

The Unicorn Phenomenon: An Embeddedness-Based View of Influencing Factors

Basel Hammoda
Merle Küttim

Department of Business Administration
Tallinn University of Technology
Akadeemia tee 3
Tallinn 12618, Estonia
basel.hammoda@taltech.ee
merle.kuttim@taltech.ee

Abstract: Unicorns are a special breed of an entrepreneurial phenomenon that is gaining increased attention from theoretical and practical perspectives. This emerging niche, however, lacks structurization and sufficient investigation of the development of a unicorn firm. The article aims to investigate the factors influencing the emergence and growth of unicorns, using embeddedness as a theoretical framework. It follows a systematic review of empirical articles investigating the unicorn phenomenon based on a search in Scopus and Web of Science databases. A total of 17 articles were qualified and reviewed in depth for descriptive information and the factors impacting unicorns. The findings confirm that the unicorn phenomenon is a new entrant in entrepreneurship research, with the first study published in 2017. Most of the empirical work relied on secondary data to analyze this phenomenon, with a split of geographical focus between the leading countries (US and China) and the developing ones. The identified influencing factors were analyzed and organized into three levels: context, firm, and individual. They highlight the necessary elements in an entrepreneurship ecosystem, a company's business and operating models, and the characteristics of founders and unicorns' leaders for supporting the development of a potential unicorn. This study extends the concept of embeddedness to this special breed of companies and provides insights for ambitious entrepreneurs who want to grow their companies to a unicorn status and to

policymakers on providing an enabling environment to attract startups and promote entrepreneurship.

Keywords: *embeddedness, entrepreneurship, entrepreneurship ecosystem, systematic literature review, unicorns*

1. Introduction

Entrepreneurship attracts immense interest among scholars, policymakers, and the general public. Despite the growing interest, we still lack enough studies on Schumpeterian entrepreneurship, referring to innovative and market-disrupting startups with exceptional high growth potential (Henrekson & Sanadaji, 2019). A special breed of Schumpeterian entrepreneurship that has received increasing interest in recent years is startup unicorns, defined as privately held startups with a valuation exceeding one billion dollars (Cowden *et al.*, 2020; Kenney & Zysman, 2019; Kuckertz, Scheu & Davidsson, 2023; Kuratko & Audretsch, 2022; Kuratko, Holt & Neubert, 2020). Since the term was invented by an American venture capitalist in 2013, the number of unicorns has increased exponentially from a handful of companies less than ten years ago (Schindehutte, 2016) to just over 1,300 in early 2023 (CB Insights, 2023). Policymakers and researchers have jumped on the bandwagon, trying to understand this new phenomenon and how they can nurture it (Kuratko & Audretsch, 2022; Kuratko, Holt & Neubert, 2020). This policy and scholarly inclination are substantiated by the unequivocal innovation and transformational changes that unicorns bring to markets and societies (Henrekson & Sanadaji, 2019).

Regardless of the growing interest in startup unicorns, there is still a scarcity of research on this phenomenon. This disparity between scholarly and real-life interest can be observed on multiple ontological, epistemological, and axiological levels (Aldrich & Ruef, 2018; Cowden *et al.*, 2020; Kenney & Zysman, 2018; Kotha, Shin & Fisher, 2022; Kuratko & Audretsch, 2022).

Researchers have argued that there are several factors that can affect the emergence and sustainability of entrepreneurial firms (Aaboen *et al.*, 2022; Lehmann, Schenckenhofer & Wirsching, 2019). Within the sphere of unicorns, however, scholarly efforts aimed at investigating these factors have been limited in number (Jinzhi & Carrick, 2019; Lehmann, Schenckenhofer & Wirsching, 2019), with only a few comprehensive studies (e.g., Kotha,

Shin & Fisher, 2022). The scope in most available studies have addressed select spatial levels or variables (Acs *et al.*, 2017; Sussan & Acs, 2017), such as funding and investors' influence, which is the predominantly investigated variable in the existing literature (Bellavitis, Filatotchev & Souitaris, 2017; Kenney & Zysman, 2018).

The factors that are situated within and around entrepreneurs and their startups can be explained through the concept of embeddedness. The notion of embeddedness within the field of entrepreneurship maps the interactions between individuals (founders) and their contexts through social links (Dacin, Ventresca & Beal, 1999; Uzzi, 1996). The concept has become broadly applied in efforts to understand this field, with a growing attention of different entrepreneurial stakeholders since the turn of the century (Wigren-Kristoferson *et al.*, 2022). The importance of embeddedness-related studies is highlighted by scholarly arguments about the role of supportive contexts in guiding the behaviour, actions, and growth trajectories of unicorns (Aldrich & Martinez 2015; Dalton, 2004), and its crucial importance for a thriving entrepreneurial activity (Cavallo, Ghezzi & Balocco, 2019; Mack & Mayer, 2016; Nicotra *et al.*, 2018; Roundy, 2017).

Previous reviews on the unicorn phenomenon are limited as well, examples of which include narrative and theorizing reviews by notable scholars. These have mainly focused on venture capital discussions (Kenney & Zysman, 2018), comparing unicorns and high-growth firms to regular small firms (Henrekson & Sanadaji, 2019; Kuratko & Audretsch, 2022; Kuratko, Holt & Neubert, 2020; Lehmann, Schenkenhofer & Wirsching, 2019), investigating ethical dilemmas (Cowden *et al.*, 2020), or the decision-making process from a behavioural lens (Abatecola *et al.*, 2022). The work of Aldrich and Ruef (2018) stands out as directly investigating the emergence and growth of unicorns, although they did so as part of a wider study including firms of all sizes.

This study aims to investigate the factors influencing the emergence and growth of unicorns, using embeddedness as a theoretical framework. It applies a systematic literature review of empirical articles on the unicorn phenomenon and uses the concept of embeddedness to appropriate the factors affecting their emergence at the different levels. The study contributes to the scant, yet growing literature on the unicorn phenomenon and extends embeddedness applications to this special breed of companies.

The article is structured as follows. In the following section, we will discuss the relevant literature and theoretical concepts related to unicorns

and embeddedness. We then explain our systematic review methodology. Following from that, we present our findings and discuss them against the existing literature. We conclude the article by highlighting its main contributions to theory and practice, its potential limitations, and propose future research avenues.

2. Literature background

2.1 Unicorns

The term “unicorn” was first coined in 2013 by Aileen Lee, a venture capitalist in Silicon Valley, to define a privately held company that exceeded one billion US dollars in valuation (Cowden *et al.*, 2020; Kenney & Zysman, 2019; Kuratko & Audretsch, 2022). As of October 2022, there were 1,211 unicorns globally, with a total cumulative valuation of nearly 4 trillion dollars (CB Insights, 2023). This is almost a quadruple increase in the number of unicorns over the last four years. Hence, we can assume that we are witnessing what Kenney and Zysman (2019) called “the Era of Unicorns,” which has several distinguishable features.

Unicorns can be regarded as change agents creating magnanimous market disruption, leveraging technological advancements to build new business models and introduce innovative offerings to the markets (Kuratko & Audretsch, 2022), which emphasize the Schumpeterian definition of entrepreneurship (Schumpeter, 1934 [1912]; 1942). In the process, they solve existing market inefficiencies and change the status quo (Kim & Mauborgne, 2005; Zott & Amit, 2007), making it difficult for traditional market leaders to respond (Cowden *et al.*, 2020).

Investors are drawn to disruptive startups to achieve bigger returns on investments (Cowden *et al.*, 2020; Kenney & Zysman, 2019). They understand, however, that market disruption and establishing a new order might take several years. Thus, they tend and need to pump excessive cash continuously to provide high-growth firms with sufficient lifeline during the first years, in hopes of multiplying their investments once those unicorns break through the ceiling (Cowden *et al.*, 2020; Kenney & Zysman, 2016; 2019; Zysman & Kenney, 2018). Without such incessant backing, many of the unicorns we witnessed might have dried up and collapsed (Kenney & Zysman, 2019). Startup investors are picky, however, and tend to prioritize investing big amounts in highly ambitious business entities like unicorns

(Lehmann, Schenckenhofer & Wirsching, 2019; Sullivan, 2017), leading to the remarkably high valuations we are witnessing these days (Cowden *et al.*, 2020). Hence, venture capital (VC) investments can be seen as a self-feeding engine by unicorns, since the only way that investors raise a startup valuation is through driving more inward investments (Kenney & Zysman, 2019). However, the chances of reaching a unicorn status are very slim, even with VC backing. A study conducted by CB Insights in 2019 showed that only 1% of all startups that received VC funding make it to the unicorn status. This highlights that there are several factors other than capital that influence their emergence and sustainability.

The recent unequivocal attention towards unicorns and high-growth firms, however, has led to the centralization of economic activities and concentration of research outputs on these categories of firms, with several scholars debating the overemphasis on this special breed of firms in research and policy (Audretsch & Moog, 2022; Kuratko & Audretsch, 2022; Morris & Kuratko, 2020). Hence, Kuratko and Audretsch (2022) suggested that scholars should further investigate this debatable topic as it will determine which path entrepreneurship research and policy will take in the future, and one way to find answers to these questions is to investigate the antecedents and trajectories of those firms (Henrekson & Sanadaji, 2019).

2.2 Embeddedness

Startup founders do not act separately from their surroundings. Their attitudes and actions as well as the opportunities and resources that unfold to them are all directly related to the environment they are embedded with (Jack & Anderson, 2002; Welter, 2011; Zahra, Wright & Abdelgawad, 2014). Thereby, there is a long-standing assumption that entrepreneurial phenomena could be better analyzed within social contexts (Granovetter, 2018), which is extended to include behavioural, cultural, institutional, and political elements (Clegg, 1989; Zukin & DiMaggio, 1990). Embeddedness, therefore, has multiple parameters at different levels that are all tied to the integrative nature of entrepreneurial activities within their surrounding environment (Wigren-Kristoferson *et al.*, 2022).

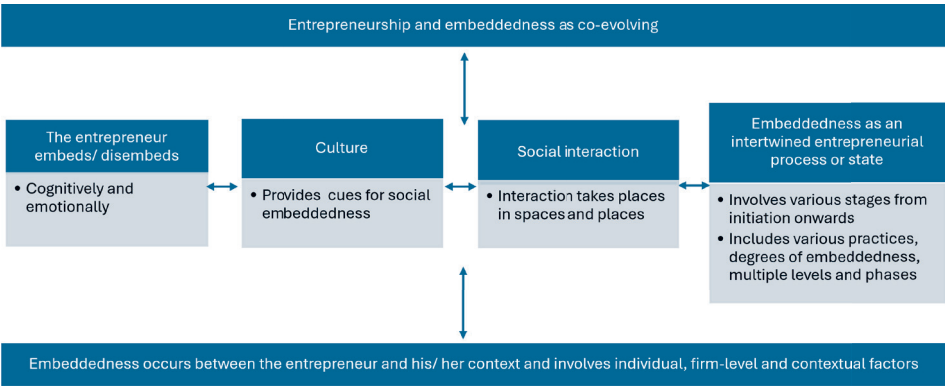
Embeddedness as a theoretical and policy lens to understand economic and entrepreneurial activities has been growing for the last twenty years (Wigren-Kristoferson *et al.*, 2022). It has established itself as the main field to investigate connections among entrepreneurial actors and their environment through social ties (Dacin, Ventresca & Beal, 1999; Uzzi, 1996;

Wigren-Kristoferson *et al.*, 2022). From a temporal perspective, most studies investigate embeddedness as a static cross-sectional framework (Grichnik *et al.*, 2014; Newbert & Tornikoski, 2013; Villanueva, Van de Ven & Sapienza, 2012). However, there are increasingly more studies applying a processual view to embeddedness (e.g., Aggestam & Wigren-Kristoferson, 2017; Ettl & Welter, 2010; Hopp & Stephan, 2012).

Closely related to embeddedness is the concept “entrepreneurial ecosystem” (EE), which analyzes the environment or contextual elements of embeddedness and can be defined as a “set of interdependent actors and factors coordinated in such a way that they enable productive entrepreneurship within a particular territory” (Stam, 2015, p. 5). Similar to embeddedness, EE has witnessed considerable growth in academic literature and policy debates over the last decade (Cavallo, Ghezzi & Balocco, 2019; Fernandes & Ferreira, 2021; Velt, Torkkeli & Laine, 2020; Roundy, 2021), as it is widely believed that entrepreneurship develops drawing on local resources, institutions, and networks (Malecki, 2018; Muldoon, Bauman & Lucy, 2018).

Embeddedness and the surrounding EE have thus been shown to influence the creation of new companies and the emergence of unicorns. It is argued that it can be used to explain the variations in startup rates and emergence of unicorns across geographies, as a dense population of firms implies dense networks and embedded entrepreneurs (Acs *et al.*, 2017; Breitenecker *et al.*, 2017). On the other hand, the existence of unicorns can also be seen as a sign of a well-functioning entrepreneurial ecosystem (Acs *et al.*, 2017). The factors impacting the embeddedness of entrepreneurial firms can be mapped either on temporal or spatial levels. Wigren-Kristoferson *et al.* (2022) mapped the characteristics of embeddedness against the early, mature, and exit phase of the entrepreneurial process. At the same time, Eriksson (2021) and Kecskes (2021) deduced that the emergence of unicorns is affected by several internal and external factors at different levels. For the sake of this study, we map the embeddedness factors influencing the emergence of unicorns at different levels by arranging them into contextual, firm, and individual levels, as presented in Figure 1. Embeddedness is seen as an umbrella concept for the factors affecting the emergence and growth of the unicorns (at the external environment, the company, and the people level), but also as a phenomenon which changes over time due to social interactions, changes in location, and growth in maturity of the startup.

Figure 1. Analytical framework for the study.



Source: Authors based on Wigren-Kristoferson *et al.*, 2022; Eriksson, 2021; Kecskes, 2021.

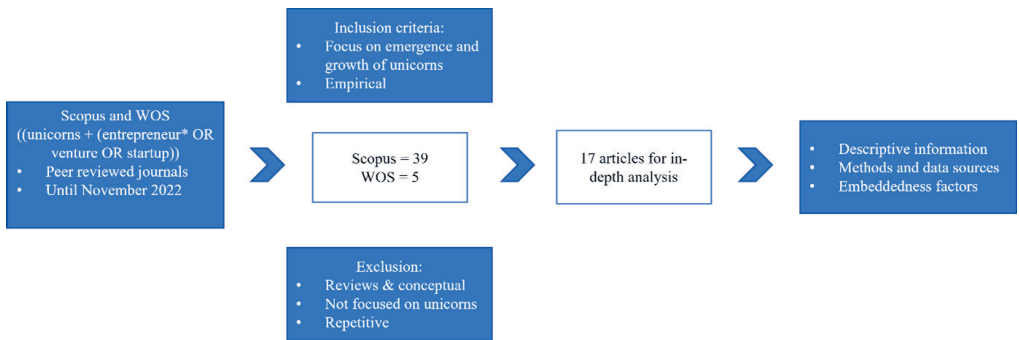
3. Methodology

The study employed a systematic literature review which is typically used to analyze the state-of-the-art research on a given topic (Massaro, Dumay & Guthrie, 2016; Petticrew & Roberts, 2008; Rauch, 2020). The reviews are often conducted in entrepreneurship research (Tranfield, Denyer & Smart, 2003) and help guide future research on investigated topics (Massaro, Dumay & Guthrie, 2016; Zahra, Sapienza & Davidsson, 2006).

Our systematic review followed the six steps outlined in Jesson, Matheson and Lacey (2011): (1) mapping the field through a scoping review; (2) comprehensive search; (3) quality assessment, by reading and selecting qualified papers; (4) data extraction, by collecting needed data from reviewed papers and storing them in an excel sheet with predetermined fields for all papers; (5) synthesis of the extracted data to show the known and to provide the basis for establishing the unknown; and (6) write-up.

The authors first discussed and agreed upon the databases, search keywords, inclusion and exclusion criteria. These were selected to fulfill the purpose of the study in critically assessing the empirical literature on unicorns and mapping the factors influencing their emergence. We produced an excel data sheet that was used in analyzing the articles, with specific criteria (columns) mirroring our research interests. We primarily relied on the

Figure 2. Systematic literature review process.



Source: Authors' data.

Scopus database as it has the largest coverage of journals in social sciences (Mishra *et al.*, 2017; Rew, 2021). We also ran our search on Web of Science (WoS) to ensure comprehensiveness (Falagas *et al.*, 2008). We searched in the title and abstracts of articles published any time before November 2022, using the following keywords: unicorn* AND (entrepreneur* or venture or startup or company or firm). To assure quality and validity, we limited our search to peer-reviewed journals (Podsakoff *et al.*, 2005) published in English any time before November 2022.

The initial search generated 44 results (39 in Scopus and 5 in WoS). We then applied our inclusion and exclusion criteria to the 44 publications. The criteria set for including articles focused on the emergence and development of unicorns, and were of empirical nature, based on primary or secondary data. We set aside review and conceptual articles, those not focusing primarily on unicorns, and repetitive ones. A review of the title, abstract, and in some cases, in-depth reading of the articles was needed to assess their eligibility, with a final number of 17 articles qualified. The selection process was performed by one of the authors, then reviewed and confirmed by the other authors. The use of a limited number of articles in systematic literature reviews is not uncommon in social sciences (Bendermacher *et al.*, 2017; McLain, Lawry & Ojanen, 2018).

The 17 articles were divided among the authors to be reviewed and analyzed for the first time. Then, the articles were redistributed among the authors for a second review. Finally, the authors discussed the reviews, and a unified sheet with thematic coding was produced. When analyzing the articles using the excel sheet, we collected information on the year of publication,

geographies, journals, and their fields, focus areas, methodologies and theories used, and the unicorns studied. Then, the articles were analyzed in depth to identify the themes and categories connected to the emergence and development of unicorns. The approach followed is summarized in Figure 2.

4. Findings and discussion

4.1 Descriptive findings

4.1.1 Year and field of publication

Scholarly attention to the unicorn phenomenon is a very recent one, starting to gather momentum from 2019 onwards, which also follows the rising trend of unicorns in real life, as presented in the above literature review section. This highlights how scholarly interest runs in parallel with the growing significance of the empirical phenomenon. The first empirical article in our review dates back no further than 2017 (Hogarth, 2017) and explores the role of political economy in unicorns through a case study of 23andme, a DNA sequencing biotech startup. This scholarly interest picked up in 2019 with Jinzhi and Carrick (2019) and Jois, Pallasena and Chakrabarti (2019), followed by four articles in 2020 (Bock & Hackober, 2020; Chambers, 2020; Gornall & Strebulaev, 2020; Tripathy & Devarapalli, 2021). In 2021, six articles were published (Damasceno, Morini & Pannellini, 2021; Frare & Beuren, 2022; Malyy, Tekic & Podladchikova, 2021; Rodrigues & de Noronha, 2023; Straker *et al.*, 2021; Torres & Godinho, 2021), and before December 2022, the final four (Hidayat *et al.*, 2022; Kartanaitė & Krušinskas, 2022; Kotha, Shin & Fisher, 2022; Wang *et al.*, 2022). Most of the studies (ten) appeared in business and management journals, while five were published in financial and economics journals. Meanwhile, three papers were published in what were rather technical outlets. The descriptive information, including on the authors of the articles, year of publication, journals and their fields, locations and sectors are shown in Table 1.

Table 1. Descriptive findings.

Article	Journal	Field	Location	Sector
Bock & Hackober, 2020	<i>Business Research</i>	Business and management	Global	Multiple
Chambers, 2020	<i>Transportation Research Part A: Policy and Practice</i>	Transportation	Singapore	Ride sharing
Damasceno, Morini & Pannellini, 2021	<i>Innovation & Management Review</i>	Business and management	Brazil	Proptech
Frare & Beuren, 2021	<i>European Journal of Innovation Management</i>	Business and management	Brazil	Fintech
Gornall & Strebulaev, 2020	<i>Journal of Financial Economics</i>	Finance and economics	US	Multiple
Hidayat <i>et al.</i> , 2022	<i>Borsa Istanbul Review</i>	Finance and economics	Global	Multiple
Hogarth, 2017	<i>New Genetics and Society</i>	Science	US	Biotech
Jinzhì & Carrick, 2019	<i>Emerging Markets Finance and Trade</i>	Finance and economics	China and US	Ride sharing
Jois, Pallasena & Chakrabarti, 2019	<i>Journal of Information Technology Case and Application Research</i>	Business and management	India	Tech
Kartanaitė & Krušinskas, 2022	<i>Engineering Economics</i>	Finance and economics	Global	Multiple
Kotha, Shin & Fisher, 2022	<i>Strategic Entrepreneurship Journal</i>	Business and management	China and US	Multiple
Malyy, Tekic & Podladchikova, 2021	<i>Technological Forecasting and Social Change</i>	Business and management	US	Multiple
Rodrigues & de Noronha, 2023	<i>Innovation & Management Review</i>	Business and management	Brazil	Multiple
Straker <i>et al.</i> , 2021	<i>Business Horizons</i>	Business and management	US	Biotech
Torres & Godinho, 2021	<i>Small Business Economics</i>	Business and management, finance and economics	Europe	Multiple
Tripathy & Devarapalli, 2020	<i>Journal of Public Affairs</i>	Policy	India	Edutech
Wang <i>et al.</i> , 2022	<i>Systems Research and Behavioural Science</i>	Business and management	China	Tech (social media)

Source: Authors' analysis of the reviewed articles.

4.1.2 Location and sector

The unicorns studied in the reviewed articles were spread across the US, China, Brazil, India, Singapore, and Europe, with several articles analyzing a global sample. The significant weight of US and China in the unicorns' playfield is manifested in our results, with seven cases between the two countries. However, the cases from the developing countries were clearly present, with six other studies focusing on them: three from Brazil, two from India, and one from Singapore. To our surprise, there were no studies focusing on a single European unicorn or country, despite constituting over 12% of the total numbers of unicorns globally (Statista, 2023). Most of the studied unicorns were tech-based or tech-enabled, although they spanned different sectors. Several studies, especially those with a continental or global sample, covered multiple sectors at once. These are additionally shown in Table 1.

4.1.3 Method and data sources

Despite what could be expected from a financially inclined field of enquiry (Cowden *et al.*, 2020), over half of the studies (nine) followed a qualitative case study approach. This can be attributed to the explanatory nature of those articles, with most of them trying to identify the factors influencing success, the valuation dynamics, or the attractiveness of unicorns to investors.

Two of the studies were purely based on primary data sources (Damasceno, Morini & Pannellini, 2021; Frare & Beuren, 2022). Two of the qualitative case studies relied on a mix of primary (interviews) and secondary (content analysis of documents) data (Jinzhi & Carrick, 2019; Rodrigues & de Noronha, 2023). Six qualitative case studies relied on secondary data solely from documents, websites, and media (Chambers, 2020; Hogarth, 2017; Jois, Pallasena & Chakrabarti, 2019; Straker *et al.*, 2021; Tripathy & Devarapalli, 2021; Wang *et al.*, 2022). Seven studies relied on statistical analysis of information about unicorns found in startup databases (Bock & Hackober, 2020; Gornall & Strebulaev, 2020; Hidayat *et al.*, 2022; Kartanaitė & Krušinskas, 2022; Kotha, Shin & Fisher, 2022; Malyy, Tekic & Podladchikova, 2021; Torres & Godinho, 2021).

It is worth noting, however, that studies analyzing information about unicorns from databases relied on specific databases, with all but two studies gathering information from multiple ones. The most used databases were CB Insights (Gornall & Strebulaev, 2020; Kartanaitė & Krušinskas, 2022; Kotha, Shin & Fisher, 2022; Malyy, Tekic & Podladchikova, 2021; Torres

& Godinho, 2021), Crunchbase (Bock & Hackober, 2020; Kotha, Shin & Fisher, 2022; Malyy, Tekic & Podladchikova, 2021), and PitchBook (Gornall & Strebulaev, 2020; Hidayat *et al.*, 2022; Kotha, Shin & Fisher, 2022).

The following section will focus in more detail on analyzing the factors that influenced the emergence and growth of unicorns, at contextual, firm, and individual levels.

4.2 Content findings: Influencing factors

The reviewed articles tried to explore the factors influencing the emergence and growth of unicorns at different levels. We identified those factors and arranged them into contextual, firm-level, and individual factors, based on the embeddedness approach to the unicorn phenomenon. The factors are summarized in Table 2 and elaborated upon in the remainder of this section.

Table 2. Factors influencing the emergence of unicorns.

Contextual factors	Cultural norms (Chambers, 2020; Torres & Godinho, 2021); Digital shift and technological advances (Wang <i>et al.</i>, 2022); Ecosystem networks (Torres & Godinho, 2021; Kotha, Shin & Fisher, 2022); Enabling ecosystem infrastructure (Torres & Godinho, 2021); Funding availability and access (Bock & Hackober, 2020; Chambers, 2020; Straker <i>et al.</i>, 2021); Geographical location (Hidayat <i>et al.</i>, 2022; Kartanaité & Krušinskas, 2022; Tripathy & Devarapalli, 2021); Human capital and labor market conditions (Bock & Hackober, 2020; Torres & Godinho, 2021); National and environmental crisis (Damasceno, Morini & Pannellini, 2021; Rodrigues & de Noronha, 2023); and Political and economic situation (Bock & Hackober, 2020)
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Firm-level factors	Business model innovation (Damasceno, Morini & Pannellini, 2021; Jois, Pallasena & Chakrabarti, 2019; Tripathy & Devarapalli, 2021; Wang <i>et al.</i>, 2022); Collaborative and supportive work culture (Jois, Pallasena & Chakrabarti, 2019; Straker <i>et al.</i>, 2021; Tripathy & Devarapalli, 2021); Decision-making soundness (Jinzhi & Carrick, 2019); Designing and testing products rigorously (Straker <i>et al.</i>, 2021); Digital marketing (Hidayat <i>et al.</i>, 2022; Kotha, Shin & Fisher, 2022; Malyy, Tekic & Podladchikova, 2021); Financial viability (Hidayat <i>et al.</i>, 2022; Kotha, Shin & Fisher, 2022); Founding team size (Kotha, Shin & Fisher, 2022); Fundraising, consistently (Jinzhi & Carrick, 2019; Jois, Pallasena & Chakrabarti, 2019); Industry, vertical (Hidayat <i>et al.</i>, 2022; Kotha, Shin & Fisher, 2022); Information availability and contractual terms (Gornall & Strebulaev, 2020); IPO early (Gornall & Strebulaev, 2020; Kartanaitė & Krušinskas, 2022); Platform and SaaS business models (Chambers, 2020; Jois, Pallasena & Chakrabarti, 2019); Positioning, branding and reputation (Chambers, 2020; Frare & Beuren, 2022); Scientific (knowledge) excellence (Straker <i>et al.</i>, 2021); Strategic alliances (Jinzhi & Carrick, 2019); Technological and innovation capabilities (Jinzhi & Carrick, 2019; Wang <i>et al.</i>, 2022); Workforce size (Hidayat <i>et al.</i>, 2022); and Workforce skills and training (Jois, Pallasena & Chakrabarti, 2019, Tripathy & Devarapalli, 2021).
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Individual factors	Academic credentials, experience, passion, personality (Bock & Hackober, 2020; Damasceno, Morini & Pannellini, 2021; Jinzhi & Carrick, 2019; Jois, Pallasena & Chakrabarti, 2019; Kotha, Shin & Fisher, 2022; Straker <i>et al.</i> , 2021; Tripathy & Devarapalli, 2021); Mindset and orientation (Straker <i>et al.</i> , 2021); Personal connections and networks (Hogarth, 2017; Jinzhi & Carrick, 2019); and Spotting and evaluating opportunities (Jinzhi & Carrick, 2019).
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Source: Authors' analysis of the reviewed articles.

4.2.1 Contextual factors

On a contextual level, there are a variety of factors that influence the emergence and growth of unicorns, their spreading across the different components of an entrepreneurial ecosystem. Unicorn development was found to depend on the overall political and economic situation of a country (Bock & Hackober, 2020), with crises such as the economic crisis that Brazil went through between 2014 and 2017 (Damasceno, Morini & Pannellini, 2021) and the COVID-19 crisis, which Rodrigues and de Noronha (2023) investigated in terms of Brazilian unicorns' strategies to mitigate its profound impact on their prospects. The location of the company also plays an important role in terms of proximity to investors, target markets, other companies in its value chain and support services. The studies by Hidayat *et al.* (2022) and Kartanaitė and Krušinskas (2022) found that place and proximity play an important role in receiving capital and becoming a unicorn, with East Asia and the US marked as the most favorable destinations (Hidayat *et al.*, 2022). However, the market where the startup operates in or targets is equally important. In case of Byju, the edtech unicorn, originating in India was an essential success factor, as the country is known for its huge education market and needs (Tripathy & Devarapalli, 2021).

With regard to the enabling effect of a healthy ecosystem, market conditions and the physical infrastructure including accelerators and utilities are also important contributing factors (Torres & Godinho, 2021). The availability of highly educated human capital was found to be necessary for the emergence of successful ventures, as with the overall labor market conditions (Bock & Hackober, 2020; Torres & Godinho, 2021). Chambers (2020) regarded the availability and ease of securing funding in the 2010s as a supporting factor

to the rapid growth of oBike. The funding-based view is also shared by Bock and Hackober (2020) after reviewing data of more than 200 unicorns globally and Straker *et al.* (2021) commenting on the Theranos' case and identifying early family investors as a support factor.

Equally important to these elements is the networking among the different actors of the entrepreneurial ecosystem and the support mechanisms (Torres & Godinho, 2021; Kotha, Shin & Fisher, 2022). Cultural norms were found to play a role as well in the social situatedness of unicorns (Torres & Godinho, 2021). For example, the prevalence of sharing culture in Southeast Asia made it easier for oBike, a bike sharing firm, to flourish (Chambers, 2020). Wang *et al.* (2022), deciphering the value creation process of ByteDance, the unicorn with the highest valuation globally and the mother company of the TikTok social platform, argue that the digital shift and technological advancements are two important trends expanding the horizons of platform-based companies in terms of both content and traffic.

4.2.2 Firm-level factors

Jinzhi and Carrick (2019), in their analysis of 68 Chinese unicorns and running a comparative study of Didi and Uber, identified a mix of company-related factors contributing to the emergence of unicorns such as those possessing unique technological and innovative capabilities, establishing early strategic alliances with partners and government bodies, making rational decisions, and acting tirelessly to raise capital. The latter was also a common feature in the success of FreshDesk (Jois, Pallasena & Chakrabarti, 2019). Throughout the rest of this section, we will analyze the firm-level factors that were discussed in the reviewed articles.

Chambers (2020) viewed the enthusiasm towards platform business models, such as technology-as-a-service, as a main driver that enabled unicorns to raise significant funds from investors. Also, strategic decisions involving business model innovation, such as implementing a direct online home-buying and acquiring a fintech company to facilitate the process, was key to the rapid growth of the major proptech unicorn in Brazil (Damasceno, Morini & Pannellini, 2021). Adjusting the value proposition to target an underserved market, including the adoption of a flexible pricing strategy and continuous product innovation was a key driver in Freshdesk gaining the lion's share in the customer relationship management (CRM) market among small and medium-sized enterprises (SMEs) (Jois, Pallasena & Chakrabarti, 2019). In Byju's case, they adapted their online educational

courses to the needs of the new generations by making them multimedia-based and interactive. They also positioned themselves as a customer-oriented organization by opening offices in several Indian cities and abroad and adopted a personal selling approach (Tripathy & Devarapalli, 2021). Moreover, the innovative business model of ByteDance (Wang *et al.*, 2022), based on leveraging AI technology for targeted user content distribution and relying on a loop of traffic construction, traffic expansion, and traffic monetization, can be seen as exemplary for network based social platforms. In the case of knowledge-intensive unicorns, following a rigorous design, testing and trial methodologies, as well as relying on the latest scientific research and experts' views is essential for the validity and viability of their offerings (Straker *et al.*, 2021).

With regard to the sector a unicorn operates within, Hidayat *et al.* (2022) investigated the factors that can lead to more favorable investment decisions by venture capitals. They found that firms within specific sectors, such as information technology services (e.g., fintech, cleantech, crypto and blockchain, augmented reality and e-commerce), automotive, real estate, insurance, and biotechnology, are more lucrative to investors than more traditional ones such as clothing, retail, consulting, and education services (Hidayat *et al.*, 2022). The attractiveness of software as a service (SaaS) companies was the main reason behind FreshDesk's success as a unicorn as well (Jois, Pallasena & Chakrabarti, 2019). However, public scepticism towards certain subsectors such as crypto and augmented reality (AR) is affecting their valuations (Hidayat *et al.*, 2022). The sectorial predisposition of unicorns towards VC funding was also evident in Kotha, Shin and Fisher's (2022) study of the influencing factors on 337 unicorns.

The positioning and branding of a company plays a role in building bridges with users and establishing a leading position in the market, as in the case of oBike branding itself as the "Uber of bikes" and the "future of transportation" (Chambers, 2020). The promotion of company offerings and activities via social media was an important factor in garnering users' and investors' buy-in as well (Hidayat *et al.*, 2022). The media and online exposure effect were also found by Kotha, Shin and Fisher (2022), in their study on the factors influencing the growth of 337 unicorns and Malyy, Tekic and Podladchikova (2021), who investigated the correlation between web traffic and high-growth firms, contributing positively to unicorns' fortunes. Closely related are Frare and Beuren's (2022) findings that the company reputation and perceived social identity play an important role in a firm's performance in improving innovation and employee engagement and commitment.

On the valuation of unicorns, Gornall and Strebulaev (2020) tried to unpack the overvaluation black box of unicorns and identified information availability or lack of it, contractual terms, and the decision to launch an initial public offering (IPO) early as contributing factors to startups accumulating higher valuations and achieving the unicorn status faster. The latter, early IPO, was also a common finding identified by Kartanaitė and Krušinskas (2022) in their analysis of the IPOs of 97 unicorns globally. The financial viability of a unicorn as its revenue (Hidayat *et al.*, 2022) or profitability (Kotha, Shin & Fisher, 2022) was found to be positively correlated to its valuation as well.

The number of founders has been found to influence firm growth with somewhat conflicting results, as more founding team members could tap into more potential resources and establish networks but can also lead to misunderstandings and differences in objectives under the conditions of uncertainty and risk (Kotha, Shin & Fisher, 2022). However, the number of employees a company has, and its larger size, was found to be positively correlated to its growth, with every 1% increase in the workforce adding more than 0.32% to its valuation (Hidayat *et al.*, 2022). Regardless of the debate on how the number of founders or employees might impact a unicorn's growth, having a talented workforce receiving continuous training to upgrade their skills through a supportive firm culture was proved to have a positive influence on the rapid growth of FreshDesk (Jois, Pallasena & Chakrabarti, 2019) and on the extraordinary success of Byju (Tripathy & Devarapalli, 2021). On the other hand, working in silos with minimal collaboration was one of the factors that contributed to the demise of Theranos (Straker *et al.*, 2021).

4.2.3 Individual factors

Several of the founding team attributes such as their quality, academic credentials, previous experience, personality, passion, and charisma were found to play a significant role in driving the unicorn forward at early stages (Bock & Hackober, 2020; Jinzhi & Carrick, 2019; Jois, Pallasena & Chakrabarti, 2019; Kotha, Shin & Fisher, 2022; Straker *et al.*, 2021; Tripathy & Devarapalli, 2021). Damasceno, Morini and Pannellini (2021) revealed that the two founders of the biggest real estate platforms in Brazil graduated from top US business schools.

Moreover, the personal connections and networks of the founders have been found to be vital for unicorn growth as this helps facilitate access to VC finance (Hogarth, 2017; Jinzhi & Carrick, 2019), establish strategic alliances

with firms and other organizations and communicate with policymakers (Jinzhi & Carrick, 2019). It was reported as well that the founders' mindset and skills play a clear role in guiding the unicorn's direction. For example, a valuation-based orientation instead of a focus on business sustainability was shown to have a destructive impact in the case of Theranos (Straker *et al.*, 2021), while having founders and startup leaders who were able to spot and evaluate opportunities (Jinzhi & Carrick, 2019) directed their business towards more viable spaces.

5. Discussion

The unicorn phenomenon is a recent one, but clearly attracting increasing scholarly attention, though unequal to what it receives in the “startup world” (Giardino *et al.*, 2023). Our systematic review focused primarily on identifying the factors influencing the emergence of unicorns at the different levels of context, firm, and individual, which are rather unexplored in the literature (Cristofaro *et al.*, 2024). This is in contrast with the recent review by Giardino *et al.* (2023), which applied a holistic lens in reviewing the literature on the unicorn phenomenon. Hence, this study is among the limited reviews that focus on the emergence of unicorns and discusses these factors, providing valuable insights to scholars, policymakers, and entrepreneurs.

On a contextual level, most of Isenberg's (2011) six domains of an entrepreneurial ecosystem, consisting of policy, markets, finance, human capital, culture, and support, were evident among the reviewed papers. The location of a unicorn, for example, was found to affect its ability to access funding, target customers, and become embedded within the local value chain. This spatial relevance was confirmed in previous studies as well (e.g., Brieger & De Clercq, 2019; Klyver, Nielsen & Evald, 2013). Cultural norms were found to play an important role in the social embeddedness of unicorns, which falls in line with similar conclusions regarding entrepreneurial firms more generally (Breitenecker *et al.*, 2017; Brieger & De Clercq, 2019). However, there is a dearth of studies that applied a policy lens to understanding the unicorn phenomenon. The only exception is Bock and Hackober (2020), who tangentially mentioned it from an economic development perspective. Also, only a few studies investigated the impact of external crises, such as economic downturns or COVID-19, on unicorns and their risk-mitigation strategies (Damasceno, Morini & Pannellini, 2021; Rodrigues & de Noronha, 2023).

Understanding the firm-level factors provides important guidance to entrepreneurs on shaping their business and operational models. Confirming previous remarks by Ganau and Rodríguez-Pose (2019) and Kecskes (2021), most unicorns are heavily reliant on technology in their business models. This rhymes with the conclusions of Cristofaro *et al.* (2023) that the network effect and zeal of platform-based startups, Snapchat in their study, plays an important role in attracting investors. However, the sectoral focus of these tech startups was widely varied, including real estate (Damasceno, Morini & Pannellini, 2021), healthcare (Straker *et al.*, 2021), or transportation (Chambers, 2020), which made them especially attractive to investors (Kenney & Zysman, 2019). Another explanation for this variance, beyond the investment attractiveness of certain sectors, can be attributed to the fact that innovation occurs differently in different sectors (Breschi & Malerba, 1997; Küttim, 2020). Moreover, the financial health of a unicorn has a clear impact on investors' appetite to invest in them (Hidayet *et al.*, 2022; Kotha, Shin & Fisher, 2022), which aligns with Ganau and Rodríguez-Pose's (2019) earlier remarks on the importance of startups' balance sheets in influencing valuations. Also, the size of the firm and the number of employees were positively correlated to it becoming a unicorn (Faccio, 2010).

However, as there were only four studies that relied on primary data, there was little information on the less tangible factors on the firm level, such as innovative culture (Linnenluecke, 2017; Naz, Niebuhr & Peters, 2015), and the individual factors in general. Still, several studies found that the characteristics of the founders and firm leadership were important influencing factors on unicorns' progress (e.g., Jinzhi & Carrick, 2019; Jois, Pallasena & Chakrabarti, 2019), which confirms the conclusions of Sousa and Rocha (2019) and Ratzingeret *et al.* (2018) on the importance of startup leaders' skills on the firm's success.

Across our analysis of the factors affecting the emergence of unicorns, we noticed that some of the identified factors could be plotted against more than one level. Networks, for example, can be used to explain the ecosystem dynamism and the opportunities it brings on a contextual level (Torres & Godinho, 2021; Kotha, Shin & Fisher, 2022). On the individual level, however, founders' networks were found in several instances to be important in building strategic alliances and raising capital (Hogarth, 2017; Jinzhi & Carrick, 2019). Moreover, despite the plethora of factors identified by the reviewed articles, none of them established connections between the different factors within a given level or among the different levels.

Reviewing the results of this study against the existing literature on firm embeddedness, it can be concluded that there are no fundamental differences between the factors influencing the prospects of unicorns and those affecting mainstream startups. However, there are three factors that have a particular emphasis in unicorn settings. First, the critical role of the location of potential unicorns, as this facilitates their access to needed investment, allows them to tap into lucrative market opportunities and customer segments, and enables them to leverage an already well-functioning value chain. However, this spatial situatedness is not strictly geographical in nature as networks and technology are redefining the ecosystem boundaries based on the connectedness among its elements (Muldoon *et al.*, 2022). Second, the heightened importance of adopting innovative business models that have advanced technologies at their core and use it to disrupt existing markets and change the status quo. And third, the visible role of the founders' characteristics and networks in facilitating funding procurement and building necessary strategic alliances.

Also, we can reaffirm the conclusions of the previous studies that none of the embeddedness levels or factors operate in isolation but produce combinations which can accelerate firm growth. The overall picture is a complex web of interdependencies of external and internal factors in various domains (policy, markets, finance, human capital, culture, supports, networks, motivation) cutting across the context, firm, and individual levels. For example, economic, environmental, and investor-related factors, such as proximity to VC investors, act in combination as drivers for the emergence of unicorns (Bock & Hackober, 2020). It should be added that these factors are not static but develop and their importance changes with time (Wigren-Kristoferson *et al.*, 2022), as the accumulating nature of knowledge and experiences at the individual level allows the unicorn to develop alliances and partnerships at the firm level, and contribute to the understanding of the market, recognizing entrepreneurial opportunities and raising capital.

5.1 Implications

From a theoretical perspective, the study extended the concept of embeddedness to analyze the factors influencing the emergence and growth of unicorns. Embeddedness is used as an umbrella term for all the elements within the external environment, the company, and the people, which directly and indirectly impact a given economic activity (Wigren-Kristoferson *et al.*, 2022). This study thus mapped and organized the influencing factors

identified from empirical studies on unicorns against different levels (Eriksson, 2021; Kecskes, 2021)—context, firm, and individual. Moreover, the study contributes to the scant, yet growing literature on the unicorn phenomenon, which appears to be leading entrepreneurship, investing, and economic development policy discussions. A point of caution to researchers is to avoid the overemphasis on studying outliers and exceptional forms of entrepreneurial firms, such as unicorns. Equal attention should be directed to other, mainstream forms of entrepreneurship (Ahlstrom & Lee, 2024) in our scholarly pursuit of reflecting real-life phenomena (Hammoda, 2024).

On a practical note, our findings can provide useful guidance to ambitious entrepreneurs who visualize their startups as potential future unicorns, as it maps what factors are important for achieving their goal, internally and externally. Hence, they can run a reality check on their competences, resources, business models, and ecosystem readiness to set their expectations and plan accordingly. Policymakers and ecosystem actors can also perform a similar assessment of the health and dynamism of their enabling startup environment and propositions. They can use the findings of this study to better design and implement their policies and plans, to improve the situatedness of existing potential unicorns and attract and nurture the growth of many new ones.

6. Conclusion

The study employed a systematic literature review of empirical research to investigate the relatively new phenomenon of unicorns. It provided insights on some of the descriptive determinants apparent in the investigated articles and analyzed in more depth the factors influencing the emergence of unicorns studied. The identified factors were organized onto contextual, firm, and individual levels, and discussed within the framework of firm embeddedness. It provided several implications for theory and practice, and in the following we highlight its limitations and potential avenues for future research in this niche.

6.1 Limitations

For this systematic review to be as comprehensive as possible, yet precise in exploring the state of empirical research on the phenomenon of unicorns,

the sample size was 17 articles. Although small, it evidentially provided a very rich discourse on the factors influencing the emergence and growth of unicorns. The sample could have been expanded by including other relevant types of startups, such as high-growth firms or gazelles; however, this would have diluted the analysis and impacted the relevance of this study to the literature on unicorns. Additionally, although it would have been beneficial to plot the identified factors on a longitudinal timeline, following the temporal approach of Wigren-Kristoferson *et al.* (2022), there was little information in reviewed articles on how those influencing factors change in time.

6.2 Future research

We believe that an important contribution of our study, as of other systematic literature reviews, is that it paves the way to guide future research avenues in this nascent scholarly subfield. Indeed, there is a dire need for elaborate conceptual and empirical scholarly discussions on the unicorn phenomenon and Schumpeterian entrepreneurship. Future research might want to explore the dynamics and interactive relationships among the different factors, either on one level or on the different levels of context, firm, and individual. There is also a need for more studies that gather data directly and primarily from the unicorns themselves. This will allow us to explore more complex and intricate factors, and their interrelatedness, especially on the individual and firm levels, which have received less attention.

Researchers are urged to apply a policy and innovation ecosystem lens to studying the unicorn phenomenon, given its importance in policy discussions. This could prove helpful in extracting best practices and implementing them, whenever applicable, across regions.

In addition, there is value in applying a temporal lens (Wigren-Kristoferson *et al.*, 2022) when studying the unicorns' embeddedness, as this can provide us with crucial insights as to which factors are important at different evolutionary stages of unicorns, and how decisions are made at different points in time. More studies are needed to develop a better understanding of the impact of crises and management among unicorns. Firm resilience amidst the economic, health, and political crises, which characterizes the modern world, is becoming crucial for ensuring economic sustainability. This would help move beyond the linear growth-based glamorous success stories of unicorns and uncover some failure scenarios to shed light on the avoidable practices and ethical dilemmas of founders and the development of unicorns.

Acknowledgment

The authors would like to thank Mirjam Reino and Mirjam Vichmann, previous master's students at the School of Business and Governance, Tallinn University of Technology, for their support and effort during the initial analysis of the reviewed articles.

Basel Hammoda, PhD is a lecturer in entrepreneurship at the Department of Business Administration, Tallinn University of Technology (TalTech) in Estonia. His research focuses on innovative approaches to entrepreneurial learning and its intersection with the wider entrepreneurship and management fields. He has several publications in the field of entrepreneurship, digital technology, and education and is the editor of *Contemporary Entrepreneurship: Global Perspectives and Cases* (Routledge, 2024).

Merle Küttim is an assistant professor at Tallinn University of Technology, Estonia. She obtained her PhD degree from the same university. Her research interests include university-industry cooperation, knowledge transfer, knowledge networks, commercialization, intellectual property regimes, entrepreneurial ecosystem, entrepreneurial opportunity recognition, and entrepreneurial activity of the population and its subgroups.

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