



Re-viewing the entrepreneurial university: strategic challenges and theory building opportunities

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Abstract Influenced by the neo-liberal economic perspective, in which universities are evaluated based on their contribution to society, the term “Entrepreneurial University” (EU) emerged in the early 1980s. The entrepreneurial university has evolved as a “natural” incubator supporting entrepreneurship, innovation, and sustainability in the university community (e.g., students, alumni, staff, and academics) and beyond civic engagement. Over the last four decades, academic debates on why and how higher education organizations could play this key role have become increasingly important in the business and management literature. It has motivated several special issues published in multidisciplinary academic journals, literature reviews, and theoretical-empirical contributions. However, there is a defragmentation of

the literature given the unique nature of each entrepreneurial university during the current decade and the forced transformation of entrepreneurial organizations due to new (technological and health) paradigms. Therefore, this new decade opens the door for re-viewing the theoretical foundations and empirical evidence of entrepreneurial universities. Inspired by these universities’ challenges, this special issue represented a unique opportunity to build a novel theory that provides an updated theoretical view of the entrepreneurial university phenomenon (e.g., re-conceptualization, re-view missions, re-view business models, re-view metrics), as well as to offer new insights about how the new paradigms have transformed core entrepreneurial university activities (education, research, technology transfer, and entrepreneurship), strategies, and interconnectedness with ecosystems. This introductory paper encouraged an in-depth multidisciplinary conversation within the management and related research community from different

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socio-economic settings to make theoretical and empirical contributions. As a result, six papers have contributed to this special issue and provide several implications for different stakeholders.

Plain English Summary Over the last four decades, academic debates on why and how higher education organizations could play this key role have become increasingly important in the business and management literature. It has motivated several special issues published in multidisciplinary academic journals, literature reviews, and theoretical-empirical contributions. However, there is a defragmentation of the literature given the unique nature of each entrepreneurial university during the current decade and the forced transformation of entrepreneurial organizations due to new (technological and health) paradigms. Therefore, this new decade opens the door for re-viewing the theoretical foundations and empirical evidence of entrepreneurial universities. Inspired by these universities' challenges, this special issue represented a unique opportunity to build a novel theory that provides an updated theoretical view of the entrepreneurial university phenomenon.

Keywords Entrepreneurial universities · Entrepreneurial universities' core activities · Entrepreneurial universities' strategic perspective · Entrepreneurial universities ecosystems

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1 Introduction

Influenced by the neo-liberal economic perspective, in which universities are evaluated based on their contribution to society, the term “Entrepreneurial University” (EU)¹ emerged in the early 1980s by describing universities that leverage their scientific knowledge through new types of income (Etzkowitz, 1983). In

most countries, universities (especially the public ones) have been increasingly distressed to “return the public funding to the community.” Nowadays, the entrepreneurial university has evolved as a “natural” incubator that provides support for fostering entrepreneurship, innovation, and sustainability in the university community (e.g., students, alumni, staff, and academics) and beyond through their civic engagement (Audretsch, 2014; Fini et al., 2018; Guerrero & Lira, 2023; Guerrero & Urbano, 2012). In this perspective, the EU has played an important role in highlighting social, economic, and sustainable development through academe's interrelated core activities: (i) developing human capital through teaching that supplies highly qualified graduates to business/industry; (ii) creating new knowledge and innovations through research; (iii) commercializing research results to society via technology transfer and knowledge-exchange activities; and (iv) engagement with civic community via co-creation initiatives (Compagnucci & Spigarelli, 2020; Fayolle & Redford, 2014; Guerrero et al., 2006, 2015).

Over the last four decades, academic debates on why and how higher education organizations could play this key role have become increasingly important in business management literature, which resulted in the publication of several special issues in this topic in various academic journals (Fini et al., 2018; Grimaldi et al., 2011; Guerrero et al., 2016; Jungblut & Lee, 2022; Klofsten et al., 2019; Link et al., 2008; Mowery & Shane, 2002; Siegel & Leih, 2018; Wright et al., 2004). This exponential growth of academic publications has led to multiple theoretical and methodological approaches for reviewing the extant literature to discover how entrepreneurial universities attract cutting-edge researchers, educate students, facilitate knowledge transfers, encourage new venture creation, notably science-based spinoffs, diffuse, and promote entrepreneurial culture, thus influencing and shaping regional entrepreneurial ecosystems and building innovation communities (Arroyabe et al., 2022; Cai & Ahmad, 2023; Cerver Romero et al., 2021; Compagnucci & Spigarelli, 2020; Forliano et al., 2021; Guerrero et al., 2006; Rothaermel et al., 2007; Schmitz et al., 2017; Secundo et al., 2019b). Moreover, the empirical evidence has shown that each entrepreneurial university is unique. They have faced multiple strategic challenges based on their contexts concerning entrepreneurial pathways, internal and external factors, types of education programs and their modes

¹ Other terms used to refer to this type of university include “University Technological Transfer” (Dill, 1995), “Market Universities” (Slaughter and Leslie, 1997), “Innovative Universities” (Clark, 1998), “Engaged university” (Benneworth, 2012; Breznitz & Feldman, 2012; Bridger & Alter, 2006), and “Academic Enterprise” (Crow et al., 2020).

of delivery, and the associated impact measures (Guerrero et al., 2015; Miller et al., 2018; Klofsten et al., 2019; Cunningham & Miller, 2021; Forliano et al., 2021; Guerrero & Dábic, 2023). It is noteworthy that during the current decade, we have observed the forced transformation of entrepreneurial organizations particularly in the technological and health sectors due to significant paradigm shifts (Guerrero, 2021), and entrepreneurial universities have not been the exception (Guerrero & Pugh, 2022).

Regarding the new digital technology paradigm, Klofsten et al., 2019 (p. 151) claim that “to respond to digital challenges and achieve stakeholders’ goals, entrepreneurial university’s leaders should transform their internal factors into digital technologies (e.g., artifacts, platforms, infrastructures) for conducting entrepreneurial and innovative initiatives (Nambisan, 2017; Nambisan et al., 2018; Rippa & Secundo, 2019). This means working or fostering strategic organizational capabilities such as digital human capital, a digital culture, digital support infrastructure, digital teaching, research practices, and a dynamic digital presence”. Nowadays, we know that digital technologies are making a deep impact on societies worldwide, drawing us into a new era of a globalized digital economy based on knowledge and mobility (Nambisan et al., 2017). Digitalization is, as evoked previously, for entrepreneurial universities, a source of strategic, financial, and technological challenges and new opportunities to re-view their missions, educational offerings, research, and entrepreneurship pursuits (Liguori & Winkler, 2020; Shepherd, 2020).

Regarding the new health/societal paradigms, the sudden and unexpected appearance of the long-persisting COVID-19 pandemic has forced an agile response from entrepreneurial universities to their stakeholders’ needs (e.g., move very quickly from offline education to remote learning or hybrid teaching models) (Guerrero & Urbano, 2021). In this respect, the entrepreneurial dimension of these universities has also played a key role in facilitating the technology transfer among research labs in industry, academia, and the government to control the coronavirus’s spread (Siegel & Guerrero, 2021). The COVID-19 pandemic is questioning and challenging fundamental assumptions in the field of entrepreneurship “that may require a research pivot, that is, that may require a change in research direction on specific topics” (Shepherd, 2020: 1750). For entrepreneurial universities, the emergence of the “normal life” paradigm represents an opportunity to re-view the core activities, business

models, organizational capabilities, strategic partnerships, and stakeholders’ demands (Guerrero & Dábic, 2023).

In sum, to face these new digital and health paradigms, the entrepreneurial university leadership should act ambidextrously with agile methodology to prepare numerous strategies, seek creative solutions, and be flexible in the face of continuous changes. Therefore, this new decade characterized by exponential changes opens the door for re-viewing the theoretical foundations and empirical evidence of entrepreneurial universities. Inspired by these universities’ challenges, this special issue represents a unique opportunity to help build a novel theory that provides an updated theoretical view of the entrepreneurial university phenomenon (e.g., re-conceptualization, re-view missions, re-view business models, re-view metrics), as well as to offer new insights about how the new paradigms have transformed core entrepreneurial university activities (education, research, technology transfer, and entrepreneurship support) and business models. From this perspective, the special issue is aimed to encourage an in-depth multidisciplinary conversation within the management and related research community (entrepreneurship, technology, sociology, economics, geography, health, and others) from different socio-economic settings to make theoretical and empirical contributions.

For this special issue, we received over 100 extended abstracts, of which we invited 12 best-suited submissions to continue our editorial screening process by soliciting the full paper manuscripts. In the end, six papers were accepted, which contributed to this special issue.

This introductory paper is structured as follows. In Section 2, we re-view the extant literature on entrepreneurial universities. In Section 3, we re-view the entrepreneurial university’s current strategic challenges presented in the six papers featured in this special issue. Then, in Section 4, we re-view the entrepreneurial university theory-building opportunities by offering several implications and a research agenda. Finally, in Section 5, we provide our concluding remarks.

2 Re-viewing entrepreneurial universities’ accumulated literature

2.1 Theoretical foundations

Our past 40 years of review show that the literature on entrepreneurial universities has been fragmented.

The first group of researchers focused on articulating and extending the definition of this phenomenon as it emerged. Table 1 depicts the evolution in the definition of the entrepreneurial university. From 1983 to 2004, influenced by the U.S. Bayh Dole Act, several authors defined an entrepreneurial university as an organization that involves the diversification of multiple outcomes or new sources of income, such as new faculty ventures, spin-offs or commercialization of technology through patents, licenses (Chrisman et al., 1995; Clark, 1998; Dill, 1995; Etzkowitz, 1983, 2003; Jacob et al., 2003; Kirby, 2002; Röpke, 1998; Shane, 2004; Subotzky, 1999). Consequently, the notion of entrepreneurial scientists, academic entrepreneurs, knowledge commercialization, technology transfer, and research group entrepreneurship emerged as a new research line. From 2005 to 2014, influenced by the Global Challenges Declaration in higher education, the entrepreneurial university definition also incorporated outcomes associated with the need for community engagement engaged entrepreneurship, and graduate entrepreneurship were coined (Benneworth, 2012; Bridger & Alter, 2006; Guerrero & Urbano, 2012). From 2014 to 2023, influenced by the United Nations Agenda on the Sustainable Development Goals (SDGs) and new technological paradigms, the entrepreneurial university definition incorporated the intersection between entrepreneurship and innovation (Autio et al., 2014), the catalyst contribution in sustainable, social, and economic development due to the central role within entrepreneurial and innovation ecosystems (Audretsch, 2014; Guerrero et al., 2015; Cai & Ahmad, 2023; Guerrero & Lira, 2023), the ambidexterity view of academic enterprise (Crow et al., 2020), and frugal entrepreneurial innovations (Fischer et al., 2021; Roncancio-Marin et al., 2022).

A second group of researchers offered conceptual and theoretical frameworks for understanding the determinants, strategic processes, outcomes, and impacts of entrepreneurial universities (see Table 2). Clark (1998) identifies five common transformational pathways of EUs: (1) a strengthened steering core, (2) an expanded developmental periphery, (3) a diversified funding base, (4) a stimulated academic heartland, and (5) an integrated entrepreneurial culture. Guerrero and Urbano (2012) propose/test a framework that explains the internal and external determinant factors to achieve the EU missions. Markuerkiaga et al. (2014) integrate a framework that proposes internal

and external determinants. Leih and Teece (2016) explored how strategic thinking and capabilities enhance a university's competitive fitness and long-term survival. Wright et al. (2017) included university ecosystem mechanisms to facilitate student entrepreneurship, along with a continuum of involvement from pre-accelerators through to accelerators and incubators; the involvement of a variety of entrepreneurs, support actors, and investors; the nature of the university environment and the external context; and their evolution over time. Cunningham et al. (2022) focus on the exploration and exploitation stages per each stage of the entrepreneurship process. Most recently, Meek and Gianiodis (2023) proposed different pathway that considers the inputs, processes, and outcomes for each pertinent stakeholder group.

A third group revised the accumulated literature from 1983 to the present (see Table 3). Guerrero et al. (2006) reviewed the literature about the formal-informal environmental factors that affect the creation and development of the EU. These authors contributed toward the evolution of definitions and a proposed formal-informal environmental framework for the EU. Rothaermel et al. (2007) provided an overview of the research evolution of EUs and proposed a taxonomy. Schmitz et al. (2017) explored scientific literature on innovation and entrepreneurship in the academic setting to contribute to definitions, theoretical frameworks, and empirical models and identify research gaps. Secundo et al. (2019b) reviewed knowledge management (KM) literature to contribute to emerging streams in KM: transfer, creation, processes, and regional development. Compagnucci and Spigarelli, (2020) reviewed the state of knowledge of the EU missions and contributed to the third mission definitions, shifts, paths, and impacts. Cai and Ahmad (2023) reviewed the research gap by integrating conceptual and empirical literature about the reforms of the university. They contributed toward the sustainable entrepreneurial university phenomenon. Cerver Romero et al. (2021) reviewed the different theoretical approaches to the EU prevalent in the literature and identified six EU approaches: Triple Helix, knowledge society, globalized perspective, researcher vs. entrepreneur, dual personality, and frenzy. Forliano et al. (2021) reviewed the EU in the business and management fields and proposed three evolutionary stages of the EU literature: 1983–2009, 2010–2014, and 2015–2018. Arroyabe et al. (2022)

Table 1 Selected definitions of entrepreneurial universities

Year	Author	Definition	Focus
1983	Etzkowitz	“Universities that are considering new sources of funds like patents, research under by contracts and entry into a partnership with a private enterprise”	Entrepreneurial scientists
1995	Chrisman et al	The entrepreneurial university involves “the creation of new business ventures by university professors, technicians, or students.”	Faculty entrepreneurship
1995	Dill	“University technology transfer is defined as formal efforts to capitalize upon university research by bringing research outcomes to fruition as commercial ventures. Formal efforts are, in turn, defined as organizational units with explicit responsibility for promoting technology transfer.”	University-industry entrepreneurship
1998	Clark	An entrepreneurial university, on its own, seeks to innovate in how it goes to business. It seeks to work out a substantial shift in organizational character so as to arrive at a more promising posture for the future. Entrepreneurial universities seek to become “stand-up” universities that are significant actors in their own terms”	Innovation entrepreneurship
1998	Röpke	“An entrepreneurial university can mean three things: the university itself, as an organization, becomes entrepreneurial; the members of the university -faculty, students, employees- are turning themselves somehow into entrepreneur; and the interaction of the university with the environment, the “structural coupling” between university and region, follows entrepreneurial patten”	Academic entrepreneurship
1999	Subotzky	“The entrepreneurial university is characterized by closer university-business partnerships, by greater faculty responsibility for accessing external sources of funding, and by a managerial ethos institutional governance, leadership, and planning”	New modes of knowledge production
2002	Kirby	“As at the heart of any entrepreneurial culture, entrepreneurial universities have the ability to innovate, recognize and create opportunities, work in teams, take risks and respond to challenges	University entrepreneurship
2003	Etzkowitz	“Just as the university trains individual students and sends them out into the world, the entrepreneurial university is a natural incubator, providing support structures for teachers and students to initiate new ventures: intellectual, commercial and conjoint.”	Research group entrepreneurship
2003	Jacob et al	An entrepreneurial university is based on both commercialization (customs made further education courses, consultancy services, and extension activities) and commoditization (patents, licensing or student-owned star-ups)”	Commercialization and commoditization entrepreneurship

Table 1 (continued)

Year	Author	Definition	Focus
2004	Shane	“An important catalyst for the facilitation of academic entrepreneurship, which in turn generates regional economic and social development through the added value created by the identification and exploitation of entrepreneurial opportunities.”	Academic entrepreneurship
2006	Bridger & Alter	“The engaged university works in partnership with local people to facilitate the broad range of community interaction that fosters individual and social well-being”	Community engagement entrepreneurship
2012	Guerrero & Urbano	“The entrepreneurial university has emerged as a “natural” incubator that provides support for fostering entrepreneurship and innovation in the university community (e.g., students, alumni, staff, and academics) and beyond”	Academic & graduates entrepreneurship
2012	Benneworth	“Societal institutions evolve in parallel with broad transformation in society”	Engaged entrepreneurship
2014	Audretsch	“While the entrepreneurial university has a mandate to facilitate the commercialization of university research and generate startups and new ventures, the role of the university in the entrepreneurial society is considerably broader and more fundamental—to provide thinking, leadership and activity to enhance entrepreneurship capital. The goal of the university in the entrepreneurial society is not just to promote technology transfer and increase the number of startups but to ensure that people thrive in the emerging entrepreneurial society”	Technology Transfer and Commercialization
2014	Autio et al	“It is a university that is able to take a crucial role in both the entrepreneurial and innovation ecosystem to generate entrepreneurial innovations”	Entrepreneurial innovations
2015	Guerrero et al	“An important catalyst for socio-economic development”	Academic & graduate entrepreneurship
2020	Crow et al	“The academic enterprise is a broad-based organizational logic that attempts to recharacterize both the organization and its governance around identifying and pursuing new opportunities that help achieve critical social outcomes”	Academic enterprise
2021	Cai & Ahman	“The notion of an entrepreneurial university needs to be replaced by a more suitable concept to capture the unprecedented changes in universities in the societal transformation”	Sustainable entrepreneurship
2021	Fischer et al	“Universities that foster frugal innovations and connect them to markets, the surrounding innovation ecosystems in which the university is embedded and the overarching institutional framework”	Frugal entrepreneurial innovations

Table 1 (continued)

Year	Author	Definition	Focus
2022	Roncancio-Marin et al	“Universities that promote different forms of non-commercial AE even in the absence of sophisticated resources for innovation, through the stimulation of the specific human capital of the university community resulting from activities where they help others	Social Entrepreneurial Innovations
2023	Guerrero & Lira	“An entrepreneurial university ecosystem contributes to the UN SDGs’ achievement through its core activities and social-entrepreneurial orientation”	Entrepreneurial university engagement with SDGs

Source: Adapted from Guerrero et al. (2006)

Table 2 Selected theoretical frameworks of entrepreneurial universities

Authors	Conceptual frameworks	Contributions
Clark (1998)	The transformation pathways of EUs	By analyzing five EUs, the author identifies five common transformational elements: (1) a strengthened steering core, (2) an expanded developmental periphery, (3) a diversified funding base, (4) a stimulated academic heartland, and (5) an integrated entrepreneurial culture
Guerrero and Urbano (2012)	Conditional internal and environmental factors in the development of the EU	By adopting the RBV and the institutional approach, the authors propose/test a framework that explain the internal and external determinant factors to achieve the EU university missions
Markuerkiaga et al. (2014)	Determining factors of the EU	By analyzing previous frameworks, the authors integrate a framework that propose three determinants: internal, external, and strategic
Leih and Teece (2016)	Relationship between campus leadership and organizational-level dynamic capabilities	By comparing strategic decisions and leadership propensities, the authors explored how strategic thinking and capabilities enhance university’ competitive fitness and long-term survival
Wright et al. (2017)	University entrepreneurship ecosystem	By including university mechanisms to facilitate student entrepreneurship, along with a continuum of involvement from pre-accelerators through to accelerators; the involvement of a variety of entrepreneurs, support actors and investors; the particular nature of the university environment and the external context; and their evolution over time
Cunningham et al. (2022)	Organizational architecture of the EU through the stages of entrepreneurship	By categorizing the organizational units, the authors focus on the exploration and exploitation stages per each stage of the entrepreneurship process
Meek and Gianiodis (2023)	The existing EUM does not adequately account for the true costs borne by participating stakeholders	By adopting the stakeholder approach, the authors propose different pathway that considers the inputs, processes, and outcomes for each pertinent stakeholder group

Source: Authors

Table 3 Selected literature review of entrepreneurial universities

Reference	Objective	Method	Period	Contributions
Guerrero et al. (2006)	Review the literature about the formal-informal environmental factors that affect the creation and development of the EU	Literature review	1983–2005 (170 papers)	Definitions and framework for the EU
Rothaermel et al. (2007)	An overview of the research evolution on EUs	Literature review	1983–2005 (173 papers)	Taxonomy of an EU
Schnitz et al. (2017)	Explore scientific literature on innovation and entrepreneurship in the academic setting	Bibliometric analysis	2003–2015 (168 papers)	Definitions, theoretical frameworks, empirical models, and research gaps
Secundo et al. (2019b)	Review knowledge management (KM) literature	Bibliometric analysis	(150 papers)	Emerging streams in KM: transfer, creation, processes, regional development
Compagnucci and Spigarelli, (2020)	Review the state of knowledge of the EU missions	Systematic literature review	2004–2019 (134 papers)	Third mission: definitions, shifts, paths, and impacts
Cai and Ahmad (2021)	Review the research gap by integrating conceptual and empirical literature about the reforms of university	Literature review	1991–2019 (126 papers)	Identified a sustainable entrepreneurial university
Cerver Romero et al. (2021)	Identify the different theoretical approaches to the EU prevalent in the literature	Co-citation and bibliometric analysis	1983–2018 (479 papers)	Six EU approaches: Triple Helix, Knowledge Society, globalized perspective, researcher vs. entrepreneur, dual personality, frenzy
Forliano et al. (2021)	Investigating the EU in the business and management fields	Bibliometric analysis	1983–2018 (511 papers)	Propose of the three evolutionary stages of the EU literature: 1983–2009, 2010–2014, and 2015–2018
Arroyabe et al. (2022)	Identify the different underlying topics and to outline avenues for fruitful future research	Bibliometric and text mining	1983–2020 (1110 papers)	Identification of 20 topics of the EU: the decline of case studies and emerging of capabilities and alliances
Dábic et al. (2022)	Identify the evolution of university spin-off literature	Systematic literature review and multiple corresponding analysis	1986–2020 (488 papers)	Insights into the analytical trends of the past, current evidence on the configuration of USOs, and discussions of the future of USO research

Source: Authors

reviewed the different underlying topics, outlined avenues for fruitful future research, and identified 20 topics of the EU: the decline of case studies and the emergence of capabilities and alliances. Dabić et al. (2022) reviewed the evolution of university spin-off (USOs) literature to provide insights into the analytical trends of the past, current evidence on the configuration of USOs, and discussions of the future of USO research.

Given the previous views, the fourth group of researchers re-conducted entrepreneurial university research through different special issues (see Table 4). Mowery and Shane (2002) facilitated a cross-disciplinary discussion about university entrepreneurship. This special issue published in *Management Science* contributed to new approaches, relations between the university and private sector, mechanics (mechanisms?) for entrepreneurship, the creation of new ventures, and commercialization. Wright et al. (2004) encouraged the study of entrepreneurship in the context of university technology transfer. This special issue published in the *Journal of Business Venturing* contributed to new approaches, such as the nature of the EU, regional economy engine, academic transition, and balancing research and entrepreneurship. Etzkowitz and Zhou (2008) looked at building the EU's global approach in a special issue published in *Science and Public Policy*. Link et al. (2008) addressed EU's third mission's managerial and policy implications. This special issue published in the *IEEE Journal of Engineering Management* contributed to new approaches, such as institutional theory, organizational learning, and RBV. Grimaldi et al. (2011) considered the evolving role of universities in the third mission. This special issue published in *Research Policy* contributed to new empirical evidence, such as scientist entrepreneurship, university IPR regulations, invention disclosures, the entrepreneurial orientation of individual academics, Bayh-Dole legislation, and university-level support mechanisms. Guerrero et al. (2016) addressed emerging EU models in the new social and economic landscape. This special issue published in *Small Business Economics* contributed to new roles of the EU as divers

of innovation and entrepreneurship, as well as new approaches like internationalization, TTO awareness, opportunism, knowledge intermediaries, performance, and entrepreneurial practices. Siegel and Leih (2018) examined the university's strategic challenges. This special issue published in *Strategic Organization* contributed to new emerging approaches and tools for managing universities' inventions, partnering with industry, and promoting socio-economic development. Fini et al. (2018) focused on re-thinking from entrepreneurial outcomes to societal impacts. This special issue published in the *Academy of Management Perspectives* contributed to the emerging view of scientific commercialization's dual social and economic contribution. Guerrero and Urbano (2019) examined the effectiveness of technology transfer policies and legislation in fostering entrepreneurial innovations across continents. This special issue published in the *Journal of Technology Transfer* contributed to an overview of legitimizing the EU's crucial role through technology transfer related public policies worldwide. Klofsten et al. (2019) examined strategic challenges that the EU currently encounters. This special issue published in *Technological Forecasting and Social Change* contributed to new paths for managing ambidexterity tensions, maximizing the creation of regional benefits, ecosystem and spillovers, and the post-incubation process. Jungblut and Lee (2022) explore new approaches to their study and suggest novel analyses on the topic. This special issue published in *Studies in Higher Education* contributed by extending roles related to education cooperation, career intention, internship activities, social entrepreneurship, and regional development.

The aforementioned fragmented theoretical view warranted the need to re-view the EU's core activities, its strategic approaches and ecosystem development perspective. This special issue aims to offer theory-building opportunities and provide an update on strategic challenges studied in broader multidisciplinary research settings. The following section presents our review of the accumulated empirical evidence spread along various phases and employs the co-words analysis technique (reference?).

Table 4 Selected special issues of entrepreneurial universities

Guest Editors	Journal	Focus	Contributions
Mowery and Shane (2002)	Management Science	Facilitate a cross-disciplinary discussion about the university entrepreneurship	Approaches: relations between the university and private sector, mechanics for entrepreneurship, the creation of new ventures and commercialization
Wright et al. (2004)	Journal of Business Venturing	Study of entrepreneurship in university technology transfer	Approaches: spin-out level (typologies, evolution, and resources), and university level (internal resources and processes)
Eitzkowitz and Zhou (2008)	Science and Public Policy	Building the EU global approach	Approaches: nature of the EU, regional economy engine, academic transition, balancing research, and entrepreneurship
Link et al. (2008)	IEEE	Address the managerial and policy implications of UE's third mission	Approaches: institutional theory, organizational learning, RBV
Grimaldi et al. (2011)	Research Policy	Consider the evolving role of universities in the third mission	Empirical evidence: scientist entrepreneurship, university IPR regulations, invention disclosures, the entrepreneurial orientation of individual academics, Bayh-Dole legislation, and university-level support mechanisms
Guerrero et al. (2016)	Small Business Economics	Emerging EU models in the new social and economic landscape	Roles: EU as divers of innovation and entrepreneurship Approaches: internationalization, TTO awareness, opportunism, knowledge intermediaries, performance, entrepreneurial practices
Stiegel and Leih (2018)	Strategic Organization	Examine the university's strategic challenges	Emerging approaches and tools for managing universities' inventions, partnering with industry, and promoting socio-economic development
Fini et al. (2018)	Academy of Management Perspectives	Re-think from entrepreneurial outcomes to societal impacts	Emerging view: the dual social and economic contribution of scientific commercialization
Guerrero and Urbano (2019)	Journal of Technology Transfer	Effectiveness of technology transfer policies and legislation in fostering entrepreneurial innovations across continents	Emerging views: technology transfer policies, entrepreneurial innovation definitions, and worldwide view
Klofsten et al. (2019)	Technological Forecasting and Social Change	Examine strategic challenges that the EU currently encounters	Approaches: paths for managing ambidexterity tensions, maximizing the creation of regional benefits, ecosystem, and spillovers, and post-incubation process
Jungblut and Lee (2022)	Studies in Higher Education	Explore new approaches to their study and suggest novel analyses on the topic	Approaches: text mining Roles: education-cooperation, career intention, internship, activities, social entrepreneurship, regional development Factors: governance, ecosystems

Source: Authors

2.2 Empirical evidence²

Figure 1 illustrates the five trends that have been observed in the 361 empirical publications over the last two decades. Firstly, before 2003, there were few empirical publications on entrepreneurial universities. Secondly, between 2005 and 2009, there was a gradual increase in the number of empirical publications, with most of them focused on regional economic development. Thirdly, from 2010 to 2014, there was a notable steady growth in the number of empirical publications, with most of them concentrating on the intersection between innovation and entrepreneurship ecosystems. Fourthly, from 2015 to 2019, there was a quick expansion in empirical publications that focused on a global approach and expanded the third university mission. Finally, from 2020 to 2022, a sustained number of empirical publications were mostly influenced by the current global social and health challenges. These empirical studies were published in top-tier journals³ in entrepreneurship, management, economics, and technology.

Regarding co-words⁴ Fig. 2 illustrates our re-view of the three core clusters (core activities, strategies,

² Methodological note: We reviewed the accumulated empirical literature using the Web of Science database for its well-documented reliability in the realm of citation data processing (Di Guardo & Harrigan, 2012; Loi et al., 2016). Following Cerver Romero et al. (2021), we selected articles that incorporated the term “Entrepreneur * Universit *” in the title, abstract, or keywords in English language journals in the categories of management, entrepreneurship, and business within the 20 years window between 1993 and 2022. The analysis focused on the publications themselves and examined various variables such as authors and their affiliations, publication journals, citation frequencies, and references cited in these scholarly works. After a rigorous search process, a total of 361 empirical papers (published in English) between 1994 and 2022 were included in the analysis.

³ Listed journals are in alphabetical order: *Academy of Management Perspectives*, *Journal of Business Venturing*, *Industrial and Corporate Change*, *International Journal of Technology Management*, *Research Policy*, *Small Business Economics Journal*, *Strategic Management Journal*, *Technovation*, *Journal of Management Studies*, *Technological Forecasting and Social Change*, *The Journal of Technology Transfer*, and among others.

⁴ Methodological note: The co-word analysis is an impactful methodological approach to examine the co-occurrence of keywords or strategic terms within a set of academic papers (Castrionta et al., 2019; Castrionta et al., 2021; Loi et al., 2023). The co-word analysis provides insights into research trends and intellectual dynamics of a particular field of study (Castrionta et al., 2021). By examining the co-occurrence of terms, a reading of empirical papers on entrepreneurial universities offers insights into the re-view of central themes: core activities, strategies, and ecosystems.

and ecosystems) pertaining to the empirical evidence on entrepreneurial universities.

In the first cluster [black], the re-view of the core activity view of the EU accentuates the importance of recognizing and balancing social and economic interests among all EUs stakeholders (Clauss et al., 2018; Corazza & Saluto, 2021; Gianiodis & Meek, 2020). Therefore, the collaboration between universities and N-Helix actors (industry, government, non-profit organizations, civil communities) becomes a cornerstone of the re-review of EUs’ core activities to overcome current societal challenges (Guerrero & Pugh, 2022; Ibáñez et al., 2021; Secundo et al., 2019a). This research stream reveals challenges in evaluating these collaborative projects, emphasizing the need for a more comprehensive approach to performance evaluation. Moreover, EUs continue to face challenges in knowledge transfer and commercialization (Guerrero et al., 2019; Paoloni et al., 2021), particularly in achieving sustainable impacts (Audretsch & Belitski, 2022) and fostering internationalization (Baier-Fuentes et al., 2021). Likewise, the relevance of higher education regulations and policies has driven the modern EU’s core activities, especially due to the new technological paradigms (Chang et al., 2021; Guerrero et al., 2021a, b; Rippa & Secundo, 2019; Unger et al., 2020). In addition, some authors have recently questioned the contribution of entrepreneurship education to prepare entrepreneurs (Eesley & Lee, 2021). By re-viewing the EU’s core activities, the empirical evidence reveals an intersection among core activities, such as teaching, research, technology transfer and commercialization, community engagement, and sustainable approaches. However, the integration of these core activities across university departments/colleges is still unknown.

In the second cluster [gray], there is re-view of the strategic orientation that enable university leadership to act entrepreneurial, innovative, and sustainable to navigate into the complex societal and economic landscape. This leverages the effective allocation of resources, infrastructures, capabilities, and intellectual outcomes (Lamine et al., 2018; Liu & Huang, 2018). An entrepreneurial and innovative strategic identity involves re-viewing the university’s organizational culture (Leih & Teece, 2016), university governance and financial performance (Balasubramanian et al., 2020; Heaton et al., 2023), managing dynamic capabilities (Heaton et al., 2020), the configuration

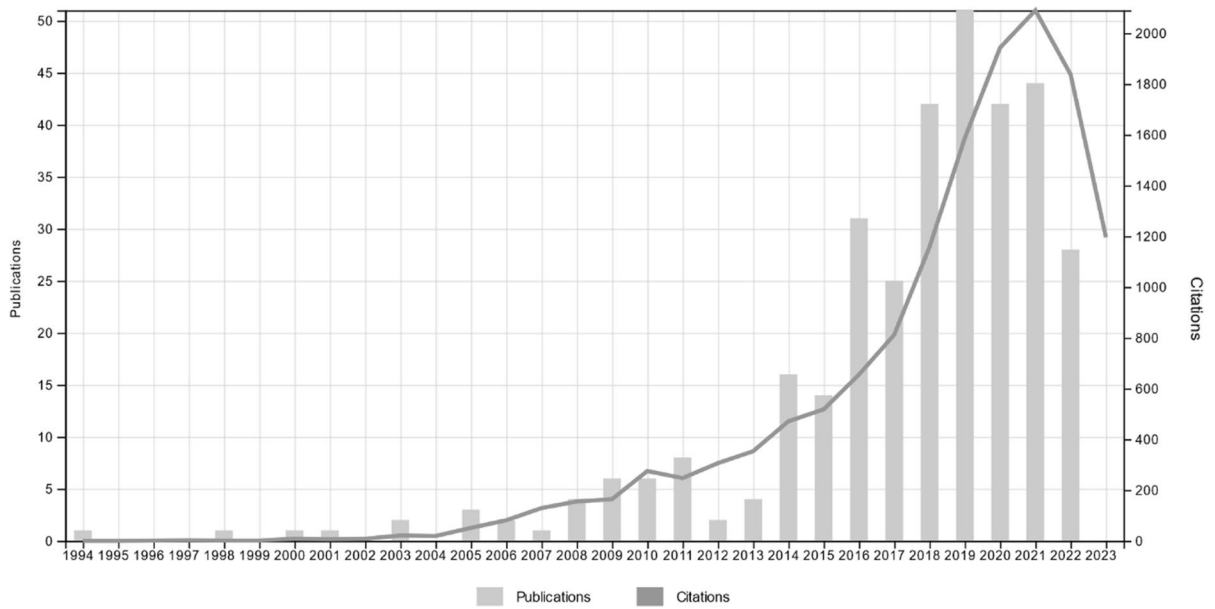


Fig. 1 Distribution of the 361 empirical papers and citations from 1994 to 2022. Source: Authors

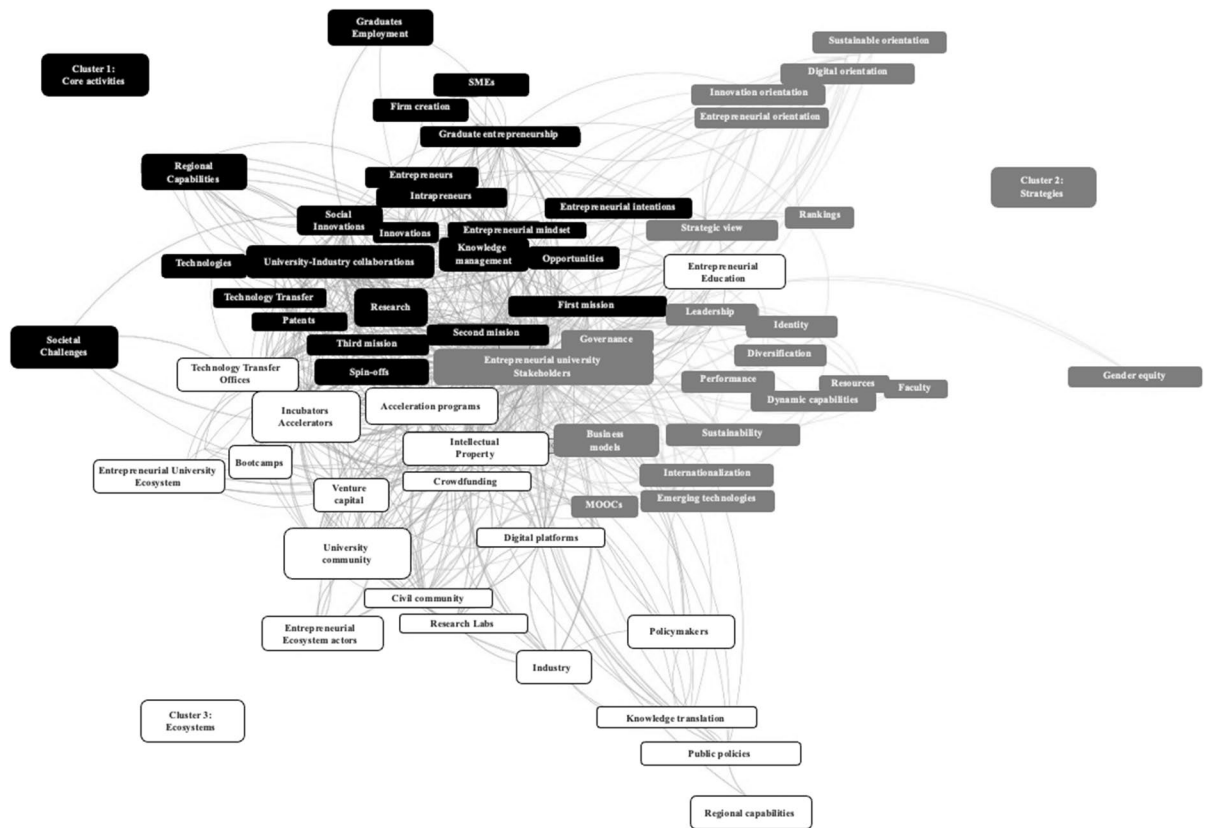


Fig. 2 Co-word analysis of the 361 empirical papers and citations from 1994 to 2022. Source: Authors

Table 5 Special issue's papers

Dimension	Author	Objective	Methodology	Findings	Contributions	Implications	Research agenda
Core activity's re-view	Borman et al	The authors examine the design and delivery of lean social launch (LSL), a socially oriented derivative of the emerging lean launch method	Data was collected from individuals participating in derivative interventions during 7 years of delivery. Concretely, 98 interviews with a follow-up	The authors found that by broadening the context in which opportunities are identified and creating value, LSL attracts individuals who might not otherwise participate in entrepreneurial activities	LSL provides participants with pathways to social and commercial value creation and serves as a venue for socially focused entrepreneurial identity play, an important antecedent to entrepreneurial behavior	How universities implement and coordinate supportive program and policy interventions embodied within entrepreneurship ecosystems	Enterprising scholars might thus draw from promising facets of LSL and other entrepreneurship education approaches to engage and serve distinct student populations (undergraduate students, doctoral students, postdocs)
Strategic re-view	Karahan	The study delves into a sustainable entrepreneurial university (SEU) concept	A multiple-case study of four German university business incubators (UBIs)	The author identifies six distinct sustainability transformation stages and proposes a stylized model to explain the emergence of sustainability in UBIs	The author proposed a stylized model of UBI sustainability transformations	The study illustrates several implications for HEI leadership, UBI leadership and employees, and policy makers	Transformation activities Transformation trajectories Sustainable entrepreneurial university Sustainable entrepreneurial ecosystems
	Choi et al	The authors examine the relationship between role conflict and scientists' propensity to engage in AE	Data came from 391 scientists at 25 U.S. research universities	The authors confirm that foreign-born scientists are well-positioned for AE and that engagement in AE mediates the positive impact of foreign-born status on entrepreneurial identity	The authors hypothesize that foreign-born scientists are more adept at developing an entrepreneurial identity and managing role conflict, which makes them more likely to engage in AE than their domestic counterparts	The results imply that a more open immigration policy will generate higher levels of AE	Future research on entrepreneurial identity should focus on ambidexterity, in relation to scientists' entrepreneurial identity, to understand how to promote entrepreneurial university without compromising academic rigor
	Hahn et al	The authors study the effect of exploration and exploitation in universities research on the early-stage equity financing of university spin-offs (USOs)	Using a unique dataset that covers a sample of 739 USOs from 39 Italian public universities founded during 2011–2019	The authors found that exploration and exploitation in originating universities' research has different and opposite effects on USOs' early-stage external equity financing	This study endorses the value of imprinting in explaining the relationship between the EU and USOs' development trajectories, by focusing on different patterns in university research as the genesis of imprinting	University leaders can learn that allocating resources to exploration research patterns. Likewise, academic scientists interested in developing their research by founding USOs and academic entrepreneurs can learn that if they come from universities strong in research exploration	Future research could rely on experimental research designs to observe which specific characteristics of USO parent universities are appealing to external equity investors

Table 5 (continued)

Dimension	Author	Objective	Methodology	Findings	Contributions	Implications	Research agenda
Ecosystem re-view	Politis et al	The authors propose a framework that identifies social, behavioral, cognitive, and affective drivers of alumni engagement	A sample of 493 entrepreneurship graduates from the Venture Creation Programs (VCP) at three major universities in Scandinavia	The authors suggested that alumni engagement is multifaceted, encompassing providing and connecting functions	A proposed framework of alumni engagement	This study suggests university leaders and entrepreneurship educators can target, recruit, nurture, and facilitate groups of alumni most likely to engage with the entrepreneurial university	The authors encourage researchers to focus on how entrepreneurship education and university managers may prepare students for becoming engaged alumni
	Wurth et al	The authors develop a programmatic theory of the entrepreneurial university	Drawing on in-depth quantitative and qualitative fieldwork and the literature in the UK	The authors capture the stemness and the interdependencies between universities' entrepreneurial activities and their dynamic capabilities	The paper highlights how universities are part of a larger system and how this influences their external engagement activities	Policy makers should focus beyond commercialization and support pro-active capacity and network building	A more holistic understanding of entrepreneurial universities that reconciles existing work and guides future research

Source: Authors

of teams in technology transfer and commercialization environments (Eesley et al., 2014), managing the incorporation of emerging technologies like artificial intelligence tools (Guerrero et al., 2021a, b; Rippa & Secundo, 2019; Teece, 2018), and the re-configuring of absorbing capabilities for the transformation of regional capacity buildings (Fischer et al., 2019, 2021; Grzegorzczuk, 2019), likewise, the EU's openness to a strategic internationalization approach (Corsi et al., 2023). By re-viewing the EU's strategies, the empirical evidence reveals the EU's strategic metamorphosis balancing resources, capabilities, stakeholders' demands, and outcomes (Guerrero & Pugh, 2022). However, the integration of identity, diversity, equity, and accessibility in the EU's strategies is still unknown.

In the third cluster [white], the re-view of the ecosystem view of the EU reveals the catalyst role of universities within innovation and entrepreneurial ecosystems worldwide. The ecosystem dimension of the EU is a vibrant and open multifaceted landscape. Empirical studies have mainly overfocused on the configuration of the university ecosystem to foster student entrepreneurship (Allahar & Sookram, 2019; Moraes et al., 2023; Wright et al., 2017), academic entrepreneurship (Aerts et al., 2022; Heaton et al., 2019; Rippa & Secundo, 2019), entrepreneurial community (Guerrero et al., 2017, 2020; Bedó et al., 2021), or a sustainable orientation (Audretsch et al., 2023; Guerrero & Lira, 2023). A few studies have empirically explored the bidirectional linkages between EU's core activities and the innovation and entrepreneurship ecosystems (Schaeffer et al., 2021). It implies an urgent re-view of the absorptive capacity between university actors and ecosystem actors in the co-creation or knowledge transfer and production of entrepreneurial (social or digital) innovations (Miller et al., 2016), but also how universities enhance regional capabilities or transform higher education regulations across developed and developing economies (Guerrero et al., 2021a, b). By reviewing the EU's ecosystems, the empirical evidence reveals the societal legitimization of the crucial role of universities in local/regional innovation and entrepreneurship ecosystems, as well as the contribution to socio-economic development, well-being, and regional capacity building. However, the multiple impacts of the EU's outcomes and multi-directional linkages with ecosystem' actors are still unknown.

Table 6 Research agenda on entrepreneurial universities

Dimension	Themes	Research question
Core activities re-view	<ol style="list-style-type: none"> (1) Re-conceptualization of the entrepreneurial university phenomenon (2) Re-view the core activities (e.g., teaching, research, technology transfer, and entrepreneurship) and their metrics (3) Re-orientation of the teaching activities (e.g., the negative and positive impact of online pedagogies on the entrepreneurial mindsets, intentions, competencies, behaviors, and actions) (4) Re-orientation of research and technology transfer activities/policies (5) Re-definition of entrepreneurial, digital, and innovative initiatives promoted by the entrepreneurial university community (students, academics, researchers, staff) 	<ul style="list-style-type: none"> • How do the core activities of entrepreneurial universities evolve in response to changing technological landscapes? • What are the emerging pedagogical approaches to fostering entrepreneurial mindsets among students? • How do universities balance traditional research activities with the increasing emphasis on technology transfer and entrepreneurship? • What are the emerging metrics for evaluating the success of entrepreneurial activities within universities? • How do digital transformation initiatives impact the core activities of entrepreneurial universities? • How do entrepreneurial universities integrate interdisciplinary studies into their core activities to foster innovation? • What role does mentorship play in enhancing the entrepreneurial activities of students and faculty within universities? • How do entrepreneurial universities adapt their curricula to reflect real-world entrepreneurial challenges and opportunities? • What are the implications of global collaborations and partnerships on the core activities of entrepreneurial universities? • How do entrepreneurial universities ensure ethical considerations in their research, technology transfer, and entrepreneurial endeavors?
Strategic perspectives re-view	<ol style="list-style-type: none"> (1) Re-definition of entrepreneurial orientation, strategic business models, and innovative academic models (2) Re-building of the dynamic capabilities across the entrepreneurial universities' core activities (3) Re-definition of the entrepreneurial university ambidexterity patterns (exploration and exploitation) (4) Re-view what, when, and how university managers measure the effects of current socio-economic paradigms on entrepreneurial university activities 	<ul style="list-style-type: none"> • How do entrepreneurial universities adapt their strategies in response to global economic shifts? • What emerging strategic partnerships are entrepreneurial universities forming to enhance their impact? • How do universities balance the need for immediate entrepreneurial outcomes with long-term research goals (short-term vs. long-term strategies)? • What are the implications of global socio-economic changes on the strategic positioning of entrepreneurial universities? • How do entrepreneurial universities' strategies align with national and regional innovation agendas? • How do entrepreneurial universities align their strategic goals with the United Nations' Sustainable Development Goals (SDGs)? • What strategies are entrepreneurial universities employing to attract and retain top entrepreneurial talent (both faculty and students)? • How do entrepreneurial universities leverage alumni networks for strategic advantage in entrepreneurial activities? • In what ways are entrepreneurial universities adapting their strategies to cater to the needs of diverse student populations, including non-traditional students and lifelong learners? • How do geopolitical shifts and global events (e.g., pandemics and economic crises) influence the strategic planning of entrepreneurial universities?

Table 6 (continued)

Dimension	Themes	Research question
Ecosystem integration re-view:	<p>(1) Re-view challenges and opportunities faced by the university-based entrepreneurial ecosystems</p> <p>(2) Re-view the emergence of new types of support mechanisms for enhancing entrepreneurship in the entrepreneurial university community (students, academics, researchers, staff) based on the stakeholders' needs (society, government, industry)</p> <p>(3) Re-view the level of participation of the entrepreneurial university in the local entrepreneurial and innovation ecosystem response to the new socioeconomic paradigms</p> <p>(4) Re-view the entrepreneurial university scholarly impacts on promoting the implementation of new regulations, actions, or dialogues about the big societal challenges with ecosystems' agents</p>	<ul style="list-style-type: none"> • How do entrepreneurial universities engage with local communities to foster a vibrant entrepreneurial ecosystem? • What are the emerging roles of entrepreneurial universities in shaping regional and national innovation policies? • How do universities collaborate with industry partners to co-create value in the entrepreneurial ecosystem? • What are the best practices for universities to engage with governmental agencies in promoting entrepreneurship? • How do entrepreneurial universities navigate the challenges and opportunities of global innovation networks? • How do entrepreneurial universities engage with local communities to foster a vibrant entrepreneurial ecosystem? • What are the emerging roles of entrepreneurial universities in shaping regional and national innovation policies? • How do universities collaborate with industry partners to co-create value in the entrepreneurial ecosystem? • What are the best practices for universities to engage with governmental agencies in promoting entrepreneurship? • How do entrepreneurial universities navigate the challenges and opportunities of global innovation networks?

Source: Authors

3 Re-viewing entrepreneurial university's current strategic challenges

3.1 Special issue

Six papers were accepted for this special issue. Two papers contribute to each of our three re-view dimensions (see Table 5).

3.2 Special issue contributions

3.2.1 Core activity re-view

Borman et al. (2023) argue that entrepreneurship education has long been framed as a crucial component of the entrepreneurial university core activities. However, the predominantly commercial focus of academic entrepreneurship potentially limits theorizing about how academic units not otherwise involved in entrepreneurship contribute to the entrepreneurial university. The authors examine the design and delivery of lean social launch (LSL), a socially oriented derivative of the emerging lean launch method. Adopting a qualitative approach, 98 interviews were conducted over a 7-year period, which included follow-up interviews. The authors found that by broadening the context in which opportunities are identified and creating value, LSL attracts individuals who might not otherwise participate in entrepreneurial activities. In addition, LSL provides participants with pathways to social and commercial value creation and serves as a venue for socially focused entrepreneurial identity play, an important antecedent to entrepreneurial behavior. This paper's re-view suggests a re-orientation of the core teaching activities (e.g., the negative and positive impact of online pedagogies on entrepreneurial mindsets, intentions, competencies, behaviors, and actions).

Karahan (2023) argues that while limited research has investigated HEI's sustainability transformations, only a few studies applied an explicit entrepreneurial perspective and explored its implications for the EU. To address this gap, this study delves into a sustainable entrepreneurial university (SEU) concept, which aligns the EU model with sustainable development principles. The study focuses on sustainable university business incubators (UBIs) as primary entrepreneurship institutions within the emerging SEU model. By investigating how

the pursuit of an SEU model affected four German UBIs, the author explores through a multiple-case study design the sustainability transformation processes of these UBIs. The author identifies six distinct sustainability transformation stages and proposes a theoretical model to explain the emergence of sustainability in UBIs. The study illustrates that SEU sustainability impacts evolve over time and that continuous leadership commitment is required. This paper's re-view of core activities suggests that SEUs strategically engage in external partnerships with alternating functions. It provides insights about metrics, re-orientation of research, and technology transfer activities and policies of the core teaching activities (e.g., the negative and positive impact of online pedagogies on entrepreneurial mindsets, intentions, competencies, behaviors, and actions).

3.2.2 Strategic re-view

Choi et al. (2023) argue that university scientists have been strongly encouraged by administrators to engage in academic entrepreneurship (AE), via patenting, licensing, and startup formation, a key aspect of the rise of "entrepreneurial universities." The authors examine the relationship between role conflict and scientists' propensity to engage in AE. The proposed model starts with the realization that academics contemplating AE struggle with multiple identities as scientists and entrepreneurs and their different roles. Specifically, the authors hypothesize that foreign-born scientists are more adept at developing an entrepreneurial identity and managing role conflict, which makes them more likely to engage in AE than their native-born counterparts. The empirical results, based on data from 391 scientists at 25 US research universities, confirm that foreign-born scientists are well-positioned for AE and that engagement in AE mediates the positive impact of foreign-born status on entrepreneurial identity. The results imply that a more open immigration policy will generate higher levels of AE.

Hahn et al. (forthcoming) argue that universities should evolve to best reconcile their different missions, particularly in research and commercialization, which often require different sets of resources. The authors study the effect of exploration and exploitation in university research on the early-stage equity financing of university spin-offs (USOs). They used a unique

dataset covering 739 USOs from 39 Italian public universities founded during 2011–2019. The authors found that exploration and exploitation in originating universities' research have different and opposite effects on USOs' early-stage external equity financing.

3.2.3 Ecosystem re-view

Politis et al. (2023) contribute to re-viewing entrepreneurial universities by expanding the understanding of the role and impact of alumni engagement in this context. Embedded in a stakeholder theory perspective, the authors propose a framework that identifies social, behavioral, cognitive, and affective drivers of alumni engagement. The authors conducted statistical analyses using a sample of 493 entrepreneurship graduates from the Venture Creation Programs (VCP) at three major universities in Scandinavia. They suggested that alumni engagement is multifaceted, encompassing providing and connecting functions. Furthermore, their analysis also suggests social, behavioral, and affective drivers to accelerate alumni engagement. The authors encourage researchers to focus on how entrepreneurship education and university managers may prepare students for becoming engaged alumni.

Wurth et al. (forthcoming) argue that much of the entrepreneurial university literature overemphasizes commercialization activities in certain types of universities but is de-contextualized and does not consider the systems in which universities operate. The authors develop a programmatic theory of the entrepreneurial university based on in-depth quantitative and qualitative fieldwork and the relevant literature. Using causal loop diagrams, the authors capture the stemness and the interdependencies between universities' entrepreneurial activities and their dynamic capabilities. The paper also highlights how universities are part of a larger system and how this influences their external engagement activities. The result is a more holistic understanding of entrepreneurial universities that reconciles existing work and guides future research.

4 Re-viewing entrepreneurial university theory building and empirical opportunities

It is time to encourage researchers to continue contributing theoretically and empirically to a

better understanding of entrepreneurial universities. Table 6 summarizes the research agenda themes to guide theory-building and empirical research opportunities in each dimension: (1) core activities re-view, (2) strategic perspectives re-view, and (3) ecosystem integration re-view. Specifically, each dimension includes central themes and several research questions to address them.

4.1 Core activity's re-view

- (1) Re-conceptualization of the entrepreneurial university phenomenon
- (2) Re-view the core activities (e.g., teaching, research, technology transfer, and entrepreneurship) and their metrics
- (3) Re-orientation of the teaching activities (e.g., the negative and positive impact of online pedagogies on the entrepreneurial mindsets, intentions, competencies, behaviors, and actions)
- (4) Re-orientation of research and technology transfer activities/policies
- (5) Re-definition of entrepreneurial, digital, and innovative initiatives promoted by the entrepreneurial university community (students, academics, researchers, staff)

4.2 Strategic perspective's re-view

- (1) Re-definition of entrepreneurial orientation, strategic business models, and innovative academic models
- (2) Re-building of the dynamic capabilities across the entrepreneurial universities' core activities
- (3) Re-definition of the entrepreneurial university ambidexterity patterns (exploration and exploitation)
- (4) Re-view what, when, and how university managers measure the effects of current socio-economic paradigms on entrepreneurial university activities

4.3 Ecosystem integration re-view

- (1) Re-view challenges and opportunities faced by the university-based entrepreneurial ecosystems

- (2) Re-view the emergence of new types of support mechanisms for enhancing entrepreneurship in the entrepreneurial university community (students, academics, researchers, staff) based on the stakeholders' needs (society, government, industry)
- (3) Re-view the level of participation of the entrepreneurial university in the local entrepreneurial and innovation ecosystem response to the new socio-economic paradigms
- (4) Re-view the entrepreneurial university scholarly impacts on promoting the implementation of new regulations, actions, or dialogues about the big societal challenges with ecosystems' agents

5 Conclusions

The entrepreneurial university phenomenon has been theoretically and empirically studied over the past four decades. The accumulated literature has been fragmented and warranted a re-view of its common themes to reinvigorate the concept with a better understanding of this phenomenon. Specifically, the integration of its core activities, strategies, and ecosystem actors in the current socio-economic landscape was analyzed under the contemporary entrepreneurship, economics, innovation, and management perspectives. For the development of the entrepreneurial university concept, it is crucial to navigate these approaches to further articulate a successful future model. The hope is that this special issue will motivate researchers, practitioners, and ecosystem actors to help navigate a vibrant role for entrepreneurial universities.

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