares<sup>a</sup>  | Magnus Luiz Emmendoerfer<sup>a</sup> 

<sup>a</sup>Department of Administration and Accounting, Federal University of Viçosa, Brazil.

**Abstract** The growing integration of entrepreneurship and innovation in universities requires public graduate programs to adapt to social and market demands. This study investigates the integration of Entrepreneurial Orientation (EO) in *Stricto Sensu* administration programs at Brazilian public universities. These programs are essential for training leaders and innovators, yet their ability to foster entrepreneurship and strategic thinking remains underexplored. The research adopts a qualitative approach, based on interviews with coordinators and professors from four major Brazilian public universities. Content analysis reveals an increasing alignment between teaching and entrepreneurial practices, driven by active learning methods. However, challenges persist, such as the tension between academic productivity and practical entrepreneurial experiences, as well as the still incipient collaboration between universities and the private sector. The findings highlight the role of graduate programs in developing strategies aligned with societal needs and the importance of institutional support for entrepreneurial initiatives. This study reinforces how EO can be a strategic tool in public administration education, preparing leaders to address social challenges through innovation and collaboration.

**Keywords:** entrepreneurship, entrepreneurial education, corporate entrepreneurship, university professor, social outcomes

## 1. Introduction

Throughout history, universities have undergone transformations to adapt to external conditions and legitimize their role in society (Abidi et al., 2022; Mamedov et al., 2021). This evolutionary process has led to the emergence of a new institutional model: the entrepreneurial university (Etzkowitz et al., 2019; Klein & Pereira, 2020; Mamedov et al., 2021). The entrepreneurial university is characterized by integrating traditional academic activities, such as teaching and research, with a proactive approach to innovation, knowledge transfer, and engagement with the productive sector and society (Dal-Soto, Souza, & Benner, 2021a; Hormiga et al., 2017; Tajpour et al., 2020). In this context, the university not only generates knowledge but also seeks to apply it in practice, fostering economic and social impact (Dal-Soto et al., 2021b). Unlike the traditional model, the entrepreneurial university emphasizes value creation from knowledge, encouraging collaboration among researchers, students, companies, and governments while adopting strategies that transform ideas into products, services, and public policies (Feola et al., 2021).

This shift reflects a broader movement in the evolving role of higher education institutions, which have been adapting to new social demands and economic dynamics. Historically, universities were knowledge-producing centers focused on academic training for traditional careers (Longo, 1989; Rampazzo & Joslin, 2017). However, with the advancement of an innovation-driven economy, institutions have begun incorporating more dynamic learning methodologies, such as projects, case studies, and partnerships with the productive sector (Copelli et al., 2022; Dal-Soto et al., 2021a; Matthew et al., 2019; Ostojic & Leko Simic, 2021). These practices aim to foster creativity, critical thinking, and the ability to solve complex problems. Entrepreneurial universities also promote the development of transversal skills such as leadership, teamwork, and entrepreneurship, which are essential in a constantly evolving job market (Abidi et al., 2022; Ratković et al., 2022).

This repositioning of universities responds to growing pressure for innovation, employability, and social relevance. University education, once centered on knowledge transmission, has adopted more active practices, such as interdisciplinary projects and partnerships with external actors, aiming to foster skills like creativity, collaboration, and autonomy (Matthew et al., 2019; Copelli et al., 2022). In this new scenario, universities are expected not only to advance knowledge but also to generate solutions for complex social challenges (Ratković et al., 2022).

Graduate programs, especially in the Brazilian context, play a strategic role in this process. Initially created to focus on faculty training and scientific research (Hostins, 2006), these programs have increasingly incorporated new functions, such as

applied research, interdisciplinarity, and the pursuit of social impact (Silva et al., 2021). However, this transformation still faces challenges, particularly in aligning with the demands of the labor market, civil society, and the public sector.

In this context, Entrepreneurial Orientation (EO) emerges as a strategic approach to align public graduate programs with contemporary demands. EO in the university setting involves practices, behaviors, and strategies that promote innovation, cross-sector collaboration, and the practical application of knowledge (Abidi et al., 2022; Cvijić et al., 2019; Dal-Soto, Souza & Benner, 2021a; Todorovic et al., 2011). This approach is directly connected to educational policies that seek to strengthen the social relevance of research and the development of professional competencies, while also contributing to the transformation of universities into centers of innovation and social impact (Santos et al., 2021).

The demand for professionals capable of innovating and leading complex initiatives requires institutions to adapt their curricula and pedagogical practices to incorporate an entrepreneurial approach (Matthew et al., 2019). In particular, public *Stricto Sensu* graduate programs, which have historically driven the country's scientific and technological advancement, must now reflect these new demands (Cabral et al., 2020). EO, by encouraging the development of ideas with the potential to become entrepreneurial initiatives—both social and economic—reinforces the collaborative nature of the academic environment and aligns education with contemporary needs.

However, the capacity of these programs to foster entrepreneurship and strategic thinking remains underexplored. Understanding this potential is essential for strengthening civic engagement and promoting social capital, contributing to sustainability and social equity. Considering the role of Brazilian public universities in professional training and scientific production, this study investigates the integration of Entrepreneurial Orientation (EO) in *Stricto Sensu* graduate programs in administration at Brazilian public universities. These programs play a key role in preparing professionals for both the public and private sectors but still lack in-depth studies on their alignment with entrepreneurial and innovative practices.

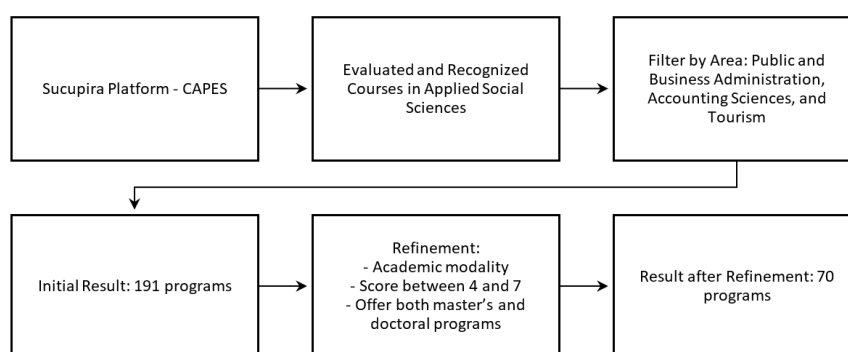
This research is relevant as it connects entrepreneurial education with public sector strategy, contributing to the empirical debate on how higher education can strengthen social capital, increase civic engagement, and improve governance. The justification for conducting this study lies in the growing need for empirical evidence on the implementation and experience of EO in universities, offering a perspective on how such initiatives can align with broader social goals, such as sustainability and equity (Cvijić et al., 2019; Dal-Soto, Souza & Benner, 2021a; Riviezzo et al., 2018; Todorovic et al., 2011). Existing literature on EO predominantly focuses on private sector companies, leaving a gap in understanding how this approach can be applied and promoted in the academic environment (Abidi et al., 2022; Aga, 2023).

## 2. Materials and Methods

This research is characterized as a multiple-case study with a qualitative approach. Qualitative research seeks to understand social reality from the perspective of the individuals involved (Denzin & Lincoln, 2006), delving into the meanings and interpretations attributed to phenomena. As an exploratory study, its purpose is "to provide greater familiarity with the problem, with a view to making it more explicit" (Gil, 2002).

Considering the close relationship between entrepreneurship and management—stemming from the origin of entrepreneurship as a field of study within management sciences (Copelli et al., 2022)—we methodologically chose to focus on Brazilian *Stricto Sensu* Graduate Programs in Management (PPGs). This choice was further justified by criteria of feasibility (time and resources), thematic proximity to the object of study, and the availability of public information.

To select the PPGs analyzed, we surveyed the programs available on CAPES's Sucupira Platform, using the following inclusion criteria: (i) programs in the fields of public and business administration; (ii) offering both academic master's and doctoral degrees; (iii) delivered in person; (iv) publicly funded; and (v) rated between 4 and 7 in the 2023 CAPES evaluation. Programs exclusively in the fields of Accounting and Tourism were excluded. The selection was based on the Sucupira Platform, the main graduate studies database in Brazil. The Sucupira Platform is the largest connected database for Brazilian graduate programs (Plataforma Sucupira, 2023). To facilitate understanding of the selection process, Figure 1 summarizes the steps and criteria used.



**Figure 1** Methodological path for the selection of the PPGs.

Of the 70 programs initially identified, 44 met the inclusion criteria. Their regional distribution was as follows: 19 in the Southeast, 15 in the South, 5 in the Northeast, 4 in the Central-West, and only 1 in the North of the country (Plataforma Sucupira, 2023). For the final selection, we added the following criteria: (i) regional diversity; (ii) representativeness in terms of socioeconomically impactful output; (iii) a significant number of graduates; (iv) a mix of state and federal institutions; and (v) feasibility of contact with coordinators and faculty. Thus, four PPGs were selected: University of São Paulo (USP), Federal University of Goiás (UFG), Federal University of Rio Grande do Norte (UFRN), and State University of Santa Catarina (UDESC). Table 1 presents their characteristics.

**Table 1** Universities that make up the research analysis corpus.

Institution	Abbreviation	Locus	Level	Area	Location
University of São Paulo	USP	São Paulo	State	Administration	Southeast
Federal University of Goiás	UFG	Goiânia	Federal	Administration	Central-West
Federal University of Rio Grande do Norte	UFRN	Rio Grande do Norte	Federal	Administration	Northeast
State University of Santa Catarina	UDESC	Santa Catarina	State	Administration	South

Source: Sucupira Platform – CAPES (2023).

We used both secondary and primary data sources. Secondary sources involved the analysis of regulations, syllabi, and teaching plans, gathered from the institutional websites of the selected PPGs. All courses offered in the master’s and doctoral programs were mapped and organized into six thematic areas related to entrepreneurial orientation, based on the identification of content related to innovation, market trends, business practices, entrepreneurship, self-management, leadership, and career development. Courses on research methodology and teaching internships were excluded, resulting in 25 courses analyzed.

Primary data were collected through semi-structured interviews with 23 faculty members across the four PPGs. Inclusion criteria were: being the program coordinator; being a faculty member or advisor working in fields such as entrepreneurship, innovation, or technology; or having the longest tenure in the program. The interview script included 13 questions covering topics such as institutional policies, CAPES evaluation, funding strategies, innovation, employability, and social impact. Table 2 presents the distribution of participants.

**Table 2** Presentation of Participants.

Institution	Participant Code
University of São Paulo (USP)	Participants 1 to 7
Federal University of Goiás (UFG)	Participants 8 to 13
Federal University of Rio Grande do Norte (UFRN)	Participants 14 to 18
State University of Santa Catarina (UDESC)	Participants 19 to 23
Total Participants	23

Data analysis was conducted through thematic content analysis (Bardin, 2011), based on full interview transcriptions. The process followed three steps: (i) pre-analysis, including a preliminary reading and organization of responses by question; (ii) material exploration, with open coding of meaning units within each response; and (iii) treatment and interpretation, involving thematic categorization, inference, and integration with the theoretical framework.

Categories were developed based on thematic recurrence in the responses and later refined independently by two researchers. Discrepancies in categorization were discussed until consensus was reached, ensuring inter-rater reliability. Additionally, interview analysis was triangulated with documentary data from the PPGs, strengthening analytical robustness and enhancing the understanding of institutional contexts. This process of triangulating sources and researchers aimed to minimize individual interpretation biases.

The study was approved by the Research Ethics Committee of the Federal University of Viçosa (approval number 6.699.977, dated 03/13/2024), in accordance with Resolution CNS No. 510/2016. The interviews were conducted in person, with voluntary participation. All participants signed the Informed Consent Form (ICF). The interviews were recorded and transcribed with the participants’ consent.

### 3. Results and Discussions

#### 3.1. Integration of Entrepreneurial Orientation in Curricula and Teaching Practices

The integration of entrepreneurial orientation into Graduate Programs (PPGs) has intensified, reflecting institutional adaptation to an evolving educational landscape. This shift prioritizes the real impact of research, interinstitutional collaboration, and alignment with sectoral demands, influencing curricula, teaching methods, and research applications. PPGs increasingly adopt interdisciplinary and practical approaches, incorporating courses on Innovation, Technology, Strategy, Entrepreneurship, and Markets while applying active methodologies to traditional subjects. These updates ensure students develop entrepreneurial and critical skills to navigate a dynamic professional environment.



Thematic organization of courses, as shown in Table 3, illustrates this integration, highlighting teaching methodologies and faculty perspectives. By aligning curricula with market and academic demands, PPGs reinforce their commitment to fostering innovation and practical applicability.

**Table 3** Categories of the Analysis Corpus.

Thematic Category	Main Themes and Approaches
Innovation and Technology	Innovation management, strategic planning, interaction with innovation ecosystems, artificial intelligence, innovation in the public sector, social and ethical impacts of technology.
Strategy and Competitiveness	Strategic planning, analysis of internal and external environments, corporate governance, sustainability, balanced scorecard, strategic foresight.
Entrepreneurship and Startups	Startup development, commercialization of emerging technologies, entrepreneurial mindset, digital entrepreneurship, creative territories, digital transformation.
Markets and Finance	Capital markets, alternative finance, derivatives market, Python programming for finance, integration of technology in financial analysis.
Marketing and Commercialization	Marketing strategy, communication and branding, consumer behavior, data modeling, statistical methods for marketing.
Education and Training	Technology in education, pedagogical strategies, management laboratory, active methodologies, integration of theory and practice, didactics and teaching in higher education.

The inclusion of courses focused on innovation and entrepreneurship has become a common practice among graduate programs (PPGs), reflecting efforts to adapt to market demands. Universities such as USP, UFG, and UDESC have introduced new subjects and methodologies to foster creativity, critical thinking, and innovative problem-solving. UFG has been restructuring its research lines to encompass current socioeconomic trends while also introducing performance metrics that encourage the practical application of research. Similarly, UDESC is undergoing a curricular reform to incorporate more innovative elements, with a focus on concrete deliverables. A UDESC participant stated: "The projects we develop in the graduate courses here always have deliverables for the market (...)" (Participant 22). These initiatives reflect an effort to align academic training with market demands, supporting studies that highlight the importance of a curriculum that fosters creativity and the practical application of knowledge (Dal-Soto et al., 2021a; Cvijić et al., 2019).

The growing flexibility in the curriculum has proven essential to meet the dynamic demands of the market. Many academic programs are shifting from rigid structures to more adaptable curricula, capable of being adjusted based on feedback from industry partners. This model allows the PPGs to respond quickly to emerging trends and technologies, ensuring relevant and up-to-date education. The creation of innovation centers, along with the strengthening of courses focused on innovation and entrepreneurship, reinforces this flexible approach, aligning students' education with market needs and the constant evolution of the professional sector.

Within this adaptation, most participants aim to foster a dynamic and interactive classroom environment in which students feel engaged and participatory. This is reflected in various strategies, such as the use of seminars, debates, and group activities, where students are encouraged to work together on projects, case studies, or other tasks, developing collaboration and communication skills. The use of online platforms, discussion forums, and audiovisual resources is also widely adopted to promote interaction and active learning. Figure 2 shows the methodologies used by faculty, as detailed in the interviews.

Several participants also emphasize the importance of integrating theory and practice in courses. Participant 21 and Participant 22, for example, highlighted how practical experience is essential for solidifying theoretical learning and preparing students to face real-world challenges. This integration contributes to the development of more autonomous professionals, capable of adapting to the demands of the labor market, which increasingly requires professionals with the ability to handle complex and multidisciplinary situations (Matthew et al., 2019). Additionally, the use of real-world cases in courses allows faculty to incorporate their findings into their teaching, involving students in different aspects of their research (Abidi et al., 2022).

Entrepreneurship education is based on the idea that students should work creatively and collaboratively, applying new information and strategies to solve practical problems. Thus, the active methodologies presented in Figure 2 indicate that the analyzed institutions aim not only to develop students' technical competencies but also to prepare them to address social, democratic, and environmental challenges, thereby fostering their role as agents of change. (Fernandes, 2024; Matthew et al., 2019; Santos & Alves, 2022; Ogassavara et al., 2022). Such methodologies align with the universities' entrepreneurial orientation perspective by fostering critical thinking, innovation, and practical problem-solving skills (Abidi et al., 2022). This approach prepares students to generate impactful solutions and engage in socioeconomic transformations. Implications of these methodologies and their relationship with entrepreneurial education (Hormiga et al., 2017; Juliatto et al., 2017).

The growing integration of innovation and entrepreneurship-focused courses in graduate programs has stood out by offering a diverse range of methodologies that stimulate creativity, critical thinking, and the development of innovative solutions to complex problems. Among the most adopted methodologies are active methodologies, which place students at the center of the learning process, encouraging active participation, collaboration, and problem-solving.

Participation of external experts	Seminars Conducted by Students
Technical and expository teaching methods	Discussions in the classroom after pre-readings
Integration of Theory and Practice and Experiential Learning	Case studies
Computer Labs and Innovation Labs	Dynamic syllabus and flipped classrooms
Workshop-Based Teaching	Content curation
Learning Portfolio and Frameworks	Teaching with integrated research
Dialogical and Interactive Teaching	Project Basics

**Figure 2** Teaching methods used by faculty.

Participants 16 and 22 highlight the use of active methodologies, such as workshops, problem-based learning, case studies, and simulations, which directly involve students in the teaching process, in contrast to traditional lecture-based approaches. Participant 22 emphasizes the importance of this shift: “The use of more active methodologies, which are less centered on the teacher, is a crucial aspect of our teaching-learning process. Constant reinvention as an educator is essential, as the traditional model of lecture-based classes, with the teacher at the center and slides, is becoming obsolete”.

In the context of graduate education, the adoption of active methodologies and the incorporation of entrepreneurship into the curriculum (Abidi et al., 2022) emerge as promising strategies to prepare graduates for contemporary challenges. Academic training focused on problem-solving and the pursuit of professional autonomy are essential elements to enhance the insertion of masters and doctors into various sectors of the economy (Copelli et al., 2022). Thus, by promoting an academic culture oriented toward innovation and collaboration, universities can play an even more strategic role in the development of public policies aimed at sustainable development and the modernization of the labor market.

This shift reflects a significant transition from traditional methods, which center teaching around the instructor, to approaches that prioritize active student participation. As emphasized by Participant 16: “I am completely in favor of practical, project-based teaching, practical activities, and active methodologies. Adopting active methodologies requires more work, but it is essential to see the real learning of the students”. This pedagogical approach allows students to develop essential skills such as teamwork, effective communication, and critical thinking, preparing them to operate in an increasingly complex and dynamic world (Mota, 2018; Ogassavara et al., 2022; Santos & Alves, 2022).

A widely adopted methodology is Project-Based Learning (PBL), used by Participant 7. This approach encourages students to apply knowledge in real projects, promoting the integration of theory and practice (Amaral, 2021). As highlighted: “It’s not enough to read an article; it’s necessary to go to the market and validate. If you don’t have access to the client, you need to make an effort to find them. Students are encouraged to go to the market, following this logic” (Participant 7).

Unlike the isolated transmission of theoretical knowledge, PBL stimulates curiosity, creativity, and the development of essential skills such as teamwork, effective communication, and critical thinking (Amaral, 2021). According to Matthew et al. (2019), curricula that use this methodology contribute to the development of an entrepreneurial mindset applicable to different contexts. Its application in higher education has proven effective in training professionals prepared for market challenges, which increasingly demand innovation and problem-solving skills (Santoso et al., 2023).

In addition to active methodologies, there is a concern among educators to encourage analytical thinking in students. Participant 23 highlights this approach: “In every class, students receive a set of readings that must be prepared in advance for discussion. They must be ready to debate and analyze the content, exploring its implications for organizational life and connecting the concepts with others covered in the course” (Participant 23). This model reinforces the importance of active participation in the teaching-learning process, preparing students for academic and professional challenges.

Despite the growing adoption of active methodologies, the structure of classes still varies according to the discipline and the needs of the students. Some educators still follow traditional methods, like Participant 9: “I like the lecture-based class and use the traditional method. Perhaps due to the influence of my training, I still apply traditional exams and give lecture-based classes”.

Faculty training in graduate programs seeks to prepare new teachers to use modern tools and be engaged in a dynamic teaching process. Participants 16 and 22 highlight the importance of student engagement for more effective learning: “I constantly seek new approaches to keep students motivated and engaged, as this engagement is crucial for effective learning” (Participant 16). The need for constant updating of teaching methods is reinforced by studies such as Abidi et al. (2022), which

recommend training and advising faculty members who are less inclined to adopt innovative approaches. The transition to more active methodologies reflects an adaptation to new expectations and learning styles.

Technological evolution has also transformed the way information is accessed and utilized. In the past, research relied on physical libraries; today, immediate access to vast amounts of information requires new teaching strategies. Participant 11 discusses the impact of a course in "Innovation and Teaching" on their own practice: "The course transformed my perspective. Before, I replicated what I learned throughout my training, centered around written exams and the instructor as the exclusive source of knowledge. Today, students have access to multiple resources, such as videos and online materials, which broadens their learning methods".

Faculty qualification also influences pedagogical innovation. Teachers with additional training are more proactive in implementing new ideas (Abidi et al., 2022). Almasri and Ahmad (2020) emphasize that continuous professional development is essential for educators to keep up with market changes and acquire new skills. Kraus et al. (2019) highlight that training can enhance educators' ability to identify opportunities within their institutions.

The need for adaptation in university education is reinforced by Matthew et al. (2019), who argue that teaching students to innovate – that is, to turn ideas into applicable solutions – enhances higher education. Participant 1 recognizes these changes: "When I started teaching, research relied heavily on libraries. Today, students have instant access to a vast amount of information, requiring new ways of learning". Online platforms, such as LinkedIn and ResearchGate, facilitate the exchange of knowledge among educators globally (Abidi et al., 2022). The COVID-19 pandemic accelerated this transition, highlighting the need for an education that goes beyond technical transmission and promotes critical thinking and social awareness (Marmolejo & Groccia, 2022).

Despite these transformations, the lack of institutional requirements for pedagogical improvement represents an obstacle to the adoption of new methodologies. Participant 11 points out this limitation, indicating that the traditional teacher-centered pedagogical practice becomes insufficient in the face of the demands of a globalized world (Felcher & Folmer, 2022; Souza & Schneider, 2022). Thus, encouraging continuous professional development is essential for the training of educators who can incorporate new technologies and pedagogical approaches, making teaching more dynamic and aligned with the needs of the 21st century (Abidi et al., 2022; Marmolejo & Groccia, 2022).

### 3.2. Interaction Between Academia and the Private Sector Amid the Challenges of Entrepreneurial Orientation

The graduate programs of the four analyzed universities share a common goal: aligning academic activities with market and societal demands. A central concern among participants is assessing the societal impact of intellectual production and program activities.

Faculty members encourage students to examine research contributions to economic, social, and environmental development, emphasizing the transformation of academic knowledge into practical solutions. As Participant 7 states, "A university generates knowledge for what? To turn it into something that reaches the market, creates jobs, and generates income." This perspective shifts focus from traditional academic metrics to tangible societal benefits.

Introducing impact as a criterion for evaluating academic production aligns with Research Mobilization (Todorovic, McNaughton & Guilda, 2011), challenging the perception of universities as detached from reality (Participant 22). Despite advancements, measuring long-term research impact remains a challenge for CAPES (Participant 4), necessitating metrics beyond publications. Recent evaluations considered alumni trajectories, faculty engagement, and employability (Participant 10). Some universities, such as USP and UFG, have adopted metrics encouraging faculty participation in international conferences and industry partnerships. These initiatives foster an entrepreneurial culture and drive innovation.

Participant 7 critiques this focus: "Real impact occurs when research results in something marketable with positive effects." This tension between traditional academic outputs and practical innovations reflects broader challenges in Brazilian universities (Todorovic et al., 2011; Hormiga et al., 2017).

Institutional theory and the entrepreneurial university model (Guerrero-Cano et al., 2006) explain this transformation, highlighting internal and external influences in restructuring universities. Graduate programs increasingly integrate research with real-world challenges. Participant 2 emphasizes relevance: "What challenges do companies face? What are the pain points?" At USP, students develop case studies and intervention projects for business contexts. Participant 4 underscores this approach: "Courses should equip students for the job market (...). The dissertation is just one aspect of their education." While UFG intends to link research with industry needs, the lack of formal institutional policies remains an obstacle.

Collaboration between academia and the market is prominent. At USP, events like 'Science Meets Business (SciBiz)' facilitate researcher-industry interactions. UDESC's 'ParticipACT,' developed with the University of Bologna, integrates crowdsensing techniques with the municipal ombudsman of Florianópolis to drive social innovation. However, at UFRN, the absence of clear policies impedes such collaborations.

Theoretical training combined with practical application aligns graduate programs with labor market demands. This reinforces Research Mobilization (Todorovic et al., 2011), fostering societal impact.

These findings align with studies highlighting entrepreneurial orientation as key to university innovation and market relevance (Cvijić et al., 2019; Hormiga et al., 2017). SciBiz exemplifies efforts to link academic knowledge with industry needs,

promoting innovation ecosystems. Participant 13 notes that only a third of graduates enter academia, with most applying their education in public and private organizations. This shift underscores the programs' role in enhancing decision-making and fostering innovation, vital for organizational success.

Despite progress, institutional barriers hinder applied research. The absence of formal regulations limits the transformation of academic outputs into market solutions. Participant 14 observes: "At the program level, no regulation or directive supports this." At UFRN, bureaucracy obstructs industry collaboration. Participant 15 highlights: "Regulatory constraints and unclear guidelines hinder applied research and corporate partnerships."

Additional challenges include publication pressure and funding shortages, complicating the balance between scientific output and entrepreneurial activities (Todorovic et al., 2011; Hormiga et al., 2017). Universities investing in creativity-driven environments strengthen their economic and societal roles (Dal-Soto et al., 2021a; Matthew et al., 2019). Robust institutional policies are needed to encourage applied research. This entails revising evaluation metrics to prioritize practical impacts and fostering academia-industry collaboration. At USP, excessive reliance on CAPES metrics is criticized for favoring publications over impactful innovations. Participant 7 argues: "True impact occurs when research reaches the market with tangible benefits."

Bureaucracy also hinders applied research, particularly at UFRN, where Ethics Committees slow approval processes. The "publish or perish" culture exacerbates these pressures, forcing academics to prioritize quantity over depth. Participant 1 acknowledges: "If you don't publish in recognized outlets, you're out of the game." This dynamic fosters fragmented research and prioritizes low-impact journals. The competition for publications undermines university autonomy, shifting knowledge production towards funding and prestige rather than societal challenges (Silva, 2020). This prioritization of institutional interests weakens academia's societal relevance. Institutional support is crucial for fostering innovation through events and partnerships. Participant 15 emphasizes: "We need infrastructure to organize events effectively." The lack of an experimental culture restricts creative problem-solving in complex societal issues.

Funding and evaluation models exacerbate inequalities among institutions. Established programs receive greater resources, while emerging ones struggle to compete. Participant 20 observes: "Criteria favor established universities while disadvantaging newer institutions." This resource concentration perpetuates academic hierarchies and stifles innovation in smaller universities. Graduate programs increasingly recognize market adaptation as essential for skill development. Strategic partnerships with national and international institutions, government bodies, and private enterprises help align curricula with industry needs, improving workforce preparedness.

University-industry collaboration is crucial for innovation and economic growth. At UFG, participants report structured support for partnerships despite bureaucratic hurdles. Participant 9 acknowledges: "There is strong encouragement," while Participant 10 highlights administrative support in facilitating agreements. However, resistance to private-sector funding persists due to concerns over academic independence and intellectual property conflicts. Exclusive reliance on public funding limits university competitiveness and market integration (Ribeiro & Alves, 2019). Companies provide valuable resources and expertise, essential for advancing applied research.

While challenges remain, fostering innovation-oriented institutional policies and strategic partnerships can strengthen the societal impact of graduate research, ensuring its long-term relevance and contribution to economic and social development.

#### 4. Conclusions

This study analyzed the integration of Entrepreneurial Orientation in *stricto sensu* graduate programs in administration at Brazilian public universities. The findings reveal a growing convergence between teaching, research, and market demands. However, structural and cultural barriers still limit the consolidation of an innovation-oriented academic culture. Overcoming these challenges requires stronger institutional policies, increased funding, and revised evaluation criteria that consider both scientific output and the practical impact of research. Entrepreneurial education, which has gained momentum over the past 25 years, promotes active, participatory methodologies that foster both technical and socio-environmental competencies (Matthew et al., 2019). This aligns with the entrepreneurial university model, which reconfigures its structures to support innovation, technology transfer, and entrepreneurship, reshaping how science is produced, funded, and taught (Tajpour et al., 2020).

Creating environments that reduce bureaucratic constraints and foster open dialogue between faculty and students is key to nurturing innovation. These settings encourage the development of transversal competencies—leadership, teamwork, and entrepreneurship—crucial for navigating the changing labor market (Abidi et al., 2022; Ratković et al., 2022). Interdisciplinarity and knowledge sharing among research groups amplify universities' social and economic impact (Hormiga et al., 2017; Juliatto et al., 2017). Active methodologies, which emphasize student protagonism, mark a shift from passive to participatory learning (Mota, 2018), enhancing both academic quality and societal relevance.

The transformation of higher education through competency-based models positions professors as facilitators of research with real-world impact (Abidi et al., 2022; Bratianu et al., 2020), reinforcing the importance of skills like proactivity, innovation, and networking (Almasri & Ahmad, 2020). Entrepreneurial orientation thus encompasses practices that increase

the societal relevance of academic work and diversify graduate students' career paths. Organizing academic events fosters collaboration with external actors and helps align research agendas with societal demands. Ultimately, promoting entrepreneurial orientation in graduate education requires integrated efforts to reduce barriers, strengthen academia-market connections, and ensure research translates into applicable solutions.

## Acknowledgment

The authors thank the FAPEMIG (Fundação de Amparo à Pesquisa do Estado de Minas Gerais – Code APQ-01502-22) for the financial support for the research in this article.

## 5. Declarations

### 5.1. Ethical considerations

This research received an ethical statement (No. 6,699,977, dated 03/13/2024) from the Research Ethics Committee on Human Subjects of the Federal University of Viçosa, in accordance with CNS Resolution No. 510/2016. The interviews were conducted in person at the universities, with the voluntary participation of faculty members. Prior to the interviews, participants received and signed the Informed Consent Form (ICF). With authorization, the interviews were recorded and later transcribed for analysis.

### 5.2. Use of artificial intelligence (AI)

The authors declare that the generative artificial intelligence (AI) tool ChatGPT 5.2 was used exclusively for language editing and/or grammatical improvement. The use of AI did not influence the scientific content, study design, data analysis, data interpretation, results, or conclusions of the manuscript. Full responsibility for the content remains with the authors.

### 5.3. Conflict of Interest

The authors declare no conflicts of interest.

### 5.4. Funding

This research received financial support from FAPEMIG (Fundação de Amparo à Pesquisa do Estado de Minas Gerais, Brazil).

## References

- Abidi, O., Nimer, K., Bani-Mustafa, A., & others. (2022). Relationship between faculty characteristics and their entrepreneurial orientation in higher education institutions in Kuwait. *Journal of Innovation and Entrepreneurship*, 11, 12. <https://doi.org/10.1186/s13731-022-00206-7>
- Aga, M. K. (2023). The mediating role of perceived behavioral control in the relationship between entrepreneurship education and entrepreneurial intentions of university students in Ethiopia. *Journal of Innovation and Entrepreneurship*, 12, 32. <https://doi.org/10.1186/s13731-023-00297-w>
- Almasri, O., & Ahmad, A. (2020). Intrapreneurial behaviors and innovative performance: The moderating role of employees' characteristics in commercial banks. *Accounting*, 6(6), 1007–1020. <https://doi.org/10.5267/j.ac.2020.7.018>
- Almeida, E. S., et al. (2017). Método de caso como ferramenta de ensino para integração entre a teoria acadêmica e a prática empresarial. *Olhar de Docente*, 20(2). <https://doi.org/10.5212/OlharProfr.v20i2.0005>
- Amaral, J. A. A. do. (2021). Using project-based learning to teach project-based learning: Lessons learned. *Pro-Posições*, 32, e20180135EN. <https://doi.org/10.1590/1980-6248-2018-0135EN>
- Anderson, B. S., Kreiser, P. M., Kuratko, D. F., Hornsby, J. S., & Eshima, Y. (2015). Reconceptualizing entrepreneurial orientation. *Strategic Management Journal*, 36(10), 1579–1596. <https://doi.org/10.1002/smj.2298>
- Bardin, L. (2011). *Análise de conteúdo* (L. A. Reto & A. Pinheiro, Trans.). Edições 70.
- Blockmans, W. (2020). Medieval universities and empirical research. In *Medieval universities and empirical research* (Chap. 3). Springer. [https://doi.org/10.1007/978-3-030-41834-2\\_3](https://doi.org/10.1007/978-3-030-41834-2_3)
- Brasil Júnior – Confederação Brasileira de Empresas Juniores. (2023). *IES empreendedoras 2023*. [https://drive.google.com/drive/folders/1V\\_WjFuZRhc0-9LBvNC\\_oLVcXt7gOf-OU](https://drive.google.com/drive/folders/1V_WjFuZRhc0-9LBvNC_oLVcXt7gOf-OU)
- Brasil. Coordenação de Aperfeiçoamento de Pessoal de Nível Superior. (2024a). *Avaliação da pós-graduação*. <https://www.gov.br/capes/pt-br/aceso-a-informacao/perguntas-frequentes/avaliacao-da-pos-graduacao>
- Bratianu, C., Hadad, S., & Bejinaru, R. (2020). Paradigm shift in business education: A competence-based approach. *Sustainability*, 12(4), 1348. <https://doi.org/10.3390/su12041348>
- Cabral, T. L. de O., Silva, F. C. da, Pacheco, A. S. V., & Melo, P. A. de. (2020). A CAPES e suas sete décadas: Trajetória da pós-graduação stricto sensu no Brasil. *Revista Brasileira de Pós-Graduação*, 16(36), 1–22. <https://doi.org/10.21713/rbpg.v16i36.1680>
- Castanhar, J. C., Dias, J. F., & Esperança, J. P. (2006). Orientação empreendedora, reconhecimento de oportunidades e desempenho em pequenas e médias empresas brasileiras: Evidências de dois estudos de caso. In *Anais do 30º Encontro Nacional de Programas de Pós-Graduação em Administração (ENANPAD)*.
- Castro, M. H. de M. (2011). Universidades e inovação: Configurações institucionais e terceira missão. *Caderno CRH*, 24(63), 555–574. <https://doi.org/10.1590/S0103-49792011000300007>
- Ceptureanu, E. G., Ceptureanu, S. I., & Popescu, D. I. (2017). Relationship between entropy, corporate entrepreneurship and organizational capabilities in Romanian medium-sized enterprises. *Entropy*, 19, 448. <https://doi.org/10.3390/e19080412>

- Copelli, F. H. D. S., Erdmann, A. L., Santos, J. L. G. dos, Backes, D. S., & Martini, J. G. (2022). Empreendedorismo e educação empreendedora no contexto da pós-graduação em enfermagem. *Revista Gaúcha de Enfermagem*, 43, e20200444. <https://doi.org/10.1590/1983-1447.2022.20200444.pt>
- Covin, J. G., & Slevin, D. P. (1989). Strategic management of small firms in hostile and benign environments. *Strategic Management Journal*, 10(1), 75–87. <https://doi.org/10.1002/smj.4250100107>
- Cristofoletti, E. C., & Serafim, M. P. (2017). A relação universidade–empresa sob diferentes abordagens: Da universidade empreendedora ao capitalismo acadêmico. *Educação*, 40(1), 73–82. <https://doi.org/10.15448/1981-2582.2017.1.22838>
- Curvo, F. E., Mello, G. J., & Leão, M. F. (2023). A gamificação como prática de ensino inovadora: Um olhar para as teorias epistemológicas. *Cuadernos de Educación y Desarrollo*, 15(6), 4972–4994. <https://doi.org/10.55905/cuadv15n6-008>
- Cvijić, M., Tatarski, J., Katić, I., Vekić, A., & Borocki, J. (2019). Entrepreneurial orientation of public universities in the Republic of Serbia: Empirical study. *Sustainability*, 11, 1509. <https://doi.org/10.3390/su11061509>
- Dabić, M., Švarc, J., & González-Loureiro, M. (2018). *Entrepreneurial universities in innovation-seeking countries: Challenges and opportunities*. Palgrave Macmillan. <https://doi.org/10.1057/9781137579829>
- Dal-Soto, F., Souza, Y. S. D., & Benner, M. (2021a). The entrepreneurial orientation in the transformation of universities. *BBR. Brazilian Business Review*, 18(3), 255–277. <https://doi.org/10.15728/bbr.2021.18.3.2>
- Dal-Soto, F., Souza, Y. S. D., & Benner, M. (2021b). Trajetórias basílicas em direção a um modelo de universidade empreendedora. *Educação em Revista*, 37, e20291. <https://doi.org/10.1590/0102-469820291>
- Denzin, N. K., & Lincoln, Y. S. (2006). Introdução: A disciplina e a prática da pesquisa qualitativa. In N. K. Denzin & Y. S. Lincoln (Eds.), *O planejamento da pesquisa qualitativa: Teorias e abordagens* (2nd ed., pp. 15–41). Artmed.
- Etzkowitz, H. (2003). Research groups as “quasi-firms”: The invention of the entrepreneurial university. *Research Policy*, 32(1), 109–121. [https://doi.org/10.1016/S0048-7333\(02\)00009-4](https://doi.org/10.1016/S0048-7333(02)00009-4)
- Etzkowitz, H. (2013). Anatomy of the entrepreneurial university. *Social Science Information*, 52(3), 486–511. <https://doi.org/10.1177/0539018413485832>
- Etzkowitz, H., Germain-Alamartine, E., Keel, J., Kumar, C., Smith, K. N., & Albats, E. (2019). Entrepreneurial university dynamics: Structured ambivalence, relative deprivation and institution-formation in the Stanford innovation system. *Technological Forecasting and Social Change*. <https://doi.org/10.1016/j.techfore.2018.10.019>
- Felcher, C. D. O., & Folmer, V. (2021). Educação 5.0: Reflexões e perspectivas para sua implementação. *Revista Tecnologias Educacionais em Rede (ReTer)*, 2(3), E5/01–15. <https://periodicos.ufsm.br/reter/article/view/67227>
- Feola, R., Parente, R., & Cucino, V. (2021). The entrepreneurial university: How to develop the entrepreneurial orientation of academia. *Journal of the Knowledge Economy*, 12(4), 1–22. <https://doi.org/10.1007/s13132-020-00675-9>
- Fernandes, A. B. (2024). Aprendizagem baseada em problemas e formação acadêmica do administrador. *Revista Educação & Ensino*, 8(1). <https://doi.org/10.71136/ree.v8i1.643>
- Gil, A. C. (1999). *Métodos e técnicas de pesquisa social* (5th ed.). Atlas.
- Gil, A. C. (2002). *Como elaborar projetos de pesquisa*. Atlas.
- Guerrero-Cano, M., Kirby, D., & Urbano, D. (2006). A literature review on entrepreneurial universities: An institutional approach. In *Proceedings of the 3rd Conference of Pre-communications to Congresses*. Autonomous University of Barcelona.
- Guerrero-Cano, M., Urbano, D., Cunningham, J., & Organ, D. (2014). Entrepreneurial universities in two European regions: A case study comparison. *The Journal of Technology Transfer*, 39(3), 415–434. <https://doi.org/10.1007/s10961-012-9287-2>
- Hormiga, E., de Saá-Pérez, P., Díaz-Díaz, N. L., Ballesteros-Rodríguez, J. L., & Aguiar-Díaz, I. (2017). The influence of entrepreneurial orientation on the performance of academic research groups: The mediating role of knowledge sharing. *The Journal of Technology Transfer*, 42(1), 10–32. <https://doi.org/10.1007/s10961-015-9463-2>
- Hostins, R. C. L. (2006). Os Planos Nacionais de Pós-Graduação (PNPG) e suas repercussões na pós-graduação brasileira. *Perspectiva*, 24(1), 133–160.
- Juliatto, D. L., Queiroz, A. H., & Lezana, A. G. R. (2017). A universidade empreendedora. In *Empreendedorismo, inovação e sustentabilidade: Origem, evolução e tendências*. Laboratório de Empreendedorismo e Inovação, UFSC.
- Klein, S. B., & Pereira, F. C. M. (2020). Entrepreneurial university: Conceptions and evolution of theoretical models. *Revista Pensamento Contemporâneo em Administração*, 14(4), 20–35. <https://doi.org/10.12712/rpca.v14i4.43186>
- Kraus, S., Breier, M., Jones, P., & Hughes, M. (2019). Individual entrepreneurial orientation and intrapreneurship in the public sector. *International Entrepreneurship and Management Journal*, 15, 1247–1268. <https://doi.org/10.1007/s11365-019-00593-6>
- Langford, C. H., Hall, J., Josty, P., Matos, S., & Jacobson, A. (2006). Indicators and outcomes of Canadian university research: Proxies becoming goals? *Research Policy*, 35, 1586–1598. <https://doi.org/10.1016/j.respol.2006.09.021>
- Longo, W. P. (1989). Ciência e tecnologia: Evolução, inter-relação e perspectivas. In *Anais do 9º Encontro Nacional de Engenharia de Produção* (Vol. 1, p. 42).
- Lumpkin, G. T., & Dess, G. G. (1996). Clarifying the entrepreneurial orientation construct and linking it to performance. *Academy of Management Review*, 21(1), 135–172. <https://doi.org/10.2307/258632>
- Mamedov, A. K., Lipatova, M. E., & Korkiya, E. D. (2021). Nuevos escenarios para la estrategia de desarrollo universitario en el espacio educativo internacional. *Acta Universitaria*, 11(2), 129–143. <https://doi.org/10.17162/au.v11i2.636>
- Mann, P. (2015). Market logic in higher education: Rethinking with sociological imagination. *International Journal of Research in Finance and Marketing*, 5(4), 1–7. <https://euroasiapub.org/market-logic-in-higher-education-rethinking-with-sociological-imagination/>
- Marmolejo, F. J., & Groccia, J. E. (2022). Reimagining and redesigning teaching and learning in the post-pandemic world. *New Directions for Teaching and Learning*, 2022(169), 21–37. <https://doi.org/10.1002/tl.20480>
- Matthew, J., Mayhew, B. S., Selznick, L., Barnes, A. C., & Staples, B. A. (2019). Examining curricular approaches to developing undergraduates’ innovation capacities. *The Journal of Higher Education*, 90(4), 563–584. <https://doi.org/10.1080/00221546.2018.1513307>
- Mello, C. M., Neto, J. R. M. A., & Petrillo, R. P. (2021). *Educação 5.0: Educação para o futuro*. Freitas Bastos.
- Miller, D. (1983). The correlates of entrepreneurship in three types of firms. *Management Science*, 29(7), 770–791. <https://doi.org/10.1287/mnsc.29.7.770>

- Mintzberg, H. (1973). Strategy-making in three modes. *California Management Review*, 16, 44–53. <https://doi.org/10.2307/41164491>
- Mota, A. R., & Rosa, C. T. W. (2018). Ensaio sobre metodologias ativas: Reflexões e propostas. *Revista de Educação*, 25(2), 261–276. <https://doi.org/10.5335/rep.v25i2.8161>
- Ogassavara, D., et al. (2022). Role playing e suas possibilidades no contexto educacional. *Revista Psicopedagogia*, 39(119), 242–250. <https://doi.org/10.51207/2179-4057.20220021>
- Ostojic, M., & Leko Simic, M. (2021). Students' perceptions of public vs. private higher education institution brand value in Croatia. *Sustainability*, 13(17), 9767. <https://doi.org/10.3390/su13179767>
- Rampazzo, L., & Joslin, E. B. (2017). Identidade, história e desafios da universidade. *Revista Ciência Contemporânea*, 1(1), 75–87.
- Ratković, T., Šlogar, H., & Šokčević, S. (2022). Entrepreneurial competencies of university students. *Economics & Sociology*, 15(4), 129–145. <https://doi.org/10.14254/2071-789x.2022/15-4/6>
- Ribeiro, É. A., & Alves, A. F. (2019). Barreiras e potencialidades da interação universidade–empresa sob a perspectiva de docentes da Universidade Estadual de Maringá. *Acta Scientiarum. Human and Social Sciences*, 41(2), e45679. <https://doi.org/10.4025/actascihumansoc.v41i2.45679>
- Riviezzo, A., Audretsch, D. B., Grimaldi, R., & Kelley, D. (2018). European universities seeking entrepreneurial paths: The moderating effect of contextual variables on the entrepreneurial orientation–performance relationship. *Technological Forecasting and Social Change*, 141, 232–248.
- Rocha, A. K. L. da, Marcondes de Moraes, G. H. S., & Fischer, B. B. (2021). The role of university environment in promoting entrepreneurial behavior: Evidence from heterogeneous regions in Brazil. *Innovation & Management Review*. <https://doi.org/10.1108/INMR-08-2020-0112>
- Salamzadeh, A., Salamzadeh, Y., & Daraei, M. (2011). Toward a systematic framework for an entrepreneurial university: A study in Iranian context with an IPOO model. *Journal of Innovation and Entrepreneurship*.
- Santos, E. G. dos, Maehler, A. E., & Teixeira de Mello, S. P. (2021). A orientação empreendedora na universidade pública: Um estudo de caso. *Revista de Ciências da Administração*, 23(60), 175–197. <https://doi.org/10.5007/1983-4535.2021.e74337>
- Santos, Z. C., & Alves Palmeira, J. A. (2022). Aplicação da aprendizagem baseada em projeto no curso superior de administração: Contribuições na aprendizagem, desenvolvimento de habilidades e formação profissional dos discentes. *Revista GUAL*, 15(2), 65–86. <https://doi.org/10.5007/1983-4535.2022.e84217>
- Santoso, R., Priyanto, S. H., Junaedi, I. W. R., Santoso, D. S. S., & Sunaryanto, L. T. (2023). Project-based entrepreneurial learning (PBEL): A blended model for startup creations at higher education institutions. *Journal of Innovation and Entrepreneurship*, 12(1), 1–22. <https://doi.org/10.1186/s13731-023-00276-1>
- Silva, M. E. F. da. (2020). “Publique ou pereça”: Efeitos do produtivismo acadêmico na produção em periódicos de um programa de pós-graduação em educação (2000–2018). *Revista Inter-Ação*, 45(3), 621–636. <https://doi.org/10.5216/ia.v45i3.61514>
- Silva, M. S. da, Nascimento Queiroz, D. P. do, Abrantes, M. L. F., Cabrera, F. P., Pereira, J. E., Pereira, R. M. S., & Santos, M. L. dos. (2021). A importância da relação dos programas de pós-graduação e do setor produtivo na geração de inovação tecnológica. *Research, Society and Development*, 10(4), e14342. <https://doi.org/10.33448/RSD-V10I4.14342>
- Sistema de Relatórios do Sucupira Beta da CAPES. (n.d.). *Sistema de relatórios do Sucupira*. <https://sucupira-beta.capes.gov.br/sucupira4/painel/ReportSection020dfa75544900701125>
- Souza, A. A. N., & Schneider, H. N. (2022). Da educação 1.0 à educação 3.0: Desafios para a prática docente no século XXI. *Olhar de Docente*, 25, e17555.014.
- Tajpour, M., Kawamorita, H., & Demiryürek, K. (2020). Towards the third generation of universities with an entrepreneurial approach. *International Journal of Technoentrepreneurship*, 4(2), 122–136. <https://doi.org/10.1504/IJTE.2020.10036599>
- Todorovic, Z. W., McNaughton, R. B., & Guild, P. (2011). ENTRE-U: An entrepreneurial orientation scale for universities. *Technovation*, 31(2), 128–137. <https://doi.org/10.1016/j.technovation.2010.10.009>
- van Berkel, K., & Homburg, E. (2023). *The laboratory revolution and the creation of the modern university, 1830–1940*. Amsterdam University Press. <https://doi.org/10.5117/9789463720434>