

Experimentation in Corporate Entrepreneurship: An Exploratory Multiple Case Study

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Abstract: Experimentation has become one of the most influential approaches to entrepreneurship revolutionizing the way new businesses are launched and enabling entrepreneurs to test their business model through rigorous experiments. While there is a growing body of research investigating experimentation in a startup context, there is no corresponding literature exploring the role of experimentation in corporate entrepreneurship activities despite the increasing interest in experimentation among managers and the growing practitioner literature urging incumbent organizations to adopt experimentation. Recently, the ideas developed around experimentation have been taken up by incumbent organizations, with the promise that this approach can benefit corporate entrepreneurship activities by accelerating them, reducing resource expenditure, and increasing the chances of success. This is more relevant in the current context where companies have to face fast-changing customer needs and market trends, as well as the design of complex value propositions. Drawing on an exploratory multiple case study, this study explores how experimentation is conducted in incumbent organizations and used as a tool to support corporate entrepreneurship. Based on the findings of this study, we provide contributions to research and practice on experimentation in corporate entrepreneurship.

1 INTRODUCTION

The use of experimentation, defined as “an iterative process to reduce uncertainty, engage stakeholders, and promote collective learning at a relatively low cost” (Bocken and Snihur, 2020, p.4), has strongly rooted in the field of entrepreneurship, becoming one of the most effective approaches to launch and develop new businesses (Hampel et al., 2020; Kerr et al., 2014). Scholars and practitioners have discussed at length the benefits that entrepreneurs can leverage by adopting experimentation (Thomke, 2020; Ries, 2011). Recently, the ideas developed around experimentation have been taken up by incumbent organizations, with the promise that this approach can benefit corporate entrepreneurship activities by accelerating them, reducing resource expenditure, and increasing the chances of success (Cabral et al., 2021; Ries, 2017). However, while there is a consistent body of research on experimentation in startups (Camuffo et al., 2020), the use of experimentation as a tool to support corporate entrepreneurship in incumbent organizations has not yet been systematically explored, despite the

increasing interest among scholars and practitioners (Ghezzi, 2020; Mariani et al., 2021; Silva et al., 2020; Hampel et al., 2020). Therefore, by answering the call of Hampel and colleagues (2020), this study aims to investigate how incumbents engage in experimentation, in terms of antecedents, processes, and outcomes, to support their corporate entrepreneurship activities, drawing on an exploratory multiple case study (Yin, 1984) based on three incumbent firms operating respectively in the manufacturing, energy and information technology sectors. Our multiple case study contributes to research and practice on experimentation in corporate entrepreneurship. First, answering to the call of Hampel et al. (2020), we investigate experimentation in corporate entrepreneurship in terms of antecedents, process, and outcomes; second, we provide detailed empirical evidence about the challenges incumbents face in using experimentation in corporate entrepreneurship by illustrating the peculiarities in conducting experimentation in corporate context; third, we shed light on the enabling role of digital technologies for experimentation in incumbent organizations. Finally, our study offers practical

insights for managers and practitioners involved in experimentation in a corporate context.

2 LITERATURE REVIEW

2.1 Experimentation in Entrepreneurship

Entrepreneurship is essentially about experimentation (Kerr et al., 2014). An experimentation-based approach to entrepreneurship allows to transform the fundamental assumptions of a business model into hypotheses that can be rigorously verified through experiments (Hampel et al., 2020). Experimentation has become very popular in startup context, and it is diffused in incubators and accelerators as a way to launch and develop and support new business (Hampel et al., 2020). Literature shows various experimentation methodologies that are recognized as successful experimentation approaches for experimentation in entrepreneurship such as lean startup (Camuffo et al., 2020; Jocevski et al., 2020; Ries, 2011), design thinking (Brown, 2009) and agile development (Beck et al., 2001). Several studies have documented the benefits of experimentation for startups, in supporting new businesses development and enabling the growth and long-term survival of new ventures (Balocco et al., 2019).

2.2 Experimentation in Corporate Entrepreneurship

In recent years, experimentation has attracted an increasing interest also in the corporate context with the promise to boost corporate entrepreneurship activities by reducing resource requirements and increasing success rates of entrepreneurial activities (Ries, 2017; Ries and Euchner, 2013). The long-term existence of companies depends on their capacity to explore and experiment (Cabral et al., 2021), as experimentation may enable incumbents to overcome inertia and routines that prevent them to effectively apply the changes required to survive (Anthony and Tripsas, 2016). However, despite the relevance of the topic and the increasing interest among practitioners and academics (Hampel et al., 2020; Felin et al., 2019), the use of experimentation as a tool to support corporate entrepreneurship has not yet been systematically investigated, and research urges scholars to address this gap. For instance, Bocken and Snihur (2020) highlight the necessity to understand the boundary conditions for experimentation in

incumbent organizations. Lindholm-Dahlstrand et al. (2019), stress the importance to explicit the system features that can lead companies to experiment. Other studies point out the relevance to investigate experimentation in mature contexts (Silva et al., 2021) or in not digital contexts (Mariani et al., 2021). To address this gap, taking the process view suggested by Hampel et al. (2020), we formulate the following research question: “How do incumbents engage in experimentation, in terms of antecedents, process and outcomes, to foster their corporate entrepreneurship activities?”. We start from the key assumption that companies are not large versions of startups (Chesbrough and Tucci, 2020). In fact, despite corporate experimentation may present similar characteristics with traditional experimentation in new ventures, it may have peculiar characteristics that deserves dedicated research.

3 METHODOLOGY

3.1 Cases Selection

This research has been designed as an exploratory multiple-case study (Yin, 1984) which is particularly useful to explore emerging topics in their real-life setting (Eisenhardt, 1989) and to reinforce the process of generalization of results (Meredith, 1988). Specifically, we investigated experimentation antecedents, processes and outcomes of three Italian companies respectively in the manufacturing, energy and software sectors. Several reasons led us to choose these cases. First, the heterogeneity in terms of sectors since an effective use of experimentation may depend on the type of industry where the company operates (Silva et al., 2020). Second, the heterogeneity in terms of organizational design to adopt experimentation and which could lead to different results. Third, we considered companies that present similar maturity in terms of years of adoption of experimentation in corporate entrepreneurship, to avoid comparing companies with different degrees of maturity for experimentation activities.

3.2 Data Gathering and Data Analysis

In our multiple-case study, data were collected through multiple sources of information (Yin, 1984). Semi-structured interviews were the primary source of information. We conducted 25 semi-structured interviews (8 for case A, 8 for case B and 9 for case

C) with an average duration of 1 hour. As case studies rely heavily on the correctness of the information provided by the interviewees for their validity and reliability, and these can be enhanced by using multiple sources or “looking at data in multiple ways” (Yin, 2003), several secondary sources of evidence and archival data were also added to supplement the interview data, including strategic reports, informal emails and internet pages. The content analysis was performed according to the procedures of the Grounded Theory methodology (Glaser and Strauss, 1967). From the informants’ exact words, we defined a set of first-order concepts iterating between data collected and relevant literature. Based on these, second-order concepts were developed and allowed us to view the data at a higher level of abstraction. Finally, the second-order themes were grouped into overarching dimensions representing the antecedents, process and outcomes of experimentation in corporate entrepreneurship.

4 FINDINGS

4.1 Experimentation Antecedents

The first area of investigation concerns the antecedents that lead incumbents to adopt experimentation in their entrepreneurial activities. In Company A, operating in the manufacturing industry, the need to progressively enter new markets and internationalize, exposed the company to a completely new customer base. To this end, the company adopts experimentation as a way to learn about these new markets. Similarly, in Company B, operating in the energy industry, the huge proliferation of digital technologies allows the company to test new possible configurations that can be delivered on the market. Moreover, Company B, pursuing a decarbonization strategy, leverages experimentation to bring new solutions to the market faster. Company C, operating in the software industry, adopts experimentation as an intrinsic business approach to compete. In this context, experimentation is essential for the company to stay competitive.

4.2 Experimentation Process

The second area of investigation is related to the experimentation process in incumbent organizations. We focus on three main aspects of the experimentation process: (i) experimentation phases and methodologies employed; (ii) the organizational

design adopted for experimentation in incumbent organizations; (iii) the challenges faced in conducting experimentation in corporate context. Concerning experimentation phases and methodologies, we can observe a convergency in the experimentation phases and methodologies in conducting experimentation in corporate context. In the first phase, the “ideation phase”, a new entrepreneurial idea is generated in its minimal features with the involvement of internal and external stakeholders. This phase is typically carried out by adopting design thinking methodology (Brown, 2009) to perform many diverging and converging sessions and generate a business model of the entrepreneurial idea. In the subsequent “execution phase”, the business model generated is tested and validated iteratively with customers up to its validation, following the guidelines provided by the lean startup methodology (Ries, 2011). Finally, in the “implementation phase”, the corporates leverage agile methodology (Ghezzi and Cavallo, 2020) to support the more mature development of the business idea and to build the features of the product through agile sprints. While we found convergency in the application of experimentation phases and methodologies, we find heterogeneity concerning the organizational design to adopt experimentation in the corporate context. In Company A, experimentation activities are mainly carried out in the innovation department, which is the main responsible for the entire corporate experimentation process from the ideation phase up to the industrialization phase. In Company B, experimentation is conducted in a separate area isolated from the existing organizational structure. In this way, the company can realize a “safe” area for experimentation outside the structural boundaries of the organization. Finally, Company C, operating in the software industry, embeds experimentation at many levels. In particular, the company uses experimentation at three levels. First, they experiment with their entire organization on existing products, involving all the corporate functions to continuously adjust the products according to market needs; second, they experiment to develop new products in the innovation department, similarly, to company A; and third, they experiment in a separate structure to find potential new business opportunities, similarly to company B. Focusing on experimentation process, the three incumbents show several challenges in conducting experimentation in corporate entrepreneurship. Company A reports cultural friction generated by the skepticism in accepting the results of experimentation and implementing the required changes in the established structures of the company. Company B

shows the application and understanding of experimentation methodologies as one of the main challenges in conducting experimentation. Moreover, managers of Company B also point out the difficulty in measuring the outcomes of experimentation activities. Finally, Company C faces challenges regarding the organizational culture and the rigid processes that may hinder the effective use of experimentation. Specifically, the organizational functional structure made difficult the horizontal communication flows and the mix of competencies needed to run experimentation activities.

4.3 Experimentation Outcomes

The use of experimentation can lead to different types of outcomes in corporate entrepreneurship. In Company A, experimentation is used to support the launch of new products/services that are incremental and to establish more efficient production processes. In Company B, where experimentation is conducted in a separate structure, experimentation is used to generate new business lines and corporate spin-offs also with value propositions distant from the core business. Company C, where experimentation is diffused inside the organization, presents a wide variety of experimentation outcomes such as new products, new business lines and improved organizational functioning. Through experimentation, the company can develop and spread entrepreneurial competencies associated with experimentation.

5 DISCUSSION

As outcome of our multiple case study, we developed the conceptual model illustrated in Figure 1 that

illustrates experimentation antecedents, process and outcome in corporate entrepreneurship. Experimentation antecedents are the elements that lead companies to embrace experimentation. Then, experimentation process in corporate context is illustrated with its phases and methodologies as well as the organizational designs adopted, and the challenges faced. Finally, experimentation outcomes represent the output in conducting experimentation in corporate context. In the following sections, we will discuss in detail each building block of the conceptual model presented in Figure 1.

5.1 Experimentation Antecedents

Concerning experimentation antecedents, we can identify four factors that can push incumbents to adopt experimentation. First, the availability and proliferation of digital technologies can facilitate experimentation in scope and scale (Autio et al., 2018). Second, internationalization is another factor that can lead incumbents to adopt experimentation. Entering new countries and markets may imply facing new cultural contexts that could undermine the effectiveness of the company's traditional way of doing business (Cavallo et al., 2020; Chandrashekar, 2006). Third, competition is another important factor influencing the adoption of experimentation (Bohnsack et al., 2019). In our study, experimentation emerged as a way for incumbents to keep up with an increasingly dynamic and competitive environment. Finally, our multiple-case study also confirms the role of experimentation in response to a disruptive event. Experimentation in disruptive environments allows the company to rethink its business model and implement the necessary changes as shown by Company C had to completely change its business model by experimenting in response to the disruptive

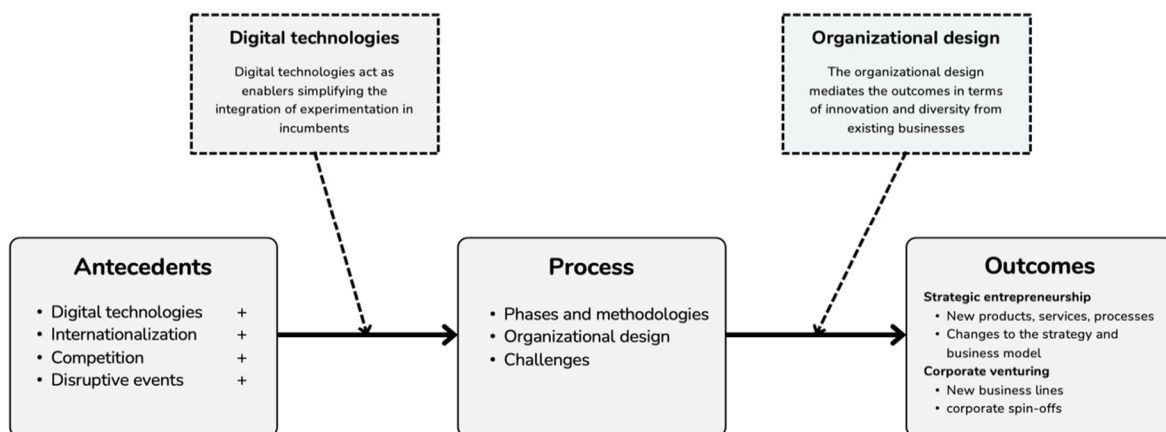


Figure 1: Conceptual model for experimentation in corporate entrepreneurship.

phenomenon of decarbonization. Focusing on the role of digital technologies in corporate experimentation, our findings show that the proliferation of digital technologies may force companies to adopt experimentation, thus acting as an antecedent for experimentation in corporate context. At the same time, digital technologies can simplify experimentation process, therefore also taking the role of enablers. More specifically, digital technologies may have three enabling roles for experimentation in corporate context. First, digital technologies can enable a greater diffusion of entrepreneurial competencies within the company. In this aspect, digital technologies enable a "democratization of competencies" which can favour experimentation (Thomke and Euchner, 2020). Second, digital technologies can make the internal organizational more flexible and responsive to the changes required for experimentation. Third, digital technologies can reduce the number of hierarchical levels in an organization, thus making the structure flatter, that is fundamental for conduct experimentation (Nambisan, 2017).

5.2 Experimentation Process

Concerning experimentation process in corporate context, we focus on experimentation phases and methodologies, the possible organizational designs and the challenges faced.

5.2.1 Experimentation Phases and Methodologies

Our findings revealed three experimentation phases, i.e., ideation, execution and implementation. During the ideation phase, incumbents generate an idea leveraging on design thinking (Brown, 2009). In the execution phase, incumbents validate their idea through the lean startup methodology (Ries, 2011). Finally, incumbents implement their idea using agile methodology and agile sprints (Hummel, 2014). This approach is also confirmed by literature (Shepherd et al., 2021). Indeed, design thinking provides the needed empathy and creativity to define a problem and generate preliminary solutions (Micheli et al., 2019). Lean startup needs to start from defined business model assumptions (Silva et al., 2021) to iteratively test them. Agile sprints can be used to build the features coming from lean startup experiments (Harms et al., 2020). Analysing experimentation phases and methodologies in corporate context, we observe that incumbents require more effort in the ideation phase than startups

(Bocken and Snihur, 2020). Indeed, incumbents have to force themselves to generate and pursue entrepreneurial ideas that are more natural in startup context. In addition, incumbents may face higher difficulties than startups in the implementation phase. Incumbents have a pre-existing organizational structure that must accept and integrate the outcomes of experimentation. This can create cultural frictions with the existing structures.

5.2.2 Organizational Designs for Experimentation in Incumbent Organizations

Another important aspect concerning experimentation process is related to the choice of the organizational designs to enable corporate innovation through experimentation (Hampel et al., 2020). While we found convergency concerning corporate experimentation phases and methodologies, incumbents present heterogeneity in their organizational design to adopt experimentation. Specifically, we can identify three types of organizational designs, respectively: (i) a diffused experimentation approach; (ii) a concentrated experimentation approach and (iii) a separate experimentation approach. A diffused experimentation model refers to a configuration in which experimentation is pervasive throughout the entire company and every function is involved in the process. In this type of configuration, experimentation is conducted simultaneously and in synergy with the usual daily activities that the incumbents run. Our multiple case study shows that this configuration is used to experiment to innovate existing corporate products and services. A concentrated experimentation model implies a configuration where experimentation is confined in one or few business functions, and business activities are mostly separate from experimentation activities. Typically, experimentation takes place in the most innovative functions, such as the innovation or product development departments. Finally, a separate experimentation model consists in conducting experimentation in a totally separate structure from the existing organization. In this case, the company creates a safe zone where experimentation activities are protected from organizational antibodies. The three models proposed, differ for their structural autonomy, which can be defined as the degree of integration of the experimentation process with the current processes and structure of the firm (Sharma and Chrisman, 2007). However, the possible configurations could vary from totally integrated, as in a diffused model, to totally separate, as in a separate model.

5.2.3 Challenges for Experimentation in Incumbent Organizations

Our multiple case study show that incumbents may encounter several challenges in applying experimentation in corporate context. We identified three main types of challenges for experimentation in incumbent organizations, namely: (i) experimentation-level challenges; (ii) firm-level challenges and (iii) network-level challenges. Experimentation-level challenges are the frictions directly generated by the use of experimentation, such as how to properly learn experimentation methodologies, how to specify and apply them in the corporate context, and how to account for them in terms of key performances indicators of such activities. Firm-level challenges are the frictions generated by the interaction between the experimentation process and the organization, such as cultural challenges with the management, the rigid organizational structures and processes. Network-level challenges are the frictions generated by the interaction between the experimentation process and the stakeholders involved in the experimentation such as customers and suppliers. Overall, experimentation-level challenges are common for both incumbents and startups, as they are intrinsic to the experimentation methodologies adopted by startups (Ghezzi et al., 2013; Ghezzi, 2019). On the other side, firm-level and network-level challenges are specific for incumbents engaging in experimentation, since incumbents have a much more structured organization and a much denser network with respect than startups (Deligianni et al., 2022). Such challenges highlight the difficulty in conducting experimentation in corporate context. However, to mitigate firm-level and network-level challenges, incumbents can separate experimentation activities from the existing business activities of the company. In other words, incumbents can increase the structural autonomy to experiment, for instance experimenting in a separate structure, to reduce such challenges.

5.3 Experimentation Outcomes

Experimentation in corporations may lead to different outcomes in terms of corporate entrepreneurship activities depending on the organizational design used to experiment. The diffused and concentrated experimentation models can be suitable to launch and develop new products, improve processes and competences, as well to renew the existing strategy. Thus, these experimentation configurations emerged related to strategic entrepreneurship (Covin and

Miles, 1999), i.e., corporate entrepreneurship domain that includes a broad array of entrepreneurial initiatives such as strategic renewal, sustained regeneration, domain redefinition, organizational rejuvenation, and business model reconstruction (Hitt et al., 2001). Indeed, operating with the diffused or with the concentrated model, innovation outcome developed is usually incremental in nature. While the separate model of experimentation is more related to corporate venturing activities (Sharma and Chrisman, 2007), which refers to the creation of new businesses, for instance, in the form of new business lines or corporate spin-offs (Covin and Miles, 1999). Indeed, operating with a separate experimentation model, incumbents can generate ideas that are radical from the current businesses of the company. In conclusion, we could say that the organizational design used to experiment with incumbents influences the degree of innovation and diversity of the outcomes. Indeed, the higher the structural separation for experimentation, (i.e., structural autonomy) the higher the degree of innovation and diversity that the experimentation can generate for corporate innovation.

6 CONCLUSIONS

Based on the findings of this study, we contribute to research and practice on experimentation in corporate entrepreneurship. From the theoretical point of view, this article offers three main contributions to research. First, this study answers the call of Hampel et al. (2020), by investigating how experimentation is conducted in incumbent organizations in terms of experimentation antecedents, process and outcomes. Second, this study offers empirical evidence about the sorts of challenges at different levels of analysis that incumbent organizations face in using experimentation in corporate entrepreneurship (i.e., experimentation-level challenges; firm-level challenges and network-level challenges), the tactics for getting around these challenges, and the limits of application of experimentation in incumbents, thus highlighting the peculiarities in conducting experimentation in corporate context (Chesbrough and Tucci, 2020). Third, this study shade light on the role of digital technologies for experimentation in corporate entrepreneurship (Cavallo et al., 2020; Arvidsson and Mønsted, 2018). This article also provides many practical implications for managers and incumbent organizations willing to adopt experimentation in their entrepreneurial activities by illustrating the phases and methodologies to conduct experimentation in corporate entrepreneurship as

well as the challenges and the suitable organizational designs for experimentation in corporations. However, our study is not free from limitations which are typical of qualitative studies. For these reasons, further studies, both qualitative and quantitative, are required to reinforce the findings of our research. For instance, future research may explore how experimentation in corporate can be linked both practically and theoretically with entrepreneurial structures such as co-working spaces, experimentation spaces, incubators, and accelerators (Bergman and McMullen, 2022; Bojovic et al., 2020).

REFERENCES

- Anthony, C., & Tripsas, M. (2016). Organizational identity and innovation. *The Oxford handbook of organizational identity*, 1, 417-435.
- Autio, E., Nambisan, S., Thomas, L. D., & Wright, M. (2018). Digital affordances, spatial affordances, and the genesis of entrepreneurial ecosystems. *Strategic Entrepreneurship Journal*, 12(1), 72-95.
- Arvidsson, V., & Mønsted, T. (2018). Generating innovation potential: How digital entrepreneurs conceal, sequence, anchor, and propagate new technology. *the Journal of strategic information systems*, 27(4), 369-383.
- Balocco, R., Cavallo, A., Ghezzi, A., & Berbegal-Mirabent, J. (2019). Lean business models change process in digital entrepreneurship. *Business Process Management Journal*.
- Beck, K., Beedle, M., Van Bennekum, A., Cockburn, A., Cunningham, W., Fowler, M., and Kern, J. (2001), *The agile manifesto*.
- Bergman, B. J., & McMullen, J. S. (2022). Helping entrepreneurs help themselves: A review and relational research agenda on entrepreneurial support organizations. *Entrepreneurship Theory and Practice*, 46(3), 688-728.
- Bocken, N., & Snihur, Y. (2020). Lean Startup and the business model: Experimenting for novelty and impact. *Long Range Planning*, 53(4), 101953.
- Bohnsack, R., & Liesner, M. M. (2019). What the hack? A growth hacking taxonomy and practical applications for firms. *Business horizons*, 62(6), 799-818.
- Bojovic, N., Sabatier, V., & Coblenz, E. (2020). Becoming through doing: How experimental spaces enable organizational identity work. *Strategic Organization*, 18(1), 20-49.
- Brown. T. (2009). *Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation*, Harper Collins.
- Cabral, J. J., Francis, B. B., & Kumar, M. S. (2021). The impact of managerial job security on corporate entrepreneurship: Evidence from corporate venture capital programs. *Strategic Entrepreneurship Journal*, 15(1), 28-48.
- Camuffo, A., Cordova, A., Gambardella, A., & Spina, C. (2020). A scientific approach to entrepreneurial decision making: Evidence from a randomized control trial. *Management Science*, 66(2), 564-586.
- Cavallo, A., D'Angelo, S., & Ghezzi, A. (2020, September). Experimentation and Digitalization: Towards a Brand-New Corporate Entrepreneurship?. In *15th European Conference on Innovation and Entrepreneurship, ECIE 2020* (Vol. 2020, pp. 163-169). Academic Conferences and Publishing International Limited.
- Cavallo, A., Ghezzi, A., & Ruales Guzman, B. V. (2020). Driving internationalization through business model innovation: Evidences from an AgTech company. *Multinational Business Review*, 28(2), 201-220.
- Chandrashekar, G. R. (2006). Examining the impact of internationalization on competitive dynamics. *Asian Business & Management*, 5(3), 399-417.
- Chesbrough, H., & Tucci, C. L. (2020). The interplay between open innovation and lean startup, or, why large companies are not large versions of startups. *Strategic Management Review*, 1(2), 277-303.
- Covin, J. G., & Miles, M. P. (1999). Corporate entrepreneurship and the pursuit of competitive advantage. *Entrepreneurship theory and practice*, 23(3), 47-63.
- Deligianni, I., Sapouna, P., Voudouris, I., & Lioukas, S. (2022). An effectual approach to innovation for new ventures: The role of entrepreneur's prior start-up experience. *Journal of Small Business Management*, 60(1), 146-177.
- Eisenhardt, K. M. (1989). Building theories from case study research. *Academy of Management Review*, 14(4), 532-550.
- Felin, T., Gambardella, A., Stern, S., & Zenger, T. (2019). Lean startup and the business model: experimentation revisited. *Long Range Planning*.
- Ghezzi, A., Renga, F., & Cortimiglia, M. (2009). Value networks: scenarios on the mobile content market configurations. In *2009 Eighth International Conference on Mobile Business* (pp. 35-40). IEEE.
- Ghezzi, A. (2012). Emerging business models and strategies for mobile platform providers: a reference framework. *info*, 14(5), 36-56.
- Ghezzi, A. (2019). Digital startups and the adoption and implementation of Lean Startup Approaches: Effectuation, Bricolage and Opportunity Creation in practice. *Technological Forecasting and Social Change*, 146, 945-960.
- Ghezzi, A. (2020). How Entrepreneurs make sense of Lean Startup Approaches: Business Models as cognitive lenses to generate fast and frugal Heuristics. *Technological Forecasting and Social Change*, 161, 120324.
- Ghezzi, A., & Cavallo, A. (2020). Agile business model innovation in digital entrepreneurship: Lean startup approaches. *Journal of business research*, 110, 519-537.
- Ghezzi, A., Rangone, A., & Balocco, R. (2013). Technology diffusion theory revisited: a regulation,

- environment, strategy, technology model for technology activation analysis of mobile ICT. *Technology Analysis & Strategic Management*, 25(10), 1223-1249.
- Glaser, B., & Strauss, A. (1967). Grounded theory: The discovery of grounded theory. *Sociology the Journal of the British Sociological Association*, 12, 27–49.
- Hampel, C., Perkmann, M., & Phillips, N. (2020). Beyond the lean start-up: experimentation in corporate entrepreneurship and innovation. *Innovation*, 22(1), 1-11.
- Harms, R., & Schwery, M. (2020). Lean startup: operationalizing lean startup capability and testing its performance implications. *Journal of small business management*, 58(1), 200-223.
- Hitt, M. A., Ireland, R. D., Camp, S. M., & Sexton, D. L. (2001). Strategic entrepreneurship: Entrepreneurial strategies for wealth creation. *Strategic management journal*, 22(6-7), 479-491.
- Hummel, M. (2014, January). State-of-the-art: A systematic literature review on agile information systems development. In 2014 47th Hawaii International Conference on System Sciences (pp. 4712-4721). IEEE.
- Jocevski, M., Arvidsson, N., & Ghezzi, A. (2020). Interconnected business models: present debates and future agenda. *Journal of Business & Industrial Marketing*, 35(6), 1051-1067.
- Kerr, W. R., Nanda, R., & Rhodes-Kropf, M. (2014). Entrepreneurship as experimentation. *Journal of Economic Perspectives*, 28(3), 25–48.
- Lindholm-Dahlstrand, Å., Andersson, M., & Carlsson, B. (2019). Entrepreneurial experimentation: a key function in systems of innovation. *Small Business Economics*, 53(3), 591-610.
- Mariani, M. M., & Nambisan, S. (2021). Innovation analytics and digital innovation experimentation: the rise of research-driven online review platforms. *Technological Forecasting and Social Change*, 172, 121009.
- Meredith, J. (1998). Building operations management theory through case and field research. *Journal of Operations Management*, 16(4), 441–454.
- Micheli, P., Wilner, S.J.S., Bhatti, S.H., Mura, M. and Beverland, M.B. (2019), “Doing design thinking: conceptual review, synthesis, and research agenda”, *Journal of Product Innovation Management*, 36(2), 124-148.
- Nambisan, S. (2017). Digital entrepreneurship: Toward a digital technology perspective of entrepreneurship. *Entrepreneurship theory and practice*, 41(6), 1029-1055.
- Ries, E. (2011). *The lean startup: How today's entrepreneurs use continuous innovation to create radically successful businesses*. New York: Crown Business.
- Ries, E. (2017). *The startup way: How modern companies use entrepreneurial management to transform culture and drive long-term growth*. New York: Currency.
- Ries, E., & Euchner, J. (2013). What large companies can learn from start-ups. *Research-Technology Management*, 56(4), 12-16.
- Sharma, P., & Chrisman, S. J. J. (2007). Toward a reconciliation of the definitional issues in the field of corporate entrepreneurship. In *Entrepreneurship* (pp. 83- 103). Springer, Berlin, Heidelberg.
- Shepherd, D. A., & Gruber, M. (2021). The lean startup framework: Closing the academic–practitioner divide. *Entrepreneurship Theory and Practice*, 45(5), 967-998.
- Silva, D. S., Ghezzi, A., de Aguiar, R. B., Cortimiglia, M. N., & ten Caten, C. S. (2020). Lean Startup, Agile Methodologies and Customer Development for business model innovation: A systematic review and research agenda. *International Journal of Entrepreneurial Behavior & Research*, 26(4), 595-628.
- Silva, D. S., Ghezzi, A., Aguiar, R. B. D., Cortimiglia, M. N., & ten Caten, C. S. (2021). Lean startup for opportunity exploitation: adoption constraints and strategies in technology new ventures. *International Journal of Entrepreneurial Behavior & Research*, 27(4), 944-969.
- Thomke, S., & Euchner, J. (2020). High velocity business experiments: An interview with Stefan Thomke. *Research-Technology Management*, 63(4), 11-16.
- Thomke, S. (2020). Building a culture of experimentation. *Harvard Business Review*, 98(2), 40-47.
- Yin, R. (1984). *Case study research*. Beverly Hills CA: Sage.
- Yin, R. (2003). K. (2003). *Case study research: Design and methods*. 5, Sage Publications, Inc11.