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Demystifying massive and rapid business scaling – An explorative study on driving factors in digital start-ups

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ABSTRACT

This study explores the concept of massive and rapid business scaling (MRBS) in the context of digital start-ups by identifying 20 factors clustered into seven core drivers. Through inductive qualitative research, the study builds on 53 semi-structured interviews with founders, executives, and advisors, leading to the development of a framework that uncovers seven core drivers of MRBS contributing to the scaling process. These core drivers are as follows: 1) scanning the environment and recognizing opportunities, 2) iteratively adjusting the business model with an asset-light structure, 3) achieving operational excellence through digitization, 4) building an efficient and entrepreneurial workforce combined with leadership and vision, 5) leveraging internal resources to strengthen positioning and expand the market, 6) attracting capital to facilitate growth realization, and 7) cultivating organizational agility and a transformation culture. While core drivers one to five imply a processual nature, the sixth and seventh core drivers serve as a foundation for MRBS. Moreover, this study outlines several areas of tension within the process of MRBS. Therefore, the study provides valuable insights for scholars and practitioners.

1. Introduction

In many start-ups, founders and investors share the common goal of growing the firm massively and rapidly. According to Hurun Research Institute (2021), the number of start-ups growing to a market valuation of $1 billion (USD) or more and not yet listed on a stock exchange nearly doubled from 586 in 2020 to 1058 in 2021, making it the most successful year in history. By definition, start-ups are temporary organizations designed to scale into large companies (Ries, 2011). Scaling is a process of delivering rapid growth through replication (Reuber et al., 2021).

As the start-up landscape continues to evolve, many start-ups are digital businesses to take advantage of the growing opportunities of technological development (Kraus et al., 2019). These digital start-ups, which can be defined as "temporary organizations focused on the creation of high-tech and innovative products, with little or no operating history, aiming to grow by aggressively scaling their business in highly scalable markets" (Giardino et al., 2014, p. 179), are gaining traction and are achieving success in today's digital economy (Islam, 2010; Kraus et al., 2021).

Digital start-ups thrive in today's economy because of multiple reasons. The use of digital technology can help start-ups create and capture new value (Trischler and Li-Ying, 2022), improve their processes and integrate them into new business models (Bouncken et al., 2021). Furthermore, they allow quicker product development cycles (Ojala, 2016) and reduced transaction costs make founding digital start-ups easier than traditional ones (Hair et al., 2012). Contrasting with non-digital start-ups, digital entrepreneurs today operate often without rigid business plans, allowing their behavior and decisions to evolve organically throughout the entrepreneurial process and focus on a continuous advancement in technology (Nambisan, 2017; Kraus et al., 2023). Additionally, the development of a digital start-up occurs amidst high uncertainty (Ojala, 2016), with Wind (2008) highlighting the shift towards network orchestration.

The last decade has demonstrated that especially digital start-ups, such as platform business models, have the potential to scale massively and rapidly (Asadullah et al., 2018; Jin Zhang et al., 2015;

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Ruggieri et al., 2018). In fact, massive and rapid business scaling (MRBS) has increased significantly with recent advances in digitization (Giustiziero et al., 2021), yet it remains a rare phenomenon, with some estimates suggesting that only 3 % of start-ups ever reach $1 billion (USD) in revenue (Kutcher et al., 2014). Furthermore, the pursuit of MRBS is not without its perils. Premature scaling is the most common reason for poorer start-up performance, with 74 % of high-growth digital businesses failing due to premature scaling (Marmer et al., 2011). For clarity, we use the term MRBS, although there is no universal academic definition of it, to refer to an extraordinary level of exponential growth. This growth is evidenced by swift and significant advancements in various aspects of organizational performance.

As scholars point out, it is not well understood how some start-ups achieve MRBS while others struggle to grow (Beekman and Robinson, 2004). While there is a growing body of research on business scaling, much of this research has focused on the challenges of scaling rather than the specific factors that can influence the success or failure of MRBS efforts. Besides, the digital entrepreneurship literature "is still in its infancy" (Kraus et al., 2019, p. 372) and is a "highly under-represented topic"(Zaheer et al., 2019, p. 5). Nevertheless, researchers could identified multiple challenges that constrain companies in their scaling process, including attracting financial capital in a timely manner (Walsh et al., 2005; Vik et al., 2021), choosing the right technology (Walsh, 2004), choosing a scalable business model (Gartner et al., 2022; Reuber et al., 2021; Radenković et al., 2020), technology integration into business model development (Cowan and Daim, 2018) or optimizing the supply chain for growth (Anson et al., 2008). In addition, current literature focuses mainly on the largest companies by market share rather than the scaling process from technology-based start-ups to scale-ups.

It is important to conduct research on specific factors that can influence the success of MRBS efforts for several reasons. Understanding the factors influencing this process is essential for helping stakeholders in digital start-ups develop effective MRBS strategies and achieve success in the digital economy. Furthermore, rapidly growing start-ups are engines of creative destruction and responsible for a large amount of employment growth (Anyadike-Danes et al., 2009). Thereby, digital start-ups identify problems and develop solutions creatively that are rather challenging for incumbent firms (Groen and Walsh, 2013). Findings on MRBS factors can inform policymakers as they develop policies and programs aimed at fostering growth and innovation for start-up ecosystems in the digital economy (Berman et al., 2023).

This study aims to answer how some digital start-ups grow tremendously and perform exceedingly by examining the driving factors of MRBS. Thus, this study aims to answer the research question: *What are the driving factors of massive and rapid business scaling?*

To comprehensively answer our research question, we take over the perspective of dynamic capabilities (DC), which is often used in business growth literature (Leemann and Kanbach, 2022; Fabrizio et al., 2022). We use the concept of DC since digital start-ups have grown in a very disruptive and volatile environment. New markets have been created, old markets have been closed, and established market players have been displaced. Therefore, it is important that digital start-ups increasingly adapt with sensing (perception of the environment), seizing (adaptation and allocation of resources), and constantly transforming to changing environments (Bouncken and Kraus, 2022). DC represent a view both internally of the company and externally of the macro environment and can explain how firms can gain and retain a competitive advantage in changing environments by integrating the internal and external capabilities of start-ups (Pavlou and El Sawy, 2006; Pavlou and Sawy, 2010; Sandberg and Hultberg, 2021; Teece et al., 1997; Weiss and Kanbach, 2022).

Our study follows an inductive, exploratory grounded theory approach (Cohen, 1969; Corbin and Strauss, 1990) that uses DC as a theoretical lens. DC is primarily used as a guide for data collection rather than a rigid framework for data analysis. It provides a starting point for understanding MRBS and assist in the design of our semi-structured interview guide. In our study, we adopt an inductive and exploratory research approach for several reasons. First, MRBS is a phenomenon that is not yet sufficiently supported by solid, established theories that could provide precise hypotheses for deductive analysis. Secondly, the complex and multifaceted nature of MRBS requires a research approach that is open to diverse findings and unexpected outcomes. Third, the inductive, exploratory approach we chose allows us to remain open to emergent themes, patterns, and insights that transcend preconceived theoretical boundaries. In total, we interview over 53 experts, which comprise founders and executives who managed to steer their digital start-ups into a MRBS phase. Additionally, it includes advisors who have either provided support to digital start-ups during their MRBS journey or invested in start-ups undergoing such accelerated growth.

Our study contributes significantly to the under-researched fields of MRBS and digital entrepreneurship by identifying 20 key factors consolidated into seven core drivers, thereby enhancing our understanding of MRBS's multi-dimensional nature. We further expand upon the DC research area by drawing parallels between our identified core drivers and the dimensions of DC, providing fresh insights into its microfoundations from an MRBS viewpoint. Additionally, we introduce a critical perspective by showing potential tensions within the MRBS process, offering a holistic understanding previously absent in the literature.

2. Theoretical background

2.1. Massive and rapid business scaling

Scaling is an integral part of the digital start-up's lifecycle and refers to delivering rapid growth over a period of time through replication (Reuber et al., 2021). Entrepreneurs and investors desire to scale due to multiple reason. Rapidly scaling start-ups often experience faster revenue growth, higher market share, and greater attractiveness to investors (Jovanovic, 1982; Stinchcombe, 2000). In addition, scaling can improve a start-up's visibility and reputation in the marketplace, which can lead to further growth opportunities (Eisenhardt and Schoonhoven, 1990). It can also provide start-ups with a first-mover advantage that enables them to set industry standards, create brand recognition, and erect barriers to entry for potential competitors (Lieberman and Montgomery, 1988). Besides, by demonstrating rapid growth, start-ups can attract more investors who are eager to provide capital. This influx of capital supports further development (Balz et al., 2023). Furthermore, exiting fast-scaling start-ups provides attractive wealth creation opportunities for entrepreneurs (Souitaris et al., 2020) and investors (Schwienbacher, 2008).

Therefore, it is surprising that scaling has received much attention from practitioners and policymakers but little in academia (Shepherd and Patzelt, 2020). In scholarly research, many terms are used to describe rapid scaling firms, including "fast-growing firms" (Almus, 2002), "high-growing firms" (Delmar et al., 2003), "scale-ups" (Tippmann et al., 2023), or "gazelles" (Henrekson and Johansson, 2010). While the terms "fast-growing firms" and "high-growing firms" have been used for a long time, research has mainly examined established firms and not (digital) start-ups. A commonly used threshold is an annual growth of at least 20 % in revenues or employment for three consecutive years (OECD, 2007). The term "scale-ups" is used especially by practitioners and policymakers, but a conceptual definition is not yet realized from a scholarly perspective (Lee and Oh, 2021). Similarly, "gazelles," coined and defined by practitioner David Birch, refers to companies that have achieved an annual growth rate of at least 20 % (Gundry and Welsch, 2001) there are many other measures of scale. Therefore, scholarly researchers conclude that the literature comprises a multitude of definitions, making it difficult to compare the results of different studies as different measures and growth calculations have varying effects on model building and theory development (Hölzl,

2014). Scholars have recognized this as an important problem and have suggested that research should aim for a single or a few possible methods to calculate rapid growth (Delmar et al., 2003). The literature is even more limited when it comes to MRBS rather than general scaling.

The importance of MRBS has prompted researchers to develop empirical methods for determining top performers, yet McKenzie and Sansone (2017) show that most methods can identify only one-fifth of the top performers. These findings are consistent with the performance of professional investors in their search for MRBS start-ups. Research shows that most start-ups selected by venture capitalists (VCs) eventually fail, and only 10 % earn returns by a factor of five on the capital invested (Kerr et al., 2014). In addition, Nanda et al. (2020) examined the persistence of investors to identify top performers but found no performance persistence and argued that deal flow is more explanatory for picking the winners than the inherent screening capabilities of VCs.

Notably, MRBS is not an end goal but a strategic maneuver to achieve earlier mentioned benefits quickly. The ultimate objective of start-ups is the creation of a resilient, profitable, and successful business. The speed and scale of growth are tools that can help reach this end, but they are not definitive markers of success. Moreover, it can lead to certain pitfalls as premature scaling is the most common reason for poorer start-up performance, with 74 % of rapidly growing digital businesses failing due to premature scaling (Marmer et al., 2011). Furthermore, evidence shows that MRBS is often a short-lived episode in the life cycle of start-ups in which only 15 % can sustain massive and rapid growth episodes while 50 % exit the market in the following three to six years (Goswami et al., 2019). Many start-ups are not able to repeat their historical growth success and show that MRBS periods are followed by setbacks and stagnation (Garnsey et al., 2006; Garnsey and Heffernan, 2005). According to Parker et al. (2010), organizational routinization and an improper blending of management strategies may lead to this slowdown in growth. Similarly, Kim and Mauborgne (1997) noted that the difference between high-growth companies and fewer-growing companies may also be due to the strategy pursued by start-ups. High-growth companies focus less on matching or beating their competitors and primarily on making them irrelevant. This is where the strategic use of dynamic capabilities can be critical. As a result, digital start-ups are keen to understand how they can achieve and sustain MRBS.

2.2. Dynamic capabilities in the context of business scaling

Digital start-ups need many capabilities to scale in today's market environment. These capabilities include ordinary capabilities and DC. Ordinary capabilities enable start-ups to make a living (Helfat and Winter, 2011; Winter, 2003) and are anchored in the execution of administrative, operational, and governance functions. Their purpose is to achieve technical efficiency by "doing things right" (Teece, 2014, p. 23). In contrast, the purpose of DC is to achieve alignment with customer needs and technological and business opportunities (Teece, 2014). Therefore, they equip start-ups with the ability to steer their ordinary activities in a strategic direction, specifically focusing on efforts with high profit potential to address and shape the rapidly changing business environment. In other words, they focus on "doing the right things, at the right time" (Teece, 2014, p. 18).

DC are often seen as key to a start-up's long-term success and competitiveness, as they allow the start-up to respond quickly and effectively to changes in the business environment and to gain competitive advantages (Schilke et al., 2018). Based on the work of Teece et al. (1997) and Eisenhardt and Martin (2000), DC are "the firm's processes that use resources—specifically the processes to integrate, reconfigure, gain and release resources—to match and even create market change. Dynamic capabilities thus are the organizational and strategic routines by which start-ups achieve new resource configurations as markets emerge, collide, split, evolve, and die" (Eisenhardt and Martin, 2000, p. 1107) and may benefit start-up performance in a variety of ways: DC adapt the resource base to changing environments (Teece et al., 1997), support resource- and capability-building profitability mechanisms (Makadok, 2001), improve inter-firm performance (Gudergan et al., 2012), improve the effectiveness, speed, and efficiency of organizational responses (Chmielewski and Paladino, 2007; Hitt et al., 2001) and enable start-ups to adjust operations to reduce costs and capitalize on revenue-generating opportunities (Drnevich and Kriauciunas, 2011). They are not fixed or inherent to an organization but can be developed and improved over time.

Following Teece et al. (1997) and Teece (2007), DC can be dissembled into three categories: "1) sense and shape opportunities and threats, 2) to seize opportunities, and 3) to maintain competitiveness through enhancing, combining, protecting, and when necessary, reconfiguring the business enterprise's intangible and tangible assets." (Teece, 2007, p. 1319). The three categories constitute the microfoundations of DC (Ambrosini and Bowman, 2009) and refer to the underlying processes and mechanisms that enable start-ups to identify, create, and capture value. These processes and mechanisms can include factors such as the organization's culture, leadership, and decision-making processes, as well as the skills and capabilities of its individual members. There can be overlaps and interrelationships among DC microfoundations (Leemann et al., 2021). In the following, we will address the three categories in more detail.

The ability of digital start-ups to continuously scan their environment is referred to as sensing. Sensing is an important part of the DC process and involves gathering and filtering environmental data to form hypotheses or assumptions about the plausible evolution of technologies and market developments. It entails scanning external technological developments and evaluating both expressed and latent customer needs (Teece, 2007, 2014). According to Babelytė-Labanauskė and Nedzinskas (2017), sensing has both an external and internal perspective, as it can also involve the recognition of new opportunities and developments within the start-up. To discover new opportunities, scholars suggest that cultivating an entrepreneurial culture can help foster the opportunity recognition process (Jarvis, 2016). In addition, Lumpkin and Lichtenstein (2005) show that organizational learning, particularly cognitive, behavioral, and active learning, can promote opportunity recognition in the organization. Another study by Maine et al. (2015) suggests that successful entrepreneurs in an uncertain environment should use a combination of effectuation and causation. This means being flexible, experimental, and willing to try new approaches while maintaining clear goals and acting decisively to achieve them. A mix of entrepreneurial, managerial, and technical experience can help identify new technological opportunities (Park, 2005). In addition, environmental factors such as network ties and stakeholder feedback can promote opportunity recognition (Ojala, 2016). The sensing process is particularly important for digital start-ups that are trying to scale rapidly and massively as it helps them to make informed decisions about how to adapt and respond to changes in their environment and can enable them to take advantage of new opportunities as they arise. In this way, the sensing process might be a key part of a digital start-up's strategy for MRBS.

The concept of shaping refers to a start-up's ability to proactively influence and steer the trajectory of market development. This entails the introduction of disruptive technologies or business models, the redefinition of industry standards, and the reshaping of consumer expectations (Teece, 2007). Shaping can yield significant competitive advantages, particularly for innovative start-ups. Uber and Airbnb exemplify how start-ups can ultimately create entirely new markets (Lehmann et al., 2022) by leverage their shaping capabilities. These actively pursued strategies to transform their sectors through shaping. By utilizing technology as a disruptive force, creating innovative business models, and redefining customer expectations, start-up can effectively reshape the competitive landscape (Birnbaum et al., 2005).

Seizing refers to the ability of a start-up to act based on the information it has gathered through the sensing process. It is an important part of the DC process, as it allows a digital start-up to capitalize on new

opportunities and adapt to changes by exploiting market opportunities and eluding threats as business opportunities are developed and selected through innovative value propositions. Hence, business opportunities require matching the strengths and weaknesses of organizations and bridging external and internal information for strategy development (Teece, 2007). The seizing process might be particularly important for digital start-ups that are trying to scale rapidly and massively. By acting quickly and decisively, digital start-ups can capitalize on new opportunities and can adapt to changes in their environment in a timely and effective manner. In addition, seizing can help digital start-ups to innovate and introduce new products or services, which can be essential for driving MRBS.

Reconfiguring refers to the ability of a start-up to change its internal structure, processes, and systems in response to changes in its internal and external environment. This can involve reorganizing the start-up's operations, introducing new technology or processes, or making changes to the start-up's culture. Reconfiguring is an important part of the DC process, as it allows digital start-ups to adapt to changes in their environment in a way that is efficient and effective. It requires recombining and reconfiguring assets and organizational structures to sustain profitable growth (Teece, 2007). When environmental changes occur rapidly, a more extensive configuration is required (Helfat et al., 2007). By continually improving and adjusting their internal workings during MRBS periods, digital start-ups can maintain their competitiveness and position themselves for long-term success.

Overall, DC may be particularly important for digital start-ups that are trying to scale rapidly and massively, as MRBS can be seen as a manifestation of DC in action. When digital start-ups undertake massive and rapid scaling efforts, they are essentially trying to sense, seize, and reconfigure opportunities and challenges to achieve rapid and massive growth. How the digital start-up manages the internal and external factors that shape its DC might significantly impact the outcome of this scaling effort.

3. Research methodology

An exploratory approach is used to successfully elaborate the research question and inductively identify (Corbin and Strauss, 1990) and describe factors driving MRBS. Interview studies are well-suited for exploring complex phenomena in a naturalistic setting, and the conduction of semi-structured interviews with experts in the field of MRBS allows us to gain in-depth insights into the experiences and knowledge. Interviewing various and diverse sets of people enables the elaboration of the topic from a different perspective. Thus, we can gain a rich understanding of factors stimulating MRBS.

3.1. Data collection

The data was collected through semi-structured interviews. To ensure a consistent methodology and consistency, as well as digging in-depth into the topic and providing interviewees with the freedom to actively shape the discussion, we conducted semi-structured interviews (Lune and Berg, 2017). The sampling method followed the underlying concept of purposive sampling (Easterby-Smith et al., 2012). Interviews were conducted exclusively with experts who had knowledge or practical experience on MRBS during August and November 2022. The interviewees include 19 founders and executives who have scaled digital start-ups and 34 advisors who support and digital coach start-ups on scaling and investors. Overall, we interviewed 53 experts. In the realm of MRBS, the study ensures the selection of esteemed experts since we have chosen carefully the interviewees based on their profound experience and predetermined knowledge (Creswell and Plano Clark, 2011). To ensure the expert's fit to the study, we applied a set of criteria. Firstly, the experts need to have more than five years of experience in the field of scaling. Secondly, founders should have scaled at least one digital business. Thirdly, investors should have invested in multiple digital start-ups.

Table 1 provides details on the interviewees. We stopped the interview process and sampling after reaching theoretical saturation (Francis et al., 2010). In our study, we determined a theoretical saturation after based on several key observations. Firstly, we noticed a repetition of major aspects or themes across our data sources already expressed in previous data (Morse, 2015). This redundancy was further confirmed through our data analysis, as we did not generate any additional first-order concepts beyond what had already been identified. After 53 interviewees, we were able to transfer the data into generalizable terms (Morse, 2015) and develop a theoretical construct (Khan, 2014; Saunders et al., 2018).

With consent from the experts, the virtual interviews were audio-recorded and transcribed. In total, we collected 19:13 h of interview data, with interviews lasting, on average, 21:45 min what may appear short for the reason to dig deep into the context. Since the interviewed experts are accustomed to dealing with time constraints, we ensured with interviewee-centric questions a smooth procedure of the conversations. By focusing on experts in the respective field allowed us to capture valuable insights based on their knowledge and expertise in a limited amount of time. Lastly, we did not record the intro and outro of the interviewees which explains a shortly appearing average time for the interviews. Finally, our rich dataset is a testament to the quality and depth of the discussions we had with the interviewees. The diverse set of interviewees is condensed in Table 1.

3.2. Data analysis

The data analysis was carried out using the following approach: First, the researcher carefully read their transcribed data and coded the data. Each researcher performed active reading and used open coding. Following the data analysis steps from Gioia et al. (2013), the researchers coded 1st-order themes using the software MAXQDA. Next, we performed investigator triangulation (Patton, 2015) by having the researchers independently review the coded interview data. The independent researchers jointly searched for recurring patterns in the coding of the 1st-order themes to derive the underlying logic (Gioia et al., 2013) and resolved differences in the coding (Hennink et al., 2011; Lapan et al., 2012). After this alignment, the researchers jointly distilled the 2nd-order themes and aggregate dimensions as the basis of our data structure that is portrayed in Fig. 1. To obtain meaningful findings, the authors discussed preliminary findings with knowledgeable peers from digital start-up ecosystems and research colleagues.

4. Findings

Given the lack of a clear definition for MRBS, we first have meticulously derived a comprehensive definition based on the interview data. Accordingly, we define MRBS as follows:

MRBS is a cyclical process that is characterized by outstanding growth in relation to the market average as measured by organization, customers, and revenue growth (massive) to time (rapid). It is amplified by significant capital investments and entrepreneurial culture as a base.

Second, based on the inductive and explorative research design, this study outlines twenty factors that are summarized into seven core drivers of MRBS in digital start-ups, namely (i) scanning environment and recognizing opportunities, (ii) adjusting iteratively the business model with an asset-light structure, (iii) building efficient and entrepreneurial workforce synthesized with leadership and vision, (iv) achieving operational excellence enabled by digitization, (v) leveraging internal and external resources to strengthen positioning and market expansion, (vi) attracting capital as basis for growth realization and (vii) cultivating organizational agility and transformation culture. These findings of our study are accumulated in Fig. 2, which portrays the *Core Drivers of MRBS*.

Table 1
Details of interviewees.

Interviewee	Role	Cluster	Industry
I-1	Head Start-up Incubator	Advisor	Education
I-2	Managing Partner	Advisor	Private Equity
I-3	Co-Founder	Founder	Gaming
I-4	Start-Up Coach	Advisor	Company Building
I-5	Innovation Manager	Executive	Automotive
I-6	CEO	Advisor	Private Equity Company
I-7	Head of Finance and Investments	Advisor	Building
I-8	Group Manager	Executive	Automotive Professional
I-9	Managing Director	Advisor	Service
I-10	Researcher	Advisor	Manufacturing
I-11	Head of Partnerships	Executive	FinTech
I-12	Associate	Advisor	Private Equity Company
I-13	Manager Incubator	Advisor	Building Company
I-14	Serial Founder and CEO	Founder	Building
I-15	Founder	Founder	Academia Company
I-16	Venture Building	Advisor	Building
I-17	Impact Architect, Principal Director	Advisor	Professional Service
I-18	Co-Founder	Founder	Education Company
I-19	Manager Start-up Ecosystem	Advisor	Building Professional
I-20	Venture Manager	Advisor	Service
I-21	Co-Founder and Project Managers Operations	Founder	Travel
I-22	Manager	Executive	Health
I-23	Manager	Executive	*E*-Commerce Company
I-24	Principal and Venture Partner	Advisor	Building
I-25	Program Manager Exzellenz-Center IT	Advisor	Academia
I-26	Investment Manager	Advisor	Private Equity Professional
I-27	Managing Director	Advisor	Service Company
I-28	Senior Manager Digital Strategy	Advisor	Building
I-29	Investment Manager	Advisor	Private Equity
I-30	Consultant	Advisor	Academia Company
I-31	Start-Up Coach	Advisor	Building
I-32	Chief Digital Officer	Executive	Consumer Goods Company
I-33	Managing Director	Advisor	Building
I-34	Serial Founder	Founder	IT & Software
I_35	Founder	Founder	IT & Software Professional
I-36	Senior Vice President	Advisor	Service
I-37	Associate	Advisor	Private Equity Company
I-38	Manager	Advisor	Building
I-39	Co-Founder	Founder	Education
I-40	Co-Founder	Founder	Consumer Goods
I-41	Start-Up Coach	Advisor	Education
I-42	Co-Founder	Founder	Real Estate
I-43	Serial Founder; Venture Partner	Founder	IT & Software
I-44	Senior Investment Manager	Advisor	Private Equity Company
I-45	Scale-Up Coach	Advisor	Building
I-46	Start-Up Coach	Advisor	Academia Professional
I-47	Venture Manager	Advisor	Service Professional
I-48	Growth Advisor	Advisor	Service
I-49	Co-Founder	Founder	Consumer Goods
I-50	Co-Founder	Founder	Digital Health Company
I-51	Partner	Advisor	Building Professional
I-52	Consultant	Advisor	Service
I-53	Investment Manager	Advisor	Private Equity

4.1. Scanning environment and recognizing opportunities

The first core driver, *scanning environment and recognizing opportunities*, focuses on the essential prerequisites to developing business models that allow massive and rapid scaling. Therefore, it is indispensable to continuously monitor and track changing markets as well as technology trends. To bail out the potential of a start-up, it is important to analyze different markets to get an in-depth understanding of the market size, market segments, market timing, market dynamics, as well as technology trends, and technology maturities. By doing so, digital start-ups set the underpinnings for scalable business models that penetrate the right market at the right time with the right technology. Our data suggest that digital start-ups that achieve MRBS were capable of being either one of the first companies in the market or belonged to a fast-follower group trying to benefit from new rising markets. The monitoring of markets, scouting of technologies as well as exploration of customer needs are the basis of the process of opportunity recognition.

In addition, it is equally important to conduct frequent cross-industry and competitor analyses to identify best practices as well as adaptation use cases for the respective digital start-up. Therefore, interviewee 1 outlined, *"Look at the competitors across industries and learn from them instead of reinventing the wheel"*. The ability to quickly implement what is learned from the monitoring activities is a key differentiator for MRBS start-ups. Besides market and technology scouting, digital start-ups need to screen and evaluate customers' needs, preferences, and characteristics and define relevant target groups. Hence, digital start-ups need to conduct different customer analyses to identify the pain points of customers as well as unsatisfied or unknown customer needs. Moreover, the respective digital start-up also needs to focus on the monetization potentials of the customer segments. Therefore, a thorough customer understanding, including economic indicators such as the willingness to pay, or the frequency of use, is important to understand the strength of the customer need. The data showed that digital start-ups achieving MRBS are particularly focused on getting a clear and comprehensive picture of their target customers.

4.2. Adjusting iteratively the business model with an asset-light structure

The second core driver, *adjusting iteratively the business model with an asset-light structure*, focuses on choosing the right hypotheses and developing business models that allow massive and rapid scaling.

Our data underscores the need to formulate hypotheses and test them iteratively, for example through pilot projects. The purpose of this is twofold: First, to confirm the fit between problem and solution, and then, in the next phase, to establish a robust product-market fit. Validating or disproving these hypotheses is a critical component of creating for MRBS. This process examines customer and user needs, technological feasibility, and the economic viability of the initiative. In addition, digital start-ups that frequently achieve MRBS tend to adopt asset-light business models. This strategic decision minimizes both the capital outlay and operating costs associated with scaling, allowing them to grow rapidly with minimal financial burden. The triadic synergy of desirability, feasibility and profitability combined with an asset-light model underscores the basic requirements for a MRBS business model.

4.3. Building efficient and entrepreneurial workforce synthesized with leadership and vision

The third core driver, *building efficient and entrepreneurial workforce synthesized with leadership and vision,* emphasizes the importance of human personnel and leadership communication. MRBS start-ups place great emphasis on finding and attracting the best talent in their industry. Therefore, they often work with third parties, especially recruiters, to actively identify and poach qualified individuals from reputable firms and competitors. Managing MRBS start-ups ask for permanent endeavors as it involves instant adaptations and fast decisions. Therefore,

Fig. 1. Data analysis following Gioia et al. (2013).

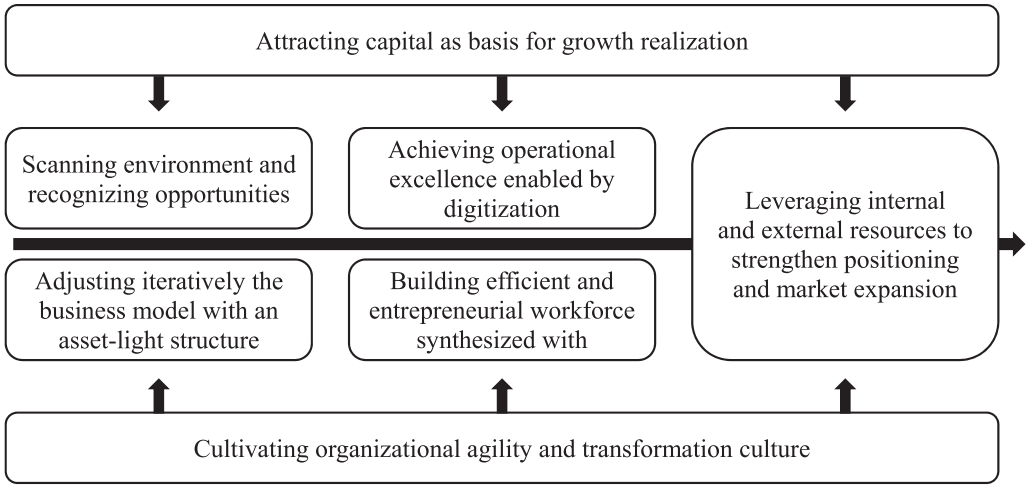

Fig. 2. Core drivers of MRBS.

the interviewees outline the necessity to develop mechanisms to orchestrate tasks and responsibilities efficiently within the start-up and to build up resilient organizational structures. The orchestration ability entails strong human resource management involving internal stakeholders. Therefore, the venture needs to provide development programs as well as incentives to create or expand the expertise and competencies of its employees. With the rapid growth of the start-up, the management board must evaluate the competencies and complementarity of the staff base to identify personnel bottlenecks and lacking competencies. Consequently, the start-up needs to intensify employer-branding activities attracting outstanding talents that support the corporate vision and support the rapid scaling endeavor.

As founders navigate the MRBS process, they encounter the challenge of assuming the role of CEOs. This transition can be particularly challenging for many, as highlighted by interviewee 45 who stated, *"The transition from a founder towards a CEO is very difficult due to lacking management experience."* Thus, it is advantageous to alienate external managers or/and to build up management competencies to build up efficient management structures to direct and execute scaling strategies. Managers have to communicate the vision as well as the growth strategy enhancing cohesion and alignment among the workforce. MRBS start-ups must therefore pay particular attention to middle management, as they must implement the strategy set by top management.

However, some interviewees emphasized the tensions of establishing management structures. On the one hand, these structures provide important oversight, but they can also impose inflexible procedures that come with increased administrative tasks and compliance requirements. Conversely, the associated administrative burdens and compliance obligations may strain scarce resources and divert attention from the start-up's fundamental strengths while stifling creativity and innovation.

4.4. Achieving operational excellence enabled by digitization

The core driver, *achieving operational excellence enabled by digitization,* embraces practices contributing to the overall performance and operational efficiency enhancement. Accordingly, the development of a massively and rapidly scaling digital start-up requires lean and efficient structures and processes that continuously improve operational excellence. Therefore, digital start-ups need to monitor internal processes and structures quantitatively and qualitatively to identify bottlenecks and respective optimization potentials.

An integral part of achieving operational excellence is the definition and tracking of Key Performance Indicators (KPIs). The definition of relevant KPIs, coupled with their continuous tracking and monitoring, emerged as a pivotal practice for MRBS in our data. In addition to the use of KPIs, another crucial aspect of achieving operational excellence in digital start-ups is the establishment of efficient processes through automation and standardization. By automating repetitive tasks and standardizing procedures, businesses can significantly enhance their operational efficiency. This approach not only ensures consistency but also reduces the likelihood of errors, which becomes particularly important when scaling operations.

Integrating technology and big data are essential in building up automation mechanisms to implement standardized processes. The development of a flexible and scalable technology infrastructure outlines the importance of investing in and building a technologically advanced, flexible, and scalable infrastructure that propels business scaling. This technological groundwork is composed of an integrative tech stack that, by design, caters to the evolving and expanding needs of the start-up often using state-of-the-art cloud solutions.

Notably, the interviewees underscore the importance of significantly investing in marketing and sales efforts as a fundamental strategy to enhance product visibility. A consistent investment ensures that a business's products or services remain at the forefront of its target market's consciousness, thereby increasing potential for higher sales volume and market share. Selecting the right channels plays a crucial role in reaching the desired target audience effectively and efficiently. Continuous evaluation of these channels ensures that marketing and sales efforts are producing the desired results, and adjustments can be made as needed. Furthermore, collaborating with testimonials, pilot customers, partners, and external experts as consultants enhances credibility, attracts new customers, and improves process efficiency.

Among those interviewed, some mentioned a significant tension regarding the balance between striving for operational excellence and the possible drawbacks incurred by prioritizing efficiency in digital start-ups. While operational excellence contributes to productivity and scalability, they run the risk of neglecting the needs and preferences of the customer, thus jeopardizing their overall experience and suitability for the market. Furthermore, a persistent drive towards efficiency could result in start-ups taking shortcuts that may compromise standards of quality, safety, or compliance, thus damaging their reputation. Moreover, an efficiency-focused approach could limit learning and growth opportunities, as start-ups may avoid the risk-taking and experimentation that are essential for innovation and long-term growth.

4.5. Leveraging internal and external resources to strengthen positioning and market expansion

The core driver *leveraging internal and external resources to strengthen positioning and market expansion* relates to the transformation of the venture towards an established and expanding market participant with competitive advantages. To strengthen and expand the positioning of the start-up in the market, the product must be developed and adjusted continuously to changing market conditions as well as altering customer needs. According to interviewee 2, *"Low-innovative companies rapidly lose traction due to market saturation and eroding customer interests."* Therefore, the start-up needs to integrate and utilize customer feedback in their product development to react to changing conditions, ensure relevance for the customers, and avoid creative destruction from competitors or emerging ventures. The customer-centric adaptation and transformation of the venture provide a true value that can serve as an MRBS differentiation criterion, and therefore it creates competitive advantages. According to the interviewees, MRBS digital start-ups have a strong focus on customers and the value proposition to create lock-in effects for customers and market entry barriers for competitors and emerging ventures.

With the strong focus on customers it is equally important to derive measures that keep them in the business ecosystem and reduce churn rates. Hence, a strong service orientation that is facilitated by automation and mass customization increases customer relationship management as well as customer satisfaction. Furthermore, the achieved revenue and customer base growth act as a strong signal to existing or new investors to close additional financing rounds being necessary to achieve MRBS.

The interviewees delineated that prospering digital start-ups face sooner or later fierce and strong competition. Therefore, they aim to significantly outperform competitors; according to the interviewed experts, different measures can be realized in this sense. Interviewee 4 claimed, *"Do not back down from the fight. Stand for your vision and your strategy and find your USP that can be used to build a competitive advantage."* As liquidity continues to grow, MRBS may consider acquiring competitors as a strategic move to establish market leadership and gain a significant competitive edge over their remaining market players. Therefore, fierce competition often characterized by price wars can be eliminated, and start-ups can offer unique value propositions and avoid a "stuck-in-the-middle" dilemma. Furthermore, digital start-ups often tend to gain the upper hand in niche markets, which subsequently serves as a stepping stone to larger markets. However, the interviewees highlighted that as stakeholder numbers grow due to expansion activities, there's a corresponding increase in the need for coordination and consensus, which could slow down decision-making processes. This sluggishness can undermine a venture's agility, hindering the swift

execution of key initiatives to capitalize on opportunities or adapt to market shifts. Moreover, with an expanded stakeholder base, communication complexity enhances. Efficiently disseminating information to an increasingly large and diverse group can become a complex task, consuming substantial time and resources.

4.6. Attracting capital as basis for growth realization

The core driver *attracting capital as basis for growth realization*, forms an overarching core driver that constantly applies in the overall MRBS process having overarching significance. According to the interviewees, the MRBS of digital start-ups requires significantly large financial resources to build and promote the product as well as to transform the organization from an early-stage start-up into a scalable venture. Necessarily, the start-up actively engages with investors, such as venture capital firms, and closes investment rounds to obtain liquidity to realize the scaling plan. This has a dual objective: to secure future rounds of funding and to obtain the long-term support and guidance of investors. Therefore, digital start-ups that actively seek to satisfy their investors have a better chance of achieving MRBS. Our interviewees often associated the closing of large investment rounds with the acquisition of credibility, which in turn helps to attract additional investors. Rapid market entry, supported by substantial capital, was seen as critical to gaining significant market share early. In addition to capital, investors often contribute their industry-specific expertise, advice, and extensive networks. Successful planning and integration of these external resources has a noticeable positive impact on scaling, as they enrich the company's knowledge base, extend its network in the start-up industry or business segment, and helps to attract key resources, such as highly skilled executives.

As the interviewees highlighted, attracting capital for MRBS often means a tense balance for start-ups. Equity dilution becomes a reality as VCs demand a stake in the company, potentially limiting founders' control over decision making. This also leads to high expectations as VCs seek significant growth and successful exits, which can lead to immense pressure on start-ups to reach aggressive milestones quickly, thus interviewee 3 stated, *"Scaling on VC money is like scaling on steroid"*. Pursuing these goals can cause start-ups to lose flexibility and autonomy as they must adhere to a specific growth trajectory, sometimes prioritizing short-term gains over long-term sustainability. Valuation and exit pressures arise, affecting future funding and imposing a specific timeframe for growth and profitability. Finally, this scenario can lead to misalignment of interests as VCs focus on maximizing investment value, potentially leading founders to neglect other important aspects of their business.

4.7. Cultivating organizational agility and transformation culture

The last core driver, *cultivating organizational agility and transformation culture*, forms the second overarching driver which has crucial significance for the overall MRBS process. According to the interviewees, the development and reinforcement of measures promoting an entrepreneurial mindset and culture are critical. Hence, an open, appreciative, and constructive business environment that allows experimentation and exploration characterize this culture. This form of cultural underpinning is an effective measure to enhance employee motivation and dedication towards the focus of business scaling and growth. One essential component of such a culture embraces the generation, dissemination, and instant integration of experience, feedback, and knowledge into processes and products. Furthermore, the continuous willingness to reflect and the ability to adapt and renew play a crucial part in the realization of MRBS's ambitions in digital ventures. The critical and multi-dimensional reflection on the business model, processes, and strategies facilitates the identification of optimization potential in terms of desirability, feasibility, and viability. The ability to reflect is often triggered by the fear of digital ventures becoming obsolete or being outperformed by competitors. Hence, scrutinizing the status quo and defining new paths forward are essential to scale massively, even if it implies "*kill your darlings, make hard decisions because pivoting is difficult from a psychological view*," according to interviewee 51, implying to question the main hypotheses and consequently change the existing product offering.

Nevertheless, digital start-ups are often caught between scaling and preserving their unique culture. As they grow in complexity and adopt bureaucratic structures, their initial agility, risk-taking, and innovative spirit often face stifling effects thereby potentially suppressing the dynamic qualities that once defined the organization. In addition, scaling requires rapid hiring, which can disrupt the initial culture. As the focus may shift to hiring specialized and experienced personnel, it can be challenging to balance this with the foundational entrepreneurial ethos of the start-up.

5. Discussion

5.1. Massive and rapid business scaling and its interrelations to dynamic capabilities

The data drawn from our study and its analyses provide important insights into MRBS. The primary findings of our study highlight that multiple factors significantly contribute to shape and impact of MRBS. The identified seven core drivers of MRBS exhibit similarities to the concept of DC.

The core drivers *Scanning the environment and recognizing opportunities* and *adjusting iteratively the business model with an asset-light structure* demonstrate parallels to the sensing dimension of DC. By continuously scanning the environment and staying attuned to market trends, emerging technologies, and customer needs, an organization can identify opportunities and seize them before its competitors (Chakravarthy, 1982; Wang and Ahmed, 2007). Moreover, realizing a flexible business model allows organizations to adjust it adequately to changing market conditions (Teece et al., 2016). As identified in the two respective core drivers, start-ups aiming to scale massively and rapidly need to *sense* the environment and react to the external changes with internal adjustments (Teece, 2018). One last important point for this reaction is the realization of an asset-light structure by using digital technologies and form strategic alliances (Seo et al., 2021).

The core drivers *Achieving operational excellence enabled by digitization* and *Building an efficient and entrepreneurial culture synthesized with leadership and vision* demonstrate specific resemblances to the *seizing* dimension of DC. Seizing relates to the attraction, integration, and utilization of internal and external resources to take advantage of market trends, new technologies or altering customer needs identified in the previous core driver *Scanning the environment and recognizing opportunities* (Gebauer, 2011). Thereby, the integration of digital tools plays a crucial role in enabling operational excellence within an organization (Sher and Lee, 2004) by optimizing operations, enhancing efficiency, and delivering values to the customer (e.g., Battleson et al., 2016) Furthermore, DC involve nurturing a workforce that possesses the necessary skills, mindset, and entrepreneurial spirit to drive innovation and adapt to change (Teece, 2014). By aligning the workforce with the organization's vision and providing them with the necessary autonomy and resources, DC can be developed and sustained (Schoemaker et al., 2018).

The core driver *Leveraging internal and external resources to strengthen positioning and market expansion* can be associated with the transforming dimension of DC. DC involve leveraging both internal needs and external contingencies to enhance and transform an organization's competitive positioning and facilitate market expansion (Luo, 2000). This can include developing strategic alliances, partnerships, or collaborations to access complementary resources, capabilities, or markets.

Finally, the core drivers *Cultivating organizational agility and transformation culture* and *attracting capital as a basis for growth realization*

have an overall influence on all other five core drivers and therefore cannot be directly categorized into a specific DC dimension. However, their overarching effect on the other dimensions refers to indirect relations of DC. Especially, the next chapter emphasizes the interplay of the different core drivers by demonstrating areas of tension.

5.2. Reflecting the process of massive and rapid business scaling

Through our investigation, we not only identified the core drivers contributing to MRBS, but we also uncovered notable areas of tension that emerge between them. First, we will briefly discuss these areas of tension, as they hold significant implications for the realization of MRBS.

The extent of unpredictable scaling may affect internal resources, meaning an imbalance in human resources regarding capacity as well as capability which effects the factor of workforce in MRBS. Especially the management face special requirements and increasing bureaucracy can limit the growth. As previously described, operational excellence is a significant important driver for MRBS. However, overemphasizing operational excellence can concurrently diminishes the overall flexibility of start-ups and the drive for innovations. Leveraging internal and external resources request the integration of different stakeholders increasing complexity surrounding the start-up as well as slowing down decision making processes. Consequently, swift, and adaptive responses to evolving market and customer demands are compromised limiting overall growth.

The underlying driver of investment presents a prerequisite for MRBS, but it brings several complications in the context of scaling (Smith, 2005). By receiving investment, the start-up is urged to deliver growth, and the valuation of a start-up mirrors the successful conversion of the investment (Köhn, 2018). This fact is partly realistic for MRBS since start-ups are not able to meet the investors' growth expectations and the valuation of the start-up diverges diametrically from reality. Ultimately, a strong dependency is formed between investors and start-ups, potentially prioritizing short-term goals over long-term sustainability. Lastly, the underlying factor of culture is affected by all areas of tension since they affect the human beings working in the scaling start-ups. Here it becomes obvious, that the potential tension areas are interconnected affecting the scaling process. Interestingly, the data does not show any tension areas for the factors *scanning environment and recognizing opportunities* as well as *adjusting iteratively the business model with an asset-light structure*. By reflecting on the conflict areas, we apply an incremental perspective on MRBS.

In the proposed definition, MRBS implies a cyclical component. Consequently, the core drivers of MRBS are of processual nature and all drivers are relevant to cause and realize massive and rapid growth. Nonetheless, the process of MRBS should not be considered as set since only inherent drive and motivations allow long-term scaling. Consequently, the start-up benefits from the question, *do we want to scale massively and rapidly?* And with a positive answer, the next question implies the component of *when to scale*, considering timing as a crucial element. By posing this previous question(s), the start-up takes an autonomous position having inherent control and power to scale consciously and efficiently.

Finally, we discuss MRBS from a macro-economic and societal perspective. On the one site digital start-ups growing massively and rapidly by providing technological and digital innovation may have the potential to unfold tremendous economic and social value through technological and digital innovation (Gary et al., 2020; Schmidthuber et al., 2020). On the other hand, interviewees reflected critically whether digital start-ups scale only as an end in itself and to what extent they realize a purpose for society and economy. In recent times, the purpose-driven economy has gained more and more attention and relevance (Hurst, 2014), and potentially massively and rapidly scaling digital start-ups may lack relevance to their existence. Ultimately, our study allows a critical reflection of MRBS and the question if MRBS is a desired constant process or rather a state for a certain period.

6. Conclusion

6.1. Implications for theory

Our research study has multiple implications for theory. Firstly, we succeed to answer the research question by deriving a description of 20 driving factors for MRBS summarized in seven core drivers. With these, we are able to identify and describe the core drivers of MRBS, visualizing the overall process and its interconnections. We propose a definition of MRBS and developed an in-depth understanding of MRBS from multi-dimensional perspectives. Considering these findings, we add elemental value to the under-researched field of MRBS.

Secondly, we refer to the concept of DC to comprehensively answer our research question. Therefore, we add value to the adjacent research field. With our exploratory research study, we enrich the field of DC, which is often dominated by studies of a conceptual nature (Barreto, 2010). More significantly, our study emphasizes similarities between our identified core drivers and the dimensions of DC. Specifically, the processual core drivers exhibit parallels to DC, which are directly influenced by the fundamental core drivers. These parallels allow us to nurture the knowledge of the microfoundations of DC from an MRBS perspective (Sprafke et al., 2012).

Thirdly, our research question focuses on the driving factors for MRBS. However, while analyzing the data, different areas of tension between the core drivers become obvious, affecting the overall MRBS process. These findings broaden the perspective of MRBS raising an awareness for potential conflicts. Ultimately, we critically reflect on the process of MRBS with these findings, providing a holistic perspective that does not exist in the literature as of now.

6.2. Implications for practice

The results of our research study provide a high relevance for founders, executives, start-up employees, advisors, investors, and policy makers in the entrepreneurial ecosystem.

For founders, the study offers practical, hands-on guidance rooted in 20 driving factors that are critical in achieving MRBS. It underscores the significant importance of capital and culture during the MRBS process and how these elements are key for each driver of MRBS. The study enables founders to identify areas of tension within their organizations and with external stakeholders and helps anticipate potential risks associated with MRBS. By presenting MRBS as a process rather than a singular event, our study helps to understand and manage areas of tension more effectively. Executives can also benefit from the results of this research. The study highlights the critical role of leadership and the need to make informed hiring decisions based on current business challenges and objectives. In particular, it underscores the importance of continuous communication with all company members to effectively articulate the vision and manage the scaling process. For employees, the study underscores the reality of MRBS as a dynamic process that requires constant reconfiguration of existing resources, processes, and routines to adapt to changing environments and seize new opportunities. It advocates for an entrepreneurial mindset and a willingness to adapt in the face of evolving start-up needs and challenges. Advisors, given their significant role in guiding start-ups, will find the holistic perspective on various factors influencing MRBS useful. This comprehensive understanding will enable them to identify potential areas where start-ups may be lacking and suggest changes accordingly, thereby driving growth and success. Moreover, our study provides valuable insights to investors who seek start-ups with dynamic capabilities for MRBS. By identifying the key drivers behind this accelerated growth, our findings assist investors in their due diligence.

Finally, policymakers can use this study in entrepreneurship education and start-up assistance programs to provide guidance and support

how to drive MRBS in digital start-ups. Moreover, our study underscores the need for and importance of policymakers to allocate significant capital to digital start-ups in order to rapidly foster their growth and promote transformative impacts in designated markets.

In essence, our research provides a comprehensive understanding of the drivers and tensions of MRBS for key stakeholders in the digital start-up ecosystem. By leveraging this knowledge, stakeholders can derive actionable insights and make informed decisions that align with their objectives.

6.3. Limitations and future research

As with all research, this study has limitations. The first major limitation is the scope of our study, which was limited exclusively to digital start-ups. While this provided us with a detailed understanding of this specific sector, our findings may not necessarily be applicable to start-ups with non-digital business models (Song et al., 2022). As a result, our conclusions have limited generalizability to all types of start-ups. Additionally, our research was solely dedicated to understanding the factors that drive MRBS. We did not consider factors that explicitly lead to MRBS failures. Another limitation arises from the methodology of interview studies which introduces inherent biases and subjectivity, as the collected data is based on the perceptions and experiences of the participants. This makes it difficult to generalize the findings from an interview study to a wider population or to draw definitive conclusions about the research topic.

Future research should consider conducting longitudinal studies of individual cases or multiple cases to understand how DC of digital start-ups may evolve over time. These studies may track the DC development of digital start-ups from their early stages through to their scaling efforts and explore how the focus on the capabilities changes and adapts as the digital start-up grows and faces new challenges. Furthermore, future research may seek to link the concept of DC to the overall performance of digital start-ups to better understand the relationship between certain DC and their outcome. This could involve conducting a longitudinal study that tracks both digital start-ups DC and their financial performance. Finally, by examining the DC of multiple digital start-ups in a particular industry or market, researchers may identify industry- or market-specific differences and trends in their MRBS phases.

CRediT authorship contribution statement

Francie Lange: Writing – original draft, Formal analysis, Data curation. **Nino Tomini:** Writing – original draft, Formal analysis, Data curation. **Florian Brinkmann:** Writing – original draft, Formal analysis, Data curation. **Dominik K. Kanbach:** Writing – review & editing, Writing – original draft, Supervision, Project administration, Conceptualization. **Sascha Kraus:** Writing – review & editing, Project administration, Supervision.

Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work the authors used ChatGPT by OpenAI in order to enhance sentence structures for fluent reading, improve grammar, and refine the overall clarity and cohesiveness of the written content. After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

Declaration of competing interest

None.

Data availability

The authors do not have permission to share data.

References

Almus, M., 2002. What characterizes of fast-growing firm? Appl. Econ. 34 (12) https://doi.org/10.1080/00036840110105010.

Ambrosini, V., Bowman, C., 2009. What are dynamic capabilities and are they a useful construct in strategic management? Int. J. Manag. Rev. 11 (1) https://doi.org/10.1111/j.1468-2370.2008.00251.x.

Anson, S.M., Kautt, M., Walsh, S.T., Bittner, K., 2008. Academic infrastructure and competence centres for a potentially evolving nanomanufacturing industry. Int. J. Technol. Transf. Commer. 7 (4) https://doi.org/10.1504/ijttc.2008.021039.

Anyadike-Danes, M., Bonner, K., Hart, M., Mason, C., 2009. Measuring Business Growth: High-Growth Firms and their Contribution to Employment in the UK.

Asadullah, A., Faik, I., Kankanhalli, A., 2018. Digital Platforms: A Review and Future Directions Artificial Intelligence in Governments View Project Knowledge Flow and Innovation View Project.

Babelytė-Labanauskė, K., Nedzinskas, Š., 2017. Dynamic capabilities and their impact on research organizations' R&D and innovation performance. J. Model. Manag. 12 (4), 603–630. https://doi.org/10.1108/JM2-05-2015-0025.

Balz, F.P., Brinkmann, F., Kanbach, D.K., 2023. The impact of independent and heterogeneous corporate venture capital on firm efficiency. J. Bus. Ventur. Insights 19. https://doi.org/10.1016/j.jbvi.2023.e00384.

Barreto, I., 2010. Dynamic capabilities: a review of past research and an agenda for the future. J. Manag. 36 (1), 256–280. https://doi.org/10.1177/0149206309350776.

Battleson, D.A., West, B.C., Kim, J., Ramesh, B., Robinson, P.S., 2016. Achieving dynamic capabilities with cloud computing: an empirical investigation. Eur. J. Inf. Syst. 25 (3), 209–230. https://doi.org/10.1057/ejis.2015.12.

Beekman, A.V., Robinson, R.B., 2004. Supplier partnerships and the small, high-growth firm: selecting for success. J. Small Bus. Manag. 42 (1), 59–77. https://doi.org/10.1111/j.1540-627X.2004.00097.x.

Berman, T., Stuckler, D., Schallmo, D., Kraus, S., 2023. Drivers and success factors of digital entrepreneurship: A systematic literature review and future research agenda. J. Small Bus. Manag. 1–29. https://doi.org/10.1080/00472778.2023.2238791.

Birnbaum, R., Christensen, C.M., Christensen, C.M., Raynor, M.E., 2005. The Innovator's dilemma: when new technologies cause great firms to fail. Academe 91 (1). https://doi.org/10.2307/40252749.

Bouncken, R.B., Kraus, S., 2022. Entrepreneurial ecosystems in an interconnected world: emergence, governance and digitalization. Rev. Manag. Sci. 16 (1), 1–14.

Bouncken, R.B., Kraus, S., Roig-Tierno, N., 2021. Knowledge- and innovation-based business models for future growth: digitalized business models and portfolio considerations. Rev. Manag. Sci. 15 (1), 1–14. https://doi.org/10.1007/s11846-019-00366-z.

Chakravarthy, B.S., 1982. Adaptation: a promising metaphor for strategic. Source: Acad. Manag. Rev. 7 (1), 35–44.

Chmielewski, D.A., Paladino, A., 2007. Driving a resource orientation: reviewing the role of resource and capability characteristics. Manag. Decis. 45 (3), 462–483. https://doi.org/10.1108/00251740710745089.

Cohen, S., 1969. The discovery of grounded theory: Strategies for qualitative research. Br. J. Sociol. 20 (2), 227–228.

Corbin, J., Strauss, A., 1990. Grounded theory research: procedures, canons, and evaluative criteria. Qual. Sociol. 13.

Cowan, K., & Daim, T. U. (2018). Technology planning for aligning emerging business models and regulatory structures-the case of electric vehicle charging and the smart grid. PICMET 2018 - Portland International Conference on Management of Engineering and Technology: Managing Technological Entrepreneurship: The Engine for Economic Growth, Proceedings. Doi:10.23919/PICMET.2018.8481977.

Creswell, J.W., Plano Clark, V.L., 2011. Designing and conducting mixed methods research, 2nd Edition. Sage Publications, Los Angeles.

Delmar, F., Davidsson, P., Gartner, W.B., 2003. Arriving at the high-growth firm. J. Bus. Ventur. 18 (2), 189–216. https://doi.org/10.1016/S0883-9026(02)00080-0.

Drnevich, P.L., Kriauciunas, A.P., 2011. Clarifying the conditions and limits of the contributions of ordinary and dynamic capabilities to relative firm performance. Strateg. Manag. J. 32 (3), 254–279. https://doi.org/10.1002/smj.882.

Easterby-Smith, M., Thorpe, R., Jackson, P.R., 2012. Management Research. Sage.

Eisenhardt, K.M., Martin, J.A., 2000. Dynamic capabilities: what are they? Strateg. Manag. J. 21 (10−11), 1105–1121. https://doi.org/10.1002/1097-0266(200010/11)21:10/11<1105::AID-SMJ133>3.0.CO;2-E.

Eisenhardt, K.M., Schoonhoven, C.B., 1990. Organizational growth: linking founding team, strategy, environment, and growth among U.S. semiconductor ventures, 1978-1988. Adm. Sci. Q. 35 (3) https://doi.org/10.2307/2393315.

Fabrizio, C.M., Kaczam, F., de Moura, et al., 2022. Competitive advantage and dynamic capability in small and medium-sized enterprises: a systematic literature review and future research directions. Rev Manag Sci 16, 617–648. https://doi.org/10.1007/s11846-021-00459-8.

Francis, J.J., Johnston, M., Robertson, C., Glidewell, L., Entwistle, V., Eccles, M.P., Grimshaw, J.M., 2010. What is an adequate sample size? Operationalising data saturation for theory-based interview studies. Psychol. Health 25 (10), 1229–1245. https://doi.org/10.1080/08870440903194015.

Garnsey, E., Heffernan, P., 2005. Growth setbacks in new firms. Futures 37 (7 SPEC.ISS). https://doi.org/10.1016/j.futures.2004.11.011.

Garnsey, E., Stam, E., Heffernan, P., 2006. New firm growth: exploring processes and paths. Ind. Innov. 13 (1) https://doi.org/10.1080/13662710500513367.
Gartner, J., M, D., Robert, T., 2022. The key to scaling in the digital era: simultaneous automation, individualization and interdisciplinartity. J. Small Bus. Manag. 1–28. https://doi.org/10.1080/00472778.2022.2073361.
Gary, R.F., Fink, M., Belousova, O., Marinakis, Y., Tierney, R., Walsh, S.T., 2020. An introduction to the field of abundant economic thought. Technol. Forecast. Soc. Chang. 155 https://doi.org/10.1016/j.techfore.2019.119796.
Gebauer, H., 2011. Exploring the contribution of management innovation to the evolution of dynamic capabilities. Ind. Mark. Manag. 40 (8), 1238–1250. https://doi.org/10.1016/j.indmarman.2011.10.003.
Giardino, C., Wang, X., Abrahamsson, P., 2014. Why early-stage software startups fail: a behavioral framework. In: Lecture Notes in Business Information Processing, 182 LNBIP. https://doi.org/10.1007/978-3-319-08738-2_3.
Gioia, D.A., Corley, K.G., Hamilton, A.L., 2013. Seeking qualitative rigor in inductive research: notes on the Gioia methodology. Organ. Res. Methods 16 (1). https://doi.org/10.1177/1094428112452151.
Giustiziero, G., Kretschmer, T., Somaya, D., Wu, B., 2021. Hyperspecialization and hyperscaling: a resource-based theory of the digital firm. Strateg. Manag. J. https://doi.org/10.1002/smj.3365.
Goswami, A., Medvedev, D., Olafsen, E., 2019. High-growth firms: facts, fiction, and policy options for emerging economies. International Bank for Reconstruction and Development. The World Bank, Washington DC. https://doi.org/10.1596/978-1-4648-1368-9.
Groen, A.J., Walsh, S.T., 2013. Introduction to the field of creative enterprise. Technol. Forecast. Soc. Chang. 80 (2), 187–190. https://doi.org/10.1016/j.techfore.2012.10.011.
Gudergan, S.P., Devinney, T., Richter, N.F., Ellis, R.S., 2012. Strategic implications for (non-equity) Alliance performance. Long Range Plan. 45 (5–6), 451–476. https://doi.org/10.1016/j.lrp.2012.09.002.
Gundry, L.K., Welsch, H.P., 2001. The ambitious entrepreneur: high growth strategies of women-owned enterprises. J. Bus. Ventur. 16 (5), 453–470. https://doi.org/10.1016/S0883-9026(99)00059-2.
Hair, N., Wetsch, L.R., Hull, C.E., Perotti, V., Hung, Y.T.C., 2012. Market orientation in digital entrepreneurship: advantages and challenges in a web 2.0 networked world. Int. J. Innov. Technol. Manag. 9 (6) https://doi.org/10.1142/S0219877012500459.
Helfat, C.E., Winter, S.G., 2011. Untangling dynamic and operational capabilities: strategy for the (N)ever-changing world. Strateg. Manag. J. 32 (11) https://doi.org/10.1002/smj.955.
Helfat, C.E., Finkelstein, S., Mitchell, W., Peteraf, M.A., Singh, H., Sidney, G., 2007. Dynamic Capabilities: Understanding Strategic Change in Organizations. Blackwell Publishing.
Hennink, M., Hutter, I., Bailey, A., 2011. Qualitative Research Methods. SAGE Publications.
Henrekson, M., Johansson, D., 2010. Gazelles as job creators: a survey and interpretation of the evidence. Small Bus. Econ. 35 (2) https://doi.org/10.1007/s11187-009-9172-z.
Hitt, M.A., Ireland, R.D., Camp, S.M., Sexton, D.L., 2001. Strategic entrepreneurship: entrepreneurial strategies for wealth creation. Strateg. Manag. J. 22 (6–7), 479–491. https://doi.org/10.1002/smj.196.
Hölzl, W., 2014. Persistence, survival, and growth: a closer look at 20 years of fast-growing firms in Austria. Ind. Corp. Chang. 23 (1) https://doi.org/10.1093/icc/dtt054.
Hurst, A., 2014. The purpose economy, expanded and updated: how your desire for impact, personal growth and community is changing the world. Elevate Publishing, Boise.
Hurun Research Institute, 2021. Global Unicorn Index, 2021. December 20.
Islam, N., 2010. Innovative manufacturing readiness levels (IMRLs): a new readiness matrix. Int. J. Nanomanufacturing 6 (4), 362–375. https://doi.org/10.1504/IJNM.2010.034797.
Jarvis, L.C., 2016. Identification, intentions and entrepreneurial opportunities: an integrative process model. Int. J. Entrep. Behav. Res. 22 (2) https://doi.org/10.1108/IJEBR-02-2015-0041.
Jin Zhang, J., Lichtenstein, Y., Gander, J., 2015. Designing Scalable Digital Business Models, pp. 241–277. https://doi.org/10.1108/S0742-332220150000033006.
Jovanovic, B., 1982. Selection and the evolution of industry. Econometrica 50 (3). https://doi.org/10.2307/1912606.
Kerr, W.R., Nanda, R., Rhodes-Kropf, M., 2014. Entrepreneurship as Experimentation. J. Econ. Perspect 28 (3), 25–48. https://doi.org/10.1257/jep.28.3.25.
Khan, S.N., 2014. Qualitative research method: grounded theory. International J. Bus. Manag. 9 (11) https://doi.org/10.5539/ijbm.v9n11p224.
Kim, W.C., Mauborgne, R., 1997. Value innovation: the strategic logic of high growth. Harv. Bus. Rev. 75 (1).
Köhn, A., 2018. The determinants of startup valuation in the venture capital context: a systematic review and avenues for future research. Management Review Quarterly 68 (1). https://doi.org/10.1007/s11301-017-0131-5.
Kraus, S., Palmer, C., Kailer, N., Kallinger, F.L., Spitzer, J., 2019. Digital entrepreneurship: a research agenda on new business models for the twenty-first century. Int. J. Entrep. Behav. Res. 25 (2) https://doi.org/10.1108/IJEBR-06-2018-0425.
Kraus, S., Jones, P., Kailer, N., Weinmann, A., Chaparro-Banegas, N., Roig-Tierno, N., 2021. Digital transformation: an overview of the current state of the art of research. SAGE Open 11 (3). https://doi.org/10.1177/21582440211047576.
Kraus, S., Vonmetz, K., Orlandi, L.B., Zardini, A., Rossignoli, C., 2023. Digital entrepreneurship: The role of entrepreneurial orientation and digitalization for disruptive innovation. Technol. Forecast. Soc. Change 193, 122638.
Kutcher, E., Nottebohm, O., Sprague, K., 2014. Grow Fast or Die Slow. McKinsey & Company. https://www.mckinsey.com/industries/technology-media-and-telecommunications/our-insights/grow-fast-or-die-slow.
Lapan, S.D., Quartaroli, M.T., Riemer, F.J., 2012. Qualitative Research: An Introduction to Methods and Designs. Jossey-Bass.
Lee, Y.-D., Oh, S., 2021. In search of corporate growth and Scaleup: what strategies drive unicorns and hyper-growing companies?. In: Proceedings of Conference on Business Venturing and Entrepreneurship, pp. 33–42.
Leemann, N., Kanbach, D.K., 2022. Toward a taxonomy of dynamic capabilities – a systematic literature review. Manag. Res. Rev. 45 (4), 486–501. https://doi.org/10.1108/MRR-01-2021-0066.
Leemann, N., Kanbach, D., Stubner, S., 2021. Breaking the paradigm of sensing, seizing, and transforming - evidence from Axel springer. J. Bus. Strateg. 38 (2) https://doi.org/10.54155/jbs.38.2.95-124.
Lehmann, J., Weber, F., Waldkirch, M., Graf-Vlachy, L., König, A., 2022. Institutional work battles in the sharing economy: unveiling actors and discursive strategies in media discourse. Technol. Forecast. Soc. Chang. 184 https://doi.org/10.1016/j.techfore.2022.122002.
Lieberman, M.B., Montgomery, D.B., 1988. First-mover advantages. Strateg. Manag. J. 9 (1 S) https://doi.org/10.1002/smj.4250090706.
Lumpkin, G.T., Lichtenstein, B.B., 2005. The role of organizational learning in the opportunity-recognition process. Enterp. Theory Pract. 29 (4) https://doi.org/10.1111/j.1540-6520.2005.00093.x.
Lune, H., Berg, B.L., 2017. Qualitative Research Methods for the Social Sciences, 9th ed. Pearson.
Luo, Y., 2000. Dynamic capabilities in international expansion. J. World Bus. 35 (4), 355–378.
Maine, E., Soh, P.H., Dos Santos, N., 2015. The role of entrepreneurial decision-making in opportunity creation and recognition. Technovation 39–40 (1). https://doi.org/10.1016/j.technovation.2014.02.007.
Makadok, R., 2001. Toward a synthesis of the resource-based and dynamic-capability views of rent creation. Strateg. Manag. J. 22 (5), 387–401. https://doi.org/10.1002/smj.158.
Marmer, M., Herrmann, B.L., Berman, R., Dogrultan, E., 2011. Startup Genome Report Extra on Premature Scaling.
McKenzie, D., Sansone, D., 2017. Man vs. In: Machine in Predicting Successful Entrepreneurs: Evidence from a Business Plan Competition in Nigeria. World Bank, Washington, DC. https://doi.org/10.1596/1813-9450-8271.
Morse, J.M., 2015. Critical analysis of strategies for determining rigor in qualitative inquiry. Qual. Health Res. 25 (9), 1212–1222. https://doi.org/10.1177/1049732315588501.
Nambisan, S., 2017. Digital entrepreneurship: toward a digital technology perspective of entrepreneurship. Enterp. Theory Pract. 41 (6) https://doi.org/10.1111/etap.12254.
Nanda, R., Samila, S., Sorenson, O., 2020. The persistent effect of initial success: evidence from venture capital. J. Financ. Econ. 137 (1), 231–248. https://doi.org/10.1016/j.jfineco.2020.01.004.
OECD, 2007. Eurostat-OECD Manual on Business Demography Statistics. OECD. https://doi.org/10.1787/9789264041882-en.
Ojala, A., 2016. Business models and opportunity creation: how IT entrepreneurs create and develop business models under uncertainty. Inf. Syst. J. 26 (5) https://doi.org/10.1111/isj.12078.
Park, J.S., 2005. Opportunity recognition and product innovation in entrepreneurial hi-tech start-ups: a new perspective and supporting case study. Technovation 25 (7). https://doi.org/10.1016/j.technovation.2004.01.006.
Parker, S.C., Storey, D.J., van Witteloostuijn, A., 2010. What happens to gazelles? The importance of dynamic management strategy. Small Bus. Econ. 35 (2) https://doi.org/10.1007/s11187-009-9250-2.
Patton, M.Q., 2015. Qualitative Research & Evaluation Methods. SAGE Publications.
Pavlou, P.A., El Sawy, O.A., 2006. From IT leveraging competence to competitive advantage in turbulent environments: the case of new product development. Inf. Syst. Res. 17 (3), 198–227. https://doi.org/10.1287/isre.1060.0094.
Pavlou, P.A., Sawy, O.A.E., 2010. The "third hand": IT-enabled competitive advantage in turbulence through improvisational capabilities. Inf. Syst. Res. 21 (3), 443–471. https://doi.org/10.1287/isre.1100.0280.
Radenković, M., Bogdanović, Z., Despotović-Zrakić, M., Labus, A., Lazarević, S., 2020. Assessing consumer readiness for participation in IoT-based demand response business models. Technol. Forecast. Soc. Chang. 150 https://doi.org/10.1016/j.techfore.2019.119715.
Reuber, A.R., Tippmann, E., Monaghan, S., 2021. Global scaling as a logic of multinationalization. J. Int. Bus. Stud. 52 (6), 1031–1046. https://doi.org/10.1057/s41267-021-00417-2.
Ries, E., 2011. The Lean Startup: How today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses. Crown Business.
Ruggieri, R., Savastano, M., Scalingi, A., Bala, D., D'Ascenzo, F., 2018. The impact of digital platforms on business models: an empirical investigation on innovative start-ups. Management and Marketing 13 (4), 1210–1225. https://doi.org/10.2478/mmcks-2018-0032.
Sandberg, E., Hultberg, E., 2021. Dynamic capabilities for the scaling of circular business model initiatives in the fashion industry. J. Clean. Prod. 320 (March), 128831 https://doi.org/10.1016/j.jclepro.2021.128831.
Saunders, B., Sim, J., Kingstone, T., Baker, S., Waterfield, J., Bartlam, B., Burroughs, H., Jinks, C., 2018. Saturation in qualitative research: exploring its conceptualization and operationalization. Qual. Quant. 52 (4), 1893–1907. https://doi.org/10.1007/s11135-017-0574-8.
Schilke, O., Hu, S., Helfat, C.E., 2018. Quo Vadis, dynamic capabilities? A content-analytic review of the current state of knowledge and recommendations for future

research. Acad. Manag. Ann. 12 (1), 390–439. https://doi.org/10.5465/annals.2016.0014.
Schmidthuber, L., Maresch, D., Ginner, M., 2020. Disruptive technologies and abundance in the service sector - toward a refined technology acceptance model. Technol. Forecast. Soc. Chang. 155 https://doi.org/10.1016/j.techfore.2018.06.017.
Schoemaker, P.J.H., Heaton, S., Teece, D., 2018. Innovation, dynamic capabilities, and leadership. Calif. Manag. Rev. 61 (1), 15–42. https://doi.org/10.1177/0008125618790246.
Schwienbacher, A., 2008. Innovation and venture capital exits. Econ. J. 118 (533) https://doi.org/10.1111/j.1468-0297.2008.02195.x.
Seo, K., Woo, L., Mun, S.G., Soh, J., 2021. The asset-light business model and firm performance in complex and dynamic environments: the dynamic capabilities view. Tour. Manag. 85 https://doi.org/10.1016/j.tourman.2021.104311.
Shepherd, D.A., Patzelt, H., 2020. A call for research on the scaling of organizations and the scaling of social impact. Entrep. Theory Pract. 46 (2), 255–268. https://doi.org/10.1177/1042258720950599.
Sher, P.J., Lee, V.C., 2004. Information technology as a facilitator for enhancing dynamic capabilities through knowledge management. Inf. Manag. 41 (8), 933–945. https://doi.org/10.1016/j.im.2003.06.004.
Smith, D.G., 2005. The exit structure of venture capital. UCLA Law Rev. 53 (2) https://doi.org/10.2139/ssrn.272231.
Souitaris, V., Zerbinati, S., Peng, B., & Shepherd, D. (2020). Should I stay or should I go? Founder power and exit via initial public offering. In Acad. Manag. J. (Vol. 63, issue 1). doi:https://doi.org/10.5465/amj.2017.0420.
Song, Y., Escobar, O., Arzubiaga, U., et al., 2022. The digital transformation of a traditional market into an entrepreneurial ecosystem. Rev. Manag. Sci. 16, 65–88. https://doi.org/10.1007/s11846-020-00438-5.
Sprafke, N., Externbrink, K., Wilkens, U., 2012. Exploring microfoundations of dynamic capabilities: insights from a case study in the engineering sector. Research in Competence-Based Management 6, 117–152. https://doi.org/10.1108/S1744-2117(2012)0000006007.
Stinchcombe, A.L., 2000. Social structure and organizations. Adv. Strateg. Manag. 17 https://doi.org/10.1016/S0956-5221(03)00039-3.
Teece, D., Peteraf, M., Leih, S., 2016. Dynamic capabilities and organizational agility: Risk, uncertainty, and strategy in the innovation economy. Calif. Manag. Rev. 58 (4), 13–35.
Teece, D.J., 2007. Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance. Strateg. Manag. J. 28 (13), 1319–1350. https://doi.org/10.1002/smj.640.
Teece, D.J., 2014. A dynamic capabilities-based entrepreneurial theory of the multinational enterprise. J. Int. Bus. Stud. 45 (1), 8–37. https://doi.org/10.1057/jibs.2013.54.
Teece, D.J., 2018. Business models and dynamic capabilities. Long Range Plan. 51 (1), 40–49. https://doi.org/10.1016/j.lrp.2017.06.007.
Teece, D.J., Pisano, G., Shuen, A., 1997. Dynamic capabilities and strategic management. Strateg. Manag. J. 18 (7), 509–533.
Tippmann, E., Ambos, T.C., Del Giudice, M., Monaghan, S., Ringov, D., 2023. Scale-ups and scaling in an international business context. J. World Bus. 58 (1), 101397 https://doi.org/10.1016/j.jwb.2022.101397.
Trischler, M.F.G., Li-Ying, J., 2022. Digital business model innovation: toward construct clarity and future research directions. Rev. Manag. Sci. 17, 3–32. https://doi.org/10.1007/s11846-021-00508-2.
Vik, J., Melås, A.M., Stræte, E.P., Søraa, R.A., 2021. Balanced readiness level assessment (BRLa): a tool for exploring new and emerging technologies. Technol. Forecast. Soc. Chang. 169 https://doi.org/10.1016/j.techfore.2021.120854.
Walsh, S.T., 2004. Roadmapping a disruptive technology: a case study the emerging microsystems and top-down nanosystems industry. Technol. Forecast. Soc. Chang. 71 (1–2) https://doi.org/10.1016/j.techfore.2003.10.003.
Walsh, S.T., Boylan, R.L., McDermott, C., Paulson, A., 2005. The semiconductor silicon industry roadmap: epochs driven by the dynamics between disruptive technologies and core competencies. Technol. Forecast. Soc. Chang. 72 (2) https://doi.org/10.1016/S0040-1625(03)00066-0.
Wang, C.L., Ahmed, P.K., 2007. Dynamic capabilities: a review and research agenda. In. Int. J. Manag. Rev. 9 (1), 31–51. https://doi.org/10.1111/j.1468-2370.2007.00201.x.
Weiss, L., Kanbach, D.K., 2022. Toward an integrated framework of corporate venturing for organizational ambidexterity as a dynamic capability. Management Review Quarterly 72 (4), 1129–1170. https://doi.org/10.1007/s11301-021-00223-y.
Wind, Y., 2008. A plan to invent the marketing we need today. MIT Sloan Manag. Rev. 49 (4).
Winter, S.G., 2003. Understanding dynamic capabilities. Strateg. Manag. J. 24 (10 SPEC ISS) https://doi.org/10.1002/smj.318.
Zaheer, H., Breyer, Y., Dumay, J., 2019. Digital entrepreneurship: an interdisciplinary structured literature review and research agenda. Technol. Forecast. Soc. Chang. 148 https://doi.org/10.1016/j.techfore.2019.119735.

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