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Opening the black box of Growth Hacking: Insights into the microfoundations of Lean Startup Capabilities☆

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ABSTRACT

Growth hacking (GH) is a strategy of rapid experimentation and testing aimed at scaling firms' business model. Based on the relationships established in the literature between GH and Lean Startup (LS), we acknowledge LS capabilities play a crucial role in the successful implementation of GH, yet a deeper understanding of how LS capabilities support GH is needed, especially from a theoretical perspective. In this context, through a multiple case study approach analyzing six different startups, we aim to unveil the microfoundations of LS capabilities supporting the implementation of GH, hence opening the black box of GH. This research advances the theoretical development and understanding of GH, with a focus on its relationship with LS and underlying LS capabilities, by leveraging the microfoundations perspective to reconcile theory and practice when examining GH. Additionally, it informs the debate on how GH can create favorable conditions for scaling business models.

1. Introduction

Growth hacking (GH) is a pragmatic approach to support entrepreneurs in business model innovation during the scaling-up phase, that is, the rapid expansion of the customer base and market (Cavallo et al., 2023; Coviello et al., 2024). GH techniques use digital experimentation to rapidly acquire new customers by combining marketing, data analytics, and programming (Bohnsack & Liesner, 2019). This approach differs from traditional methods in its continuous iterative experimentation and influence on business model innovation (Saura et al., 2021). In recent years, scholars have begun to explore the rise of companies such as PayPal, Airbnb, and Uber, scrutinizing how the use of GH influenced their business models and how this allowed them to expand their customer base (Troisi et al., 2020). For example, PayPal, adopted innovative strategies to incentivize sign-ups, such as paying users to bring their friends to PayPal (Bohnsack & Liesner, 2019). Similarly, Airbnb discovered a simple but effective way to dramatically increase the number of bookings, such as improving the quality of accommodation images on the website (Gallagher, 2017). Airbnb also introduced "reverse engineering", allowing the users to post their listings, giving them direct access to a large existing user base (Bargoni et al., 2024). However, despite the widespread adoption of GH by numerous firms, the academic discussion about the topic remains limited. Specifically, with the exception of the link between GH and the business model literature (Cavallo et al., 2023), GH research is most rooted in practice (Troisi et al., 2020), as evidenced by the focus on GH functions (e.g., Bohnsack & Liesner, 2019; Ellis & Brown, 2017), without a strong theoretical link between GH and established field of research in management, such as strategic management and business organization.

In so doing, we first recognize that a common aspect among GH frameworks is that GH is linked to the Lean Startup (LS) framework, as both emphasize the importance of rapid learning and experimentation, which helps to quickly validate a firm's business model and reduce costs and the risk of failure (Shepherd & Gruber, 2021; McGrath et al., 2023; Moogk, 2012). Indeed, LS values experimentation, with a focus on rapid learning over traditional planning, which plays a crucial role in evaluating multiple strategic alternatives (Gans et al., 2019), especially in contexts characterized by high uncertainty (Ott et al., 2017). Similarly, GH uses rapid digital experimentation to validate business ideas and mitigate the risks associated with new market entry. In fact, the digitally enabled experiments and strategies adopted in GH to enable business model innovation may be related to those of LS (Cavallo et al., 2023; Ghezzi & Cavallo, 2020). Nevertheless, there is still no established theoretical framework that effectively integrates LS and GH for use by

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academics and practitioners. Therefore, we aim to provide additional theoretical grounding to the academic debate on GH, emphasizing the need to deepen the role of LS in GH, as more theoretical and academic attention is essential to develop an integrated and useful framework for scholars and practitioners.

In this context, we acknowledge that the role of the LS can be better understood in light of the key LS capabilities (LSC), – i.e., customer insight, hypotheses testing, iterative experimentation, validation, and learning (Harms & Schwery, 2020). These are cross-functional capabilities (Grant, 1996) that a firm should employ to define and strengthen its business model for a growth strategy (Vogel, 2016). However, while previous studies (e.g., Bohnsack & Liesner, 2019) have shown that LS successfully promote GH strategies that influence business model innovation in startups, an in-depth investigation of the underlying components of LSC is, to the best of our knowledge, lacking in the literature, nonetheless its potential contribution to extend the understanding about GH and its contribution to business model development. In-depth studies are needed to fill theoretical gaps, promote the practical adoption of GH principles, test their applicability in different contexts, and develop a more comprehensive framework that can guide both research and practice in the field of business innovation and growth. Therefore, our study specifically aims to understand the development of the LSC supporting GH, which leads to our main research question: "How do firms develop LSC nurturing GH?".

Drawing on the microfoundations perspective (Barney & Felin, 2013; Felin et al., 2012), we thus seek to open the black box of the LSC by revealing the functioning of their key components – in terms of individuals, processes and interactions, and structure (Felin et al., 2012) – to nurture GH. Notably, the microfoundations perspective is an effective lens for assessing (LS) capabilities because microfoundations of capabilities connect individual, process, and structural-level factors such as resource orchestration, technologies and identity-based community for a more comprehensive understanding of performance (Sirmon, 2021). In fact, the microfoundations perspective seeks to break down top-level concepts to understand how factors at lower-levels influence organizational performance and outcomes. It emphasizes the importance of individual actions and characteristics, as well as of what happens within the organization, in shaping outcomes and performance at the collective and organizational levels (Felin et al., 2015). By applying this perspective to GH research, we can gain a more thorough and comprehensive understanding of the key components underlying the LSC needed to successfully sustain GH strategies and optimize the business model. This approach not only supports the development of theoretical insights that extend current knowledge but also limits the risk of treating capabilities as a "black box", without a thorough understanding of the factors that drive their development. Overlooking the microfoundations perspective may lead to an incomplete understanding of the capabilities required for growth strategies and how they should be adapted to maximize success (Felin et al., 2015).

To reach our purpose, we use a multiple-case study approach, hence examining a heterogeneous sample of six startups, belonging to different sectors and countries, to ensure the comprehensiveness of the research. This methodology allows us to access heterogeneous empirical evidence and to conduct a comparative analysis (Eisenhardt & Graebner, 2007). The startups included in the study must have had a growth pattern associated with GH strategies. By examining the data gathered from the selected startups, we derived a framework delineating the essential LSC that may be critical for the implementation of GH strategies. Additionally, the theoretical framework resulting from our study also highlights the microfoundations of the LSC favoring the implementation of the GH strategy.

The contributions of this paper are manifold. From a theoretical point of view, first, our study explores and clarifies the functioning of the LSC required to implement GH strategies in startups. Second, it integrates the microfoundations perspective to explain how LSC operate, and it contributes to the theoretical development of the GH field by highlighting how the LS and GH frameworks can be combined to promote scalability and innovation in business models. Finally, the proposed framework serves as a foundation for further studies, encouraging more in-depth analyses of how different types of ventures can apply LSC to enhance their growth and innovation strategies. As a practical contribution, our study provides actionable guidelines for startups aiming to adopt GH strategies, offering insights on how to effectively develop the necessary capabilities to implement them successfully.

The paper is organized as it follows. Section 2 reviews the literature to discuss the key concepts of this paper: GH, LS principles, and microfoundations perspective. Section 3 describes the methodology. Section 4 presents the findings of the study and Section 5 discusses the results and concludes the paper by presenting the implications derived from the analysis of the multiple-case studies.

2. Theoretical background

2.1. Growth hacking and lean startup principles

GH has become an increasingly popular strategy among startups focusing on rapid experimentation to efficiently scale businesses (Bargoni et al., 2024). GH involves the use of strategies and experiments to test a product and its ability to rapidly acquire new customers and it is an approach based on the idea of exponential growth through the implementation of innovative data-driven strategies (e.g., user behavior analysis, data-driven decision making) and targeted experiments (Cavallo et al., 2023). GH strategies can be interpreted considering the literature on organizational learning, where constant iteration and adaptation of business models are essential for success (Andries et al., 2013). While empirical evidence shows that GH has been widely adopted by startups, a comprehensive understanding of how this strategy enables business model innovation remains incomplete.

Bohnsack and Liesner (2019) introduced a foundational GH framework that is primarily relevant to the marketing domain, identifying three key blocks: data analytics and testing, digital marketing techniques, and coding/automation. Other scholars have instead emphasized that GH goes beyond marketing and, like entrepreneurial design and design thinking (e.g., Magistretti et al., 2023; Mansoori & Lackéus, 2020), it integrates agile experimentation, thus aligning with LS principles (Ellis & Brown, 2017). In this sense, the LS principles (also) serve as a foundation for GH by emphasizing rapid, iterative testing, customer feedback, and low-risk growth strategies (Bohnsack & Liesner, 2019), which are essential for the growth of startups (Ott et al., 2017).

We embrace this second standpoint and recognize that despite the broad adoption of the LS perspective in the entrepreneurship literature (e.g., Blank & Eckhardt, 2023; Ghezzi & Cavallo, 2020; Harms, 2015), there is still limited understanding of how LSC may enable firms to effectively implement GH strategies.

The LSC framework includes capabilities such as customer insight, hypothesis testing, iterative experimentation, validation, and learning (Harms & Schwery, 2020). These capabilities, based on LS principles, enable startups to engage deeply with customers, continuously test hypotheses, and make data-driven decisions (Felin & Zenger, 2017; York & Danes, 2014). Yet, we still need further research to understand how LSC supports GH, particularly in the context of different types of ventures. This knowledge gap provides a promising area for future research, where combining GH and LS principles could foster more agile, scalable, and innovative business models as well as contribute to set a sound theoretical basis to investigate GH.

2.2. Lean startup capabilities in growth hacking: A microfoundations perspective

The LS principles, as outlined, are a set of principles that guide entrepreneurial ventures toward rapid experimentation, iterative learning and customer-centric innovation (Silva et al., 2020). However,

to understand how these principles translate into actionable strategies, it is essential to examine the LSC that underpin the effective execution of the LS principles. These capabilities provide startups with the tools necessary to apply LS principles within a GH framework.

The *customer insight* capability highlights the ability of organizations to accurately understand customer needs, preferences, and pain points (Slater & Narver, 1998). From a microfoundations perspective, this capability is rooted in the interplay between individuals (e.g., founders, marketers, and developers) and interaction processes (e.g., customer interviews, surveys, and user feedback mechanisms) that help unearth valuable information (Cayla & Arnould, 2013). The insights gained not only drive the creation of MVPs but also fuel the iterative cycles of GH, where continuous feedback is essential for refining product-market fit (Slater & Narver, 1998). At the microfoundations level, these insights emerge from the organization's ability to aggregate individual-level knowledge into actionable data informing strategic decisions.

The *hypothesis testing* capability emphasizes the importance of formulating and testing assumptions about a startup's business model, product, or market (Felin et al., 2020). The microfoundations here focus on the interaction between the individuals who generate hypotheses and the organizational processes that test them (Felin & Zenger, 2017). Through the LS framework, GH practitioners develop hypotheses about product features, marketing channels, or customer acquisition tactics, that are rapidly tested through data-driven experiments. These experiments, driven by the collective actions of teams, reduce uncertainty and help startups make evidence-based decisions.

The *iterative experimentation* capability embodies the LS principle of continuous learning through a series of small-scale tests. From a microfoundations perspective (Felin et al., 2012; Felin et al., 2015; Barney & Felin, 2013), this capability is built upon the dynamic interplay of individual creativity and structured processes for experimentation (Sull, 2004). The frequency and speed of these experiments enable startups to pivot or persevere with greater agility, making iterative experimentation a cornerstone of GH efforts. This capability is further enhanced by organizational structures that support a culture of experimentation, encouraging teams to test and iterate quickly in response to changing market conditions.

The *validation* capability focuses on using data to confirm or refute the outcomes of experiments (York & Danes, 2014). Microfoundations, in this context, refer to the mechanisms that organizations put in place to effectively collect and analyze data. Validation processes reduce cognitive biases and ensure that decisions are grounded in objective evidence (York & Danes, 2014). Within GH, validated learning becomes crucial for scaling successful experiments while abandoning those that do not produce measurable results. The capability of validation thus allows startups to fine-tune their growth strategies based on empirical evidence rather than intuition alone.

Finally, the *learning* capability integrates insights from all previous capabilities, ensuring that organizations continuously adapt to new information and market actual conditions (Schneckenberg et al., 2015). From a microfoundational perspective, learning is both a cognitive and a social process, involving the assimilation of new knowledge by individuals and its dissemination throughout the organization (Felin & Zenger, 2017). This capability is essential in GH, where rapid cycles of learning and adaptation are critical to maintaining a competitive edge in rapidly-evolving markets.

Despite the significant theoretical advances made in understanding LS capabilities, a research gap remains in exploring how these capabilities specifically interact within the GH framework. By delving into the microfoundations of these capabilities (Felin & Foss, 2023), we can better understand how LS facilitates growth and business model innovation, particularly in dynamic, uncertain environments. At its core, the microfoundations perspective seeks to decompose organizational capabilities into their most fundamental components – i.e., individuals, processes and interactions, and structure (Felin et al., 2012). The first component – individuals – includes individual-level elements that influence organizational functioning and collective behavior, such as skills, knowledge, personality traits, and decision-making abilities (Felin & Hesterly, 2007; Foss, 2011). The second component – processes and interactions – refers to formal and informal processes that facilitate integration and cooperation among members, shaping the development and evolution of routines and capabilities (Winter, 2012). The third component – structure – refers to the structure that defines the interactions (Barney & Felin, 2013). The three components of microfoundations interact in complex ways. In fact, each component has primary effects on routines and capabilities but does not operate in isolation. The interactions between these components form a complex system in which individual actions, organizational structures, and processes mutually influence each other, contributing to the emergence and evolution of organizational routines and capabilities (Felin et al., 2012).

When applied to investigate LS capabilities, microfoundations help explain how customer insight, hypothesis testing, iterative experimentation, validation, and learning emerge and evolve within organizations.

3. Methodology

To achieve our research purpose and answer the research questions, we deemed a multiple case-study approach as an appropriate analytical strategy. In fact, GH is a new phenomenon that has not yet been systematized in the scientific literature. Hence, in this case, a qualitative approach offers a deeper exploration and effective theory building (Eisenhardt, 1989).

We decided to analyze six different cases of startups adopting GH strategies – i.e., Bobbie, Satispay, Omio, Beam Mobility, Redefine Meat and Unobravo – operating in different countries. We chose to analyze multiple cases in order to achieve greater robustness and generalizability of results, as they provide access to diverse empirical evidence and allow conducting comparative analysis (Eisenhardt & Graebner, 2007). A detailed explanation of the methodology is reported in Table 1.

3.1. Sample selection

To ensure rigorous analyses, the selection process was characterized by four criteria (Yin, 2009). First, the research focused exclusively on startups to narrow the scope and target a specific type of enterprise, thus ensuring precise and unambiguous findings. Second, startups from different countries were selected to reduce the potential influence of geographical origin on the results. Third, we focused our attention on companies for which broad and complete qualitative and quantitative information is available. Fourth, we selected startups that demonstrated rapid growth in their customer base, an aspect generated by the successful application of GH principles.

Table 2 provides a preliminary description of the six cases and briefly explains why and how the companies pursued growth.

3.2. Data collection

After the sampling process, we collected data related to the case studies from various secondary sources (Table 3), in line with other research conducted by leading scholars in the field (e.g., De Massis et al., 2016; Aversa et al., 2015; Grodal et al., 2021; Porter, 1990) who have conducted case study analysis through secondary sources. Indeed, the secondary data available on these startups were collected through sources such as newspaper articles, company reports, public interviews, and official documents. These sources provided us with detailed information about the business strategies, growth dynamics, and challenges faced by the startups. In addition, the use of secondary data allowed us to examine a broader time span and to obtain a historical view of the evolutions of these companies, which would have been impractical with primary data collection (Eisenhardt, 1989). In fact, the secondary sources used present the facts as they occurred, whereas interviews may be affected by post-event rationalization or recall bias (Eisenhardt,

Table 1
Methodology and analysis process.

Research design	Selection criteria	Data Collection	Data analysis	Theory construction
• six different startups • multiple case study approach for robust and generalisable results • strategy analysis	• start-ups (focus on a specific type of enterprise) • geographical diversity • data availability • start-ups with fast-growing customer bases • sectorial diversity (startups belonging to different sectors)	**SOURCES:** • secondary data (company reports, news articles, public interviews, official documents) • external sources (business newspapers, magazines, consultancy firms) • longitudinal data (historical evolution of startups) **PROCESS:** • data collection from start-up websites, social media, specialised news sources • cross-checking with expert interviews and analysis reports • monitoring of documentary sources for each growth action	**CASE ANALYSIS:** • individual analysis of startups • detailed description of each startup's GH actions • actions labelled according to the LSC conceptual framework **CROSS-CASE ANALYSIS:** • comparative analysis between startups • identification of similarities, differences and patterns **METHODOLOGICAL TOOLS:** • triangulation for robust data interpretation • categorisation theory to segment data into relevant categories (technology, actors, organisations)	• authors converge through multiple discussion sessions • categorisation and pattern recognition to derive insights • final framework of growth hacking actions and their micro-foundations

1989). This longitudinal perspective enriched our analysis and allowed us to identify significant patterns and trends in the development path of startups. Information on the context of the selected startups was obtained from official reports and their websites. At the same time, we collected additional secondary information from the startups' newsrooms and official social media pages (YouTube, LinkedIn, and X) from their creation to the present. This data collection allowed us to understand the fundamental steps that characterized the development journey of these startups, from their inception to their current state.

We then conducted targeted research to obtain further information through business newspapers and magazines (e.g., Forbes, Bloomberg) and through analyses provided by consulting firms (e.g., McKinsey & Company) to deepen the information about the startups.

As an additional step in our data collection strategy, we monitored further documentary information for each action taken by the companies during their growth process to gain a comprehensive overview of the winning strategies adopted by the startups. We consulted specialized startup websites and national and international newspapers. This data included details of projects carried out, in-depth studies by qualified analysts, and interviews with key members of the startups involved in the initiatives. This approach allowed us to fully describe the growth characteristics of the six startups considered.

3.3. Data analysis

The data collected were subjected to a process of triangulation to obtain a complete and robust description of the cases studied. The cases were first analyzed as individual, independent entities and then considered as elements of a broader evaluation through a cross-case approach (Eisenhardt, 1989). This methodology allowed for further in-depth analysis within each case, bringing to light crucial details and nuances. Specifically, the in-depth within-case analysis led to a detailed description that made it possible to label the actions taken by each startup in relation to GH. This labeling was done to classify these actions within the conceptual framework of LSC (Harms & Schwery, 2020). It is noteworthy that the authors defined the labeling of GH actions according to the LSC framework, using a microfoundations perspective (Barney & Felin, 2013; Felin et al., 2012). GH actions were in fact analyzed by individuals, structure and processes, and interactions. This approach allowed an in-depth analysis of the information gathered and facilitated discussions among the authors until a common agreement was reached on how to construct the final framework. This framework was developed by coding the data, with strict adherence to the research objectives and previous relevant readings. The cross-sectional analysis of the cases, on the other hand, was carried out by assessing the similarities and differences between the actions of the different startups considered. In both analyses, the authors converged on the results through several discussion sessions. To thoroughly and carefully explore the collected data and to develop a detailed understanding of the phenomenon under study, we used the methodological approach of Grodal et al. (2021) and performed a classification of the data. The data collected from the case study sources of the six startups were carefully examined. Using categorization theory, the data was divided into meaningful and relevant categories for analysis (technology used, actors involved, and the organizations leading these initiatives), and through the analysis of these categories, emerging relationships and patterns were analyzed that could provide theoretical insights into the capabilities that are essential to the implementation of GH strategies. During the analysis process, particular attention was paid to reflexivity and transparency, ensuring that the analytical processes were clear and that the decisions made were explicit.

4. Findings

In the following section, we delve into the details of the microfoundations associated with the LSC inferred from the analysis of the case studies and outlined in Table 4. This section is split into three parts – individuals, structure, and processes and interactions.

4.1. The microfoundations of LSC capabilities for GH at the individual level

Our analysis shows that the role of individuals in developing customer insights capability is particularly relevant. The user data collected by companies allows growth hackers to better understand their target customers and generate customized strategies to acquire them. Specifically, the cases suggests that when analyzing the *customer insight* capability, the individuals' networking and collaboration, and communication skills are crucial to fully understanding customers' needs. Networking and collaboration refer to an individual's ability to establish

Table 2
Description of case study.

Startup name	Description
Bobbie (United States)	Laura Mody founded Bobbie in 2018. The idea for the company came from her difficulty finding suitable baby formulas to feed her first infant. Bobbie's infant formulas were made with organic ingredients and did not use corn syrup, palm oil, or soy. In May 2023, the company released its second product, a formula called "organic gentle", designed for fussy babies. The company also operates Bobbie Labs, a research and development hub which invests in research to expand its product offerings. Bobbie saw a growth opportunity in the US market for baby formulas, which was lacking high-quality products like those from Europe, especially during the pandemic when availability was reduced by 75 %. The health crisis created a huge demand for safe and certified products. Growth strategy including D2C (Direct-to-Consumer), Word-of-Mouth, quality certifications, crisis, and revitalization.
Satispay (Italy)	Satispay is a payment app that is designed for users who need new digital payment systems. The app works by associating with the users' bank account and in peer-to-peer mode, which allows to send and receive funds to and from other users of the same app. Satispay's services include phone top-ups, bill payment, car and motorcycle stamp payments, donations, savings, gift bags, and recurring automatic payments. Satispay manages transactions for physical stores, e-commerce, and vending machines. Satispay aimed for growth by capitalizing on the increasing digitalization of payments in Italy, a market in which consumers and retailers were looking for cheaper and simpler solutions than traditional payment circuits. It aimed for growth through a transparent pricing model, continuous expansion, massive adoption and new service offerings.
Omio (Germany)	Omio is an online travel comparison and booking platform founded in 2013. Omio employs more than 300 people and is active in 37 countries. It offers travelers a platform supporting transportation planning. Omio is a multi-modal search engine for all major means of transport, allowing comparison among different alternatives. Omio has set its sights on growth to expand internationally, tackling a competitive market with the aim of increasing the app's visibility and the number of users in new markets. It did this through Apple Search Ads, automated optimization, brand awareness, and localization.
Beam Mobility (Singapore)	Beam Mobility is the Pacific Asia's largest shared micromobility company. Its mission is to turn little drivers into better rides and make city traffic flow better. In collaboration with cities, Beam Mobility, with his fleets of self-driven small electric vehicles, offers a safe, affordable, and sustainable transportation mode to citizen. The growing popularity of micro-mobility vehicles as a sustainable and affordable alternative to traditional vehicles has prompted Beam to expand rapidly. It has expanded through advanced technology (MARS), strategic partnerships, geographical expansion, and integration with public transport.
Redefine Meat (Israel)	Redefine Meat is a food technology company that is developing a 3D printer capable of printing plant-based alternative meat products. The Redefine Meat 3D printer combines 3D printing technology, digital meat modelling, and food formulations to produce plant-based products that mimic the appearance, texture, and flavor of animal muscle meat. Redefine Meat has targeted growth to position itself as a leader in the emerging market for meat alternatives, capitalizing on the growing demand for plant-based products that mimic traditional meat. Redefine Meat has grown through innovative 3D printing technology, strategic partnerships, international expansion, and product testing.
Unobravo (Italy)	Unobravo is an online platform that uses technology and new media to provide a psychological or psychotherapeutic service to the users. Sessions with the therapist take place online, via video call. It was founded in 2019 with the aim of making psychological and psychotherapy support more accessible thanks to technology. The company is the market leader in Italy as a provider for online psychology services and its technological know-how allows the match between the patient and the therapist best suited to his needs and preferences. Unobravo's growth was motivated by the increasing demand for psychological support services, especially during and after the pandemic, when mental health became a more widespread priority. Unobravo focused on a proprietary algorithm, blood marketing, cross-media, and quality of service.

and maintain meaningful relationships with people and organizations within and outside of a business context (Lin et al., 2022). The case studies show how initiating collaborations can be paramount to increasing customer growth. An example is Satispay, which made customer collaboration the foundation of its business model, by using strategies turning customers into ambassadors for the platform. For instance, the "invite a friend and get a bonus" technique has brought and still brings many new users. According to Satispay CEO, Alberto Dalmasso, the secret of the company success is "the ability to create a super-network of payments with both consumers and merchants, and without depending on cards, allowing complete autonomy" (The Adecco Group, 2023). In addition, Bobbie experienced exponential growth in 2023 as a result of its collaboration with 'Saddle Creek', reaching four times the volume forecast in 2022. Similarly, the collaboration is also successful in the case of Omio, which carried out a seamless integration collaboration with Uber. Omio and Uber, in fact, redefine travel as a unified platform, offering greater convenience.

Instead, communication skill refers to the individual's ability to clearly, effectively, and persuasively convey messages in various situations and contexts. Indeed, adopting the right communication strategy is crucial in the current age of digitalization (Royle et al., 2014). A team of the startup Bobbie, for example, created a series of advertising campaigns with influencers. Notably, Bobbie's growth coincided with an advertising campaign with "Queer Eye" star and new parent Tan France, which generated much controversies. However, this initiative created a halo effect that raised the brand's profile. A successful communication effort also characterized the startup Unobravo, which launched a communication strategy focused on issues close to people and everyday life (e.g., parenting, relationships, empowerment) and delivered through popular media (TV, radio, digital). Through these channels and by leveraging the feedback received, Unobravo was able to significantly increase its visibility and the number of customers.

The second LSC analyzed at individual level is *hypotheses testing*. We identified two skills related to this capability, as data science and data analysis. Data science refers to an individual's ability to collect and organize data to make informed decisions and guide evidence-based actions. Instead, data analysis focuses on the ability to critically examine data, identify meaningful patterns, and formulate valid conclusions based on rigorous analysis (Morse, 2015).

In the analyzed startups, individuals used these skills to better understand their target audience, identify their growth opportunities, and optimize their marketing strategies through hypotheses testing. In particular, hypotheses testing was used to understand which channels and approaches generated the greatest return on investment. For example, Satispay constantly profiles its customers in order to create a service that is increasingly tailored to them, that meets their needs and incorporates new features leading to a continuous increase in the customer base. In this way, this analysis influences the business model by optimizing customer acquisition and retention. At the end of the Covid-19 pandemic, Omio launched an advertising campaign to increase

Table 3
Data source.

SOURCE DESCRIPTION	BOBBIE	SATISPAY	OMIO	BEAM MOBILITY	REDEFINE MEAT	UNOBRAVO
material from corporate websites	Corporate website (2): https://www.hibobbie.com/pages/our-story	Corporate website (1): https://www.satispay.com/it-it/	Corporate website (2): https://www.omio.it/chi-siamo https://searchads.apple.com/it/success-stories/omio	Corporate website (1): https://www.ridebeam.com	Corporate website (1): https://www.redefinemeat.com/company/	Corporate website (1): https://www.unobravo.com/chi-siamo
press releases (newsroom)	32 (https://news.hibobbie.com/press)	4 (https://www.satispay.com/en-it/)	26 (https://www.omio.it/corporate/newsroom/press-releases/)	63 (https://www.ridebeam.com/newsroom)	13 (https://www.redefinemeat.com/prs/)	15 (https://www.unobravo.com/rassegna-stampa)
post on official social media	18 posts (LinkedIn)	21 videos (YouTube) 8 posts (LinkedIn)	5 videos (YouTube) 12 posts (LinkedIn) 20 statements (X)	9 videos (YouTube) 8 posts (LinkedIn)	5 videos (YouTube) 5 posts (LinkedIn) 2 statements (X)	3 videos (YouTube) 12 posts (LinkedIn)
articles on newspaper business magazineS/ MANAGEMENT CONSULTING FIRMS	49 (Sources: 1. Forbes 2. TechCrunch 3. Sport Business Journal 4. The New York Times 5. Modern Retail 6. AOL.com 7. CNN 8. Bloomberg 9. Vogue 10. Business Wire 11. The Business Journal 12. Global Food Industry News 13. Business Insider 14. Time Magazine 15. Fortune 16. Inbound Logistic 17. Cnbc 18. Food Business News 19. Business Post 20. Ad age)	38 (Sources: 1. Forbes 2. ANSA 3. Vanity Fair 4. StartupBusiness 5. StartupItalia 6. Borsa Italiana 7. Business People 8. Il Sole 24 Ore 9. Corriere 10. Wired 11. La Stampa 12. SkyTG24 13. La Repubblica)	15 (Sources: 1. Bloomber 2. Wired 3. Apple Search Ads 4. The Way Magazine)	19 (Sources: 1. Forbes 2. Bloomberg 3. TechCruch 4. The Financial Express 5. Midwest Times 6. The Australian 7. The Mercury 8. Geraldton Guardian 9. PerthNow 10. Broome Advertiser 11. So Perth 12. Auto Futures 13. Intelligent Transport 14. EVs & Beyond 15. Smart Company 16. InDaily 17. Concrete Playground 18. Smart Cities World)	47 (Sources: 1. Forbes 2. Bloomberg 3. The New York Times 4. Financial Times 5. Millionaire 6. The Guardian 7. Business Wire 8. TechCruch 9. Business Insider 10. The Grocer 11. Wired 12. Il Sole 24 Ore 13. BNN Breaking 14. CBC 15. SkyNews 16. AgenFood 17. Business Green 18. New Food Magazine 19. Global Food Industry News 20. AFP.com 21. National World 22. EuroNews 23. 3DPrint.com 24. Falstaff.com 25. PR Newswire 26. Fruit Book Magazine)	24 (Sources: 1. Startup Business 2. Startup Italia 3. Vogue 4. Il Sole 24 Ore 5. La Repubblica 6. Corriere 7. TgCOM24 8. Il Mattino 9. ADNKronos 10. Dealflower 11. Milano Finanza 12. Engage.it 13. Media Key 14. Touchpoint News)

Table 4
Collection of main data.

	Microfoundations	GH ACTIONS	Performance
Satispay	Networking and collaboration, communication skills, data science, data analysis, technical knowledge, creative marketing, industry knowledge, data science, creativity, flexibility, lateral thinking.	– "Invite a friend" referral system for user acquisition. – Customer profiling for tailored services and features. – UX/UI optimization for user experience. – Campaigns to transform customers into ambassadors. – Low costs: no monthly fees or fees for micropayments below os and only 20 eurocents for higher amounts. – Differentiation of services. – Possibility to connect your current account and set a maximum spending budget weekly. – Introduction of meal vouchers up to €8 deductible to 100 % for companies and 75 % for VAT.	– Doubled customer base in two years. – Over 1.2 M users, expanded to three new countries. – Two billion euros in transactions in 2022, doubled in 2023.
Bobbie	Collaboration, communication skills. Data science, data analysis. Technical knowledge, creative marketing. Industry knowledge, data analysis. Flexibility, creativity, lateral thinking.	– Partnered with Saddle Creek for distribution. – Collaborated with influencers for marketing. – Direct-to-consumer model – Clean Label Project certification for product transparency. – Exploiting the current scarcity due to pandemic	– 4x growth over projected volume in 2022. – $1M in sales post-FDA recall. – Doubled customer base after adjustments. – Sold out 10 months of stock in two weeks
Omio	Communication skills, collaboration. Data science, data analysis. Technical knowledge, creative marketing. Industry knowledge, data science. Agility, lateral thinking.	– Partnership with Uber for unified travel platform. – OOH campaigns in Italy. – Rebranding from GoEuro to Omio. – Social media and TV campaigns to expand post-Covid brand awareness. – Omio used Apple Search Ads	– 7 % brand awareness increase in Italy. – Millions of travelers through European and US market expansion. – With Apple Search Ads the travel app increased revenue and reengaged lapsed customers
Unobravo	Communication skills, networking, collaboration. Data science, data analysis. Technical knowledge, creative marketing. Industry knowledge, data science. Creativity, flexibility, lateral thinking.	– Focus on relatable topics in campaigns (parenting, relationships). – Use of TV, radio, and digital media for outreach. – Building an online expat support community. – Matching customers with therapists through questionnaires (innovative proprietary algorithm).	– Over 200,000 therapy sessions and 17,000 patients in 2021. – Community engagement driving visibility and customer growth. – In 2023 it has exceeded 130 k patients and arrives in the Spanish market with the name "Buencoco"
Redefine Meat	Industry knowledge, networking. Data science, data analysis. Technical knowledge (3D printing, food science). Industry knowledge, data science. Flexibility, continuous innovation.	– Blind tasting events to promote plant-based products. – Expanded sales to 4,000 + points of sale. – Leveraged restaurant partnerships for market penetration. – Using of a technology that produce whole muscle cut of meat	– 4,000 + sales points in Europe by 2022. – Strong presence in restaurant industry via 3D printing technology. – More than 150 restaurant in Israel.
Beam Mobility	Industry knowledge, collaboration skills. Data science, data analysis. Technical knowledge, creative marketing. Industry knowledge, data analysis. Flexibility, continuous innovation.	– Agile service adaptation to local market needs. – Launched MARS technology for enhanced user experience. – Social media campaigns using user-generated content. – Collaboration with ODM to produce custom e-scooters, e-bikes and mopeds that are built specifically for sharing and have gone through rigorous safety testing processes.	– 80,000 + new sign-ups in 2022. – Over 1 M trips in 2022, 2.5x more than in 2021. – Over 100,000 of those trips were to move people to or from a public transportation facility like an MRT, LRT, or bus station; an astounding 5x increase compared to the year before.

its customer base. To best define where this campaign would work, the insights team conducted a market research. Results showed that customers were more likely to travel to Italy. The analysts explained, "based on the results of the survey, we ran two campaigns in the last two quarters of 2021 focusing on brand awareness. We decided to place the ads at transit points and on highways in large cities, where travelers were most likely to notice them. The second campaign was launched with a month-long TV campaign in Italy to build brand awareness. This was complemented by always-on campaigns on various media such as social media, music streaming, search engines, online videos, and podcasts to maintain the level of brand awareness. With a 7 % increase in brand awareness in Italy, our campaign was definitely a great success".

For the *iterative experimentation* capability, we identified technical knowledge as paramount at individual level. Technical knowledge specifically refers to the individuals' detailed knowledge of techniques, processes, or tools within a particular context, such as an organization or industry (Bhatt, 2001). The analyzed startups show that individuals own a high extent of technical knowledge, that is leveraged for experimentation processes. For example, Bobbie's success is due to its in-depth knowledge of the "baby formulas" to be introduced. After extensive experimentation, Bobbie decided to adopt the European formula, which contained superior ingredients compared to the US version. This decision led to a surge in orders. In 2022, following the refinement of the final formulas, sales exceeded the founders' expectations by four times. Furthermore, Satispay's CEO stated that "in the last two years we have grown tremendously, more than doubling our customer base and launching services in three more countries. This is also thanks to the new talents that have joined the team to help us to transform Satispay into a bigger, more structured and competitive reality".

In the analysis of the *validation* capability, certain components were discussed for hypotheses testing. Notably, in the assessment of the individual segment in the *validation* function, the relevance of skills in data science and data analysis were identified, alongside the inclusion of the individual's industry knowledge.

When discussing data science and data analysis skills in relation with the *validation* capability, we highlighted that they are useful to definitively validate what was assessed through hypotheses testing. Industry knowledge refers to the specific knowledge of the industry or sector in which an individual operates (Zahra et al., 2007). This turns out to be a crucial element in the validation phase to understand the behavior and

decisions of individuals in a specific industry. Therefore, industry knowledge is considered a key factor in the development of the product or service that characterizes the focal startup. In their own way, all the analyzed startups leveraged individual's industry knowledge into their GH strategy, since a more accurate understanding of the industry in which they operate facilitates the achievement of a competitive advantage and consequently customer growth. For instance, Redefine Meat also gained a competitive advantage in the industry through an in-depth study of its product and processing. Indeed, the startup has developed in-depth knowledge not only in the processing of plant-based products, but also in the study of 3D printing technology, which enabled the startup to improve its product. This was also the case for Beam Mobility, which thoroughly studied its industry in order to make citizens' mobility more effective and gain an advantage over its competitors. In fact, in 2022, Beam registered over 80,000 new sign-ups, increasing its total pool of drivers by 65 % compared to 2021.

The individual role in developing the *learning* capability is based on creativity and lateral thinking, and flexibility (Roffe, 1999). Creativity and lateral thinking are respectively the ability to generate original ideas and use imagination to solve problems in innovative ways (Proctor, 2010). In addition, they relate to the ability to explore unconventional solutions, to look beyond traditional approaches and to find unexpected connections between seemingly unrelated concepts, to update beliefs and actions (Piirto, 2011). For example, Unobravo found its niche in solving the inherent problem of people who needed therapy but were not in their own country. In fact, the CEO came up with the idea for Unobravo while she was abroad and realized that she could not get psychological support. By using new information to update beliefs and actions, Unobravo experienced remarkable growth, reaching 200 k sessions online and over 17 k patients in 2021. Instead, flexibility is the ability to adapt quickly and effortlessly to new situations, demands or perspectives and to be able to change plans or behaviors in response to changing needs, without losing effectiveness (Shimizu & Hitt, 2004). This is the case with Bobbie, which underwent a recall in late 2020 by the US Food and Drugs Administration (FDA) and was able to quickly adapt to the required changes and even benefit from them. In fact, after the recall and the changes, Bobbie made $1M in sales and doubled its customer base in the first few weeks.

4.2. The microfoundations of LSC capabilities for GH at the structure level

Starting with *customer insights*, we found high relevance for relationship management and customer support. While both refer to organizational structure, the former considers the actions a company takes to manage relations with all stakeholders, the latter focuses on customer service and support (Payne et al., 2005). All of the startups analyzed have a unit dedicated to stakeholder relations within their organizational structure. For example, Redefine Meat's success is largely driven by its strong network of restaurant partnerships, which has helped expand its customer base. In fact, Redefine Meat decided in 2021 to expand its operations in Europe, whit the aim of reaching thousands of restaurants by the end of 2022. Redefine Meat currently owns more than 4,000 points of sale across Europe. Moreover, Unobravo supports the new customers by proposing the most suitable professional for their needs, based on a questionnaire-based interview aimed at collecting customer information. The effort devoted to developing customer relationship leads to increase customer trust, which turns into a greater customer base for the startup. Bobbie's founder also stated that although they were a subscription-based company, they decided to include shelf sales in their structure, in order to always be available in times of urgency. Another strong example of customer support leading to an increase in customers is related to the use of Satispay for children. In fact, Satispay was designed to be safe and transparent and make children learn to control the use of money. This has also led buyers themselves to trust Satispay for their children.

Regarding the structure of *hypotheses testing*, the analysis of the cases highlights the need to make it agile. This may promote the flexibility, responsiveness, and adaptability of an organization to changing market and environmental conditions (Meade & Sarkis, 1999). An agile structure is a requirement that all the analyzed startups have. For example, consider how this capability has enabled the development of Beam Mobility in several countries. Indeed, through its agile structure, the startup was able to quickly learn customer needs in different countries, tailoring its services to its customers. It adapted its offerings according to the countries in which it was setting up, so as to make its business more attractive.

In terms of structure, technical development and creative marketing are crucial to develop the *iterative experimentation* capability. The former refers to the growth and evolution of technical skills and knowledge within an organization (Geels, 2005). The underlying concepts are similar to those mentioned in the previous section. However, in this case, we refer to the presence of a business unit dedicated to the technical development of the product and service offered in the startup structure. For instance, Redefine Meat has its own product printing unit focused on technical development. Satispay has added many services for its customers over time. In particular, the turning point came with the Covid 19 pandemic. The Satispay application presented an effective system to speed up payments in pharmacies and supermarkets. As a result of these structural changes, in 2021 Satispay processed €2M transactions per week and a net turnover of €15 M per year. Instead, creative marketing refers to the design and implementation of innovative and original marketing strategies (Walker & Ruekert, 1987). Each of the case studies employed creative marketing and achieved different outputs. Bobbie focused on marketing campaigns with influencers, even in provocative ways, notably with the star of Queer Eye and the new parent Tan France, which led to a barrage of hate messages from anti-feeding-formula social media groups. In addition, Bobbie collaborated with tennis player Naomi Osaka by developing a paid parental leave campaign, bringing even more parents closer to the product. Satispay ran campaigns using customers as ambassadors, e.g. with the 'invite a friend and get 5€' strategy. Omio rented billboards in major cities and aired TV and digital spots for creative marketing. Beam Mobility developed its campaign through social media, posting photos and videos. Finally, Redefine Meat conducted a blind tasting with 600 participants to promote their product.

In terms of structure, *validation* requires the integration of emerging technologies, which refers to the ability of an organization to adapt its internal structures and processes to incorporate and take full advantage of emerging technologies (Boer et al., 1999). This structural feature is most evident in Beam Mobility and Redefine Meat. For example, at Beam Mobility, the implementation of MARS technology relies on advanced individual skills in managing camera technologies, precise localization, and sensors. Engineers and technicians within the organization must continuously update their knowledge and skills to keep up with technological advancements. Daily practices of knowledge sharing and collaborative problem-solving are fundamental to fully exploiting these technologies and differentiating the startup by offering improved driving experiences. Similarly, Redefine Meat integrated 3D printing technology combined with food science and engineering into its structure to develop its innovative products. This requires team members to have a deep understanding of 3D printing technologies and food science, as well as the ability to work across disciplines. In addition, Satispay created a new payment circuit, with a direct relationship with both consumers and retailers on a large scale, reducing fees and simplifying money management. The microfoundations here include not only individual technical skills, but also the ability to collaborate across teams with different expertise, to continuously innovate, and to experiment with new processes to validate product outcomes.

Finally, agility – i.e., the ability of an organization to quickly adapt and modify its internal structures to respond effectively to changes in the external environment (Singh et al., 2013) – is a crucial feature to

develop *learning* capabilities. For instance, Omio rebranded from GoEuro to Omio, with plans to expand out the European market and enter the US one. Shortly after this rebranding, the Covid 19 pandemic spread, severely reducing travels. Hence, Omio decided to add a marketing campaign unit in its structure to focus on brand awareness. This unit developed two different campaigns using social media, resulting in 7 % increase of brand awareness. These structural features created an environment favoring continuous experimentation and innovation that, in turn, support the scalability of the business.

4.3. The microfoundations of LSC capabilities for GH at the processes and interactions level

Finally, regarding the assessment of processes and interactions, for the *customer insights* capability, we identified e-commerce skill, community management and market analysis. By e-commerce skill we mean the ability to effectively manage and develop e-commerce activities. A successful example of this is Bobbie, which sells its product with the direct-to-consumer channel within its website. Through this channel, Bobbie was able to sell ten months of stock in a two weeks. Redefine Meat, in addition to on-shelf purchase, also allows online purchase and this favored a fast growth for the startup. In addition, Satispay, thanks to its direct connection with the consumer, facilitated by its ease of use, has gained more than 1.2 M people on its platform, from small shops to large chains (e.g., Esselunga, Benetton).

Community management refers to activities aimed at managing and developing an online community around a brand, product, or idea (Laroche et al., 2012). This is what Bobbie and Unobravo were able to do by creating a community through their product/service offering of loyal customers, also using social networks. In particular, Bobbie fostered the development of a community of customers discussing their experiences with the products. This also made each customer feel part of a community.

Market analysis refers to the process of collecting, analyzing and interpreting data and information about the market in which a company operates (Sarstedt & Mooi, 2014). The analyzed startups developed or are developing a market analysis process. Satispay studied its competitors in the FinTech sector through information analysis processes and increased services that others did not have as a competitive variable. A market analysis conducted by Satispay enabled the startup to enter the meal voucher industry by simplifying their use.. In fact, Dalmasso said: “We created our meal vouchers at zero cost for retailers discouraged by years of very high commissions in this sector, up to 15–20 %. Our meal vouchers are also accepted in the evenings, and there is also an agreement with the large discount retailers” (Pica, 2023). As the figures show, this new product has influenced Satispay’s growth of 122 % just over a year. Bobbie implemented a market study process through which it noticed a scarcity of baby formulas (availability was reduced by 75 %) during the pandemic and used this information to address potential issues.

For the *hypotheses testing* capability, we found two features related to processes and interactions: product management and performance analysis. Product management is the process of developing, launching, and managing a product or service to meet customer needs and focuses on specific actions necessary to ensure that the product meets market requirements and contributes to the overall success of the organization (Giese et al., 1982). For instance, Bobbie is the only brand on the market that is Clean Label Project certified, pesticide-free, organic, gluten-free, corn syrup-free, and palm oil-free. These ingredient choices are especially appealing to parents. Satispay also focused on customer needs, an example of this is the choice of charging zero additional fees for small businesses and pay food vouchers in a single business day when the company decided to enter in the food voucher market in 2023. The abovementioned introduction of food vouchers influenced the growth of Satispay.

Finally, performance analysis relates to the evaluation of the performance of a product, service, or process to identify strengths, weaknesses, and areas for improvement in relation with the formulated hypothesis. The selected cases started with a basic product that was afterwards developed to generate new products or improve the existing one. This led to both an increase in customers and greater customer satisfaction. For example, in 2022, after the improvement of its product, Beam registered over 80,000 new sign ups, increasing the total pool of riders by 65 % with respect to 2021. In particular, more than 1 M rides were taken in 2022 – two and a half time more than in 2021.

Within the *iterative experimentation* capability, two different features emerge: digital and social media marketing and UX/UI design (User Experience/User Interface design). Digital and social media marketing refers to the use of digital and social media platforms to promote products, services, or brands (Evans et al., 2021). From a microfoundations perspective, this marketing analyzes the interactions between the company and its customers on various digital and social media channels, as well as the internal processes for planning, executing, and evaluating online marketing activities. The aim of these activities is to optimize performance and create value for stakeholders. All the cases use their official social media profiles to promote their products or services.

Secondly, UX/UI Design refers to the design of intuitive and pleasant user interfaces to improve the overall user experience (Unger & Chandler, 2023). This turns out to be crucial in facilitating the growth of startups, especially those that leverage digital technologies. Indeed, one of Satispay’s strengths is its interface, which has led to increase in the platform’s customers by facilitating user tasks.

In the analysis of interactions and processes of *validation* capability, we spotted the relevance of performance analysis, which we have already found as relevant to develop *hypotheses testing* capabilities. As mentioned earlier, performance analysis involves evaluating the performance of a product, service, or process to identify strengths, weaknesses, and areas for improvement. Therefore, the cases show that, through performance analysis, the startups not only carry out the testing phase, but also use the resulting information to plan their strategies. An example is Satispay, which used testing and performance evaluation to be competitive in the FinTech sector and succeeded in establishing itself by focusing on areas not fully exploited by other FinTech companies. Consequently, Satispay accelerated its growth. As the collected data shows, Satispay reached the 1 M users threshold in 70 months and the 2 M users were achieved in 20 months. After that, the 3 M threshold was reached within 10 months. In 2022, transaction volume reached two billion euros, doubling in 2023 and growing to 4 M users.Finally, we highlighted the importance of public relationships and continuous innovation and improvement to develop the *learning* capability. The former refers to the strategies and practices used by an organization to manage and maintain relationships with the public. The relevance of public relationships is clear in the cases of Redefine Meat and Satispay. The strategy adopted by Redefine Meat was to create relationships with its customers and stakeholders by organizing a tasting session of its vegan meat. Instead, Satispay turned its customers into brand ambassadors to strengthen and maintain its connection with the public. Continuous innovation and improvement are crucial for the development of the startup. This feature is evident in Satispay and Redefine Meat. Indeed, Satispay focuses on the continuous optimization and improvement of electronic payments and beyond, while Redefine Meat devotes great effort in the development of 3D food printing, trying to always optimize the results and improve the process.

4.4. Interaction among individual, structural and processual levels

The interaction between the individual, structural, and processual levels of LSC is a complex and dynamic process that collectively drives GH within startups. These three levels do not operate in isolation (Felin et al., 2015; Barney & Felin, 2013); rather, they interconnect and reinforce each other to create a cohesive system that accelerates innovation,

enhances customer acquisition, and sustains growth.

At the individual level, the capabilities of team members—such as creativity, data analysis, technical knowledge, and communication skills—form the bedrock upon which GH strategies are built. For example, in the case of Satispay, the technical knowledge of individuals allowed the company to innovate its payment platform to include features such as meal vouchers and savings banks. These innovations stem from the team's ability to analyze and creatively address customer needs. Moreover, individual skills in communication and networking, as seen in Bobbie's influencer marketing campaigns, enable the startup to craft messages that resonate with the target audience, driving customer engagement and growth.

These individual capabilities are effectively amplified when aligned with the structural level of the organization. The structure provides the necessary framework and resources to support and scale individual contributions. For instance, Satispay's organizational structure includes dedicated units for technical development and business development, which are paramount to turning individual ideas into scalable products. The agile nature of the structure at Beam Mobility, which allows for rapid iteration and adaptation, is a prime example of how structural agility enables the quick deployment of innovations generated at the individual level. This structure supports the individuals' capacity to experiment and validate new ideas, ensuring that successful innovations are quickly integrated into the business model.

The process level then comes into play as the process by which individual capabilities and structural resources are executed and optimized. Processes such as market analysis, community management, and performance analysis are critical in translating insights into actionable strategies. For example, Unobravo's use of an innovative proprietary algorithm to match customers with therapists is the result of both individual creativity and a well-structured process that continuously analyzes customer data to refine and improve service delivery. Similarly, Bobbie's market analysis allowed the company to capitalize on the shortage of baby formulas during the pandemic and quickly adapt its processes to meet the increased demand and secure a competitive advantage.

Moreover, these processes are enhanced by the continuous feedback loop between the individual and structural levels. As individuals engage in iterative experimentation, supported by an agile structure, they generate new insights that feed back into the processes. For example, the performance analysis conducted by Omio during its rebranding and expansion efforts enabled the startup to fine-tune its marketing campaigns based on real-time data, which was then supported by a responsive organizational structure that allowed for rapid adjustments.

5. Discussion and conclusion

Based on the analysis of six startups through a multiple case study, we delved into the LSC supporting GH (i.e., customer insights, hypotheses testing, iterative experimentation, validation and learning). Specifically, microfoundations were used as a lens to conduct this analysis, showing that at the individual level, specific skills and knowledge (e.g., data analysis, lateral thinking) and cognitive and relational skills (e.g., effective communication and teamwork) were identified. In terms of processes and interactions, we identified structured processes for data collection and analysis (e.g., market analysis, customer journey mapping), product/service development and testing methods (e.g., agile development) and collaborative interactions between teams and stakeholders (e.g., marketing, customer service). The structural assessment revealed an agile and flexible organization that encourages learning and adaptation, a culture based on innovation and experimentation, and investment in technology and resources to support GH (the findings are summarized in Fig. 1). Our study highlights how LSC and their microfoundations provide a solid foundation for GH. Our research revealed the complex interplay between individual competencies, organizational processes, and structural dynamics in fostering GH initiatives. In particular, the integration of emerging technologies, performance analysis, and continuous innovation emerged as critical processes that facilitate validation and learning within the GH framework. Indeed, the integration of data analytics and in-house digital capabilities are crucial to stimulate business growth by improving process efficiency and product effectiveness (Tan et al., 2024).

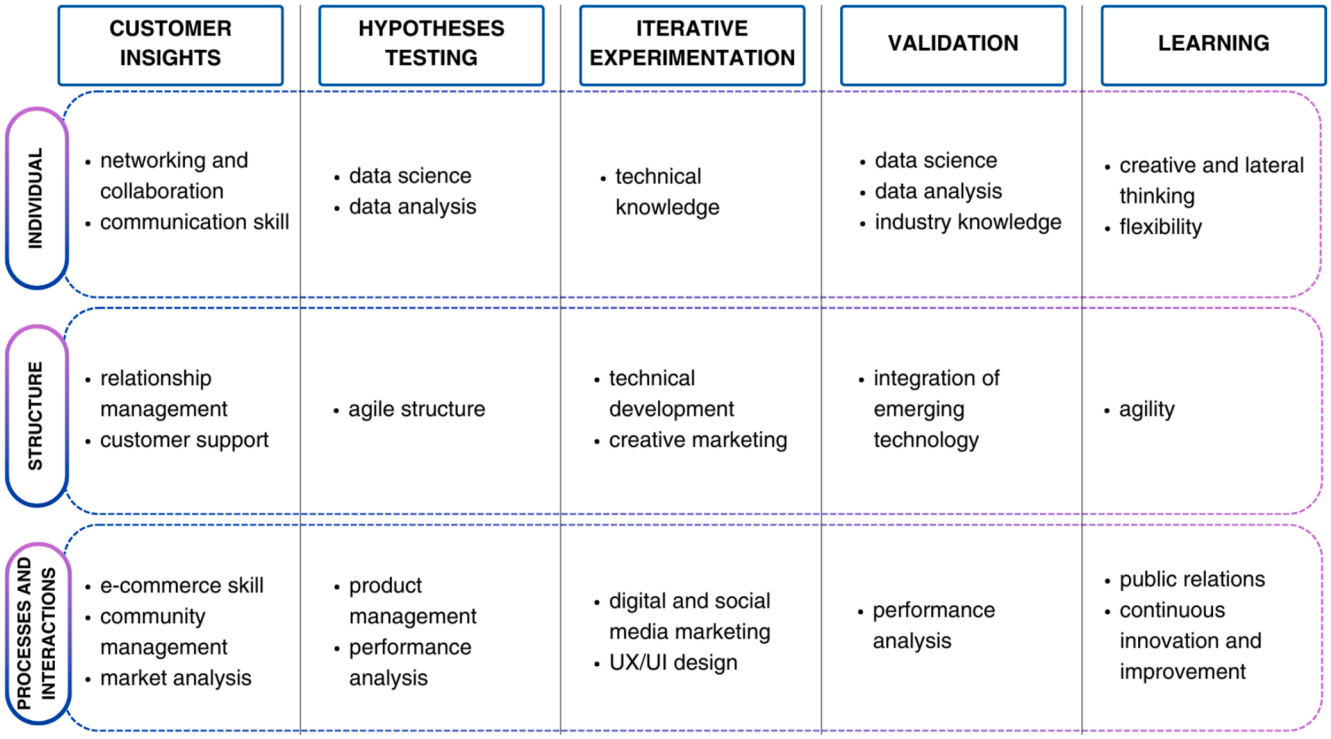

Fig. 1. Microfoundations of LSC sustaining GH.

Overall, this study contributes to the growing literature on GH and LS principles (Bortolini et al., 2018) by providing a theoretical framework for understanding the microfoundations underlying GH capabilities. Indeed, we offer an in-depth exploration of the relationship between LS and GH, identifying the microfoundations that support LSC for GH and analyzing the interplay between individual skills, organizational processes, and structural dynamics in GH. By highlighting the link between microfoundations and LSC, the findings underscore the importance of fostering organizational agility, collaboration, and innovation to drive sustainable growth and competitive advantage.

Thus, the theoretical contributions of this paper are manifold. Firstly, our paper extends the theoretical understanding of GH by integrating microfoundations and LSC, bridging the gap between GH and LS, following and enriching the line defined by previous studies (e.g., Cavallo et al., 2024; Bohnsack & Liesner, 2019). Furthermore, we deepen our understanding of the capabilities required to implement a GH strategy in startups, in line with existing studies (e.g., Bargoni et al., 2024; Bohnsack & Liesner, 2019), and deepen previous studies (e.g., Harms & Schwery, 2020) by integrating the microfoundations perspective to obtain a more detailed view of the mechanisms underlying LSC. Thus, our research enriches existing frameworks (e.g., Bohnsack & Liesner, 2019) and provides a detailed blueprint for future GH and LS research. Secondly, the findings of our research enhance the understanding of LS principles (e.g., Shepherd & Gruber, 2021; Felin et al., 2020; Bocken & Snihur, 2020) by integrating the microfoundations perspective and deepening the mechanisms of LSC. Furthermore, a new perspective deepening the exploration of the associated capabilities and allowing to improve the understanding and application of LS in the context of innovation and business growth is provided. Finally, we contribute to the existing literature on GH and business models (e.g., Cavallo et al., 2023), by identifying the key elements supporting the successful implementation of GH strategies that influence the business model and its scalability.

Our study also offers practical contributions. In particular, LSC and their microfoundations provide a comprehensive framework for assessing and improving GH capabilities within startups. GH has become an essential element of startup success, but startups often find themselves navigating a sea of strategies and tactics without clear guidance on how to implement GH effectively. In this context, the LSC framework is a valuable tool that enables startups to structure and optimize their growth strategies. Our findings provide a detailed practical guide for startups looking to adopt GH strategies and effectively implement these capabilities within their organizations. Through a series of clear and practical steps, startups can learn how to identify growth opportunities, define key objectives and develop targeted action plans. The study also provides examples and case studies that illustrate how GH strategies can be successfully applied in different contexts. In addition to practical guidance on implementing GH strategies, our findings provide useful information for designing and implementing employee training programs and for organizational development of the startup structure. In particular, they outline the core skills required for the effective development of GH strategies. The aim is to improve business models, in line with existing research as highlighted by Cavallo et al. (2023). It is crucial that startups develop a culture and working environment that encourages innovation and experimentation, which are key elements of LS. Finally, the findings of this paper may also provide useful insights for investors and venture capitalists when evaluating the growth potential of a startup. Since growth potential is an important consideration, the ability to successfully implement GH strategies can play a role in this evaluation. By considering the LSC framework as part of their assessment, investors may be better equipped to identify promising startups and make more informed investment decisions.

The study has some limitations. In particular, the results are based on the analysis of six case studies and the qualitative nature of the research may limit the generalizability of our findings. In addition, the use of secondary sources in relation to the case studies may miss some perspectives and limit the completeness of the information available. Hence, quantitative research on a larger sample of startups could provide further confirmation of the findings. Moreover, this study represents a starting point for future research, encouraging more in-depth analyses of the challenges and best practices in implementing LSC and GH in different contexts and business types. The integration of contextual information and primary information may further enrich the understanding of the findings and implications of this study, paving the way for more comprehensive and detailed research in this area.

In conclusion, this study has deepened the understanding of GH capabilities in the context of the LS principles by identifying their microfoundations. Through theoretical review and empirical analysis, we elucidated the interplay between individual competencies, organizational processes, and structural dynamics in facilitating GH efforts.

CRediT authorship contribution statement

Caterina Foggetti: Writing – original draft, Visualization, Methodology, Investigation, Formal analysis, Data curation. **Angelo Natalicchio:** Writing – review & editing, Validation, Supervision, Methodology, Formal analysis, Conceptualization. **Lorenzo Ardito:** Writing – review & editing, Validation, Supervision, Methodology, Formal analysis, Conceptualization. **Vito Albino:** Writing – review & editing, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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