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**Beyond Myth: A Systematic Literature Review on the Emergence of Unicorn Firms**

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**Abstract**

**Purpose** – This study aims to provide a systematic and comprehensive examination of the underlying factors enabling the emergence of unicorn firms. By addressing this research gap and offering an integrative framework, it seeks to support future research efforts in understanding this phenomenon and contribute to the academic debate around it.

**Design/methodology/approach** – This study employs a systematic literature review (SLR) approach and thematic analysis of articles retrieved from Scopus and Web of Science databases.

**Findings** – The study sheds light on internal characteristics, ranging from the entrepreneurial (human capital and knowledge) to firm-specific level (business model, corporate governance, resources), and external ones related to the funding factors (financial patterns, venture capitalists, firm evaluation) and the ecosystem (entrepreneurial and technology) around the phenomenon of unicorn firms.

**Originality** – This is the first systematic literature review on unicorns that offers insights into the internal and external factors driving the emergence of such firms, contributes to shed light on the main

criticalities that blur their understanding, and presents a research agenda for developing this field of research.

**Keywords:** unicorns; entrepreneurship; systematic literature review; research agenda

## 1. Introduction

In 2013, venture capitalist Aileen Lee adopted the term “unicorn” to describe privately held firms valued at least 1 billion USD. While at that time, only 39 companies were forming the exclusive “unicorn club” (Lee, 2013), today, more than 1,200 belong to this categorization (Crunchbase, 2023). Furthermore, despite representing only a tiny fraction of global business, unicorns include a wide representation of disruptive companies such as Airbnb, Uber, and TikTok, making them an interesting observation unit for management scholars (Trabucchi *et al.*, 2019; Brown and Wiles, 2020; Urbinati *et al.*, 2020; Cristofaro *et al.*, 2023).

Nevertheless, a stream of academics philosophically criticized the attention given and the efforts deployed to research unicorns (e.g., Ruef *et al.*, 2023). Notably, Aldrich and Ruef (2018) and Kuckertz *et al.* (2023) critically assessed how entrepreneurship research investigated fast-growing firms such as unicorns, gazelles, and other “fantastic ventures” (e.g., Coad and Karlsson, 2022; De Gennaro *et al.*, 2023) –, identifying several potential pitfalls and calling for scholars to focus their efforts on studying everyday entrepreneurs instead. Aldrich and Ruef (2018) point out that the exceptional success of unicorns is rare; hence their study might paint a skewed picture of entrepreneurship, deviating significantly from the typical experiences of most entrepreneurs. They further caution that the constant spotlight on these firms could foster unrealistic expectations for students, entrepreneurs, and policymakers, leading to policy and practice decisions that may not be in the best interest of the broader entrepreneurial landscape. Indeed, by studying more ordinary and widespread firms, valuable insights are offered that can inform more effective policies and practices for entrepreneurship. Kuckertz *et al.* (2023) echo these concerns, affirming that prioritizing firm valuation over genuine value creation can lead to resource inefficiencies and depletion, especially when venture capital-backed firms overshadow more efficient competitors, a dynamic that could result in resource misallocation and stifle innovation within the entrepreneurial ecosystem. The combination of these critiques raises questions over the validity of the unicorns’ myth, which may be more reflective of flawed valuation mechanisms rather than tangible improvements in entrepreneurial value creation.

Yet, the amount and heat of academic debate and disagreement around unicorns may be considered a testament to their relevance and controversy for society and the economy. Four streams of arguments that have emerged in the academic debate: *i*) the use of the “one billion USD valuation” parameter to identify unicorns brings complications when comparing firms across different periods, due to variables like inflation and currency devaluation, making the concept “ambiguous and subject to manipulation” (Kuckertz *et al.*, 2023, p. 4); *ii*) the classification of unicorns as startups or scaleups (e.g.,

Piaskowska *et al.*, 2021; Rodrigues and De Noronha, 2021; Menon and James, 2022) remains imprecise, particularly regarding both “the point in time a startup has to reach the valuation threshold and the time span it needs to stay above it” (Kuckertz *et al.*, 2023; p. 2); *iii*) the societal and economic impacts brought by unicorns (Balampanidis *et al.*, 2021; Fageda, 2021); and *iv*) the analysis of environmental conditions that enable the inception and accelerate the birth and valuation of potential unicorns (Kabbara and Hagen, 2023; Venâncio *et al.*, 2023), including the role of venture capital in promoting rapid growth, and whether it leads to improved performance and value generation for stakeholders (Kuckertz *et al.*, 2023).

Despite the growing and lively interest, the intellectual and practical debates, and the criticisms raised towards the study of unicorns, research on the phenomenon is still at an early stage, is mostly fragmented, and often produces either contradictory or narrowed findings and insights. In this context, many research questions are still open, particularly for the emergence of unicorns (Kuckertz *et al.*, 2023). Therefore, scholars are moving towards a more holistic approach by linking a series of internal (e.g., founder/CEO and venture characteristics) and external (e.g., investment characteristics and media coverage) factors to the speed at which firms reach the unicorn threshold (Kotha *et al.*, 2022). However, these studies tend to focus more on the whys investigation rather than the hows. To contribute to the advancement of scholarly research in understanding the emergence of unicorns (e.g., Kotha *et al.*, 2022; Kuckertz *et al.*, 2023), this study aims to systematize the available findings and provide some theoretical order by addressing the following research questions: *What are the underlying factors enabling the emergence of unicorn?*, and *How are these factors influencing the emergence of unicorns?*

To answer this question and develop a comprehensive and integrative framework in support of future research efforts, a Systematic Literature Review (SLR) of the studies investigating unicorns has been conducted and identified 35 peer-reviewed articles published since 2015, the year when the first academic articles about unicorns appeared. This study offers several contributions in terms of theory, methodology, and practice. It contributes to systematizing the academic debate about unicorns by offering a balanced and comprehensive account of the factors contributing to the emergence of unicorns. It presents a systematic review supported by a thematic analysis. By developing an interpretative framework based on the thematic clusters identified in the literature we provide researchers and practitioners with a clearer picture of the internal and external factors that have been driving the phenomenon of unicorns. The framework can serve practitioners and policymakers in understanding the levers affecting the emergence of unicorns. The developed research agenda contributes to the advancement of the research around unicorns, and more in general fast-growing firms, by offering direction and identifying promising research avenues. The identification of relevant literature can further support entrepreneurs, policymakers and practitioners in search of practical insights for better grasping and exploiting resources, market trends, and financial opportunities. Furthermore, the article provides insights by disentangling how the key drivers synergistically enable firms to become unicorns.

The paper is organized as follows. In the next section, the review protocol and methods are explained. Then, results are presented, shedding light on the key findings derived from the systematic review. The following section discusses these findings and develops a research agenda outlining potential avenues for further investigation. Finally, the implications, conclusions, and limitations of the study are presented.

## **2. Methodology**

This study employed a systematic approach to review the literature, drawing on the works of Cook *et al.* (1997), Tranfield *et al.* (2003) and Denyer *et al.* (2008). The systematic method, originally developed in the UK medical profession to enhance evidence-based research, has since found extensive application across various fields, including management analysis, as noted by Thorpe *et al.* (2005). The objective of this method is to comprehensively gather and link relevant existing studies through a structured and systematic literature review process (Callahan, 2014). In particular, this method differs from the traditional narrative reviews in: *i*) assisting in linking future research to the questions and concerns that have been posed by past research and *ii*) being more explicit in the selection process by employing rigorous and reproducible evaluation methods.

Aligned with recent systematic assessments of entrepreneurship literature (e.g., Caputo *et al.*, 2016; Dabić *et al.*, 2021; Theodoraki *et al.*, 2022), this study established a set of inclusion and exclusion criteria in support of the search protocol. Moreover, a consulting panel of subject experts, independent from the authors and including five highly influential scholars in the field, was arranged to refine the research scope, select keywords, validate the search string, and develop the inclusion and exclusion criteria.

### *2.1 Search protocol*

The search protocol was developed to systematically identify all the scientific contributions that have been devoted to investigating unicorns.

To conduct systematic literature reviews, researchers typically search for publications primarily on abstracts retrieved from databases, notably Elsevier's Scopus and Clarivate Analytics' Web of Science (WOS). The coverage of these databases varies significantly across different research areas, leading to potential variations in the results of systematic literature reviews depending on the chosen database (Mongeon and Paul-Hus, 2016). While many scholars tend to rely on a single database due to methodological hurdles and familiarity, the integration of more databases is advisable, and recent methodological developments outlined processes to do so and ensure the replicability of results (Caputo and Kargina, 2022). For this research, given the extensive coverage of management and entrepreneurship literature, both Scopus and Web of Science, the most widely used databases, have been used.

The search protocol comprised six main steps, outlined as follows (see also Figure I).

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1. Previous contributions on the topic were identified by combining Web of Science and Scopus online databases with an initial review informed by the author's knowledge of the field and the suggestions of the panel of subject experts;
2. Based on the initial review, a set of keywords was developed, and to reduce the likelihood of missing important contributions, a broad string was developed and run respectively on Web of Science's Core Collection,  $TS=(\text{"unicorn*" OR "decacorn*" OR "hectocorn*"})$ , and Scopus,  $TITLE-ABS-KEY(\text{"unicorn*" OR "decacorn*" OR "hectocorn*"})$  – the search was last updated on May 29<sup>th</sup>, 2023 and it resulted in 2,390 and 2,803 records, respectively;
3. Inclusion criteria considered only peer-reviewed journal articles published in English, and only papers belonging to either the “management”, “business”, “accounting” or “business finance” categories were considered. 136 articles were included at this stage. It is important to note that although we included the keywords “decacorn\*” and “hectocorn\*” in our search – as such nouns are commonly used in practice to describe unicorn firms that have achieved valuations of 10 and 100 USB, respectively (Wisson, 2022) – no article was found with the keyword “hectocorn\*”, while for “decacorn\*” only two articles included this term in either their title, keywords, or abstract;
4. Because the databases have overlaps, duplicates were eliminated following prescriptions by Caputo and Kargina (2022). 100 results were retained at this stage;
5. The resulting articles were scanned by reading all the abstracts to ensure their substantive context. To ensure inclusiveness and limit human error, all the resulting records were then matched and disagreements were solved through panel discussions. Following Caputo *et al.* (2016), two main criteria were considered to retain relevant literature: pertinence and coherence with the research objective. 61 articles were retained at this stage;
6. The remaining articles were further scanned by reading all the full texts to ensure their alignment with the research question. Each researcher individually compiled a list of relevant articles.
7. Subsequently articles were compared using the pertinence and coherence criteria. Through a series of panel discussions, a final list of articles to be thoroughly read and examined was collectively agreed upon. At this stage, the authors agreed to exclude 4 articles from the clustering analysis – namely, Aldrich and Ruef (2018), Kotha *et al.* (2022), Kuratko and Audretsch (2022), and Kuckertz *et al.* (2023) – because they were not coherent with the research question. However, as these papers concern the debate around the overall validity of researching unicorns, they have been discussed across the paper to inform the analysis. 33 articles met the criteria and were considered further.

8. Following Caputo (2013), a snowballing technique was deployed to support the results of the previous steps. While reading the 33 articles, each researcher cited references that may be relevant to include the literature reviews. These references were then examined and collectively agreed upon for inclusion.

The final sample considered 35 articles published from 2015 until 2023.

## 2.2 Analyses

The final sample of 35 papers has been analyzed through a two-step procedure for content analysis. First, for each article in the sample, the following elements were exported in Microsoft Excel: *i*) author(s), *ii*) year of publication, *iii*) type of paper, *iv*) data collection method, *v*) data analysis method, and *vi*) main results; this procedure allowed us to have an overall understanding of how the literature is organized and has developed over time as well as to derive descriptive statistics.

Second, we systematically reviewed the 35 articles by means of an inductive thematic analysis. To do so, we followed the six steps proposed by Braun and Clarke (2006): *i*) familiarizing yourself with your data, *ii*) generating initial codes, *iii*) searching for themes, *iv*) reviewing themes, *v*) defining and naming themes, and *vi*) producing the report. To do so, we have iteratively examined the text of the articles, categorizing passages in any section that discussed relevant information for answering the study's research question.

This allowed us to identify 39 initial codes (i.e., concepts derived from the raw data and information investigated within all 35 articles) such as 'psychological and behavioral characteristics', 'financial sustainability', and 'growth speed'. Then, for convenience, we have implemented a double-step procedure for generating themes: the 39 codes were initially grouped according to their unit of analysis and then according to their level of analysis, arriving at the creation of four global themes (i.e., entrepreneurial factors, firm-specific factors, funding factors, and ecosystem factors). Moreover, for better analysis and to produce a meaningful report, global themes have been aggregated into two inclusive dimensions (i.e., internal and external factors), as illustrated in Figure II. The objective of this process was twofold: *i*) to inductively understand the specific underlying factors that enable the emergence of unicorns, and *ii*) to establish the foundations for creating an interpretative framework.

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## 3. Results

### 3.1 Descriptive Statistics

This section presents a descriptive statistics analysis, which contributes to creating a comprehensive, relevant, and well-aligned research agenda by providing valuable insights into the landscape of academic literature.

Specifically, the articles composing the dataset are published in over 30 journals, of which 9 were classified in the 2021 Academic Journal Guide by the Chartered Association of Business Schools (CABS). Most of the articles of the data set are part of the Business, Management and Accounting subject area (25 articles), followed by Economics, Econometrics and Finance (9), and Social Sciences (1).

As shown in Figure III, the first peer-reviewed articles on unicorns trace back to 2015 (Brown and Wiles, 2015; Fenwick and Vermeulen, 2015), two years after the term “unicorn” was first introduced to characterize companies valued at least 1 billion USD (Lee, 2013). It is meaningful that of the 35 articles on unicorns related to the 2015-2023 time span, half of them were published in the last three years. Interestingly, despite the paper collection has been completed at the end of May 2023, an equivalent number of articles to those published throughout the entirety of 2021 have already been released; this may be correlated with the growing practical importance of the phenomenon that is signaled, among others, by the growth of unicorns’ collective market value equal to \$869 billion as of May 2023 from \$41 billion in 2015 (Crunchbase, 2023).

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Concerning the authors’ affiliation, most authors are from European institutions (42 authors over the total of 107 authors), followed by Asian (30 authors), and North American (25). Regarding collaborations among authors, the majority of papers are the result of intra-country collaborations, only five papers are co-authored among scholars whose affiliation is in different countries. Among the inter-country collaborations, the majority happens between European and non-European scholars.

Regarding the research design adopted, it appeared that the majority of the 35 articles had an empirical approach (26 articles) – qualitative (9 articles) analyzing case studies (Barot and Chhaniwal, 2018) or implementing a thematic analysis (Wang *et al.*, 2022); quantitative (12 articles) focusing in the majority of cases on US unicorns (Chernenko *et al.*, 2021; Malyy *et al.*, 2021; Kartanaitė and Krusinskas, 2022) and adopting regression (Chernenko *et al.*, 2021) and cluster analysis (Piaskowska *et al.*, 2021), and following mixed method approach (5 articles) such as fsQCA technique (Torres and Godinho, 2022). The rest of the papers were conceptual (9 articles), investigating a particular phenomenon such as financing patterns (Mittal and Madan, 2020) or entrepreneurial ecosystems (Chillakuri *et al.*, 2020).

Finally, almost all 35 articles refer to unicorns as private companies exceeding the market value of one billion dollars. However, the choice to use the “one billion USD valuation” parameter is debated

because it can make it difficult to compare firms across different periods due to variables such as inflation and currency devaluation (Kuckertz *et al.*, 2023). In this respect, Gornall and Strebulaev (2020) demonstrate that in a sample of 135 unicorns, almost one-half lose their unicorn status when their value is expressed on a fair value basis. Moreover, 19 articles consider unicorns as start-ups (e.g., Rodrigues and De Noronha, 2021; Menon and James, 2022; Torres and Godinho, 2022), while two articles as scale-ups (Piaskowska *et al.*, 2021; Burström *et al.*, 2023). Clearly, the current fragmentation of literature on these ventures contributes to the lack of clarity about their characteristics.

### 3.2 Systematic literature review analysis

The following subsections are devoted to reviewing the two dimensions – ‘internal factors’ and ‘external factors’ enabling the emergence of unicorns –, identified via an inductive content analysis of the 35 selected peer-reviewed articles, synthesizing the findings, and then setting the stage for a research agenda. Specifically, 19 papers are related to internal factors, while 16 refer to external factors. For each dimension, two levels of analysis have been identified, i.e., entrepreneurial and firm-specific factors, for the internal dimension, and venture capital industry and ecosystem factors, for the external one. Furthermore, for each level of analysis, one or more units of analysis have emerged. It is worth noticing that the distribution of the scientific production is not homogeneous across the identified levels and units of analysis (see Table I).

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#### 3.2.1 Internal factors

Among the contributions related to the ‘internal factors’, the majority deal with firm-specific factors (15 articles out of 19), while only 4 articles focus on entrepreneurs’ characteristics. Firm-specific factors are mainly analyzed, focusing on the business model of unicorns (8 articles out of 15), adopting empirical methods, both quantitative, qualitative, and mixed. Instead, all 4 articles pointing to entrepreneurial factors refer to human capital and knowledge of founders and entrepreneurs of unicorns and have been investigated following conceptual and qualitative methods.

##### 3.2.1.1 Entrepreneurial factors

This first cluster is the smallest one, and it is composed of 4 articles. Papers belonging to this cluster analyze the human capital and knowledge of founders and entrepreneurs of unicorns. The cluster is composed of conceptual and qualitative studies that are mainly focused on a specific country (e.g., China) (Jinzhi and Carrick, 2019) and on a specific company (e.g., Snapchat) (Cristofaro *et al.*, 2023).



Starting from the new venture growth literature (Gilbert *et al.*, 2006), which disentangles the key enablers of firms' growth, Jinzhi and Carrick (2019) investigate the role of founders' scientific and management capabilities in fostering the early growth of unicorns. Specifically, the authors highlight the strategic function of funders in combining resources together and forming strategic alliances. Another aspect considered by the authors is the unique previous knowledge and capabilities of founders, especially in managing start-ups and fostering innovation. Recent authors adopted a dynamic approach, focusing on the evolution of founders' strategic decision-making and biases and their role in firms' development (Abatecola *et al.*, 2022; Cristofaro *et al.*, 2023). Adopting a behavioral strategy approach, scholars discover that there is a network effect between founders' and investors' decisions, which are intertwined, and one influences the other (Abatecola *et al.*, 2022; Cristofaro *et al.*, 2023). During the evaluation of a start-up, investors use positive memories as a benchmark to find similarities with the company in successful unicorns. The start-up is classified as a potential unicorn if these similarities are found. Founders then search for confirming evidence to support investors' positive feelings, eventually establishing the start-up as a unicorn through biased framing and increased financial commitment.

A different perspective has been taken by Kutsenko *et al.* (2022), who investigate the migration of unicorn founders as a driver for innovative activity. Results revealed that 40% of unicorns were founded with the participation of foreign founders. Surprisingly, unicorns created by migrants attract the same amount of venture capital as those composed by natives but on average, are valued 1.2 higher. Indeed, the most active innovators emigrate five times more frequently than their less successful counterparts, suggesting the role of migration as a signal for being more inclined to innovate.

### 3.2.1.2 *Firms-specific factors*

This cluster includes articles dealing with the unique internal factors that affect firms' operations, financial outcomes, and overall success. Among these factors, greater attention has been paid to unicorns' business models (BMs) (8 articles), which have been increasingly adopted in strategic entrepreneurship studies both as a unit of analysis to understand how firms do business according to a holistic perspective (Zott and Amit, 2010) and as a conceptual tool to describe the firm (Osterwalder and Pigneur, 2010). Drawing on the framework proposed by Osterwalder and Pigneur (2010) and by conducting empirical research mostly through case study analysis, scholars have identified various BM configurations of unicorns and related disruptive effects in reshaping the rules of competition on entire industries worldwide and regional economies. For example, Urbinati *et al.* (2019) identify "larger partners ecosystem" and "smaller partners ecosystem" BM configurations, which both lead, even if at different speeds, to the diffusion of new products and services enabled by digital technologies. The main difference between the two configurations lies in the value network (the number of upstream suppliers and downstream users), which affects the access of companies to technological input and their value proposition. Other scholars shed light on the main design variables (namely, innovation strategy, value

proposition, channel, segments, cost structure, and revenue streams) and devastating impacts for incumbents in the markets of the BM of “content providers” and “matchmakers” unicorns (Trabucchi *et al.*, 2019). Piaskowska *et al.* (2021), by conducting an empirical study on a sample of 128 unicorns with digital BMs, identify financing, innovation, digitization, and acquisition activities as critical for scaling. Following a narrative case study, other scholars (Barot and Chhaniwal, 2018) explore the evolution of Uber since its inception in 2009 and its disruptive effects on the transportation industry through a peer-to-peer BM.

Overall, in all the BM analyses, digital technologies emerge as a key antecedent of the various configurations of unicorns’ BMs, driving their potential to be disruptors in the markets. As pointed out by Lehmann *et al.* (2018), this requires firm-specific knowledge and technological skills in the workforce. Unexpectedly, when it comes to analyzing the sustainable socio-economic impact of unicorns, which is not always positive (Balampanidis *et al.*, 2021; Fageda, 2021), scholars prefer to focus on ex-post effects of companies’ operations instead of looking at their internal structure and vision. Indeed, as suggested by Schaltegger *et al.* (2016), contributing to sustainable development implies that firms operate according to a business logic that has sustainability at their core, thus through a sustainable BM (Schaltegger *et al.*, 2016). Therefore, future research could focus on the impact unicorns have on society and sustainability, utilizing their BM as the unit of analysis.

Also, scholars have shed light on the need to adapt unicorns’ BM to the various local socioeconomic and cultural conditions across countries (Barot and Chhaniwal, 2018). Recently, Rodrigues and De Noronha (2021) have analyzed unicorns’ BM change in response to environmental adversity through multiple case studies, arguing that by innovating the BM, unicorns were able to overcome the COVID-19 pandemic successfully. However, how the innovation of the BM of unicorns occurs is still not addressed in the literature, reflecting the fact that the BM has been mostly used as a conceptual tool to describe these firms. This signals the need for theoretical perspectives for an explanation of the phenomenon in a holistic and dynamic view.

The remaining seven articles of the cluster related to firm-specific factors deal with corporate governance (Fenwick and Vermeulen, 2015; Brown and Wiles, 2020) and resources of unicorns (Agrawal *et al.*, 2020; Chernenko *et al.*, 2021; Damasceno *et al.*, 2021; Frare and Beuren, 2022; Kartanaitė and Krušinskas, 2022). Except for Damasceno *et al.* (2021), which draw on the resource-based view of the firm (Barney, 1996), these seven articles do not clearly highlight their theoretical premises. Fenwick and Vermeulen (2015) argue that unicorns maintain specific corporate governance practices, such as flat hierarchy, open communication, and inclusion in key decision-making, to remain private, maintaining control and favoring valuation. Brown and Wiles (2020) concur with these scholars in supporting that unicorns outperform comparable public companies thanks to better governance structures (e.g., more active and interested boards). However, they also cautioned that the firm’s

founders and managers, while pursuing the status as a unicorn, could be distracted from pursuing their core business objectives.

Regarding resources, most scholars consider financial ones. Indeed, maintaining financial flexibility, i.e. “the ability of a firm to access and restructure its financing at a low cost” (Gamba and Triantis, 2008), can help unicorns to deal with environmental uncertainties. Also, regional and sectoral characteristics play a role in determining unicorns’ financial performance, as described by Kartanaité and Krušinskas (2022), who shed light on the financial profile to explain the successful features of unicorns highlighting differences in financial performance due to specific conditions of economic sectors and regions worldwide. In line with this, Agrawal *et al.* (2020) recognize unicorns’ financial strength in relation to incumbents, whose performance is challenged by disruptive innovators such as unicorns. In contrast, by conducting empirical research, Damasceno *et al.* (2021) show that financial resources are insufficient to explain the feature of the fastest Brazilian firm that became a unicorn. In fact, what proved to be important was the synchronization between the intangible resources of the firm represented not only by the education and experience of funders/managers but also by the quality of human capital as a whole.

From the analysis of the above seven articles, fragmented as well as contrasting results emerge, shedding light on the need to understand better how firms become unicorns and how they make decisions pertaining to high-risk levels. It is also important to evaluate the importance of intangible resources – not only financial ones – for the long-term growth of unicorns.

### 3.2.2 External factors

The ‘external factors’ dimension comprises 10 articles (out of 16) focusing on the venture capital industry, i.e., the sector of the financial industry that provides funding and support to early-stage, high-potential companies with significant growth prospects. Analyses have been conducted mainly following quantitative and conceptual methods. The remaining 6 articles of this cluster point out specific conditions of the ecosystem of unicorns, namely technology and entrepreneurial ecosystems, especially through empirical research (in order, quantitative, mixed method, and qualitative).

#### 3.2.2.1 Funding factors

Articles included in this cluster cope with the various elements and considerations that play a crucial role in attracting investments. Specifically, most of the articles deal with the type of financing sources, strategies, and related consequences (Kuratko *et al.*, 2020; Mittal and Madan, 2020; Burström *et al.*, 2023). This may be because unicorns are firms with high growth potential based on funding from outside investors – that is, estimating market capitalization by considering investments received – rather than by actual financial performance indicators (Brown and Wiles, 2015). Among the identified financing sources (e.g., seed funding, crowdfunding platforms, angel investors, private equity transactions, mutual

funds), researchers provide insights particularly on venture capitalists (VCs) support (5 articles out of 10), leaving the other sources scarcely investigated. By allocating capital through equity investment or financing, VCs speed high growth with the goal of making companies gain significant scale to be acquired or access larger pools of growth capital through initial public offering. In doing so, VCs can prioritize speed over efficiency in an uncertain environment. It is what Kuratko *et al.* (2020) define “blitzscaling strategy”. In line with this, Cowden *et al.* (2020), drawing on the agency theory and viewing VCs as principals and entrepreneurs as agents, argue that the former wants companies to take higher than normal risks with their investment to disrupt the market. In doing so, scholars conceptualize agreeable moral hazards in the context of unicorns. However, results are not always positive: some unicorns fail, others “sacrifice culture and ethics in pursuit of growth” (Kuratko *et al.*, 2020, p. 115), and still others can leave behind some core objectives, such as generating new products, increasing the customer base, creating operational efficiencies (Brown and Wiles, 2015). Thus, prioritizing speed over efficiency cannot be considered a preferable strategy in that it is not aimed at achieving high overall performance for the firm nor at creating value for various stakeholders (Kuckertz *et al.*, 2023).

Two intertwined issues emerge. The first one concerns the speed a company takes to become a unicorn across countries worldwide. According to a recent report (European Commission, 2022), reaching unicorn status takes ten years in the EU, eight years in the US, and five in China. Evidently, this speed is influenced by specific country conditions, including those related to the funding factors that, however, are still scarcely investigated (Chen, 2022; Burström *et al.*, 2023). The second issue is related to the drivers of unicorns’ valuation by VCs (Hidayat *et al.*, 2022) as well as to methods and techniques to measure the growth of high-potential technology-based new ventures, such as unicorns (Malyy *et al.*, 2021). This issue takes on a specific relevance given that, on the one hand, VCs provide easy access to funds; on the other hand, unicorn funders are focused on growth/scale rather than profitability (Menon and James, 2022). Yet, these “fantastic ventures” are valued higher than traditional businesses with stable profitability. In this regard, scholars shed light on financial and non-financial parameters, including patents, management teams, industry technology, and disruptive (or not) products/services. Hidayat *et al.* (2022) argue that technologies involving big data, clean tech, mobile, and augmented reality drive unicorns’ valuation by VCs, regardless of the sectors in which the companies originate. Other scholars, by conducting empirical research in the US, show that the growth dynamics of unicorns are positively correlated with their web search traffic (e.g., Malyy *et al.*, 2021).

In sum, despite the factors related to the funding characteristics being among the most researched in the field of unicorns, the dynamics of the relationships between the various elements of this dimension remain almost overlooked, leaving the unicorns’ funding evolution veiled. In this view, Burström *et al.* (2023) call for more research on the role artificial intelligence decision-making can play in investment analysis and its effects on the relationship with data suppliers and investors.

### 3.2.2.2 Ecosystem factors

This cluster presents results of external economic, entrepreneurial, technological, and social factors (ecosystem) that impact the likelihood of a company reaching an evaluation of more than one billion USD. In particular, scholars have found that certain geographical regions, such as Silicon Valley in the United States or Beijing in China, point to innovation clusters. These groups of businesses, which are geographically concentrated, provide an ecosystem that promotes the launch of new businesses and heightens competition (Lemarié *et al.*, 2001), offering support infrastructure and an atmosphere that fosters collaboration and knowledge sharing. Due to the clusters' proximity to major enterprises, academic institutions, and research centers, businesses established within them frequently expand more quickly than those established in other areas. Scholars found evidence that being embedded in an ecosystem increases the likelihood of becoming a unicorn due to the spillover effects of human capital, knowledge, and opportunities to access marketplaces (Bock and Hackober, 2020). Interestingly, those results are valid only for Silicon Valley, which indicates superior characteristics of these ecosystems (Bock and Hackober, 2020). The role of entrepreneurial ecosystems is growing outside the United States, for example Chillakuri *et al.* (2020) investigated the role of entrepreneurial ecosystems in India, linking this concept to sustainability. As a result, the authors proposed a framework to understand the dynamics of entrepreneurial ecosystems under the triple bottom line approach, suggesting the composition of the ecosystem into three main spheres equally important: social, environmental, and economic.

Deeply related to the concept of innovation ecosystems stems the role of technologies in fostering the rapid growth of billion-dollar start-ups. The current technological environment, driven by digital technologies, has changed the market dynamics. For any platform or Internet-related idea, entry costs are very low, and the network effect favors a winner-takes-all strategy in which the competition forces start-ups to invest massively in order not to be expelled from the market (Kenney and Zysman, 2018). The surge of unicorns is the result of the transformative power of digital technologies, which have created a digital entrepreneurial ecosystem where ideas can flourish. A digital entrepreneurial ecosystem (DEE) combines the focus on the entrepreneur and institutions of the entrepreneurial ecosystem with the attention of digital infrastructure and users (Venâncio *et al.*, 2023). In this vein, scholars investigated the role of DEE in unicorns' success, stressing the importance of specific factors such as the presence of a formal institutional environment (legal and regulatory quality) (Venâncio *et al.*, 2023).

To conclude, technological developments have accelerated the growth of unicorns, but this phenomenon is not without its consequences. Many unicorns have been overvalued because of the demand for investment possibilities. As a result, more investigation is required to assess the genuine worth of these unicorns, considering other measurements than their evaluation (Bock and Hackober,

2020). Future research is also necessary to understand DEE, considering digital and entrepreneurial factors that can contribute to the resources and capabilities of unicorns (Venâncio *et al.*, 2023).

#### **4. Research agenda**

The emergence of unicorns and other “fantastic ventures” has sparked a surge of interest inside and outside academia. Nevertheless, since they represent only a minor fraction of the entire business landscape, several authors have argued that studying these outliers is a distraction on the way to understanding how business and entrepreneurship emerge (Aldrich and Ruef, 2018; Kuckertz *et al.*, 2023). Instead, the existence of a lively scholarly debate is a testament to the interest in the concept and its ramifications. The question itself that concerns whether it is worth studying such unique cases or not is important for the advancement of management knowledge. Moreover, as management and entrepreneurship studies are social sciences highly concerned with the real world of business, human economic activity, and its behaviors, it appears important for academia to investigate phenomena that gauge high interest from those involved in economic activities.

Therefore, by systematically analyzing 35 scientific contributions on unicorns published between 2015 and 2023, this study identifies the main internal and external factors driving the emergence of such firms, contributing to shed light on their main features as advocated in literature (Abatecola *et al.*, 2022). In this regard, this work is the first to provide a systematic discussion of the phenomenon of unicorns.

In particular, it appeared that apart from some specific characteristics, such as those related to the “blitzscaling strategy” for pursuing extremely fast growth prioritizing speed over efficiency (Kuratko *et al.*, 2020) and agreeable moral hazards (Cowden *et al.*, 2020), unicorns share similar dynamics as traditional firms, somehow countering the arguments about their uniqueness in support and against their relevance for scholarly research. For instance, unicorns face the same “liability of newness” (Abatecola *et al.*, 2012) as conventional enterprises, thus letting emerge the crucial role of founders’ networking abilities necessary to achieve further financing partners and address the strategic direction of the firm (Cristofaro *et al.*, 2023). Further, findings concur with Lemarié *et al.* (2001) by highlighting the role of entrepreneurial ecosystems in promoting the launch of new businesses, that is of unicorns in this case (e.g., Bock and Hackober, 2020; Chillakuri *et al.*, 2020). Similarly, scholars revealed that also unicorns must adapt their BM to the various local socioeconomic and cultural conditions across countries (Barot and Chhaniwal, 2018), as happens for less fancy small- and medium-sized enterprises (Child *et al.*, 2017).

Hence, we argue that unicorns should not be considered alien or mythical species in the entrepreneurial panorama but rather as firms that have been able to better grasp and exploit market trends. Consequently, how unicorns act and react to environmental stimuli can also serve as a potential guideline for “traditional firms.”

Moreover, by systematizing the existing body of literature on unicorns, this study contributes to shed light on the main criticalities that blur the understanding of such a phenomenon. First, while scholarly consensus seemingly exists in considering unicorns as privately held companies valued at least one billion USD, the use of such parameter brings complications making the concept of unicorns ambiguous (Kuckertz *et al.*, 2023) and the operationalization of such companies as start-ups (e.g., Menon and James, 2022) or scale-ups (Burström *et al.*, 2023) almost impossible. Second, 29% of the analyzed articles have investigated factors related to the funding policies leading to the emergence of unicorns (e.g., Brown and Wiles, 2015; Burström *et al.*, 2023). Interestingly, few articles have identified specific corporate governance mechanisms (Fenwick and Vermeulen, 2015; Brown and Wiles, 2020) that influence the modalities (i.e., the form and the time) by which unicorns open to initial public offers. Conversely, the socioeconomic impacts of such companies remain almost overlooked. In line with this, scholars call to focus on the value that unicorns create, prioritizing their overvaluation (Kuckertz *et al.*, 2023). Third, only a small fraction of studies on unicorns have jointly analyzed internal and external factors enabling the emergence of unicorns (e.g., Cristofaro *et al.*, 2023), leaving the understanding of this intertwined relationship still blurred. Considering these major issues that can already serve as potential avenues for future studies, we put forth a research agenda tailored to the specific clusters comprising both internal and external domains (see Table II).

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 Insert Table II about here  
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This research agenda, by integrating theory and practice insights, seeks to stimulate scholarly discourse and guide future empirical research, enhancing the understanding of the intriguing phenomenon of unicorns. Precisely, the goal of the research agenda is threefold and outlined below.

Firstly, it is aimed at providing a synthesis of the current focus of research related to each identified internal and external factors driving unicorns' emergence.

Then, it suggests future avenues of research on a multilevel basis, where each level of analysis provides a unique and valuable perspective on the phenomenon of interest. Indeed, various research needs are identified at the entrepreneurial, firm, funding, and ecosystem levels by considering the related units of analysis selected and discussed previously. Among the others, some of the key issues to explore in future studies include the entrepreneurial and firm-specific mechanisms (such as decision-making and corporate governance mechanisms) behind the emergence of unicorns, the effects on all relevant stakeholders and society, and the dynamics of the BM of unicorns; the role of intangible resources in the valuation of unicorns as well as the valuation practices; the role of unicorns as catalysts for technological change within their entrepreneurial ecosystems.

Finally, the research agenda offers several theoretical lenses for addressing the identified research needs at each level of analysis. For example, stemming from the argument proposed by Cristofaro *et al.* (2023), it proposes drawing on the growing field of behavioral strategy (Powell *et al.*, 2011) to investigate the link between unicorn founders' cognition, emotions, social behavior, and their ability to recognize and develop innovative business opportunities. In this context, evolutionary theory (Nelson, 1985; Abatecola *et al.*, 2020) could serve as a fruitful lens to see the birth, survival, and success of unicorns as evolutionary processes (Aldrich and Ruef, 2018) in which the situation of entrepreneurs starting new ventures is influenced not only by their knowledge or experience in managing start-ups and fostering innovation (Jinzhi and Carrick, 2019) but also by their ability to anticipate and cope with changes occurring in the environment in which they operate (Wu and Wu, 2021). It is thus important to focus also on which dynamic capabilities (Teece *et al.*, 1997) can help unicorn founders to successfully survive in uncertain and fast-changing environments and how such capabilities are used to enhance existing resource configurations according to the resource-based view (RBV) (Barney, 1996). In line with the discussion on the dynamism of organizational resource uses, scholars could draw on the RBV to analyze how place-specific resource settings and conditions influence the speed of unicorn companies in reaching a one billion USD valuation. This also contributes to addressing an evident gap in the literature on RBV, which overlooks the time issue (Damasceno *et al.*, 2021). Furthermore, it is suggested to adopt different theoretical lenses, such as the stakeholder theory (Freeman, 2010), to help entrepreneurs and policymakers amalgamate business ecosystems and communities.

In sum, we believe that the directions disclosed in Table II can let future scholars better understand the mechanisms and dynamics behind unicorns' ability to disrupt the traditional way of doing business by tremendously impacting society at large. Understanding such mechanisms and dynamics can thus help in the proper conceptualization of unicorns. Moreover, and even more important in practice, it may help entrepreneurs and policymakers to support unicorns' emergence and extend their positive consequences.

## **5. Conclusion**

Today the debate around the phenomenon of unicorns is representing a hot topic in the community of management scholars. Nevertheless, being still at an early stage, such an issue is plagued by many problems, such as fragmented research directions that often produce contradictory findings and insights. Thanks to the systematic analysis of 35 articles, we provide a clear picture of "what has been made" and "what should be made" by scholars interested in understanding the dynamics behind these extraordinary ventures. In this last regard, we provided a structured research agenda to support research to add knowledge and new insight into entrepreneurship theory and practices. In addition, and this is not a minor point, this is the first systematic literature review on unicorns.



### *5.1 Limitations*

Although this study adopted a rigorous and systematic methodology of review, some limitations remain. Particularly, a constraint might arise from concentrating on management research that aids in clarifying the paper's research discipline and data consistency, yet this approach could potentially neglect valuable insights from different domains. Focusing only on published journal articles, omitting books, book chapters, conference papers and practical literature, may have limited the scope of the review. This limitation is countered by the higher quality and rigor of studies that have been peer-reviewed and future studies may also consider the inclusion of other outputs or complement our findings with a review of practical literature. Similar to prior systematic review research, our study has prioritized providing a broad perspective and research roadmap rather than delving extensively into specifics. Nonetheless, this compromise is inherent to review studies. Despite this, our review, interpretative framework and research agenda establish a robust foundation for forthcoming research endeavors to expand upon and enhance our understanding. Yet, we are optimistic that this timely literature review will prolong the lively debate about the world of unicorns and other “fantastic ventures”.

### *5.2 Implications for entrepreneurs, practitioners, and policymakers*

Given the increased attention around unicorn firms (e.g., European Commission, 2022), the insights drawn from the systematic review hold several implications for entrepreneurs, practitioners, and policymakers engaged in the business ecosystem. Understanding the emergence of unicorn firms and their dynamics can significantly influence their strategies and decision-making processes. For entrepreneurs, our research underscores that unicorn firms are not unattainable mythical entities, but rather outcomes of specific strategies and adaptations. Entrepreneurs can learn from the similarities shared with traditional firms, particularly in areas such as networking, adaptation, and business model evolution. The importance of founders' networking abilities and their role in securing financing partners offers a valuable lesson for aspiring entrepreneurs. The notion of adapting business models to local socioeconomic and cultural conditions presents entrepreneurs with a practical approach for scaling their ventures globally while remaining relevant in diverse markets. Additionally, the proposed research agenda may be read as a roadmap for entrepreneurial strategies that account for both internal and external factors.

Practitioners, including venture capitalists, managers, business consultants, and industry experts, can derive valuable insights to inform their investment decisions and advisory roles. By understanding that unicorns are not purely enigmatic outliers but instead result from well-executed strategies, practitioners can adopt a more informed and realistic approach to evaluating potential ventures. The concept of "blitzscaling strategy" and the focus on speed over efficiency can guide practitioners in identifying businesses with high growth potential. Furthermore, the insights on unicorn

founders' networking abilities and their role in obtaining financing partners can aid practitioners in assessing the caliber of leadership within startups seeking investment.

Policymakers can leverage these insights to foster an environment conducive to unicorn emergence and innovation. Understanding the role of entrepreneurial ecosystems, the adaptation of business models to local conditions, and the influence of corporate governance mechanisms can guide policymakers in formulating supportive regulations and incentives. Additionally, the emphasis on the socioeconomic impacts of unicorn firms highlights the need for policies that balance innovation with broader societal benefits, fostering an ecosystem that not only encourages unicorn emergence but also ensures positive economic and social outcomes.

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### Figures and Tables

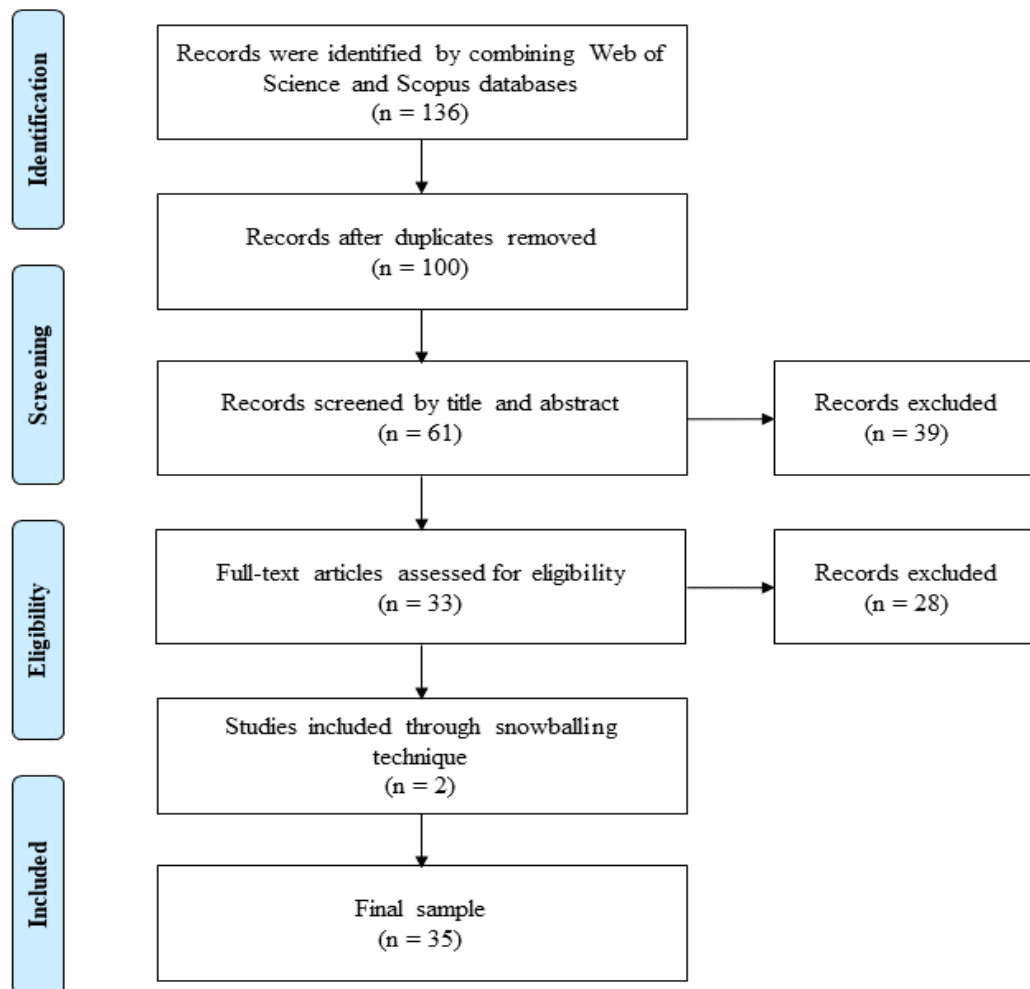


Figure 1 A representation of papers' collection strategy. Source: authors' own creation.



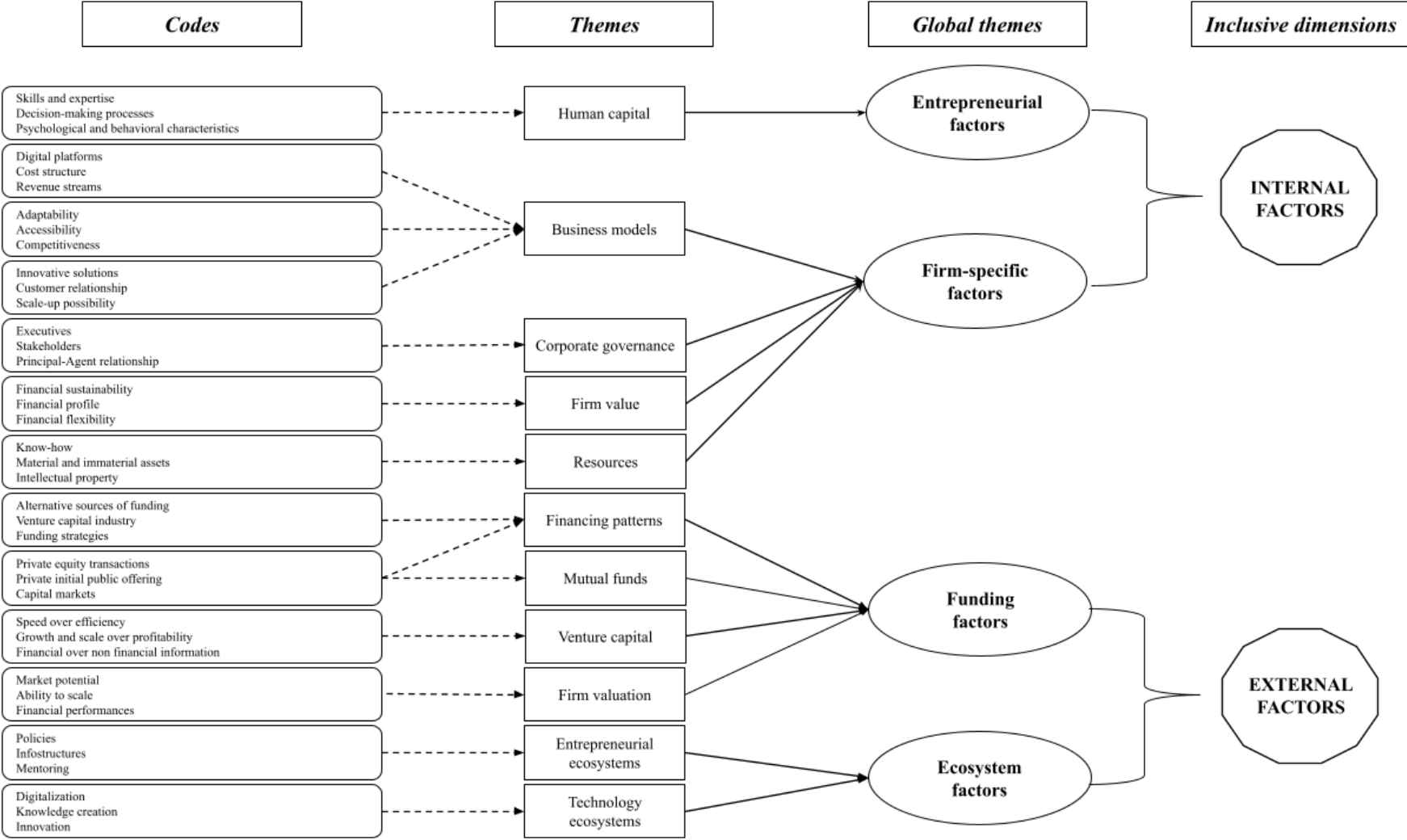
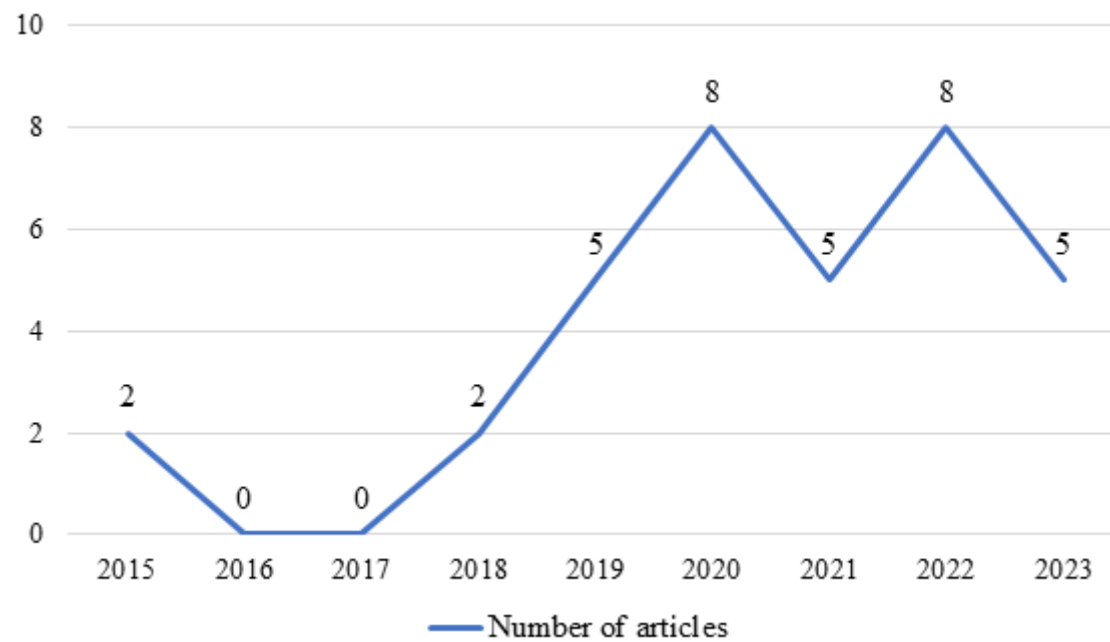


Figure II Coding process. Source: authors' own creation.



**Figure III** Annual scientific production. Source: authors' own creation.

Framework label	Level of analysis	Unit of analysis	Number of articles	Articles
<i>Internal factors</i>	<i>Entrepreneurial factors</i>	Human capital	4	Abatecola <i>et al.</i> (2022); Cristofaro <i>et al.</i> (2023); Jinzhi and Carrick (2019); Kutsenko <i>et al.</i> (2022)
	<i>Firm-specific factors</i>	Business model	8	Barot and Chhaniwal (2018); Jahn and Bohnet-Joschko (2023); Kuchi and Gupta (2023); Lehmann <i>et al.</i> (2019); Piaskowska <i>et al.</i> , (2021); Rodrigues and Noronha (2021); Trabucchi <i>et al.</i> (2019); Urbinati <i>et al.</i> (2019)
		Corporate governance	2	Brown and Wiles (2020); Fenwick and Vermeulen (2015)
		Resources	5	Agrawal <i>et al.</i> (2020); Chernenko <i>et al.</i> (2021); Damasceno <i>et al.</i> (2021); Frare and Beuren (2022), Kartanaité and Krušinskas (2022)
	<i>External factors</i>	<i>Funding factors</i>	Financing patterns	2
Venture capital			5	Brown and Wiles (2015); Burström <i>et al.</i> (2023); Chen (2022); Cowden <i>et al.</i> (2020); Gornall and Strebulaev (2020)
Unicorn valuation		3	Hidayat <i>et al.</i> (2022); Malyy <i>et al.</i> (2021); Menon and James (2022)	
<i>Ecosystem factors</i>		Entrepreneurial ecosystems	3	Bock and Hackober, 2020; Chillakuri <i>et al.</i> , 2020; Torres and Godinho, 2022
	Technology ecosystems	3	Kenney and Zysman, 2019; Venâncio <i>et al.</i> , 2023; Wang <i>et al.</i> , 2022	
<b>TOTAL</b>			<b>35</b>	

**Table I** Distribution of the scientific production. Source: authors' own creation.

Inclusive dimension	Global themes	Themes	Current focus	Future avenues	Possible theoretical approaches
	<i>Entrepreneurial factors</i>	Human capital	Focus on: <i>i)</i> the strategic function of unicorns' founders in combining resources and forming strategic alliances; <i>ii)</i> uniqueness of previous knowledge and capabilities of unicorns' founders in managing start-ups and fostering innovation; <i>iii)</i> evolution of unicorn founders' strategic decision-making and biases; <i>iv)</i> specific sociodemographic characteristics of unicorns' founders (i.e., foreign founders) as drivers for innovative activity.	Try to understand: <i>i)</i> the role of heuristics in unicorns' strategic management processes; <i>ii)</i> how unicorns' founders can recognize and develop innovative business opportunities; <i>iii)</i> behavioral dynamics associated with the birth, survival, and success of unicorn companies; <i>iv)</i> decision-makers sociodemographic characteristics more likely to foster unicorns' emergence; <i>v)</i> dynamic capabilities that can help unicorns founders to successfully survive in uncertain and fast-changing environments.	Upper Echelons Theory; Prospect Theory; Absorptive Capacity Theory.

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*Internal factors*

*Firm-specific factors*

Business model	<p>Emphasis on: <i>i</i>) BM configurations of unicorn companies and related disruptive effects on entire industries worldwide; <i>ii</i>) digital technologies as a key antecedent of the various configurations of unicorns' BMs, driving its potential of being disruptors in the markets</p>	<p>Turn attention to: <i>i</i>) the socioeconomic impacts of the BM of unicorns; <i>ii</i>) the evolution of unicorns' BM in response to current grand challenges.</p>	<p>Behavioral Theory of the Firm; Resource-Based View; Knowledge-Based View; Agency Theory.</p>
Corporate governance	<p>Focus on unicorns adopting specific corporate governance practices (flat hierarchy, open communication, and inclusion in key decision-making) to remain private, maintaining control and favoring valuation.</p>	<p>Try to develop metrics that track the type of corporate governance practices adopted in relation to the success of the company. Try to understand how unicorn founders and managers, while pursuing the status as a unicorn, pursue their core business objectives.</p>	
Resources	<p>Overemphasis on financial resources to explain the successful features of unicorn companies</p>	<p>Turn attention to the role of intangible resources in the valuation of a unicorn firm.</p>	
Financing patterns	<p>Focus on the analysis of the types of financing sources, investment strategies, and related consequences, particularly in relation to VC support.</p>	<p>A closer examination of post-initial public offering strategies and performances. Broaden research on different financing patterns as well as to the role of mutual funds.</p>	<p>Resource-Based View; Agency Theory; Transaction Cost Economics; Social Capital Theory; Absorptive Capacity Theory.</p>

<i>Funding factors</i>	Venture capital	Focus on venture capitalists' support, relationship between venture capitalists and unicorns' entrepreneurs, and related effects in terms of prioritization of speed over efficiency.	Broaden research to: <i>i</i> ) a wide number of countries which would help to compare how different resource settings and conditions, including those related to the VC industry, influence the speed to reach one billion USD valuation; <i>ii</i> ) the relation between speed of growth following VC financing patterns, financial performance, and ethical practices; <i>iii</i> ) the dynamics of the relationships between the various actors of the VC industry.	
<i>External factors</i>	Firm valuation	Attention to financial and non-financial parameters to evaluate unicorns.	A closer examination of the valuation practices for unicorns.	
<i>Ecosystem factors</i>	Entrepreneurial ecosystems	Focus on specific ecosystems that increase the likelihood of unicorns' emergence. Consideration of support infrastructure and atmosphere that fosters collaboration and knowledge sharing.	Help entrepreneurs and policymakers to amalgamate business ecosystems and communities.	Institutional Theory; Stakeholder Theory; Strategic Network Theory.
	Technology ecosystems	Emphasis on digital technologies as a key factor for the creation of a digital entrepreneurial ecosystem where unicorns can emerge and flourish.	Examine the extent to which unicorns act as catalysts for technological change within their entrepreneurial ecosystems.	

**Table II** *Research agenda.* Source: authors' own creation.