

# **How team-level Lean Startup facilitates firm-level Transforming Capability in SMEs**

Master Thesis in Business Administration

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## **Abstract**

This study aims to analyze the implementation of the Lean Startup methodology and how it facilitates Transforming Capability in the existing Small and Medium-sized Enterprises (SMEs). To address this concern, the study used a qualitative research design comprising four Lean Startup-based projects from two small service-based companies. The data collection involved documentation, observations and semi-structured interviews with 16 organizational members. Primary data was analyzed with inductive and deductive coding method.

Using individual, process-interaction and structure microfoundation levels as the starting point, the research reveals positive effects of the Lean Startup on Transforming Capability microfoundations via organizational learning processes, including reflection, repetition, verbal and non-verbal communication. Following Lean Startup principles leads to positive team-level outcomes regarding attitudes, alliances, knowledge integration, autonomy and standardization. These outcomes are then transferred to a collective form and shape the undergirding components of Transforming Capability, namely managerial cognition, decentralization and near decomposability, co-specialization, knowledge management and governance system.

This research expands the existing literature about relevant concepts while providing some management practices to leverage Lean Startup and organizational learning mechanisms. While keeping the context of SMEs, future studies are suggested to change the sampling scope, analysis method or focus on a single part of the microfoundations.

## **Keywords**

Lean Startup, Dynamic Capabilities, Transforming Capability, Reconfiguration, Small and Medium-sized Enterprises (SMEs)

## Table of contents

Acknowledgements .....	i
Abstract .....	ii
Table of contents .....	iii
Table of tables .....	v
Table of figures .....	v
Glossary.....	vi
1. Introduction .....	1
2. Theoretical background.....	3
2.1 Lean Startup .....	3
2.1.1 Definition of Lean Startup.....	3
2.1.2 Indicators of Lean Startup .....	3
2.1.3 Lean Startup application in SMEs .....	5
2.2 Transforming Capability .....	7
2.2.1 Dynamic Capabilities .....	7
2.2.2 Relevance of Transforming Capability to existing SMEs.....	7
2.2.3 Manifestation (signs) of Transforming Capability .....	8
2.3 Effect of Lean Startup on Transforming Capability in SMEs.....	9
2.3.1 Lean Startup's Continuous Improvement effects .....	9
2.3.2 Transforming Capability's required microfoundations .....	10
2.3.3 Relationship between Lean Startup and Transforming Capability.....	12
2.3.4 Possible influencing mechanism .....	14
2.3.5 Conceptual framework .....	15
3. Methodology .....	17
3.1 Research design.....	17
3.2 Case selection.....	17
3.2.1 The companies .....	18
3.2.2 The projects .....	19
3.3 Data collection.....	19
3.4 Data analysis .....	24
4. Results .....	26
4.1 Company A .....	26
4.1.1 Context.....	26
4.1.2 Lean Startup Project A1 .....	27
4.1.3 Lean Startup Project A2 .....	32
4.1.4 Cross-project analysis and influencing mechanisms .....	36
4.1.5 Transforming Capability.....	36

4.2	Company B.....	37
4.2.1	Context.....	37
4.2.2	Lean Startup Project B1.....	39
4.2.3	Lean Startup Project B2.....	43
4.2.4	Cross-project analysis and influencing mechanisms .....	47
4.2.5	Transforming Capability.....	48
4.3	Cross-case analysis.....	49
4.3.1	Context and external environment.....	49
4.3.1	Lean Startup activities .....	50
4.3.2	Team-level learning mechanisms .....	51
4.3.3	Firm-level learning mechanisms .....	52
4.3.4	Transforming Capability manifestation.....	54
4.4	Retained framework .....	55
5.	Discussion .....	58
5.1	Theoretical implications.....	58
5.1.1	Lean Startup practices and outcomes .....	58
5.1.2	Transforming Capability microfoundations and manifestations .....	59
5.1.3	Organizational learning mechanisms.....	60
5.2	Practical implications .....	62
5.2.1	Lean Startup practices .....	62
5.2.2	Organizational learning mechanisms.....	64
5.3	Limitations and Future research .....	65
5.3.1	Limitations.....	65
5.3.2	Future research .....	66
6.	Conclusion.....	68
	References .....	69

## **Table of tables**

Table 1 Examples of Lean Startup practices .....	5
Table 2 Literature review on Lean Startup application in SMEs .....	6
Table 3 Literature review on Lean Startup - Dynamic Capabilities relationship.....	13
Table 4 Overview of the company attributes .....	18
Table 5 Guided semi-interview question .....	21
Table 6 Overview of interviewees (by project role) .....	23
Table 7 Overview of interviewees (by job position).....	23
Table 8 Representative quotes about influencing mechanisms of Project A1 .....	31
Table 9 Representative quotes about influencing mechanisms of Project A2 .....	35
Table 10 Representative quotes about Lean Startup approach of Project B1 .....	42
Table 11 Representative quotes about Lean Startup approach of Project B2 .....	46
Table 12 Compare the context of Lean Startup-based projects .....	49
Table 13 Summary first inductive codes of Lean Startup activities .....	50
Table 14 Compare team-level learning mechanisms .....	51
Table 15 Compare firm-level learning mechanisms .....	54
Table 16 Compare post-project Transforming Capability .....	55

## **Table of figures**

Figure 1 Research gap in the how Lean Startup effects Transforming Capability .....	13
Figure 2 Prior literature review .....	15
Figure 3 Conceptual framework.....	16
Figure 4 Data collection process .....	20
Figure 5 Data analysis approach .....	25
Figure 6 Overview of Lean Startup projects at Company A.....	27
Figure 7 Timeline of focused Lean Startup-based projects at Company A .....	27
Figure 8 Overview of Lean Startup projects at Company B .....	38
Figure 9 Timeline of focused Lean Startup-based projects at Company B .....	38
Figure 10 How team-level Lean Startup facilitates firm-level Transforming Capability .....	55

## Glossary

Term	Definition
Build-Measure-Learn (BML)	A loop where hypotheses in the framework of a business model canvas are tested through metrics and stakeholder feedback about the Minimum Viable Product (MVP), thus allowing executors to decide whether to continue or completely change the product and/or the hypothesis (Ries, 2011).
Business model	A framework of how a firm delivers its solutions and creates value for the customers (Bortolini et al., 2021).
Business Model Canvas	A diagram consisting of hypotheses about the 9 componential blocks of the business model (Blank, 2013). It defines how a firm “ <i>creates and delivers value to customers</i> ” (Teece, 2010, p. 173). This diagram helps entrepreneurs map their testing on how their company can create value and offer to serve customers (Blank, 2013).
Capability	The ability to perform a set of routine-based tasks and utilize the resources to achieve a particular final result (Helfat & Peteraf, 2003). The performance must meet the minimal satisfaction level in a reliable manner and can be developed by collective learning and problem-solving efforts (Fainshmidt & Fraizer, 2017).
Competencies	Internal and external resources and assets give a firm differentiating characteristics to achieve and secure competitive advantages (Park & Kim, 2013).
Competitive advantage	A set of attributes at the heart of a firm’s performance to provide superior value to its customers and outperform the competitors. The superior value can be achieved through cost leadership, differentiation or a focused market segment (Porter, 1998).
Complementary assets	The required resources, capabilities and infrastructures to fully realize the innovation’s potential, enhance its value and utilize the know-how technical knowledge for profits. The complementary assets needed for innovation commercialization include competitive manufacturing, distribution, supporting services and technologies (Teece, 1986).
Continuous Improvement (CI)	A non-stop organization-wide effort to add more value and reduce waste to develop the “quality, speed, flexibility, cost, and sustainability” of the products, services and processes (van Kollenburg & Kokkinou, 2021, p. 262).
Continuous Improvement Initiative (CII)	An activity or approach that are related to the implementation of continuous improvement (van Kollenburg & Kokkinou, 2021).
Co-specialization	A particular complementarity or collaboration of assets, strategies, structures or processes among joint enterprises in a value chain. Furthermore, the co-specialized components must be distinctive and rarely available in the market, thus requiring “coordination of R&D investment and alliance activity” (Teece, 2007, p. 1338).



Term	Definition
Decentralization	A type of nonhierarchical structure where the decision-making power is spread out to multiple managers within their specific area or boundaries. These managers have the right to make decisions without the need to communicate or ask for permission from a central decision-maker (Teece, 2007).
Dynamic Capabilities (DCs)	Unique organizational capabilities to combine, construct and configure competencies to modify operating routines and manage competitive threats (Teece et al., 1997).
Governance System	Formal and informal rules across enterprise boundaries, such as outsourcing production, transferring intellectual property and technology, designing standards and policies, retaining human resources and developing corporate cultures (Teece, 2007).
Innovation	The implementation of generating or adopting a “new or significantly improved” element in a firm (OECD, 2009, p. 11).
Knowledge management	The process of designing and creating suitable procedures as well as incentives for learning, sharing and integrating knowledge (Teece, 2007).
Lean Startup (LS)	A methodology or approach to reduce resource waste and increase customer value (Ries, 2011) via continuous, speedy and customer-oriented experiments (Lizarelli et al., 2021; Bortolini et al., 2021) when developing a business model or product/service. It can involve a bundle of purposefully chosen cross-functional activities (Harms & Schwery, 2020).
Manifestation	A tangible demonstration or display of the existence or occurrence of something that may otherwise be abstract (Cambridge University Press, n.d.).
Mechanism	<i>Entities and activities organized in such a way that they are responsible for the phenomenon”</i> (Illari & Williamson, 2012, p. 132).
Microfoundations (of Dynamic Capabilities)	Underlying actions on lower-level constituent levels, namely individual and group, can lead to higher-order Dynamic Capabilities (Bojesson & Fundin, 2021). From the managerial dimension, they are defined as “skills, processes, procedures, organizational structures, decision rules, and disciplines” to sustain Dynamic Capabilities (Teece, 2007, p. 1319).
Minimum Viable Product (MVP)	An imperfect product offering the least features created from minimum energy and time resources (Ries, 2011).
Near decomposability	A type of structure with a balance between the autonomy of internal management and the integration of external knowledge (Teece, 2007).
Ordinary Capabilities	Almost universal and imitative operational, management, or governance routines to sustain existing work (Teece, 2014).

<b>Term</b>	<b>Definition</b>
Organizational Learning	A process of improving cognition and behaviors in the associations, cognitive systems, and shared memories among organizational members through improved knowledge and comprehension (Fiol & Lyles, 1985).
Reflection (Cognitive)	A process of reviewing the experience to guide future behaviors, being triggered by an external event or one's internal need (Kump et al., 2015).
Repetition (Behavioral)	The consistent retrieval and reinforcement of a certain behavior to intentionally achieve a particular goal, thus converging that action into a routine (Kump et al., 2015).
Resources	The tangible or intangible production inputs that are owned, managed or reached by a firm in the short term (Helfat & Peteraf, 2003).
Seizing Capability	One of the three categories of Dynamic Capabilities. A high-order capability to address the sensed opportunities for development and commercialization through multiple aspects, including improvement and in-time investment in technological competencies, business model design, value chain (re)construction, and resource (re)allocation (Teece, 2023).
Sensing Capability	One of the three categories of Dynamic Capabilities. A high-order capability to explore, identify, assess, learn and interpret activities toward the market and technological opportunities internally and externally (Teece, 2007).
Small and Medium-sized Enterprise (SME)	An economy-engaged firm with less than 250 employees and less than 50 million Euros in turnover or 43 million Euros balance annually (European Commission, 2020).
Transforming Capability	One of the three categories of Dynamic Capabilities. A high-order capability to realign, restructure, recombine, modify and protect existing resources as well as complementary assets (Teece, 2007). It is similar to the ability to implement and coordinate decisions and changes in the strategic level (Li & Liu, 2014).

## 1. Introduction

As **Small and Medium-sized Enterprises (SMEs)** are “*the heart of the global economy*” (OECD, 2013), accounting for over 90% of companies in the United States (United States Census Bureau, 2022), European Union (European Commission, 2022), and Asia (Yoshino & Taghizadeh-Hesary, 2018), it is helpful to understand how they can develop the necessary capabilities to continuously create values and gain economic sustainability in the internationalized business environment.

To explain how firms can make profitable modifications, create valuable products or services, carry out innovative strategies, meet societal goals and achieve growth in the long term, the concept of **Dynamic Capabilities (DCs)** has been developed (Teece, 2014). Dynamic Capabilities are a set of distinctive processes and activities that coordinate an enterprise’s resources to enable forward-looking operations and evolution (Teece, 2023). Dynamic Capabilities are also considered as “*a major source of firm success*” (Kump & Schweiger, 2022, p. 352). The Dynamic Capability’s processes and activities can be classified into three core sub-categories: sensing, seizing, and transforming (or reconfiguring) (Teece, 2007).

Among the three sub-categories of Dynamic Capabilities, **Transforming Capability** is the most relevant to existing SMEs that tend to reconfigure their established organizational aspects along with daily operations rather than seeking a whole new business model from scratch (Zsuzsanna, 2020). As Transforming Capability is about implementing changes for competition, it empowers SMEs to optimize and recombine their available resources, including existing customer databases, and execute the seizing strategies for growth and long-term resilience (Sousa-Zomer et al., 2020). As a Dynamic Capability sub-category, Transforming Capability can only be built through entrepreneurial managerial cognition and learning (Teece, 2023). This leads to the quest of looking for the drivers of Transforming Capability from different entrepreneurial methodologies, such as Lean Startup.

**Lean Startup** is currently a popular business approach to develop a (substantially) new product, service, process or business model in multiple settings, regardless of their size and field (Lizarelli et al., 2021; Blank, 2013). This methodology is often performed at a project level, comprising diverse purposefully chosen activities (Harms & Schwery, 2020) that follow the three principles of experimental learning, customer engagement and agile reaction (Silva et al., 2020; Blank, 2013). By quickly performing experiments and constantly learning from stakeholder feedback in Lean Startup-based projects, enterprises can identify and leverage business opportunities for exploration and exploitation, mainly through knowledge acquisition (Silva et al., 2021). In fact, its original principles, i.e., Lean manufacturing, is classified as a “*Continuous Improvement Initiative*” with non-stop effort to improve a product, a service or a process in a whole company (van Kollenburg & Kokkinou, 2021), thus positively associating with Dynamic Capabilities (Gutierrez-Gutierrez & Antony, 2020).

Despite the importance of Transforming Capability to the firm’s evolution and its overlapping emphasis on entrepreneurship as well as learning with Lean Startup approach, how SMEs can use Lean Startup to facilitate Transforming Capability is not well defined or examined, both in theory and practice. One reason is that the Lean Startup concept is still emerging (Bocken & Snihur, 2019), so its application in the existing SME context lacks empirical studies (Solaimani et al., 2022). Another reason is that Lean Startup is not a one-size-fits-all solution (Chesbrough & Tucci, 2020). In empirical studies, Lean Startup is argued to enhance (Oliveira-Dias et al., 2022) and manifest Dynamic Capabilities (Franco et al., 2021) in a startup, which is a special SME that interrupts the market with innovation and seeks a product-market fit business model for that innovation. However, established firms cannot just mimic

how startups approach Lean Startup (Chesbrough & Tucci, 2020) because Lean Startup can cause conflicts in the available complex system of roles and procedures in the firms (Chesbrough & Tucci, 2020; Felin et al., 2019). This phenomenon raises a question about how Lean Startup actually works and enhances organizational capabilities in the changing business environment nowadays.

Due to the different perspectives of Transforming Capability and Lean Startup, i.e., firm-level capability and team-level methodology respectively, to evaluate their connection, they need to be broken into the same analyzed components from **microfoundation levels**, including individual (cognition and abilities), processes – interactions (activities and techniques) and structures (governance system) (Felin et al., 2012). Once the elements of these microfoundations or pillars meet some specific characteristics, superior firm-level Dynamic Capabilities can be generated (Bojesson & Fundin, 2021). Specifically, Teece (2007) suggested that, to build a strong Transforming Capability, a firm is required to have a decentralized and near decomposable authority structure, bilateral dependent cooperation strategies, as well as up-to-date knowledge management and governance systems. However, there was too little empirical research on how Lean Startup can help existing SMEs meet the necessary microfoundational conditions for a strong Transforming Capability and effectively deal with changes (Solaimani et al., 2022). In other words, the opposite effects, such as change resistance or adaptation failure, may still happen in those established firms (Felin et al., 2019; Kaminskaite, 2017).

While Lean Startup methodology promotes experimental learning within the project boundary (Harms & Schwery, 2020), Dynamic Capabilities and Transforming Capabilities encompass collective learning on an organizational level (Fainshmidt & Fraizer, 2017). Similarly, it is suggested that knowledge-related process is the interlink between any kind of organizational activities (Lee & Yoo, 2019), including those under the control of team-level Lean Startup and firm-level Transforming Capability. Hence, regardless of the project results, it is more important to know what lessons existing SMEs can learn something from Lean Startup practices to reconfigure and/or get back up from its limitations, if applicable. Furthermore, as it is related to the co-evolution of knowledge, **organizational learning mechanisms**, which include different cognitive mechanisms and social communication processes (Kump et al., 2015), are the potential explanation for how Lean Startup methodology fosters collective learning and managerial cognition company-wide. Understanding this knowledge-related process would also uncover more insights into the antecedents of Transforming Capability and Dynamic Capabilities, which are still open for debate (Sousa-Zomer et al., 2020; Fainshmidt & Fraizer, 2017).

To fill the above contextual and conceptual gaps, the thesis focuses on investigating the effect of Lean Startup on Transforming Capability in existing SMEs. The central research question is “**How does team-level Lean Startup facilitate firm-level Transforming (Dynamic) Capability in SMEs?**” By exploring this question through a qualitative case study, the research aims to look at the two concepts in practice, identify how Lean Startup activities enable Transforming Capability in an SME context, and examine their interlinked mechanisms. The finding is expected to contribute to the development of relevant theories, especially in the context of existing SMEs. In addition, the study would also be helpful to SMEs in deciding whether to take up the Lean Startup method and which aspects should they focus on.

## 2. Theoretical background

### 2.1 Lean Startup

#### 2.1.1 Definition of Lean Startup

Although its name and original story closely attach to high-tech startups (Ries, 2011), the core concept of the Lean Startup is widely applied in business model (re)designing and innovation projects in multiple settings, regardless of their size and field (Lizarelli et al., 2021; Silva et al., 2020). According to Ries (2011), Lean Startup is the application of Lean management principles to new ventures in an extremely uncertain market. Originating from the Toyota production system, Lean management is about creating more value with fewer resources and less waste. This type of management may include but is not limited to several techniques such as firsthand observations, small batch size production, five whys and cross-functional innovation.

In more detail, Ries (2011) defined Lean Startup as a methodology focusing on the Build-Measure-Learn (BML) process where hypotheses in the framework of a “*business model canvas*” are tested through metrics and stakeholder feedback about the Minimum Viable Product (MVP). As explained by Blank (2013), a business model canvas is a framework consisting of hypotheses about the 9 componential blocks of the business model, which defines how a firm creates and delivers value. This diagram helps entrepreneurs map their testing on how their company can create value and offer to serve customers. The assumptions on the business model canvas are tested through the formation of a Minimum Viable Product (MVP) – an imperfect product offering the least features created from minimum energy and time resources, and the loop of feedback from stakeholders.

Bortolini et al. (2021) described the complete Lean Startup’s Build-Measure-Learn (BML) process as follows. Having the idea at hand, practitioners start to (1) “*build*” their hypotheses on a business model canvas and design a Minimum Viable Product (MVP), then quickly (2) “*measure*” them through stakeholder feedback and statistical analysis tools to (3) “*learn*” from the experiments for later decisions, whether to continue, escalate, change the product for a new hypothesis or give up the idea. After the “*learn*” stage is another circle of Build-Measure-Learn (BML) with either the same, upgraded or different assumptions. In short, Lean Startup can be understood as a continuous approach to test assumptions about a firm’s value creation and delivery by performing (1) metric-based validation, (2) stakeholder engagement and (3) proactive reaction in its product/service or process development.

According to Harms & Schwery (2020), the Lean Startup is composed of several opportunity exploration and validation activities that are not necessarily to be performed together or performed in a fixed way. Furthermore, the implementation of these activities is a matter of choice, and is often done at a project level. In that sense, a project can use different interconnected tools and activities beyond the Build-Measure-Learn (BML) process but still be considered Lean Startup-based as long as it meets the principles of the methodology.

#### 2.1.2 Indicators of Lean Startup

In evaluating the effects of Lean Startup and making relevant strategic decisions, it is necessary to know whether this methodology is being used or not. There are several ways to identify a Lean Startup-based project, each has different pros and cons. One of the literal ways is to compare the project’s process with the complete practice of the Build-Measure-Learn (BML) as described by Bortolini et al. (2021) in the previous section. Although this strictly meets the original instructions of Ries (2011), continuously following this loop would turn out



to be inefficient and costly (Kaminskaite, 2017), especially when a Minimum Viable Product (MVP) has been accepted and developed into an upgraded product.

The second option is using the three core principles developed by Blank (2013), including experimental learning, customer-oriented development and agile reaction (Silva et al., 2020; Blank, 2013). “*Experimental learning*” refers to the carrying out of experiments and iteration to confirm or rule out predefined hypotheses. The initial idea of the Lean Startup methodology was about failing fast and learning continually, thus reducing wasted resources for development processes and improving organizational wisdom (Blank, 2013). “*Customer-oriented development*” refers to the engagement of stakeholders in testing all elements of a business model, ranging from product/service features and pricing to distribution channels and marketing strategies (Blank, 2013). “*Agile reaction*” is about a firm’s speedy responses and decision-making toward changes, such as user requests or market trends (Silva et al., 2020). In general, this approach is easier to apply than the previous one, yet its broadness may cover all types of ventures and product development processes (Somi, 2021).

Another set of criteria is the assessment of Lean Startup operationalization developed by Harms & Schwery (2020). In this case, different aspects of Lean Startup are being examined and measured, which means the more dimensions with high levels, the higher the Lean Startup application. In other words, there would not be a definite yes or no answer to whether a project implements Lean Startup methodology, but a comparative one about how much Lean Startup does it apply. Harms & Schwery (2020) argued that since Lean Startup consists of several activities, it can be conceptualized as a capability bundle, which is an integration of multiple capabilities in performing the approach. Based on this line of thought, the authors operationalized the tools and activities encompassed in the Lean Startup approach and came up with a multidimensional model of five theoretically realized indicators (or dimensions). They are “*customer insight*”, “*hypothesis testing*”, “*iterative experimentation*”, “*validation*” and “*learning*” (**Table 1**). As these dimensions are connected as a cycle, missing or applying incorrectly one of the dimensions would negatively affect the hypotheses about the reality of the market and customer value, as well as the quality of the decisions made.

In more detail, a development project starts with “*Customer insight*” which refers to the understanding of customer needs and problems. To gain customer insight, the team needs to conduct market research and put the customer in their mind when trying to find the solutions with their experiments. By having a deep understanding of the product/service users or beneficiaries, firms can avoid devoting resources to making useless things.

“*Hypothesis testing*” represents the team’s practices to construct explicit assumptions about the firm’s internal or external environment and what it can do to meet the “*Customer insight*”. The dimension also includes the attempt to answer, modify or skip this question by performing empirical examination and analyzing collected data from various sources. By having a research question to verify, the project team can stay focused on exploring different solutions for one targeted issue at a time and also have the confidence to reject the hypothesis and replace it with a new one.

The “*Iterative experimentation*” dimension is met when the project team performs constant experiments to test their assumptions. This can involve prototyping, building a Minimum Viable Product (MVP), engaging in trial-and-error processes or producing in a small batch size. The results from the experiments will generate relevant data for the project team to make decisions about the leading hypothesis.

The results of “*Iterative experimentation*” are presented in the form of quantitative metrics and/or qualitative stakeholder feedback in the “*Validation*” dimension. The collected data then needs to be analyzed to understand the product/service outcomes, such as quality and

acceptance. The decision that was driven by this information would provide an objective view for the project team about their experiment as well as the tested opportunities.

The fifth dimension is “*Learning*”, which refers to the cognition development process of realizing what works and what does not work. The learning process involves knowledge acquisition, assimilation, codification, sharing and application. Manifesting this dimension includes activities such as problem-solving, obtaining new skills or techniques, spreading knowledge through internal communication or training, and codifying lessons learned into written documents or videos. Experimental learning is the most relevant type of learning in a Lean Startup project, allowing members to reflect and increase knowledge about “*Customer insight*” as well as the hypothesis under examination.

**Table 1 Examples of Lean Startup practices**

*Adapted from Harms & Schwery (2020)*

#	Dimensions	Description	Examples of activities
1	Customer insight	In-depth understanding of customer needs	<ul style="list-style-type: none"> <li>• To conduct market research</li> <li>• To identify customer needs and problems</li> <li>• To seek customer insight</li> <li>• To put customers in mind</li> </ul>
2	Hypothesis testing	To make and test assumptions	<ul style="list-style-type: none"> <li>• To formulate falsifiable assumptions that “<i>can be rejected through a decisive experiment</i>”</li> </ul>
3	Iterative experimentation	To experiment with different business aspects continuously	<ul style="list-style-type: none"> <li>• To seek information about the market/technology</li> <li>• To engage in trial-and-error processes</li> </ul>
4	Validation	To use data for the decision-making process	<ul style="list-style-type: none"> <li>• To ask for customer and employee feedback</li> <li>• To use metrics to test product features and/or acceptance</li> <li>• Communicate value and vision</li> </ul>
5	Learning	To acquire new information to improve cognition and behavior	<ul style="list-style-type: none"> <li>• To accumulate experiences</li> <li>• To codify knowledge</li> <li>• To promote learning</li> </ul>

### 2.1.3 Lean Startup application in SMEs

There are different views on the Lean Startup methodology and its effectiveness (Solaimani et al., 2022; Leatherbee & Katila, 2020; Silva et al., 2020). According to Lizarelli et al. (2021), the number of Lean Startup’s pros has been found to outweigh its cons. Regarding the good side, Lean Startup implementation will commonly foster (1) the firm’s agile responses, (2) customer orientation, (3) teamwork in a development process and (4) waste elimination while (5) capturing opportunities during the first stage of a new business venture as well as innovation projects in established companies. Similarly, Harms & Schwery (2020) argued that Lean Startup helps to improve the top managers’ confidence, direct experience and knowledge learning while allowing them to develop theories, standard operating procedures and early customer engagement in a faster, better and more affordable manner. Bocken & Snihur (2019) also identified three merits that Lean Startup can offer a firm, including the stimulation for continuous experimentation, early joint co-creation, and extra tools for other decision-making processes.

While most benefits were observed from the context of startups, contextual challenges can hinder Lean Startup’s outcomes in the case of corporate settings. Many researchers supported its one-fits-all feasibility (Jesemann et al., 2021; Blank, 2013; Ries, 2011) whereas some gave warnings about its visible failure (Felin et al., 2019; Kaminskaite, 2017), especially in grown-up enterprises (Blank & Euchner, 2018) due to organizational culture, existing processes, complex hierarchy, lack of top management support and resisting attitudes (Lizarelli

et al., 2021). Additionally, Felin et al. (2019) noted that Lean Startup practices may not lead to radical value, long-term theory-based learning or specific guidance for “*firm's own unique strategy, commitment, and point of view*” (p. 4). Euchner (2022) believed that this continuous development loop is often restrained in a protective experimental environment and is chaotic in nature. Therefore, it will face resistance from core functions when being transferred from a development project to the whole parent organization, causing a delay or a stop to the experiment.

In the context of SMEs, most prior literature used qualitative research methods, especially case studies, to approach Lean Startup (**Table 2**). While most papers suggested the positive influences of Lean Startup on SMEs’ profitable performance and innovation processes (Scheuenstuhl et al., 2020; Yang et al., 2019), the opposite result was found by Kaminskaite’s paper (2017) as their case study almost failed due to a slow and costly customer feedback loop in implementing Lean Startup. Witnessing mixed results, Solaimani et al. (2022) and Jesemann et al. (2021) gave some recommendations regarding the preparation stage and entrepreneurial skills for the success of the Build-Measure-Learn (BML) cycle.

**Table 2 Literature review on Lean Startup application in SMEs**

#	Author(s) and year	Research method	Sample	Lean Startup measurement	Impact measurement	Impacts
1	Solaimani et al., 2022	Qualitative: Case studies with semi-structured interviews	15 non-digital micro companies in Amsterdam, the Netherlands	Cognitive and behavioral logic in Build-Measure-Learn (BML) process	Compare similarities and differences with digital Lean Startup firms	Non-digital firms need some special entrepreneurial skills to effectively apply the Lean Startup method.
2	Jesemann et al., 2021	Qualitative Telephone interviews with specialists	15 experts from different sectors	Lean Startup’s motivation, approach, designing and developing process, customer involvement and interaction	Considering large firms’ Lean Startup application to SMEs	Lean Startup method can be applied in any company from any industry. Yet, preparation and customer contacts are elements for success.
3	Scheuenstuhl et al., 2020	Qualitative: Experiment and online survey	08 experiments in 01 software company in Germany	The process of Build-Measure-Learn (BML) with laboratory experiments	Compare the attractiveness, sales potential and validity of innovation performance among groups	SMEs applying Lean Startup method improved their innovation process and success rate.
4	Yang et al., 2019	Qualitative: Survey and scholarly discussion	160 firms in China	Search and execution practices	Profitability performance	A positive factor for profit growth is search activities in below-7-year-old firms, while it is execution activities for older firms.
5	Kaminskaite, 2017	Qualitative: Case study	01 gambling company (Gamevy) in the UK	Apply Build-Measure-Learn (BML) process when entering the strictly regulated market	Resources spent for testing demands and improvement of two prototypes	More testing does not mean better results. Careful planning is still needed to stay on track.
6	Raatikainen, 2016	Qualitative: interview case studies	08 cases from 04 software companies in Finland	A method to enhance the innovation life-cycle	The rationale for each decision when applying innovation approach alternatives	Lean Startup helps validate new product innovations, but it can also be biased. Autonomy is needed to utilize the method.



## 2.2 Transforming Capability

### 2.2.1 Dynamic Capabilities

“*Dynamic Capabilities*” are defined as a firm’s unique abilities to “*integrate, build and configure internal and external competencies*” (Teece et al., 1997, p. 516). They include core tangible and intangible inputs that give a firm differentiating characteristics to achieve and secure competitive advantages (Park & Kim, 2013) in all kinds of settings, ranging from rapidly changing markets (Teece, 2007) to less turbulent ones (Protogerou et al., 2014). With continuous competitive advantages, a firm can provide superior value, such as lower cost or unique benefits, to its buyers (Porter, 1985) in the long term. Firms show their “*capability*” when they are able to perform a set of routine-based tasks and utilize the resources to achieve a particular result. In which, the performance must meet the minimal satisfying level in a reliable manner and can be developed “*over time through problem-solving and collective learning*” (Fainshmidt & Fraizer, 2017, p. 551).

According to Teece (2023, p. 122), Dynamic Capabilities are transformative, change-oriented, forward-looking and are resulted from the constant changes of the “*combination of organizational routines and entrepreneurial management*”. They encompass strategic decisions dealing with opportunities, threats and future development.

Dynamic Capabilities are broken into three inter-connected sub-categories: sensing, seizing and transforming or reconfiguring, which require different skills and disciplines (Teece et al., 1997). Overall, sensing is about scanning, learning and interpreting opportunities (mostly external); seizing involves making investment decisions and designing action plans to exploit the sensed opportunities with internal resources; and transforming or reconfiguring refers to executing or implementing the strategies and modifying both internal and external resource base (Sousa-Zomer et al., 2020).

In more detail, according to Teece (2007), “*sensing*” *capability* refers to the exploring, identifying, assessing, learning and interpreting activities toward the market and technological opportunities internally and externally. Opportunities can arise from both existing and new information, and require specific wisdom, insight and creativity to activate into novel creation or discovery.

“*Seizing*” *capability* is about addressing the sensed opportunities for development and commercialization through multiple aspects, including improvement and in-time investment in technological competencies, business model design, value chain (re)construction, and resource (re)allocation (Teece, 2023). Seizing capability requires the ability to make appropriate decisions, great understanding and evidence-based experience with the organizational stakeholders.

Finally, “*transforming*” or “*reconfiguring*” *capability* is about realigning, restructuring, recombining, modifying and protecting existing resources, both tangible and intangible ones, for commercialization (Teece, 1986). This capability is needed to maintain “*to maintain evolutionary fitness [and] superior profitability*” of the seized elements Teece (2007, p. 1335). It is argued to be similar to “*implementation capacity*”, defined as “*the ability to execute and coordinate strategic decision and corporate change*” (Li & Liu, 2014, p. 2), as both require changes in several managerial processes, organizational routines and internal mechanisms designs to adopt and enact strategic plans (Kump et al., 2019).

### 2.2.2 Relevance of Transforming Capability to existing SMEs

Transforming Capability is highly relevant to existing SMEs because of (1) its fitness to SME’s typical situation, (2) its benefits for long-term resilience, and (3) its importance in the

Dynamic Capability framework. By embracing Transforming Capability, SMEs can strengthen their competitive position and achieve sustainable growth in today's rapidly changing markets.

Firstly, as existing SMEs have passed the startup stage in exploring the product-market fit, already formed relatively robust routines for further scaling or longevity, and tend to focus more on operational activities (Al-Abri & Rahim, 2020; Zsuzsanna, 2020), their revolution and innovation depend more on their Transforming Capability or how they execute the strategies and reconfigure the resources to exploit the current business(es) (Sousa-Zomer et al., 2020). Moreover, in the dynamic and competitive business environment like nowadays, existing SMEs need to quickly recombine their available and new resources to adapt to the rapid changes in market conditions, customer preferences, and technological advancements. In competing with larger incumbents, Zahra (2021) proposed that Transforming Capability can enable SMEs to adopt creative and appropriate strategies, thus allowing them to deliver unique value propositions and differentiate themselves despite resource constraints.

Secondly, a strong Transforming Capability helps SMEs to actively change, capitalize on emerging trends and expand their market presence. According to Teece, (1986), Transforming Capability is about recombining and modifying existing tangible and intangible resources. Firms with strong Transforming Capabilities would closely stay connected with the market trends and develop products/services that align with customer's evolving needs and preferences. Consequently, they can enhance customer satisfaction and loyalty, thereby ensuring the business's long-term resilience. In particular, companies with a stronger Transforming Capability are more likely to "*seize opportunities by combining resource and organizational processes and structures in new ways*" and survive a changing market (Kachouie et al., 2018, p. 1013). Grimaldi et al. (2013) also confirmed the strong relevance of Transforming Capability in existing SMEs when it comes to innovation. Despite having different innovation approaches, ranging from closed to open, all innovative SMEs in their research showed an above-medium level of Transforming Capability.

Finally, Transforming Capability is also argued to be the most important category of Dynamic Capabilities due to its relevance to implementing the strategies. This capability allows a firm to put the values from "*Sensing*" and "*Seizing*" to use and maintain its competitiveness for survival, thus providing valuable insights into the complexities and antecedents of the Dynamic Capability Framework (Sousa-Zomer et al., 2020). In organizational settings, for reconfiguration to take place, "*Transforming*" is constantly required, executing the strategies and creating sustainable competitive advantages (Warner & Wager, 2019), such as cost leadership, differentiation or focused market segment (Porter, 1998).

Although a growing number of scholars have tried to consolidate literature about Dynamic Capabilities, the understanding of this concept remains inconsistent (Soluk et al., 2023). Available findings also provided inconsistency about SME's Transforming Capability as well as its characteristics for a strong Transforming Capability. On one hand, Weaven et al., (2021) suggested that simple structure and direct ownership may allow SMEs to flexibly deploy the reconfiguration of internal activities, thus emphasizing the possibility of strong Transforming Capability in SMEs. On the other hand, Grimaldi et al. (2013) claimed that SME's experimental learning is not efficient for an evidence-based and strategic path for competitive advantage development, suggesting weak Transforming Capability in SMEs.

### **2.2.3 Manifestation (signs) of Transforming Capability**

The presence and strength of Transforming Capability can be assessed from different perspectives. According to Lee & Yoo (2019), Transforming Capability is shown via how companies change organizational structures, organize "*a task force team*", identify and spread best practices company-wide and introduce information systems to enhance internal

communication and work processes. Jantunen et al. (2005) quantified this capability through the number and success perception of “*new or substantial*” company strategy/structure, management/marketing/strategy methods, technological equipment and manufacturing/business/production processes. Eechoud & Ganzaroli (2023, p. 9) evaluated this capability from a qualitative dimension with “How” and “What” questions on the way firms change their “*existing capabilities, activities and processes ... allow[ing] the company to remain flexible*” and the contributions of these changes. Kump et al. (2019), Lopez-Cabrales et al. (2017) and Wilden et al. (2013) identified Transforming Capability through the visibility of the change-related activities in an enterprise, such as carrying out regular training, having a forward-looking plan for changes, implementing (substantially) new methods, renewing the working processes, and recombining resources to be effectively synchronized with the external ecosystem.

Given the above findings, Transforming Capability can be seen and analyzed through a firm’s (1) plans for future change, such as strategic foresight and scenario analysis; (2) the success of those implementations, (3) the consistency as well as (4) frequency of changes made in organizational structures/working processes/technological tools; and (5) learning program and internal communication. First, according to Kump et al., (2019), because Transforming Capability is about implementing change-related activities, a “*strategic plan for change*” is needed to be discussed, adopted and enacted. The second aspect is also outcome-oriented, focusing on the consequences as reconfiguration success is not only the goal but also the motivation for Transforming Capability. The third and fourth signs to identify an organization with high Transforming Capability is that it consistently and constantly “*implements decided renewal activities by assigning responsibilities, allocating resources*” (p. 18). Finally, from the activity-based view, a firm should have a company-wide education and an efficient communication environment to spread the best practices and foster a change-oriented culture (Lee & Yoo, 2019).

## **2.3 Effect of Lean Startup on Transforming Capability in SMEs**

### **2.3.1 Lean Startup’s Continuous Improvement effects**

Though not directly mentioning the Lean Startup in their article, Teece (2023) implies that the Toyota Production System – the initial philosophy behind the Lean Startup, is “*an improved process [among] strongest ordinary capabilities*”. Mohagheh & Groessler (2021) agreed with Teece (2023) that Lean routines, day-to-day practices aiming at eliminating waste in product/service production and distribution, are not sufficient to create sustainable outcomes and competitive advantages. However, van Kollenburg & Kokkinou (2021, p. 262) considered Lean management, the origin of Lean Startup, as an initiative that can affect organizational lower-level Dynamic Capabilities, known as microfoundations, through “*Continuous Improvement*” effects. “*Continuous improvement*” is defined as a non-stop effort of the whole organization in “*adding more value and eliminating waste*” to develop the “*quality, speed, flexibility, cost, and sustainability*” of the products, services and processes. Except for the different breath, Lean Startup methodology and Continuous Improvement Initiatives both share the underlying principles of increasing value and reducing waste. Hence, it implies that their effectiveness would be similar but at different levels and sizes. While Continuous Improvement Initiatives require company-wide efforts and influence firm-level Dynamic Capabilities more directly, Lean Startup methodology occurs at the project level and potentially creates similar outcomes in a smaller scope of a small group.

In their systematic literature review, Gutierrez-Gutierrez & Antony (2020) argued that Continuous Improvement Initiatives (CIIs) (1) have transformative leaders, (2) obtain change-

oriented culture, (3) offer growing human resources practices, (4) create specialized leading positions, (5) encourage problem-solving and sharing of knowledge, (6) develop knowledge management system, (7) form standardization, (8) enhance stakeholder relationships and (9) promote information technology, thus strengthening the development of Dynamic Capabilities in correspondence to (10) the environment dynamism. Among the ten propositions, the first two suggestions lean more on the inputs and external success factors of an initiative; the seven other propositions indicate some required characteristics of the projects to create positive influences; and the last one emphasizes the facilitator that tweaks the project's effects in different conditions.

Although the middle group of seven propositions can be considered as the influencing mechanisms themselves, the authors also suggested the link between these elements and Dynamic Capabilities. For example, proposition 3 said "*The implementation of CIIs that strengthen practices for employee growth and development will strengthen the development of DCs through employees' greater willingness to change and adapt*" (p. 141), which means Continuous Improvement Initiatives foster Dynamic Capabilities through (1) employee's perception and attitude towards changes. Similarly, other mechanisms that can be extracted from Gutierrez-Gutierrez & Antony's (2020) propositions include (2) the development of strategic partnerships and (3) the achievement of knowledge integration upon efficiency, scope and flexibility. For more details, "*efficiency*" is determined by the frequency of a firm's processes, "*scope*" is defined as the variety of contexts that can be based on the formed processes, and "*flexibility*" is about (re)combining different obtained knowledge by the firm (Hou & Chien, 2010).

As discussed earlier about the shared principles of Lean Startup and Continuous Improvement Initiatives, Lean Startup-based projects would likely to create some differences in terms of (1) attitude, (2) alliance, as well as (3) knowledge integration, within the project team. Firstly, in terms of attitude, according to Lizarelli et al.'s (2021) literature review, the Lean Startup approach commonly fosters team satisfaction and collaboration. Hence, this engaged and collaborative culture within the project would increase the preparation and willingness of members to "*implement the change needed by Dynamic Capabilities for environmental adaptation.*" (p. 141). Secondly, with great emphasis on stakeholder engagement, proper application of Lean Startup would be able to encourage collaboration inside and outside of the project team. This behavior not only optimizes each member's specialization but also helps reduce cost and waste for the in-house development process. Lastly, because Lean Startup-based projects rely on continuous learning, implementing this methodology leads to the integration of the knowledge, mostly from iterative experiments and validation. While continuous learning is related to the high frequency of processes, the incremental nature of the Lean Startup approach is said to boost the application scope and flexibility of the project-related content, skills or processes.

### **2.3.2 Transforming Capability's required microfoundations**

To explain how a firm develops Dynamic Capabilities, it is necessary to understand their undergirding components, the microfoundations (Teece, 2014). As reviewed by Bojesson & Fundin (2021), one of the accepted definitions is that "*Microfoundations*" are a firm's underlying actions on lower constituent levels, namely individual and group, that can shape the firm's higher-order Dynamic Capabilities. They affect but do not necessarily create Dynamic Capabilities (Felin et al., 2012). Their changes are required, but may not always lead to changes in Dynamic Capabilities (Wójcik et al., 2015). In short, microfoundations are the necessary conditions for Dynamic Capabilities emergence, but not their only causes.



Based on the definition above, the term “*Microfoundation*” can still be seen differently from a general perspective or a more context-specific perspective (Bojesson & Fundin, 2021). With the first type of viewpoint, microfoundations are used to indicate the general containers of multiple variables. In particular, Felin et al. (2012) have broken down microfoundations into three categories: (1) individuals, (2) processes and interaction, and (3) structure. Each of these categories or lower-level entities includes different components, which alone or together will cause or create a capability. These three categories can be used as the starting point to identify outstanding enablers and barriers to Transforming Capability (Bojesson & Fundin, 2021).

Individual-based microfoundation includes “*choices, agency, characteristics, cognitions, and abilities*” of the organizational members (Felin et al., 2012, p. 16). Some examples of this category are employees’ attitudes toward change and the top manager’s personality. Process-based microfoundation refers to the coordination method as well as the involved technologies and artifacts. Structure-based microfoundation can be analyzed through the complexity of rule systems to govern activities, organizational form and founding logic of the founder(s). Dynamic Capabilities are affected by the operation of each category separately or, most of the time, by the interactions within and among them. For example, a firm’s formal procedures (Process-based category) can define its decision rules (Structure-based category), influence the cross-functional cooperation that links to the collective constructs of individual interest (Individual-based category), and in turn, shape the execution and outcome of the firm’s routines and capabilities.

With context-specific viewpoints, microfoundations are seen as the required elements with detailed and specific descriptions of the elements. As top management, including their cognition, perception, motivation, skills and experiences, is commonly agreed to be the core motion of Dynamic Capabilities, required microfoundations to build and sustain a firm’s Transforming Capability are often evaluated from a managerial perspective. For example, Teece (2007) suggested three building blocks undergirding Transforming Capability are (1) a structure that is loosely coupled and allows organizational units to be considerably autonomous but connected (decentralization and near decomposability), (2) a condition where co-dependent assets can be built or integrated to enhance the firm’s value with “*differentiated product offerings or unique cost savings*” (co-specialization), (3) formal and informal rules and principles that enable learning, integrating know-how, sharing knowledge, protecting intellectual property and dealing with relevant issues, e.g., incentive design rules (knowledge management and corporate governance).

According to Teece (2007), “*Decentralization*” is a type of nonhierarchical structure where the decision-making power is spread out to multiple managers within their specific area or boundaries. These managers have the right to make decisions without the need to communicate or ask for permission from a central decision-maker. In other words, decentralization emphasizes autonomy. Meanwhile, “*near decomposability*” refers to the balance between the autonomy of internal management and the integration of external knowledge. By having a decentralized and near-decomposable structure, a firm can make decisions in response to the market and “*remain connected to activities that must be coordinated*” in a fast-paced environment.

“*Co-specialization*” is a particular complementarity or collaboration of assets, strategies, structures or processes among joint enterprises in a value chain. Furthermore, the co-specialized components must be distinctive and rarely available in the market, thus requiring “*coordination of R&D investment and alliance activity*”. With co-specialization, enterprises can enhance their joint value while differentiating their offerings and/or prices, thus

being *strategically fit* and remaining competitive. An example of co-specialization is the integration of software applications “*into a single program*”.

“*Knowledge management*” is about designing and creating suitable procedures as well as incentives for learning, sharing and integrating knowledge. “*Governance*” is about the formal and informal monitoring of issues across enterprise boundaries, such as outsourcing production, transferring intellectual property and technology, designing standards and policies, retaining human resources and developing corporate cultures. Because knowledge is a critical intangible asset, it is necessary for a firm to coordinate the know-how inside and outside of its boundaries. With a strong updated knowledge management and governance system, a firm can ensure its differentiation and position within a network or an ecosystem despite the continuous changes in “*product offerings, business models, enterprise boundaries, and organizational structures*”.

### 2.3.3 Relationship between Lean Startup and Transforming Capability

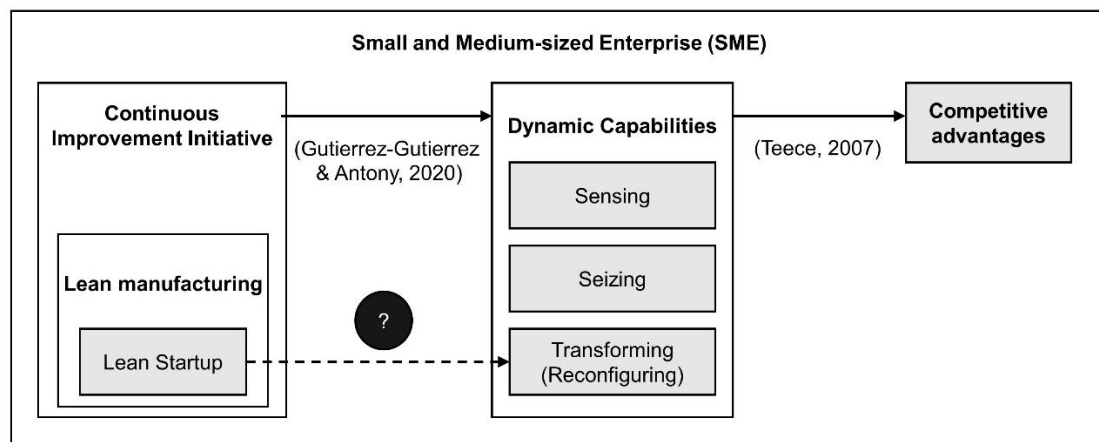
Searching via Google Scholar with both keywords, “*Lean Startup*” and “*Dynamic Capabilities*”, led to most findings about either one of the two aspects, mainly in relation to the “*business model*”. Thus, only six papers were found to actively involve the two concerned concepts in their analysis, mostly in the context of high-tech firms or startups (**Table 3**). A common result among these papers is the positive impact of the fast-experimenting cycle on the firm’s dynamic capabilities for innovation.

Noticeably, Raito (2019) integrated the similarities between the two concepts into a new theoretical framework where the Lean Startup and Dynamic Capabilities strengthen each step of the other in a circle. Particularly, starting with the newly built product/service in the “*Build*” stage of the Build-Measure-Learn (BML) loop, the company will use “*Sensing*” to scan customer needs and potential technologies to come up with appropriate measurement metrics for the product/service features and effectiveness. The results from the “*Measure*” stage help the firm to obtain insights and “*Seize*” those into new knowledge in the “*Learn*” step. When a new version of a product/service/process is needed, “*Transforming Capability*” would take place. Although Raito’s (2019) research touched on the similarities and relationship between Lean Startup and Dynamic Capabilities, it underestimated the forward-looking characteristics and high-level position of Dynamic Capabilities, and did not explicitly explore the influencing mechanisms between the two concepts. Moreover, though addressing a similar topic, it has a different scope of interest, namely the general Dynamic Capabilities in young startups, not Transforming Capability in existing SMEs.

To the knowledge of the author at the time of this study, no prior research about the specific relationship between Lean Startup and Transforming Capability has been conducted, not to mention in the context of SMEs. Even when they were seen as part of larger concepts in Gutierrez-Gutierrez & Antony’s (2020) systematic literature review, i.e., Continuous Improvement Initiatives and Dynamic Capabilities respectively (**Figure 1**), there were three different lines of argument about these concepts’ relationship. Those viewpoints either consider the former as an enabler, a result or a part of the latter. However, all these three directions reinforced the positive relationship between Lean Startup and Transforming Capability while revealing the complexity and dimensionality of this topic for further exploration and explanation.

**Table 3 Literature review on Lean Startup - Dynamic Capabilities relationship**

#	Author(s) and year	Research method	Sample	Dynamic capabilities (DCs)	Lean Startup (LS)	Association between concepts
1	Eechoud & Ganzaroli, 2023	In-depth semi-structured interviews	07 selected companies with high materiality and technological intensity	Foster business model innovation via “digital technologies or sustainable development”	A customer-oriented and value co-creation concept in operations, supply chain and new initiative development	LS strengthens seizing and transforming capabilities for circular digital business model innovation
2	Oliveira-Dias et al., 2022	Website check and interviews	03 Brazilian logistics startups	Encourage firms to develop a sustainable business model	Seen through hierarchy	LS helps transform DCs
3	Franco et al., 2021	3-year case study	01 medium-sized software company with successful business model	Lead to an innovative business model	A tool to support experimentation and agile methods in designing new business model	LS is one of the aspects to evaluate DCs
4	Zahra, 2021	Literature examination	Prior literature about startups	A resource-based view to deploying resources	An entrepreneurship framework to conceptualize, assemble, deploy and allocate the resource	Different resource-based theories to explain the resource management process
5	Raito, 2019	Interviews	04 Finnish Lean startups	Sustainability is reached if being implemented correctly	Build-Measure-Learn (BML) cycle promotes the creation and utilization	LS enhances but does not necessarily lead to DCs
6	Soriano-Rivera et al., 2022	Literature examination	Several theories	3-level intangible resources: functional activities, new ability development and learning capability	Part of the agile methodology	Two required special tools to manage a complex system in a dynamic environment



**Figure 1 Research gap in the how Lean Startup effects Transforming Capability**

### 2.3.4 Possible influencing mechanism

Organizational routines and capabilities, including Lean Startup and Transforming Capability, are affected by the interaction within and among microfoundations categories, which is explicitly complex (Felin et al., 2012). While there was a scarcity of empirical literature on the relationship between the two concepts (**Table 3**), there was plenty of literature that emphasized the value of learning each of the concepts separately. As a result, this study focused only on the overlapping aspect of “*Learning*” as the possible connection between Lean Startup methodology and Transforming Capability, thus clarifying the halfway discussion on this topic. That to say, although “*learning*” is strongly related to cognition, it can be considered as the interaction within and among individual and process-interaction microfoundations.

Particularly, the description of Lean Startup and Transforming Capability includes an overlapping dimension of “*Learning*”. It is (1) the goal or expected outcome for Lean Startup methodology and (2) a vital requirement or input for the construction of Transforming Capability. First, from the side of Lean Startup methodology, experimental learning is one of its three core principles (Blank, 2013) and “*Learn*” is an indispensable step of the original Build-Measure-Learn (BML) loop (Ries, 2011). According to the systematic literature review by Lizarelli et al. (2021), the main purpose of Lean Startup’s agile testing and validating cycle is to create a learning and adaptive organization. This implies that one of the intangible outcomes of a Lean Startup project is the new insight and knowledge in line with the internal organization’s resources and external market demands. Second, prior literature has recognized that the core notion of Dynamic Capabilities lies in the collective learning and effort of organizational members (Fainshmidt & Fraizer, 2017). Indeed, managerial cognition is claimed to be the root of Dynamic Capabilities (Teece, 2023). Similarly, Lee & Yoo (2019) indicated knowledge-related processes as the underlying interlinks for any routines or activities to influence and change Dynamic Capability.

As new knowledge learned, i.e., from Lean Startup-based projects, is mostly owned by individuals, it must be integrated into a collective logic and shared interaction patterns for reconfiguration (Pavlou & El Sawy, 2011). Therefore, it is proposed that the evolution of knowledge would possibly be the mechanism for lessons learned from Lean Startup’s experiments and activities at the team level to evolve into the organization’s collective memories and capabilities. This cross-level knowledge transfer process is defined as “*organizational learning*”. Organizational learning is the process of improving cognition and behaviors in the “*associations, cognitive systems, and memories that are developed and shared by the members in an organization*” through “*better knowledge and understanding*” (Fiol & Lyles, 1985, p. 804).

In assessing organizational learning, Kump et al. (2015) distinguish (1) different cognitive mechanisms or individual learning and (2) social communication processes, i.e., verbal and non-verbal communication. These two mechanisms interplay and lead to the transfer of knowledge from the lower level to the organizational level and vice versa, generating a loop of co-evolution. Specifically, individual learning or low-level learning in a small group can be triggered through reflection (the process of reviewing the experience to guide future behaviors) and repetition of practices (consistent retrieval and reinforcement of a certain behavior). Second, the knowledge learned from an individual base evolves to a high-level collective form of organizational learning through verbal communication (e.g., oral communication and artifact-based communication in meetings, digital conversations and written documents), and non-verbal communication (e.g., co-experience in common task or observe an activity carried out by another person).

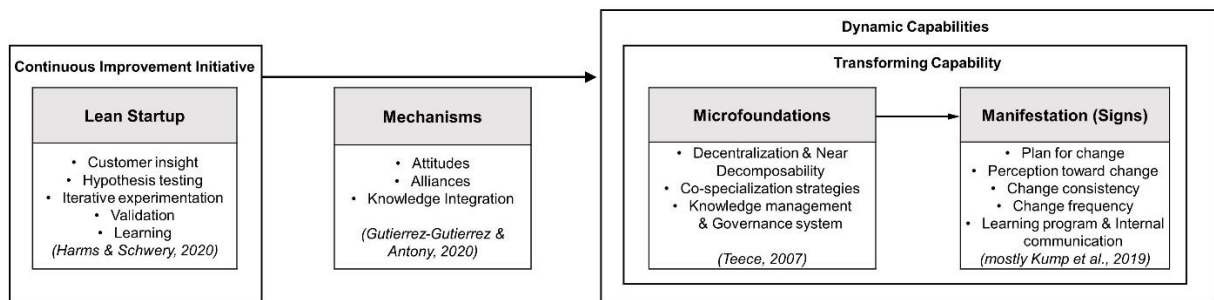


Accordingly, there can be several potential elements that suggest the link between Lean Startup and Transforming Capability besides the overlapping “*Learning*” aspect. In general, Lean Startup methodology encompasses different characteristics to foster both behavioral repetition, cognitive reflection and social communication. First, as discussed earlier, Lean Startup methodology is closely relevant to Continuous Improvement Initiatives (van Kollenburg & Kokkinou, 2021), consisting of purposefully repeated activities within the project border, thus triggering the low-level learning mechanisms of repetition. Build-Measure-Learn loop or feedback loop are two typical examples. Second, Lean Startup involves many cues for reflection, ranging from new technologies applications to “*customer insight*” and “*hypothesis testing*” activities. Third, once performed properly, the Lean Startup project can leverage the customer engagement principle to enhance communication among internal and external individuals (Lizarelli et al., 2021).

### 2.3.5 Conceptual framework

The research question of the upcoming thesis is “**How does team-level Lean Startup facilitate firm-level Transforming (Dynamic) Capability in SMEs?**”

From the literature review, several key theories and frameworks can be used to draw a framework to present the relationship between Lean Startup and Transforming Capability in prior literature (Figure 2). Specifically, based on the systematic review of Gutierrez-Gutierrez & Antony (2020), the Continuous Improvement Initiative, a category that the Lean Startup approach can be partially qualified for, can enable Dynamic Capabilities as a whole via the transfer of attitudes, alliances and knowledge integration beyond the project team. From the side of Transforming Capability, it is dependent on the required microfoundations elements, such as decentralization and near decomposability, co-specialization, knowledge management and governance system (Teece, 2007). Meanwhile, details of remaining concepts in the framework, namely Lean Startup operationalization and Transforming Capability manifestation, were also predefined by prior scholars.



**Figure 2** Prior literature review

Despite the reach of the above literature, the relationship between these two concepts was not yet well-defined, especially in the context of existing SMEs. To address the conceptual and contextual gaps, the thesis proposes an integrated conceptualized framework with key theory-based dimensions of each involved element, namely Lean Startup, Transforming Capability, Microfoundations, and Continuous Improvement (**Figure 3**).

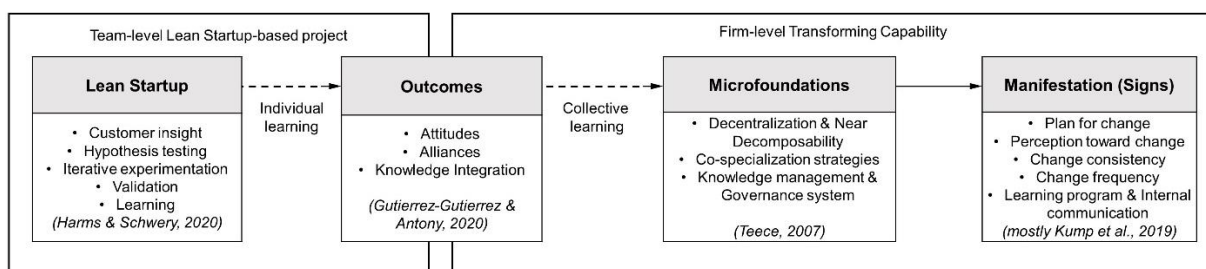
Overall, as the Lean Startup approach is most of the time implemented at a project level or team level one by one or simultaneously (Harms & Schwery, 2020), the tools and activities within the project do not directly affect the firm-level strategic routines and capability, but through its required undergirding elements. Therefore, as suggested by Felin et al. (2012) and Bojesson & Fundin (2021), to identify the influencing factors, Lean Startup outcomes and effects were examined from the three microfoundational perspectives, classifying their components into individual, process-interaction and structure categories. Indeed, Felin et al.

(2012, p. 1352) claimed that using microfoundations approach can provide insights of “*the primary components underlying routines and capabilities*” and explore how they interact with each other “*within or across categories*”.

First, team-level Lean Startup practices were confirmed through the five operationalized dimensions by Harms & Schwery (2020). As the five Lean Startup dimensions attach together and mostly describe the process of Lean Startup implementation, they are grouped into the process-interaction microfoundation. Meanwhile, each member’s attributions and the project team’s specific organization as well as management represent individual and structure phenomena respectively. While the five dimensions are used to indicate the implementation of Lean Startup, the project’s outcomes are considered as the influencing factors. Some pre-defined results as inspired by Gutierrez-Gutierrez & Antony’s (2020) propositions, namely attitudes, strategic alliances and knowledge integration upon efficiency, scope and flexibility.

Second, Transforming Capability is identified as a key sub-category of Dynamic Capabilities in Teece et al.’s (1997) framework. Mostly inspired by Kump et al., (2019), Transforming Capability is assessed through the presence, success perception, consistency, frequency and practices of change implementation in the organizational setting. Required microfoundations that undergird Transforming Capability (Teece, 2007) were used as the connection between this phenomenon and Lean Startup’s outcomes.

Third, as the two concepts occur at different layers, team-level Lean Startup practices are suggested to affect firm-level managerial microfoundations through the organizational learning evolution process (Fiol & Lyles, 1985). Specifically, the Lean Startup project’s outcomes are considered as the content of learning. Considering Kump et al.’s (2015) research, this team-level learning content is formed by individual learning mechanisms, including reflection and repetition, within the project team boundaries. On the other hand, verbal and non-verbal communication are argued to transfer knowledge from an individual form to a collective one on the firm level. Hence, it is the focus of this study to confirm whether these two-side links exist between Lean Startup and Transforming Capability while exploring the content of these mechanisms or the project’s influencing outcomes.



**Figure 3 Conceptual framework**

### **3. Methodology**

#### **3.1 Research design**

A qualitative research methodology and, specifically, the case study method, was used to describe Lean Startup practices as well as Transforming Capability in the SME context and to explore the relationship between the two concepts. This approach was selected to (1) capture the diversity of firm-specific Transforming Capability manifestation, (2) take contextual information into consideration when analyzing Lean Startup analysis, (3) explore various sources of data to answer “How” questions, and (4) overcome the inconsistency and complexity in measuring the two concepts and their relationship.

Firstly, qualitative research provided insights into the firms’ background and a detailed understanding of organizational behaviors to analyze Dynamic Capabilities, which are unique organizational activities rooted in a firm’s history and culture (Teece, 2023). Furthermore, by pursuing the case study method, “*holistic and meaningful characteristics*” (Yin, 2009, p. 2) of Transforming Capability manifestation were possibly captured.

Secondly, Lean Startup activities were selected and used differently by practitioners. Therefore, it was more flexible and appropriate for the researcher to conduct qualitative research on the Lean Startup application of each SME. Moreover, Lean Startup can also be conceptualized as a capability bundle with five main dimensions (Harms & Schwery, 2020). As a result, the case study method allowed contextual information for practitioners to identify similarities before taking the research implications into account.

Thirdly, while an exploratory can be answered by any qualitative method, such as experiment and historical analysis, a case study is the most suitable way to deal with a variety of evidence around “*a contemporary set of events [that] the investigator has little or no control*” for “How” questions (Yin, 2009, p.9). In this case, the question is about the effect and mechanism of Lean Startup activities on Transforming Capability, which are both argued to be dynamic concepts and distinctive to each firm.

Finally, qualitative methodology, particularly case studies, has been the most common approach for Dynamic Capabilities in the SME context (Zahra et al., 2006) and the relationship between the two concepts of interest. In other words, this topic is still nascent and can generate new theoretical insights – the meaning of qualitative research methodology. Similarly, as the purpose of the case study is to test and develop theory, it meets the aims of this thesis to check the feasibility and contribution of Lean Startup applications in different types of settings as stated by prior literature.

#### **3.2 Case selection**

In this study, a purposive sampling strategy was employed to select two service-based small companies in different business sectors, hereinafter called Company A and Company B. By examining two cases rather than a single case, the study (1) was able to increase the selection diversity, (2) allowed comparison for validation and (3) gained a deeper understanding of the core concepts.

First, despite sharing some similar criteria, the two companies offered different services in different regions and approached Lean Startup differently. These discrepancies allowed the research to capture a different range of contexts and challenges. The increased diversity in contexts also enhanced the result's generalizability, making the findings more applicable to a broader range of situations.

Secondly, having a comparative case study provided an opportunity to validate the findings across cases. On one hand, the similarities among companies strengthened the validity and reliability of the conclusions. The commonalities allowed the researcher to identify potential boundary conditions where Lean Startup and Transforming Capability took place. On the other hand, their differences prompted further investigation and a deeper understanding of the underlying factors.

Finally, comparing the practices of the two enterprises led to a richer understanding and new insights into the concepts under analysis. Both Lean Startup and Transforming Capability had a number of manifesting dimensions, thus being multi-faceted. Therefore, by looking at how these two phenomena unfolded in different settings, the study has gained more in-depth knowledge about their underlying dynamics and explored the potential influencing factors that led to different outcomes.

### 3.2.1 The companies

Company A and Company B were purposely selected based on several criteria. Those include (1) their matching context, namely existing SMEs, (2) their different usage of Lean Startup practices in product/service development, (3) the visibility of organizational changes at firms, (4) their willingness to share internal information.

Regarding the context, the selected companies fell within the SME category to ensure focus and comparability. Each of the selected companies had less than 25 official full-time employees who received a monthly payroll and a higher percentage of unofficial or part-time “collaborators”, such as paid interns, commission-based contractors and part-time employees (Table 4). However, the total number of employees was less than 250 people and their turnover is less than 50 million Euros per year within the past 3 years, thus meeting the requirements to be classified as SMEs (European Commission, 2020). Company A and Company B had been established for over 10 and 5 years respectively, longer than the maximum age of a startup, i.e., 42 months or 3.5 years (GEM, 2022). Furthermore, their services were not a disruption to their market at the time of entrance, and so were they at the analysis moment. This confirmed that the two selected companies were small existing SMEs, not startups (Zsuzsanna, 2020).

**Table 4 Overview of the company attributes**

	Company A	Company B
<b>Product / service</b>	Societal services (mostly education)	Service-outsourcing (mostly human resources)
<b>Geographic scope</b>	Worldwide	Asia
<b>Age since official establishment</b>	10+ years	5+ years
<b>Official full-time contracts</b>	<25	<25
<b>Diversity</b>	>80% female	>70% female
<b>Other types of labor contracts</b>	100-200	20-50
<b>Identifier of project and service</b>	An	Bn
<b>Identifier of interviewee</b>	AI-n	BI-n

The second reason why the two companies were selected is due to how they incorporate Lean Startup practices in developing new products and services. While Lean Startup is composed of multiple activities upon the matter of choice and can be conceptualized as a capability bundle (Harms & Schwery, 2020), the cases showed to use several of elements from the Lean Startup toolbox in their product/service development projects and also showed clear organizational changes within the firm boundary.

The organizational operations and business portfolio have relatively changed. While their business vision and direction remained the same over time, the organizations had changed how they managed and trained their team, delivered solutions to customers and interacted with stakeholders. These changes were made especially around and after the COVID-19 pandemic period in 2019-2021. Therefore, there was rich and valuable information about the organizational reconfiguration for data analysis, ranging from business strategies to service development. Furthermore, the environment, in that case, was a predictable and significant factor in the changes.

In addition to their relevance to the research question, it was the accessibility of internal information within the time allocation that made the two cases suitable choices. The selected SMEs, including the managers and employees, were willing to provide the necessary data and insights for the case study. Moreover, most information, including internal communication, was saved on digital platforms, such as meeting minutes and statistical reports. This digital orientation helped the research not only capture the organizational culture through written conversations but also align with prior literature in the high-tech sector (Ries, 2011) despite the two cases worked in non-digital service sectors.

### **3.2.2 The projects**

Through scanning and observing, two different recent projects at each company were chosen. Though not named, or even recognized, by the project leaders and managers, the activities performed in these projects met all three Lean Startup's principles, including (1) experimentation learning, (2) customer orientation, and (3) agility (Silva et al., 2020; Blank, 2013). By examining two cases, the study took into account the external impact of the COVID-19 pandemic. The first project of each company was close to the COVID-19 pandemic (around 2019-2021) and another one took place later (after 2021). As the COVID-19 pandemic period has no specific time that was agreed universally, it was not put into the project's timeline (**Figure 6** and **Figure 9**). Information collected from the interviews was used to confirm and identify whether the projects were based on the Lean Startup principles and to what extent. The study examines the five different dimensions of Lean Startup of each project separately. The focus lies on the process of constructing and developing the outcome services up to the time of the interview.

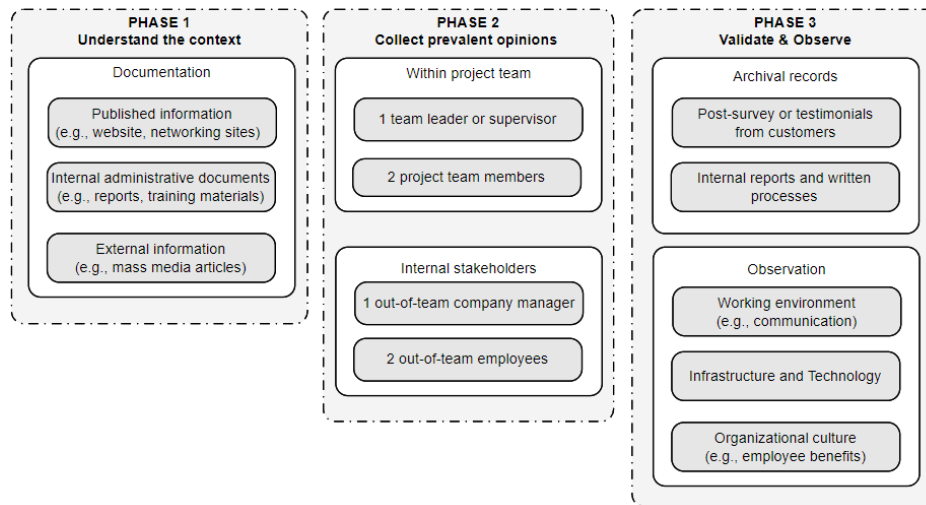
### **3.3 Data collection**

According to Yin (2009), a case study relies on multiple sources of evidence. Therefore, to collect the data regarding the Lean Startup practices and Dynamic Capabilities of the sample, the research involved different techniques (**Figure 4**), including (1) documentation, (2) semi-structured interviews with managers who took part in a product/service development process, (3) archival records, and (4) and observation.

First, a variety of internal and external documents were collected to understand the company's history, prepare for the interviews and identify projects that potentially apply Lean Startup methodology. Those documents included (1) the company's published information, namely website, social media channels and printed marketing materials; (2) internal administrative documents, such as project proposals, progress reports, and training materials; (3) and external information about the company, including governmental registration data, mass media articles and sharing blog posts by partners and customers.

Second, semi-structured interviews with open-ended questions were conducted to identify and examine (1) Lean Startup activities at the team level, (2) its outcomes as influencing mechanisms, and (3) Transforming Capability at the firm level. Thus, an interview

was divided into three corresponding parts (**Table 5**). The first two parts were duplicated to cover two different projects at each company.



**Figure 4** Data collection process

The first part focused on the five dimensions of the Lean Startup approach based on “*the operationalization*” of Harms & Schwery (2020). These questions are to confirm whether the selected projects were based on Lean Startup, and, if applicable, how much did they follow this methodology. Particularly, the more positively the answers aligned to these dimensions, the more a project was confirmed to be based on the Lean Startup approach. This part was also used to understand how the selected SMEs implemented Lean Startup.

The next part of the questions still discussed each project one by one, covering the new knowledge generated by them. The new knowledge is reflected in (1) its different components compared to the organizational normal works and (2) the changes it has brought to the companies. With the former viewpoint comparing the works inside and outside of the project, the questions focus on a team level of organizational learning through reflection and repetition within the team boundary. With the latter viewpoint contrasting the works in the company before and after the project, project outcomes are seen from collective organizational learning, through verbal communication and non-verbal communication beyond the project team. Both the differences and changes are classified into three core microfoundation levels (Felin et al., 2012): individual, process-interaction and structure.

Later, in the data analysis stage, the findings were classified according to their relevance to the three required elements for a strong Transforming Capability as suggested by Teece (2007). The received answers revealed (1) the outcomes of the Lean Startup approach to the organization, (2) the ways that Lean Startup-based project(s) transmit the influences beyond the, and (3) the effects of these changes on the microfoundations of Transforming Capability.

The last group of questions was about the firm’s Transforming Capability after the start of the Lean Startup-based project. As adapted from the quantitative research works by Kump et al. (2019) and Wilden et al. (2013), the questions about Transforming Capability included a mix of “*activity-based*” and mostly “*outcome-oriented*” dimensions, such as (1) plans for future change; (2) perception toward the success of those implementations; (3) the consistency as well as (4) frequency of organizational changes; and (5) learning program and internal communication. As main purpose of this part of the interview was to estimate the Transforming Capability level of the chosen SMEs and whether they have improved their Transforming Capability after the implementation of Lean Startup-based projects, comparative keywords were used as the signals.



**Table 5 Guided semi-interview question**

<b>Part 1: Lean Startup (team-level)</b>				
<b>Dimension</b>	<b>Group 1. Team member(s)</b>			<b>Purpose</b>
<b>Lean Startup</b>	<b>Customer insight</b>	How do you know that the customers need this new product/service?		To look for project’s activities in seeking customer insight (e.g., market research), which is one of the Lean Startup’s principles.
	<b>Hypothesis testing</b>	What assumption did you have when you implementing this project?		To understand whether the project has any hypothesis to test, one of the principles of Lean Startup approach.
	<b>Iterative experimentation</b>	Does the project involve any experiment? If yes, please describe.		To see if the project engages with any other types of experiments (e.g., trial-and-error) to test the hypothesis as Lean Startup approach.
	<b>Validation</b>	How do you measure the success of the project?		To identify if the project use metrics for evaluation, ask for feedback and use the data for making decisions, thus engaging with stakeholders for the Lean Startup approach.
	<b>Learning</b>	What have you learned from being part of this project?		To know whether the “Experimental learning” principle of Lean Startup is met.
<b>Part 2: Lean Startup outcomes and influencing mechanisms (interlinks between team-level and firm-level)</b>				
<b>Dimension</b>	<b>Focused topic</b>	<b>Group 2A. Team member(s)</b>	<b>Group 2B. Out-of-team member(s)</b>	<b>Purpose</b>
<b>Team-level learning (Differences)</b>	<b>Individual</b>	1. How do you feel about the project overall?	1. How do you feel about the project overall?	To trigger the individual feelings, memories and perception about the project, thus checking shared attitudes, the project’s efficiency and whether reflection-based learning took place.
		2. How do you feel about your tasks in the project?	2. What makes you feel that way?	
	<b>Process and interaction</b>	3. What is the different thing about the project comparing to your normal work?	3. What is the different thing about the project comparing to the company’s normal work?	To identify the new knowledge and skills learned from the project (content of learning), and whether those learning points are repeated to improve the project itself (repetition).
<b>Structure</b>	4. What is your current project-related work like?	4. What do think about the project member’s works?		
	5. What are the different rules and/or job positions in the project?	5. What are your tasks or roles related to the project?	6. What do you think about how the project is managed?	To understand the project’s organizational form as well as how the project team is built, maintained and linked to other parts of the company (content of learning).
6. What do you think about how the project is managed?				

<b>Firm-level learning (Changes)</b>	<b>Individual</b>	7. How did the project affect your normal work? 8. Have you applied anything from the project to your normal work?	7. How did the project affect your normal work? 8. What have you learned from the project?	To find the effects of the project on each member, inside and outside of the team border (project scope and flexibility), which also contributes to the understanding of new specialization and knowledge integration.
	<b>Process and interaction</b>	9. Who do you work with outside of the project team? 10. How do you communicate with other organizational members about the project? 11. Does the project bring new strategic partnership?	9. What it is like working with the project team members? 10. How can you gain information about the project? 11. Does the project bring new strategic partnership?	To indicate the shared knowledge and its transmitting channels beyond the team boundary (Communication) while checking whether the project facilitates co-specialization for Transforming Capability.
	<b>Structure</b>	12. Which project element is scaled to the whole company? 13. What are some new rules and/or job position coming out of the project?	12. Which project element is scaled to the whole company? 13. What are some new rules and/or job position coming out of the project?	To explore new roles, rules and organizational logic in the organization created from/by the project, thus seeking signals of decentralization-near decomposability and knowledge management-governance system.

<b>Part 3: Transforming Capability (firm-level) since the start of the project</b>				
<b>Dimension</b>		<b>Group 3A. Manager(s)</b>	<b>Group 3B. Employee(s)</b>	<b>Purpose</b>
<b>Transforming Capability</b>	<b>Plan for change</b>	1. What are some recent organizational changes or new projects after the projects?	1. What have been changed in the company since the start of the projects?	To indicate if the company has planned and made any (substantially) new changes or reconfiguration as an effect of the project.
	<b>Perception toward change</b>	2. What is the status of those changes?	2. What do you think about those changes?	To understand if the company is better and/or more confident at making changes after the project.
	<b>Change consistency</b>	3. How are those changes related to each other and the discussed projects?	3. Are those changes relevant to the discussed project(s)?	To see the relevance of reconfiguring efforts at the company.
	<b>Change frequency</b>	4. Do you plan to make any new organizational changes?	4. Does the company often make organizational changes?	To see the frequency of reconfiguring efforts at the company.
	<b>Learning program and internal communication</b>	5. Please describe the changes in the company training program and internal communication after the projects	5. Have you changed how you improve your knowledge/skills and communicate with others for the job after the project?	To know if the company has improved its learning culture/knowledge management and/or how its spread the knowledge after the project.



Managers and employees, who were and were not involved in the Lean Startup-based projects, were invited. While answers from project members provided insights about the project, especially the Lean Startup activities, information from supporting members shed light on the project’s cross-border interaction, and stories from other members revealed a general viewpoint toward the projects’ effects on the companies.

In each company, the researcher conducted 8 interviews with at least one team leader or supervisor, two team members, one other organizational manager and two other out-of-team internal stakeholders (**Table 6** and **Table 7**). Depending on their roles and involvement with the Lean Startup project(s), interviewees were asked different questions from the interview question framework. For example, (1) the project executive members received question groups 1, 2A and 3B; (2) the team leaders of the project(s) who were not the company managers received question groups 1, 2A and 3B; (3) the company manager who did not participate in the project(s) was asked with questions from groups 2B and 3A; and (4) out-of-the-team employees were asked with questions from groups 2B and 3B.

**Table 6 Overview of interviewees (by project role)**

Project role	Company A		Company B	
	Project A1	Project A2	Project A1	Project A2
<b>Team leader</b>	1	2	1	1
<b>Team member</b>	2	3	2	2
<b>Outside team</b>	5	3	5	5
<b>TOTAL</b>	8	8	8	8

As all interviews were semi-structured and depended on the information shared by the respondents, some questions were modified or skipped. To cover all the concerns, each interview lasted around 2 hours. Interview recordings were taken and saved with prior voluntary consent, anonymized data and strict confidentiality. The answers of each person were denoted by their company letter, then the letter “I” standing for “interviewee” and a numerical identifier (**Table 4**). For example, AI-1 represents the first interviewee from Company A.

**Table 7 Overview of interviewees (by job position)**

Job position	Company A		Company B		
	Quantity	Percentage	Quantity	Percentage	
<b>Manager</b>	CEO	1	12.5%	1	12.5%
	Head of department	3	37.5%	2	25%
	<b>Employee</b>	4	50%	5	62.5%
<b>TOTAL</b>	8	100%	8	100%	

Third, to check the validity and reliability of the participant’s perception of the company changes after the projects, archival records, including semi-public sales and budget reports, after-service surveys and customer testimonials, were investigated.

Finally, direct observational evidence was collected to provide additional information about the other aspects of the company, including the working environment, technology adoption and organizational culture. Participant observation as a member of the projects with the Lean Startup approach was also taking place. As the study looks at completed or ongoing projects, bias produced by being a participant-observer, e.g., lack of time, attention and criticism like an external observer (Yin, 2009) can be reduced.

### 3.4 Data analysis

As there is a story underlying an empirical research study (Yin, 2009), the paper used general data from documentation and time-relevant information from other techniques to develop a story that illustrated Lean Startup-based projects' timelines and outcomes. By performing a time-series analysis, the firm's Transforming Capability was also described.

A combination of deductive and inductive analysis method was used to prepare for the collecting and analyzing of data (**Figure 5**). First, in preparing for the interview questions, predefined deductive themes were taken from relevant theories. These deductive dimensions formed the three main parts of the interview: (1) Lean Startup practices, represented through the five dimensions of Lean Startup operationalization (Harms & Schwery, 2020); (2) Lean Startup outcomes and influencing mechanisms which were based on the two organizational learning levels (Kump et al., 2015) and three microfoundation categories (Felin et al., 2012); and (3) Transforming Capability manifestation after the implementation of Lean Startup activities, which was seen through five aspects of organizational changes as inspired from the works of Kump et al. (2019) and Wilden et al. (2013).

Second, all collected primary data from documentation, interviews and observations from the data collection steps were recorded and transcribed into English. Representative quotes about each project were picked and summarized into "*first inductive code*", presenting its main idea. As each company had two different Lean Startup-based projects, cross-project analysis was also performed before moving on to the company's Transforming Capability, comparing the similarities and differences across projects.

Third, the "*first inductive codes*" about Lean Startup outcomes and influences part, i.e., the second part of the interview, from all cases were grouped by dimension. The new aggregated themes formed the "*second inductive codes*", which were mostly based on more detailed concepts. For example, the first inductive codes about the "Individual" perspective towards the difference of Lean Startup practices (low-level learning mechanism within the project border) from four projects could be grouped into "*Attitudes*". If the "*second inductive codes*" from a specific aspect were significantly different from predefined ones, they would be grouped into a separate and new topic, such as "*Standardization*". For the other two parts of the interview, as their questions were constructed directly upon the theory-based dimensions, such as the five dimensions of Lean Startup operationalization (Harms & Schwery, 2020), there was no need to further group the inductive codes.

Fourth, the interlink between Lean Startup and Transforming Capability was captured through Lean Startup outcomes, including its differences and influences. This relevant data was covered in the second part of the guided interview, which also consisted of two smaller respective groups. Information about these aspects was also used to identify learning mechanisms at the team level and firm level respectively. However, the latter group that touched Lean Startup influences on the company, its first inductive codes were aggregated into two different types of "*second inductive codes*". Particularly, representative themes from both groups would be aggregated based on the theories around Lean Startup's continuous improvement effects extracted from Gutierrez-Gutierrez & Antony's (2020) propositions (i.e., attitudes, alliances and knowledge integration). Meanwhile, only the latter group of representative topics had an extra layer of "*second inductive codes*" for Transforming Capability's required microfoundations (Teece, 2007) (i.e., decentralization and near decomposability, co-specialization, knowledge management and corporate governance).

Finally, under the inductive codes, commonalities and variance across the two companies were compared to discover the fitness of the empirical data to the theoretical

propositions and gain insights into how team-level Lean Startup contributes to the development of firm-level Transforming Capability in the SME context.

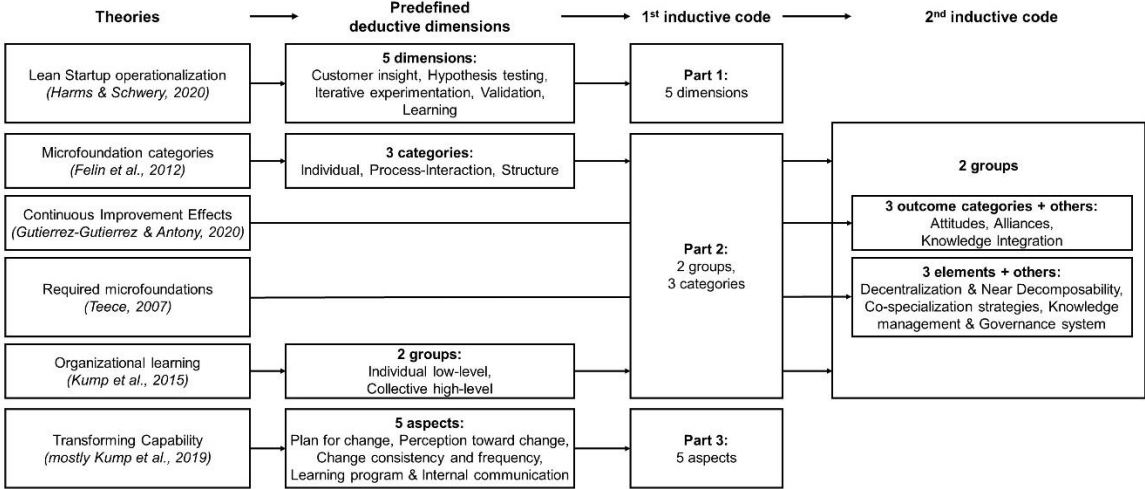


Figure 5 Data analysis approach

## 4. Results

To address the conceptual and contextual gaps about the effects of Lean Startup methodology on SMEs' Transforming Capability, the research examined two existing small service companies to (1) evaluate how they used Lean Startup approach in different service development projects, (2) identify how the projects have affected the company's change-related activities and finally (3) analyze their manifestation of Transforming Capabilities after Lean Startup projects implementation.

The research results are presented in three parts, including the findings from the two case studies one by one and their cross-case analysis. For each case, there are detailed (1) context descriptions, (2) the implementation of Lean Startup methodology in the two projects, (3) the project outcomes and influences, and (4) the manifestation of firm-level Transforming Capability after the projects. Finally, key findings from a single case analysis will be used to explore the commonalities and differences between the two companies.

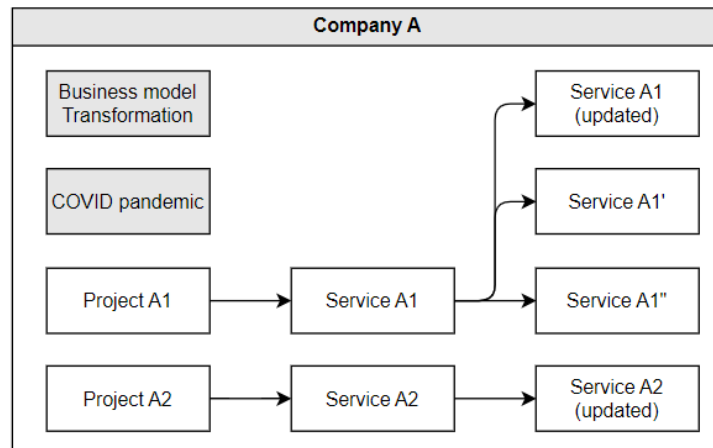
### 4.1 Company A

#### 4.1.1 Context

Company A is a small company with the current management of three main departments under the control of the CEO. The company's sector would most likely fall into educational service. However, it does not provide educational programs directly but acts as an intermediary that connects its partners and customers. While it makes an effort to seek partners or suppliers, the company greatly relies on a collaboration system with "*collaborators*", external short-term employees, to reach the customers. After confirming the market fit, the company started to scale this business to a few related themes and different geographic locations. Just before the COVID-19 pandemic occurred, Company A made a big re-branding effort, changing the stakeholders' perspectives about the services, including the responsibilities and benefits of each party in the relationship.

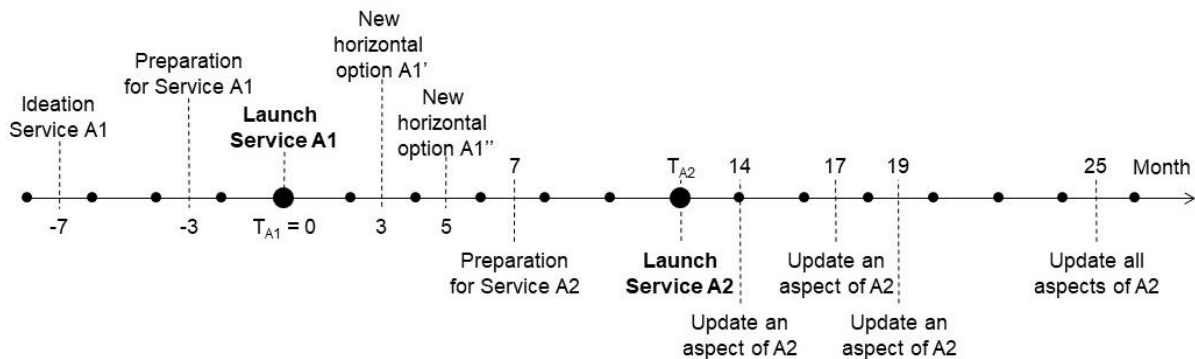
During the pandemic, due to the lockdown policies worldwide, the company could not offer its services to customers. Because the restrictions took longer than expected, Company A was on the edge of bankruptcy. It started to think about an online service and prepare the resources to bring that idea to life. It was Project A1. With Project A1, the small group of remaining members at the company created a new service on the online platform, Service A1. After three months, with the feedback from the team members and users, the company updated some features of Service A1 and developed two other options, Service A1' and Service A1'', sharing the same platform and processes but different themes (**Figure 6**).

Later on, when the pandemic had slightly passed, the company returned to its previous key services and had to re-construct its collaboration system afresh. It implemented Project A2. This time, as Project A2 was strongly connected to the main business, it had multiple sub-elements. It involved all departments and the decision at the end of each development cycle can only be more improvements. At the moment of this study, the initial outcome of Project A2, called Service A2, was upgraded into Service A2' with more features.



**Figure 6 Overview of Lean Startup projects at Company A**

If compared with Company A’s previous core products and services, both Project A1 and Project A2 brought brand-new elements. The first project created a new service called Service A1 for the customers while the second one led to Service A2 changing how the company worked with its “collaborators”. The Lean Startup dimensions and influences of these two projects on the firm’s organizational changes were examined. Their timelines were combined in **Figure 7** with the launch of Service A1 as the origin point ( $T_{A1} = 0$ ).



**Figure 7 Timeline of focused Lean Startup-based projects at Company A**

#### 4.1.2 Lean Startup Project A1

Project A1 was developed around the COVID-19 pandemic time when Company A could barely offer any of its existing products and services. Therefore, with Project A1, the project team created a totally unique service to the company’s service portfolio. At the moment of this study, Project A1 was considered pending or finished because there were no acts of modifications for the latest upgraded version of Service A1 in the near future.

##### 4.1.2.1 Lean Startup dimensions

Overall, in the first stage of the project, when Project A1 was still active, it met all criteria for a Lean Startup implementation at the medium-high level. Regarding “*Customer insight*”, the team did perform several activities to understand customer needs and validate the underlying hypothesis. For example, before starting the project, they talked to a few customers and found that the assumption was true for “*the majority of [customers]*” [AI-1]. It was the most important encouragement for them to implement the next stages. However, due to the rush for service launch and monetization, the project team skipped other typical market research activities [AI-2], such as focused group discussions or in-depth research about existing

components. They rushed to the preparation and mainly targeted the available customer list. This could be the result of why Service A1 did not generate much revenue for Company A [AI-1]. Unless Company A made more effort to understand the real needs of its customers and how Service A1 can serve that need, the “*Customer insight*” dimension of Project A1 remains humble with medium evaluation.

Beneath the implementation of Project A1 were the assumptions made by the CEO about the customer’s experience and how the company can provide that value in a different way [AI-1]. This “*hypothesis testing*” act was reconfirmed from the conversation with the project leader, [AI-2], that “*doing something like [Service A1] has always been in the top manager’s minds*”. To be more specific, they believed that their existing core services were competitive because of a specific experience or value they encompassed. Consequently, Company A has tried to copy that value into Service A1, moving from in-person to online method.

*“We’ve operated under the assumption for many years that... In the large part for the majority of [the customers], it is still the truth... [Service A1] didn’t really get a lot of traction. I think it probably only raised [a little money] in revenue... We did have a number of people that were interested in this. So it served a purpose. I think it’s evolving on its own naturally as we really listen to what [the customers] are asking for... Most people are opting to [have the core product] rather than [having Service A1].”* [AI-1]

Despite the vulnerable understanding of customer insights above, the Project A1 team has done quite well with “*Validation*”. Following common sense of validating the first prototyping versions, the project team conducted a post-experience survey with the users of Service A1. The data provided both quantitative and qualitative measurements for the project team in evaluating and promoting the service. In fact, Company A was posting some testimonials on its public website. Some were attached with identification and some were anonymous. On Service A1’s information page, there were also a few videos recorded by the customers themselves. In addition to customer opinions, which were mostly positive, Company A used financial-related data, though as simple as revenue, to validate the success of Service A1 specifically and Project A1 generally.

*From the “Iterative experimentation” dimension, Project A1 is basically an experiment for Company A to test its belief. However, the experimental aspect of the Lean Startup approach was not highly utilized in this case. The project team only modified the original offering [AI-2], which is similar to an MVP, to come up with an upgraded version of Service A1 and some other similar services on the same platform, namely Service A1’ and Service A1”. There was also an effort to try different marketing methods, some of which “were not as helpful as the initial strategies.”* [AI-8]

Though the company still provides Service A1 and its “*product line*” upon demand, it almost neglects the project [AI-2], especially when the company can start to promote its main services again in month 6 and provide them in month 10 (**Figure 6**). This decision is linked to the team’s “*Learning*” points from the Project A1 experiment. Those are customers’ preferences for the company’s core products and the applicable skills for other more “*interesting*” tasks [AI-1, AI-8].

*“Doing something like [Service A1] has always been in the top manager’s mind. We actually talked to some [customers], validating the idea. But we didn’t have the time to do it extensively... We were just developing more to shape [Service A1] and just execute it with the trust that it works... I believe we have reached the break-even point. I believe that some goals were met... I don’t recall any [customer] saying that it was a waste of money... I’m happy that that is now there, and can remain active and on demand whenever someone is interested. Every now and then we have a [customer]. The con is*



*that we kind of forget about it, we don't give as much time, effort and resources to promote it.” [AI-2]*

#### **4.1.2.1 Lean Startup outcomes and team-level learning mechanisms**

During its active time, Project A1 met a medium-high level of Lean Startup implementation and produced several outcomes along with the introduction of Service A1. According to the reflection of the respondents, due to the unexpected context of the COVID-19 pandemic, the project was built on new and unfamiliar technical knowledge to the whole organization. Therefore, although Project A1 was constructed with a strong commitment and autonomous structure, it was an isolated playground with unclear standards.

First, Project A1 brought mixed feelings to the involved individuals. Combined with the poor revenue result mentioned by [AI-1] in the Lean Startup’s validation dimension, Project A1 was not recognized as a successful project economically and mentally. Many negative expressions, such as “*not enjoyable*”, “*challenging*”, “*unfamiliar*”, “*difficult*”, “*barrier*”, “*needed to be done*” and especially the term “*not really*”, were used in describing Project A1. The distinct knowledge to develop Project A1 to Company A’s common grounds also created a clear border between the project team and the rest of the company. However, because of the time pressing from the external threat, members were committed to their tasks so as “*not to lose [their] jobs*” [AI-2].

Secondly, with the limited available staffing, Project A1 required each member to be highly responsible for a variety of tasks [AI-8]. Besides their strong commitment, it was the power transfer from the managers to the executors that made the launches of the first few versions of Service A1 happen promptly. With these conditions, the members were able to form several new skills [AI-2], mostly related to digitalization, such as marketing online on social media [AI-8]. These two details emphasized the positive autonomy and knowledge integration process within the project boundary.

Lastly, despite the autonomous working environment, one challenge faced by the project members was that they did not gain much technical support from the managers [AI-8], who were also unaccustomed to the new technical knowledge. There were no clear standards to follow, especially when no external professional partners were being mentioned. It was their first time creating and monetizing Service A1 by themselves. After the first launch of Service A1, the team came up with some basic standards, thus developing Service A1’ and Service A1’’ based on the same digital platform and operation.

#### **4.1.2.2 Microfoundations of Transforming Capability and firm-level learning mechanisms**

The influences of Project A1 on Company A were presented through the new mindset it brought to the company, the cross-border interaction and its requests for service maintenance on an organizational level.

From the viewpoint of external members, the deliverables of Project A1 promoted a new technology-favor mindset at a managerial level. Although the services came out from the project “*did not really get a lot of traction*” and generated little revenue [AI-1], the operation of the project itself touched the digitalization desire of the board of managers [AI-2]. Hence, noticing the new digital skills obtained, the managers implemented and planned for further projects to apply these skills to other organizational activities. This represents the integration process upon the expansion of knowledge’s scope and flexibility, thus being closely related to the knowledge management in Transforming Capability’s required microfoundation.

Regarding the process and interaction beyond the project team, there was a distant collaboration among Company A's functions. As mentioned earlier, the works inside Project A1 were dissimilar to the company's existing knowledge, thus the project members tended to keep the confusion to themselves and "*couldn't actually talk about it to another member that wasn't on the project*" [AI-6]. As communication was hindered, the same detached attitude could also be seen from the other way around. External members like [AI-7] did not want to "*cross the line*", especially when their tasks were not connected to Project A1. Additionally, the initial source of funding was so limited that Company A could not invest much budget and labor into the project, thus not forming any new external partnerships or alliances for co-specialization but drawing a closed circle around a group of the same few people [AI-1].

Since Project A1 was a technology-based project directed towards automation, it could be maintained and operated with little effort upon customer request [AI-2]. Being able to work on-demand with a few project members also reinforced the company's decentralized structure, giving the relevant operating duties to different staff skipping the permission-asking step. Moreover, as the project put the involved individuals in such an extremely unfamiliarity, project members had to deal with a multi-tasking workload [AI-2, AI-8], thus flexibly switching to the normal organizational structure.

As Service A1 and its variants were alternative offerings during the COVID-19 pandemic period, their upgrading plans were not a priority to Company A. At the time of this study, the company was investing money, time and human resources into the delivery and development of its core services. Moreover, restarting and upgrading Project A1, was said to require professional external support, such as external or new-hired experts in relevant technology fields [AI-8]. This co-specializing element was absent from the previous development round.

The summary of representative quotes about Project A1 and the first aggregated theme of those quotes by predefined groups are shown in **Table 8**.



**Table 8 Representative quotes about influencing mechanisms of Project A1**

Concept	Deductive code	Representative quotes about Project A1	1 <sup>st</sup> inductive code
<b>Lean Startup</b>	<b>Customer insight</b>	<ul style="list-style-type: none"> <li>• “We didn't run a focused group, but we actually talked to some [customers], validating the idea.” [AI-2]</li> </ul>	→ Conduct partial market research
	<b>Hypothesis testing</b>	<ul style="list-style-type: none"> <li>• “We've operated under the assumption for many years that... In the large part for the majority of [the customers], it is still the truth... Most people are opting to [have the core product] rather than [having Service A1].” [AI-1]</li> </ul>	→ Form falsifiable assumption
	<b>Iterative experimentation</b>	<ul style="list-style-type: none"> <li>• “We have tried to marketing [Service A1] in several different ways. [Some methods] were not as helpful as the initial strategies.” [AI-8]</li> </ul>	→ Perform a few experiments
	<b>Validation</b>	<ul style="list-style-type: none"> <li>• “I think it probably only raised [a little money] in revenue” [AI-1]</li> <li>• “I don't recall any [customer] saying that it was a waste of money” [AI-2]</li> </ul>	→ Use both types of metrics
	<b>Learning</b>	<ul style="list-style-type: none"> <li>• “During the pandemic, I got [a relevant job].” [AI-6]</li> </ul>	→ Form basic standards to apply in external tasks
<b>Team-level learning</b>	<b>Individual</b>	<ul style="list-style-type: none"> <li>• “I would say [Service A1] project was not a very enjoyable project for me, but it was a project that needed to be done for its time...” [AI-1]</li> <li>• “You couldn't actually talk about it to another member that wasn't on the project.” [AI-6]</li> </ul>	→ Build commitment with obligation → Create border and isolation
	<b>Process and interaction</b>	<ul style="list-style-type: none"> <li>• “It involved a lot of new skills and new information that we need to process” [AI-2]</li> <li>• “All of those things were unfamiliar to us.” [AI-8]</li> </ul>	→ Involve multiple unfamiliar knowledge
	<b>Structure</b>	<ul style="list-style-type: none"> <li>• “More tasks have been compressed to be done by a smaller group of people.” [AI-8]</li> <li>• “We define [the types of Service A1] we were going to have. We were just developing more to shape [Service A1] and just execute it with the trust that it works.” [AI-2]</li> <li>• “... couldn't give me many recommendations as usual and didn't set a really high standard” [AI-8]</li> </ul>	→ Allow power transfer → Build some basic standards
<b>Firm-level learning</b>	<b>Individual</b>	<ul style="list-style-type: none"> <li>• “Some of the things that are coming out of this project are the new things that we're doing” [AI-1]</li> <li>• “...moving towards digital a little bit more” [AI-2]</li> </ul>	→ Promote digitalization
	<b>Process and interaction</b>	<ul style="list-style-type: none"> <li>• “I worked with those same people on other projects.” [AI-1]</li> <li>• “It was really not a lot of additional work... I try not to get too involved... I don't want to cross that line...” [AI-7]</li> </ul>	→ Introduce no new partnerships
	<b>Structure</b>	<ul style="list-style-type: none"> <li>• “I'm happy that that is now there, and can remain active and on demand whenever someone is interested.” [AI-2]</li> <li>• “It would be nice if some professionals can jump in and help us out.” [AI-8]</li> </ul>	→ Maintain on-demand → Require external support for updates

### 4.1.3 Lean Startup Project A2

Project A2 took place after Company A stopped marketing Service A1's family product (Figure 7) and re-focused on its core services as the COVID-19 pandemic started to ease. Project A2 is closely connected to Company A's key services. It aimed to improve how Company A works with its collaborators. At the moment of this study, Project A2 was still being developed and received much attention and investment from the managers.

#### 4.1.3.1 Lean Startup dimensions

So far, Project A2 has achieved a high level in all five dimensions of Lean Startup principles (Table 9). First, from the "*Customer insight*" dimension, because the project team members included company managers, employees and those who used to be the company's collaborators, they brought their viewpoints, feedback and insights to the project and used the project as the tool to improve the relationship [AI-4]. Regardless of the information source, there was a clear need for Service A2 from Company A's side and the collaborators. For example, Service A2 solved a problem that [AI-1] used to face earlier when working with collaborators. Using the experience of a collaborator, [AI-4] understood the thoughts of those in their similar position, and brought those ideas to the table. The project was led by [AI-4] with the expectation to satisfy the collaborators' needs while balancing with the company's requirements.

Second, regarding "*Hypothesis testing*", there were some assumptions taken into the project development before and during its implementation. Those are the expectations of two parties in the collaboration, for example, the collaborator's desire [AI-1], "*some of the good qualities*" of a collaborator [AI-4] and the belief that the outcomes of Project A2 can make the company more productive [AI-2]. Though the general assumptions and their sub-ideas fluctuated slightly as far as they were tested in Project A2, the main goals of the project remained consistent. It was the aim to bring the best experience and benefits to all involved stakeholders in the partnership. In detail, the stakeholders include Company A, its people as well as its existing and potential collaborators, partners and customers, especially the customers that were connected by the collaborators.

Third, there were several continuous "*Iterative experiments*" within Project A2. According to [AI-5], the project team would reconfigure the company's existing resources "*step by step*" to reach a completed product or service to introduce to the collaborators, then they collected the feedback and modified that product or service together. One typical example was the collaboration application form. It was shifted from a semi-public link that would only be visible to recipients to a public online form on the company's website. The form was also modified several times before its current version. Not only the form but the application process has been through several modifications. In the past, after filling out the form, applicants would be invited to have an interview with the organizational staff. This process required many follow-ups but a high risk of absence. To address this issue, a project co-leader has tried a different procedure where the collaborators need to proactively book an appointment with Company A. As shared by [AI-5], it was a time-saving and effective method, thus remaining the current way for a person to apply for the collaboration with Company A.

Fourth, in terms of "*Validation*", although the Project A2 team mostly uses qualitative inputs rather than qualitative metrics to evaluate the outcome as a whole, it is a rich source of data that was fed by all stakeholders [AI-2]. The opinion-based feedback can come from the manager's weekly meeting (Table 13), the internal project member's ideas and especially from the collaborators via written surveys and spoken meetings. Meanwhile, qualitative or numeric data came from the number of collaborators and customers brought by those collaborators. A

combination of these two measurements was the basis for the company and project team to evaluate Project A2's success. While Project A2 was in progress and about to have more updates [AI-2], Company A has already used the above-mentioned collected data to make changes accordingly [AI-4]. As a result, it is possible to give Project A2 a high score for the "Validation" dimension of the Lean Startup methodology. More importantly, the project team and company were happy with the improvement in the collaboration, i.e., "better [collaborators] as time goes on" [AI-1].

Finally, Project A2 well met the "Learning" dimension. It involved not only knowledge accumulation via diverse feedback sources [AI-2] but also knowledge codification in the form of clear goals, standardized templates and guidelines [AI-6]. In particular, [AI-1] said that Project A2 has helped the company to list down the expectations for its collaboration with external short-term staff. The expectations were then described in highlighted characteristics and qualities that Company A looked for in a collaborator, such as "resilience, proactivity, work ethic and dedication" [AI-4]. Another visible piece of evidence was the public and detailed description of the collaboration on Company A's website. In addition, it was the requirement for the collaborators to confirm their understanding of Company A's available formal policies, such as vision and mission as well as terms and conditions. As Project A2 was still being updated continuously, it kept on changing. However, the modifications were said to be based on previous works rather than something significantly new [AI-6].

#### **4.1.3.1 Lean Startup outcomes and team-level learning mechanisms**

Within the project team, Lean Startup activities in Project A2 led to (1) committed individuals, (2) empathetic and flexible working processes, as well as (3) a transparent structure with clear standards (**Table 9**). These types of learning points were obtained through personal reflection and repetition while performing the tasks, and later spread throughout the team via internal discussions and teamwork.

There was a positive attitude and a close connection among the members of Project A2. As Project A2 focused on the core partnership of Company A, it was formed by a group of selected passionate members, allowing them to reinforce their existing interest in the organizational goals. Shared interest led to shared belief, especially through "heart conversations" and recognition of other talents [AI-4, AI-7]. The repetition of experiments in a Lean Startup-based project also required constant collaboration and engagement of the members [AI-4], thus building close bonding and commitment among members.

By gathering and dealing with a great amount of information about the collaboration's needs and problems, Project A2's members have gained a better understanding of the different situations that the collaborators may face. This close engagement was so different from the member's normal work that flexibility has become their new knowledge. For example, instead of keeping what they wanted, they had to be flexible "a little more than [they] used to" [AI-5, AI-7]. In addition to the need to be flexible with the collaborators' diverse situations, the members also needed to be flexible with their diverse works. Particularly, to make Service A2 happen, some members have to take up more [AI-6] and/or different tasks, such as research and data analysis [AI-4].

To test the initial assumption according to the Lean Startup methodology, Project A2 experimented with some new adjustments in its team-level structure compared to the current one at the firm level. First was the non-hierarchical arrangement where each member had the power to make decisions on their assigned tasks [AI-4]. This, in turn, led to the second difference where the team utilized their gained authority to "establish[ed] new rules" for the collaborators [AI-2], and seriously execute those new rules [AI-4, AI-5].

*“[The project leader] says ‘No, if you're not completing those tasks, it shows that you are not a good [collaborator], and you are fired.’ something like that, but it has a very positive energy because we know who is not working with us anymore. The first time I did it, I felt like it's a little bit not what we were doing. But, now I like that. It was kinda waste of time reminding or following up with those [collaborators]” [AI-5]*

#### **4.1.3.2 Microfoundations of Transforming Capability and firm-level collective learning mechanisms**

On an organizational level, Project A2 affected every individual in the whole company, especially their mindset and responsibility. More specifically, after the first development round of Project A2, marking with its recent overall update (**Figure 7**), the project was said to (1) promote the top managers to expand similar underlying notions to other aspects of the organization, (2) connect different functions for the same goal, (3) raise existing members to a higher management level and (4) introduce relatively new roles to the organization (**Table 9**).

On the top management level, the positive validation results of Project A2's underlying experiments have encouraged Company A to spend more on other materials and technologies to develop Product A2 itself [AI-4] and other organizational aspects. For example, the board of managers planned to invest in Customer Relationship Management (CRM) software [AI-1]. While this verbal information, i.e., in the form of standardized processes and statistical results resulting from Project A2, represented the spread of knowledge from a team level to a firm level, it also emphasized the consistency of organizational changes, a manifestation of Transforming Capability.

Zooming into the process-interaction microfoundation aspect, as Project A2 was “*a joint project*” [AI-1], it required a cross-functional teamwork environment where employees from different departments took part in developing the project. Because Project A2 was based on the Lean Startup ideology, it needed different resources for validation and required inputs from multiple departments. Furthermore, due to Project A2's strong stakeholder engagement, the organizational members would also make similar bonding acts with the other side of the service, the collaborators. For example, since the time they joined Project A2 as an external supporter, [AI-7] would eventually send the collaborators a personal and direct reminder email besides the generic follow-up ones. This new habit was not a requirement of Project A2, but could have formed through observation and self-reflection of the project's underlying expectations.

Autonomy was an interplayed dimension between the project team and the company. As [AI-5] mentioned their supervisor always gave them the opportunities to work on what they liked to do with trust, autonomous management structure was a standing out characteristic of Company A, leading to the power transfer in the formation of Project A2. From a reverse direction, Lean Startup-based practices in Project A2 also reinforced the benefits of this trust-based assignment with the knowledge efficiency, repeating the tasks in a continuous development loop. For instance, [AI-1] said “*We're getting better and better as time goes on and getting a better quality [collaborator].*”

Lastly, evolving from the need for specialization and efficiency in Project A2, a new model of collaboration with new positions, recognized through their titles, was introduced to the organization. High expectations of “*productivity*” [AI-2] and statistical analysis throughout Project A2 shifted the job requirement of a particular job position, from part-time to full-time commitment [AI-1]. However, this change did not lead to more diverse but more specialized tasks for this position, especially when their heavy administrative workload was taken over by a new role [AI-2].

**Table 9 Representative quotes about influencing mechanisms of Project A2**

Concept	Deductive code	Representative quotes about Project A2	1 <sup>st</sup> inductive code
<b>Lean Startup</b>	<b>Customer insight</b>	<ul style="list-style-type: none"> <li>• “Used to be [a collaborator] myself... I've been able to have this feedback, to work on it and to improve it as well.” [AI-4]</li> </ul>	→ Conduct small-scale market research with different parties
	<b>Hypothesis testing</b>	<ul style="list-style-type: none"> <li>• “It came out of a desire to create something more substantial...” [AI-1]</li> <li>• “We might be able to be more productive.” [AI-2]</li> </ul>	→ Form falsifiable assumption and expectations
	<b>Iterative experimentation</b>	<ul style="list-style-type: none"> <li>• “I think it has been changed step by step from the beginning until you got everything and then you get the feedback and you improve everything together.” [AI-5]</li> </ul>	→ Perform continuous experiments
	<b>Validation</b>	<ul style="list-style-type: none"> <li>• “It has room for improvement which is what we're working on now that we've gotten the feedback.” [AI-4]</li> </ul>	→ Use mostly qualitative metric
	<b>Learning</b>	<ul style="list-style-type: none"> <li>• “We really kind of fine-tuned the data and what we expect of [the collaborators]” [AI-1]</li> <li>• “We could just use the guidelines of our previous project, and then change it.” [AI-6]</li> </ul>	→ Set clear goals and standards
<b>Team-level learning</b>	<b>Individual</b>	<ul style="list-style-type: none"> <li>• “We're all passionate.” [AI-4]</li> </ul>	→ Commitment with passion
	<b>Process and interaction</b>	<ul style="list-style-type: none"> <li>• “We've had a lot of heart conversations.” [AI-4]</li> <li>• “I have more variety of tasks.” [AI-6]</li> <li>• “It definitely takes a lot more research and analytics.” [AI-4]</li> <li>• “We do try to be flexible, probably a little more than we used to.” [AI-7]</li> </ul>	→ Deep connection → Multiple new skills and flexibility
	<b>Structure</b>	<ul style="list-style-type: none"> <li>• “...has given me more autonomy.” [AI-4]</li> <li>• “We established the rules.” [AI-2]</li> <li>• “[A new position] in charge of doing the heavy workload that the [other position] used to do” [AI-2]</li> </ul>	→ Power transfer → Clear standards
<b>Firm-level learning</b>	<b>Individual</b>	<ul style="list-style-type: none"> <li>• “I want to take it to the next level from here... Utilizing CRM to manage workflows.” [AI-1]</li> </ul>	→ Promote updates
	<b>Process and interaction</b>	<ul style="list-style-type: none"> <li>• “That's a joint project.” [AI-1]</li> <li>• “I will eventually send a personal email.” [AI-7]</li> <li>• “Everyone feeds the changes in this.” [AI-2]</li> </ul>	→ Cross-border and cross-company
	<b>Structure</b>	<ul style="list-style-type: none"> <li>• “... giving them the freedom to do the job without micromanaging them.” [AI-1]</li> <li>• “One change is the change in the structure of ... My belief is that by having full-time staff [at a position] who are 100% dedicated every day doing the job, that they'll be better at the job.” [AI-1]</li> <li>• “Moving away from our expectations is not acceptable in the story.” [AI-7]</li> </ul>	→ Power transfer → New structure



#### 4.1.4 Cross-project analysis and influencing mechanisms

To examine the influences of the two Lean Startup-based projects on Company A's Transforming Capability, the first aggregated theme of each project's Lean Startup practices and individual/organizational learning mechanisms were compared, contrasted and grouped (**Table 14**).

Generally, both two projects in Company A met all Lean Startup dimensions from medium to high level. One common tool that both projects shared was "*hypothesis testing*". Underlying each project was an assumption or expectation that the project leader and/or the CEO had about the beneficiaries of the project, such as the customers and collaborators respectively. The other similarity lay in how they validated, specifically with qualitative information, which was mostly the testimonials or feedback from different stakeholders of the service created.

Regarding the low-level individual and team learning, most effects were positive for Project A2, including (1) excited and supportive teamwork; (2) practical and flexible processes; and (3) autonomous and standardized structure. While Project A1 was unique and uninterested to the members, Project A2 was closely attached to the core services of the company and involved various parties in the team. In Project A1, the members gained some new skills and knowledge but they did not feel confident and passionate enough to continue experimenting with the services. Happening after Project A1, Project A2 took advantage of the learning points from the previous project and combined those with members' available professions to standardize the process step by step, thus improving its approach to Lean Startup methodology and impacts on Company A.

Due to the mentioned difference in project implementation, there were clear gaps between the two projects' influences on the firm-level microfoundations as an outcome. Looking at the high-level learning mechanisms – the bridge where the Lean Startup-based project made changes to the company, knowledge from Project A1 and Project A2 had different effects on Company A in terms of (1) top manager's cognition, (2) individual specialization and team collaboration, (3) authority structure and (4) formal systems. These are also the four elements aggregated from the first themes of the two project's organizational learning mechanisms. Specifically, Project A1 promoted a digital-favored mindset, and Project A2 utilized that cognition while enhancing another one, namely continuous improvement. Regarding the connection beyond the project boundary, the Project A1 team was isolated, but Project A2 was a cross-border effort. Finally, although both teams received freedom and autonomy of decentralized structure in decision-making within their fields, Project A1 missed out on co-specialization until it got external expertise, Project A2 requested its external environment, i.e., Company A, to change the roles of several job positions.

#### 4.1.5 Transforming Capability

After reflecting on the implementation of the two projects, all interviewees from Company A agreed on the dynamic characteristics of the company. Overall, changing is a part of their work and something that they constantly discuss with each other, especially from the manager's side. The respondents also show a positive "*Perception*" toward the organizational changes since the start of the Lean Startup-based projects and what it is going to do in the future.

*"Doing changes has definitely helped us grow. I do think that we are for sure doing better than before. I think we are evolutionary, because we're always looking for ways to evolve and to do things better."* [AI-3]

In the "*Plan for change*" aspect, though consistently changing and looking forward to it, Company A still has not had a concrete written plan for future modification, but rather



spontaneous ideas from their talks about available projects [AI-1] as time goes by [AI-7]. Moreover, these new ideas are more incremental than radical, focusing on the gradual improvement of the existing services or processes, including both selected Lean Startup-based projects. From the viewpoint of the managers, who met each other once per week for several hours, what the company doing was to take old projects and improve them [AI-1] either by retaining or changing [AI-2]. Noticeably, this activity also presented a high level of “*Consistency of change*” and “*frequency of change*” dimensions.

*“What we've done is we've taken old projects and we've made them better. In fact, we were just talking about some additional changes that we wanted to make... We meet every single week, [the board of managers], for several hours, each time each week”* [AI-1]

One other aspect of Transforming Capability that Company A did not formally perform well is “*Learning program and Internal communication*” (**Table 13**). The official training was available but not well utilized. One of the reasons was that the company keeps on changing to adapt to the dynamic request (near decomposability), hence the previous knowledge is quickly outdated [AI-2]. Both of these led to a directly involved training method where a manager, a project leader or a more expertized employee trains another person “*and they get over it*” [AI-2].

“Since we're more familiar with how everything worked, we don't need that as much. Whenever we have a new task, we will have some training. It could be with someone who did the task. We usually have a meeting about it and start working on it and actually, the best way to improve our skills for the job is to ask... So, meetings are helpful. They help you improve and clarify things. After finishing the tasks, a meeting for feedback or just written feedback itself on the job made will actually help to improve the project itself or a future project.” [AI-6]

Similarly, the “*open door policy*” was existing before the projects and did not change much. None of the interviewees seem to be afraid or hesitant to reach out or express themselves in the current working environment of the company. They even proactively speak up, share and keep everyone in the loop, especially during meetings before and after the execution of some tasks. After the two projects, due to the greater responsibilities in the project (decentralization) and dependence on each other works (co-specialization), the communication among project members slightly increased to ensure the operations of the existing projects, the newly developed services and the upcoming ideas [AI-4].

*“It's always been an open door policy so, at least for me, I felt like it's never been an inconvenience to reach out to anyone and express my ideas... We're able to have more meaningful meetings where we actually work and discuss things that we can improve and brainstorming and talking about them and implementing them. I think we have more involved meetings or training. So, communicating with everybody has been a lot more to make sure that we're all on the same page.”* [AI-4]

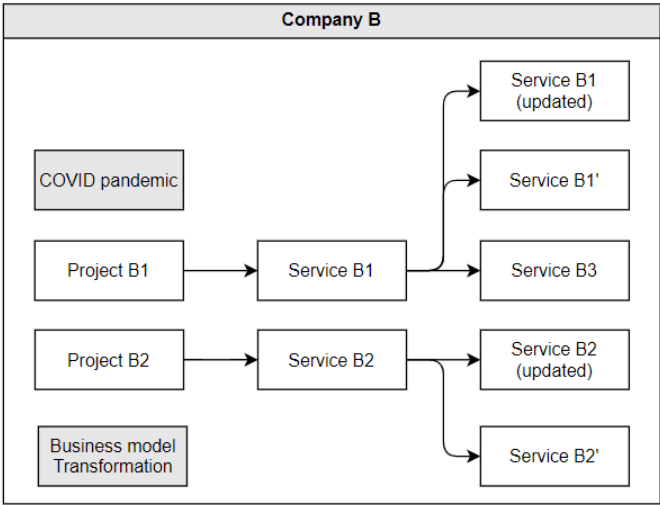
## **4.2 Company B**

### **4.2.1 Context**

Company B is a small company that specializes in business outsourcing services. It means it may help other companies in doing some tasks on their behalf, such as recruiting, marketing or training. The company does this by connecting the expertized providers or suppliers with its customer companies. This business model requires Company B to develop a broad range of partners and “*collaborators*” who are similar to short-term employees.

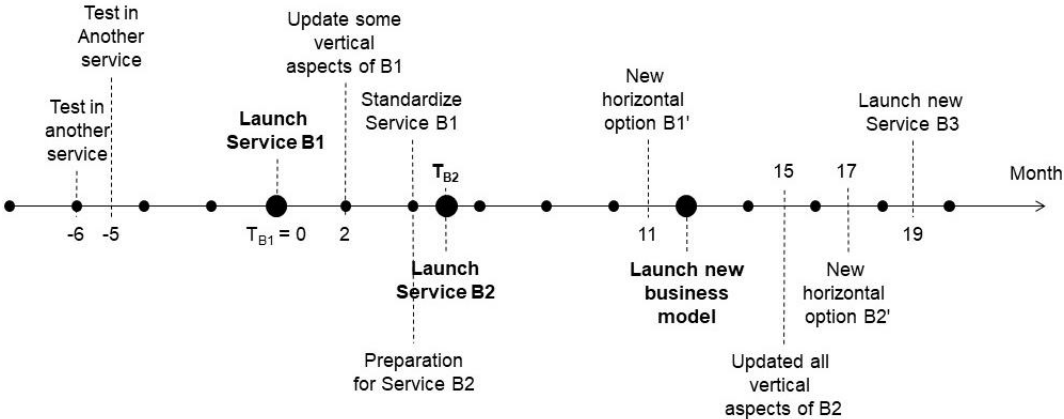
By the time of this study, Company B had been established for more than 5 years and relied upon much of its income from close strategic partnerships in a specific region. In combination with its business model mentioned above, the company was open to any business-related request from its customers. This has led to the situation where the request was so new and challenging that Company B had to find creative and different solutions than what it usually did. It was the case where Project B1 took place.

After the COVID-19 pandemic, many firms were struggling to find new employees and customers with such urgency that they came to Company B for outsourcing services. By talking to the customers and exploring the market, the CEO noticed a substantially new digital marketing method and would like to try it out. While the contract was signed early, the outcome of Project B1, namely Service B1 (**Figure 8**), was a part of the outsourcing service. Either due to Service B1 or another reason, the request was resolved, thus forming an assumption about the new method’s potential. Company B tested it the second time with another customer request, considering it as a free extra benefit. It worked again.



**Figure 8 Overview of Lean Startup projects at Company B**

Later, the team did more research to understand and utilize Service B1 while the CEO made it into a separate product and started to promote it. The time when Service B1 was officially sold for the first time is marked as  $T_{B1} = 0$  on the timeline (**Figure 9**). After a few more contracts, different requests arose and Company A tweaked its service to either a different field with Service B1’ or a broader scope with Service B3.



**Figure 9 Timeline of focused Lean Startup-based projects at Company B**

Not too long after Project B1 was well formed, when talking with new employees during the recruitment interview, the CEO was interested in a new idea of Service B2 that this new talent mentioned. Service B2 was a service that this person has experienced with another company when working for them. This service was not applied by either Company B or its existing partners. Thus, it conducted Project B2 which created a new way of working for Company B and its collaborators. Feeling happy with the outcomes that Service B2 can generate, Company B updated the original service and continued to expand it to a different field with Service B2’.

#### **4.2.2 Lean Startup Project B1**

Using the official launch of Service B1 as the start of Project B1, the project’s origin was, in fact, happened a few months earlier (**Figure 9**). Project B1 and its outcome, Service B1, came out of the need to attract online data for other existing services at Company B. Furthermore, the project team for Project B1 was small. It started with two people, the CEO with an idea and an executive member to turn that idea into visible products. Upon another new customer request, Service B1 was updated into Service B1’ which used the same process and method as the former but for a different purpose. This has led Company B to offer a later broader scope of service, Service B3 which was initially developed at the point of the interview. This study only examined the process of developing Service B1 to the launch of Service B3.

##### **4.2.2.1 Lean Startup dimensions**

Project B1 was highly based on Lean Startup principles with high scores in almost all five Lean Startup dimensions (**Table 10**). First, since the Service B1 launch came out of two previous tests, it had already been an experiment and met the “*Iterative experimentation*” dimension of the Lean Startup approach. Before its official launch, Service B1 was a part of other services that Company B provided to the customers according to their requests (**Figure 9**). After providing the most basic feature of Service B1 as an added value for other orders for free, Company B, namely the CEO, realized its meanings, monetarization potential and feasibility [BI-1]. Thus, this service was developed and went through a few more sales until it reached the current standards. Furthermore, it was not a fixed project but kept expanding to serve other fields (Service B1’) and larger scope (Service B3).

Second, the hypothesis being tested in the project was that a new method could solve the customer’s demands for attracting and collecting data [BI-1]. This assumption by the CEO was transferred to the project leader as an assignment. The project leader then started to learn about the CEO’s idea and explore its technical underlying hypotheses, such as “*How to create it?*”, “*How does it collect the data?*” or “*What layout would give the best user experience?*” [BI-4]. Even when the service was formed and standardized, new assumptions continued to emerge. Some of the new assumptions were that Service B1 could be applied in other business fields or it could be delivered in a different way, such as a Do-It-Yourself (DIY) option.

Third, the project was not derived by itself but based on the request of the customers and active market research effort [BI-1], fulfilling the sample activities of the “*Customer insights*” dimension. The original reason for Company B to come up with Project B1 was the customer's challenging request around the end of the COVID-19 pandemic critical time. With this first stage, ideation, the company had already put its customers in mind. After receiving the request and identifying the customer problem, the Project B1 team started to perform market research and obtain better insights about Service B1 itself as well as different customer needs related to this service. Furthermore, the gathered information about the market not only helped Project B1 to see Service B1’s potential, but also gave them the confidence to make bold

statements, such as “*At that moment, we are the pioneer of this solution in the market*” or “*We are leading in this field*” [BI-1]

Fourth, although the hypothesis was confirmed, the main “*Validation*” indicator that the project team used in this project was still thin. The project team did not have a predefined measurement of Service B1’s quality [BI-4]. Service B1 has not generated much income and required great effort from the company to convince customers. As a result, though the amount of sales was counted, the project’s success was mainly assessed through its positioning and newness in the market [BI-1]. The customer feedback that the project members received was also indirect, going through an intermediary or a representative [BI-6].

With the last lean Startup’s dimension, project B1 promoted the “*Learning*” attitude in the team and the necessary skills with wide application. At the beginning of the project, each member had to spend a long time self-learning and exploring. After a few experiments, the project leader was able to standardize the guidelines for Service B1 and pass on this knowledge to other members. When the other member was used to the process, the project leader transferred the leading role to this lower-level member and moved on to a new but relevant assignment. Even with the new assignments, the takeaways from Project B1 proved to be helpful. [BI-6] claimed that the process to develop Service B1 was the platform for them to skip the basic steps in building Service B3, and understand Service B3’s new knowledge faster.

#### **4.2.2.2 Lean Startup outcomes and team-level learning mechanisms**

Within the project team, Lean Startup activities in Project B1 led to (1) committed and specialized individuals, (2) sharing-favored and standardized processes, as well as (3) a transferable structure with clear standards (**Table 10** and **Table 12**). These takeaways spread throughout the team via verbal explanations and practical assignments from previous members to later joiners.

From an individual microfoundation level, the specific context of Project B1 created several requirements for the project members. First, the small size made the team’s culture specialized in only developing Service B1. Secondly, there was a clear timeline, especially when Service B1 was a part of another service, all project members were highly committed and focused on their tasks [BI-7]. Thirdly, while Service B1’s benefits were well understood by the project team, its uniqueness required great explanation effort to Company B’s current and potential customers. As [BI-1] mentioned, they needed to educate the target market about Service B1. Hence, this formed one common belief to be patient for upcoming growth in the market [BI-7].

In terms of the process-interaction aspect, as Service B1 was a newly developed solution, it required a member to act as an intermediary to work with external stakeholders, including members from other departments and buyers, to ensure smooth communication flows [BI-3]. Besides the interacting process, through repeated activities and improving understanding of Service B1, the project team was able to standardize Project B1’s service design and operation processes, thus successfully duplicating them to an upgraded version, namely Service B1’ [BI-3].

Finally, the project team was highly structured on trust and loosed control from the supervision perspective [BI-6]. After Service B1 was formed and systematized, the CEO quickly transferred the management role to the other executive member, who later transferred the management responsibilities to another newly joined member [BI-6]. As a result, there was a flow of information from the previous members to the new ones. This constant power transfer, in turn, created a flexible self-management structure for Project B1 and flexible abilities for Project B1’s project members to perform multiple tasks in different contexts.

#### 4.2.2.3 Microfoundations of Transforming Capability and firm-level learning mechanisms

On an organizational level, Project B1 affected the works of organizational members that were related to its technical aspects. To Company B, Service B1, (1) expanded to other internal departments, (2) constructed a strategic partnership, (3) broadened the business approach view, and (4) enabled new talents to climb up their career ladder (Table 12).

Firstly, by validating the technical functions of Service B1 through Lean Startup-based experiments, Company B has added a new service to its portfolio and internal toolbox. The earliest version of the key value of Service B1 was only a part of a service, yet after the successful statistical results, Company B had the confirmed motivation to continuously apply the new marketing technique for itself and more contracts later on. With sufficient evidence, the CEO decided to commercialize Service B1 as a standalone offering. As a consequence, the executor(s) repeatedly designed the core product of Service B1 until they were able to standardize the procedure and revealed more potential. In order words, the concrete standards of Service B1 were an achievement of the project team's knowledge integration upon efficiency, scope and flexibility.

“That time, [Service B1] was just a part of [another core service]. It was the simplest [offering] and not yet separated. But, from there, we got the idea for [Service B1]. Later, we tested it along with [another contract] so [the executive member] can get used to it while I learn about the market.” [BI-1]

Secondly, Project B1 led to a new long-term partnership with Company B. In particular, Service B1 was built upon an external provider's platform. Hence, in developing Project B1, Company B needed to maintain a good relationship with that new provider. When this provider updated their platform, they would update the connected products with Service B1 automatically and provide more functions for the project team to utilize, reducing Company B's resources for technical development [BI-6]. However, it was not a one-way relationship, but a win-win cooperation. Confirming the product value itself, Company B introduced it to different groups of customers, and earned some performance-based commission [BI-1].

Thirdly, Service B1 was an innovation for Company B, allowing the company leaders to think about several new business directions. After Project B1, Company B started to work on more new projects based on the relevant concepts around Service B1, such as developing Service B3 [BI-3]. Project B1 originated from the CEO's idea to resolve a customer issue, so the successful testing encouraged Company B's top manager to escalate the same entrepreneurial mindset and broaden their business viewpoint. As [AI-1] mentioned “[Service B1] gave me more ideas of the later [business model transformation]. It can do so much more.”

Finally, Project B1 was among of the motivation for Company B's structure to become more decentralized and integrated simultaneously. Project B1 was not only a test for technical assumptions – whether the team can build the solution, and business assumptions – whether the company can sell that solution, but also a management assumption. This type of assumption was tested through the activities of releasing some works from the CEO's shoulder, allowing them to “*stay in the backstage to guide how [other members] can interact with [the customers]*” [BI-1]. As more new tasks and ideas were generated after the success of Project B1 [BI-1], the company's human resources archival witnessed a noticeable growth in the number of organizational members during and after the launch of Service B1. However, though passing the specific authority to each member in a specific aspect of the organization, the CEO still maintains a certain amount of central power, being an advisor [BI-3] or reviewer [BI-6] on some special occasions.



**Table 10 Representative quotes about Lean Startup approach of Project B1**

<b>Concept</b>	<b>Deductive code</b>	<b>Representative quotes about Project B1</b>	<b>1<sup>st</sup> inductive code</b>
<b>Lean Startup</b>	<b>Customer insight</b>	<ul style="list-style-type: none"> <li>• “To monetize it, we had to do the market research, assess the market demands, evaluate the necessity, understand the reasons why customers should choose it.” [BI-1]</li> </ul>	→ Conduct market research
	<b>Hypothesis testing</b>	<ul style="list-style-type: none"> <li>• “Generally, [Service B1] helps to optimize [a process] in a business.” [BI-4]</li> </ul>	→ Form falsifiable assumption
	<b>Iterative experimentation</b>	<ul style="list-style-type: none"> <li>• “That time, it was just a part of... It was the most basic... But, from there, we got the idea for...” [BI-1]</li> </ul>	→ Test as part of another service
	<b>Validation</b>	<ul style="list-style-type: none"> <li>• “Only we are providing this service in this area.” [BI-4]</li> </ul>	→ Use mostly positioning metric
	<b>Learning</b>	<ul style="list-style-type: none"> <li>• “This is the base for me to develop... [BI-6]</li> </ul>	→ Form basic guideline for other projects
<b>Team-level learning</b>	<b>Individual</b>	<ul style="list-style-type: none"> <li>• “Everyone tends to be more focused and have higher performance to ensure the timeline.” [BI-2]</li> <li>• “So it took some time and the traffic flow is not always awesome.” [BI-7]</li> </ul>	→ Commitment with shared belief
	<b>Process-Interaction</b>	<ul style="list-style-type: none"> <li>• “I will be the intermediary between [the customers] and the internal team.” [BI-3]</li> </ul>	→ Intermediary for external communication
		<ul style="list-style-type: none"> <li>• “In the beginning, [the manager] gave me the basic instructions. The rest, I learn by myself...” [BI-6]</li> </ul>	→ Shared information
	<b>Structure</b>	<ul style="list-style-type: none"> <li>• “There have been some fixed non-spoken rules.” [BI-6]</li> <li>• “I can feel that [the CEO] and [the manager] have put a lot of trust in me.” [BI-6]</li> </ul>	→ Shared standards → Power transfer
<b>Firm-level learning</b>	<b>Individual</b>	<ul style="list-style-type: none"> <li>• “We combine [different working fields] with alignment to the market trends. We can also use it internally.” [BI-1]</li> <li>• “[Product B3] seems easier to me because I have known the basic steps to take and the underlying mindset.” [BI-3]</li> </ul>	→ Expand to other expertise based on learned skills
	<b>Process-Interaction</b>	<ul style="list-style-type: none"> <li>• “When [a partner] updates, we can also update our [Service B1].” [BI-6]</li> </ul>	→ Require external support for technical updates
		<ul style="list-style-type: none"> <li>• “Our company has educated the local market in many aspects. Those are our opportunities...” [BI-1]</li> </ul>	→ New market approach
	<b>Structure</b>	<ul style="list-style-type: none"> <li>• “I have already hand-over this task to [another member]. I only make the plans and review the work.” [BI-4]</li> </ul>	→ Power transfer



### 4.2.3 Lean Startup Project B2

Upon the idea and approval of the CEO, Project B2 was implemented and led by two members in the same department, one was the head of the department and the other was the lower executive employee. Project B2 was made into a plan one month ahead of its launch. With Service B2, Company B created a new type of relationship with its collaborators, or those that work for the company in a short-term period. The project team collected feedback from the collaborators at the end of each service point, and used it to modify the next batch of services the company provided. After a few upgrades through this process, the project team developed the Service B2 itself and offered Service B2' to a different field of collaboration.

#### 4.2.3.1 Lean Startup dimensions

Project B2 was fully a Lean Startup-based project whose process fit into the Build-Measure-Learn (BML) cycle (**Table 11**).

First, there was an assumption that Company A could apply Service B2 from other companies to its collaborators. Next, the project team brought this assumption to a test. They checked the market, built a basic service and started to offer it almost immediately. At the "Measure" stage, the team continuously collected both qualitative and quantitative indexes for decision-making. Those include the number of new collaborators, the collaborator's works and their feedback throughout the cooperation. Finally, with the "Learn" stage, by accumulating and codifying the knowledge, the Project B2 team modified the service into an updated version of Service B2 and a new approach with Service B2', both having the standardized processes and materials to follow. In the semi-structured interviews, all the above aspects were touched by the two leading members [BI-2, BI-8].

*"I raised the idea when I had an interview with [the CEO]. Because I used [a similar service to Service B2] before, I think it can help... The feedback results will be sent to all team members who were involved. Now, I only need to copy that template and edit a few details...I also participate in an online course about..."* [BI-2]

*"I also did some market research and test... I will take a look at what other [competitors] are doing... During [Service B2], I collected the feedback from [the collaborators] and came up with... We will measure the interactions on social media posts."* [BI-8]

#### 4.2.3.2 Lean Startup outcomes and team-level learning mechanisms

When this study took place, the Project B2 team was running the first round of Service B2' which applied the same guidelines and of Service B2 to a different field. Since Project B2 followed the Build-Measure-Learn cycle of Lean Startup, it led to the same outcomes as most Lean Startup-based projects would (**Table 11**). Some significant ones that took place within the project team border were (1) team satisfaction, (2) a flexible framework to scale up, and (3) structured innovation.

First, the tested assumptions and validation metrics from the Lean Startup practices were shown to strengthen the members' confidence and commitment. Upon asking for their thoughts about Project B2, both members were proud of what they had done so far in the project. [BI-2] claimed that *"Without [Service B2], our branding will be negatively affected."* Furthermore, more responsibilities in Project B2 also required the leading members to *"invest more time"* and make an effort to create planning templates [BI-2].

Second, thanks to the repeated experimental cycles and member dedication, the project team was able to create a template after the first few offers of Service B2 and reused it [BI-2]. With the first trial, [BI-2] needed to *"set some specific rules, tasks and deadlines"* yet all of the

processes, once obtained an efficient amount of feedback, can be repeated in a new cycle of service delivery without little modifications. This has helped the project team to save time and energy resources in preparing and executing Service B2. The gained knowledge was also accumulated and integrated for later versions as well as different developed options, namely the new business field touched by Service B2', while staying flexible with diverse segments.

*“Normally, I only need to manage myself, but with [Service B2], I need to manage other people and have to set some specific rules, tasks and deadlines. I feel like I have more control of my time... When I face any difficulties or challenges, I will proactively contact... There are multiple group chats... Without [Service B2], our branding will be negatively affected...” [BI-2]*

Third, regarding the team structure, Project B2 was the opportunity for the two leading members to get more autonomy and freely develop their new ideas around the initial concept of Service B2. This new perspective on management positions changed how they interact with each other and the customers. Once a plan was agreed upon in a group meeting with the CEO and other relevant organizational members, the junior project member would only need to proactively contact their supervisor and the CEO when necessary [BI-2]. Additionally, as it kept expanding, the project team had to add more people, who were also involved collaborators that had experienced Service B2.

*“The project came from the suggestion of [a project member]. I consider it a success... The team is fully aware of the value and the mindset of our branding... We still need to add more talents to our team while having more well-developed training.” [BI-1]*

#### **4.2.3.3 Microfoundations of Transforming Capability and firm-level learning mechanisms**

Although the project team for Project B2 was small, by performing Lean Startup principles, the team had reached out to multiple other departments in the company and required them to change in accordance with the project requirements (**Table 11**). In other words, Project B2 had opened a flexible environment for (1) organizational cooperation, (2) knowledge sharing, (3) idea generation and (4) delegation.

First, as this project was specialized and led by a single department, it required support from other departments for other specialized areas of Service B2. Due to the validated information from the number of collaborators who joined and their testimonials, Project B2 did not only convince the project team about its success but also made other out-of-team excited [BI-3]. Hence, it generated the commitment of the company's human resources to maintaining the service together. That to say, because the project was specialized rather than completely cross-functional, some other staff beyond the project team may “need to ask [different members] to understand the context” [BI-5] to support.

*“When [Service B2] is introduced, it serves these needs, thus being a reasonable development. When I listened to the feedback from [the customers], I felt motivated. I also heard from [other members] that we have received a lot of followers on social media channels...[Service B2] is now a well-rounded [product].” [BI-3]*

Second, Lean Startup-based activities, especially those to engage with internal stakeholders, promoted the knowledge sharing beyond the project team boundary. In fact, the knowledge was spread mostly through verbal communication, including document sharing, preparation meeting and plan explanation. Non-verbal communication, e.g., working together, was another learning channel. Thanks to these activities, the creative approaches of Project B2 were easily observed and learned. For example, [BI-4] said that “[Project B2 leader] sent me

*a file, I have learned from it how to create a proposal for a project... [A project member] assesses my supporting work more thoroughly than usual because [that person] has a bigger role in that project.”*

Besides, Lean Startup-based processes also brought some changes to the perspectives of other organizational members, including the top managers. As there was enough validation to prove the success of Project B2, the CEO was more than happy to continue investing in Project B2 and expand the experiment to other fields, such as Service B2' [BI-1]. Additionally, the market research processes used in Project B2 and the team's shared mindset around this activity also encouraged other organizational processes to be more up-to-date. For example, [BI-3], who was not involved in Project B2, started to see the necessity of *“having a bigger picture”* of their project to *“compare the reasons why some posts are more attractive than others”*.

Lastly, the upgraded position of the project members had also widely accepted, becoming a new culture of promotion in Company B. On a department level, Project B2 created an opportunity for each leading staff to improve management skills and expertise simultaneously, which they can directly use in their fields [BI-2]. On a company level, the consistent interaction with the collaborators allowed the project team to engage with different stakeholders and make the organizational communication effective. This has led to the formation of alumni groups and the job offer for a qualified collaborator to become an official employee [BI-2]. Hence, the new members already had good existing connections with the company and could catch up with the workload quickly [BI-1].

**Table 11 Representative quotes about Lean Startup approach of Project B2**

<b>Concept</b>	<b>Deductive code</b>	<b>Representative quotes about Project B2</b>	<b>1<sup>st</sup> inductive code</b>
<b>Lean Startup</b>	<b>Customer insight</b>	<ul style="list-style-type: none"> <li>• “I also did some market research and test out [Service B2] as requested.” [BI-7]</li> </ul>	→ Conduct market research
	<b>Hypothesis testing</b>	<ul style="list-style-type: none"> <li>• “Because I used to [use the Service B2 from another company], I think it can help [Company B].”[BI-2]</li> </ul>	→ Form falsifiable assumption
	<b>Iterative experimentation</b>	<ul style="list-style-type: none"> <li>• “I will take a look at what [other competitors] are doing, so we can do differently.” [BI-7]</li> </ul>	→ Collect market information
	<b>Validation</b>	<ul style="list-style-type: none"> <li>• “We will measure the interactions on social media posts. We also collect [customer] opinions during and after...” [BI-8]</li> </ul>	→ Use both types of metrics
	<b>Learning</b>	<ul style="list-style-type: none"> <li>• “The planning template was created from the first time we offered [Service B2], but now, I only need to copy that template and edit a few details.” [BI-2]</li> </ul>	→ Codify the process
<b>Team-level learning</b>	<b>Individual</b>	<ul style="list-style-type: none"> <li>• “Without [Service B2], [Company B] branding will be strongly affected... When being a part of [Service B2] project, I have more responsibilities, thus I need to invest more time.” [BI-2]</li> </ul>	→ Commitment with appreciation
	<b>Process-Interaction</b>	<ul style="list-style-type: none"> <li>• “There are multiple group chats for different projects and purposes.” [BI-2]</li> </ul>	→ Flexible communication channels
		<ul style="list-style-type: none"> <li>• “Now we are offering [Service B2] and [Service B2'] simultaneously.” [BI-8]</li> </ul>	→ Expand to other fields based on learned skills
<b>Structure</b>	<ul style="list-style-type: none"> <li>• “I will make a sample for [other members] so they know how to [do the specific tasks] then I will review their work.” [BI-8]</li> <li>• “I need to manage other people and have to set some specific rules, tasks and deadlines.” [BI-2]</li> </ul>	→ Shared standards → Power transfer	
<b>Firm-level learning</b>	<b>Individual</b>	<ul style="list-style-type: none"> <li>• “As [another member] sent me a file, I have learned from [that member] how to create a proposal for a project: objectives, timeline, details, and steps to take.” [BI-4]</li> </ul>	→ Expand to other departments
	<b>Process-Interaction</b>	<ul style="list-style-type: none"> <li>• “When I faced any difficulties or challenges, I will proactively contact [the manager].” [BI-2]</li> </ul>	→ Optimize external support
		<ul style="list-style-type: none"> <li>• “I also used [a new tool] to help me.” [BI-2]</li> <li>• “Maybe we don't need to have a really long-term working labor, just a few full-time staff is enough.” [BI-7]</li> </ul>	→ New market approach
<b>Structure</b>	<ul style="list-style-type: none"> <li>• “[A manager] assesses the project more thoroughly than usual because [that person] has a bigger in that project.” [BI-4]</li> </ul>	→ Power transfer	

#### 4.2.4 Cross-project analysis and influencing mechanisms

The two examined service development efforts implemented at Company B were highly Lean Startup projects. In fact, both of them were aligned to the Build-Measure-Learn (BML) cycle. All five principles of Lean Startup were quite similar among Project B1 and Project B2 with more improvements seen in the latter (**Table 14**).

First, regarding Lean Startup practices, both projects obtained an assumption that the company can provide a kind of service to its current target customer segments. Before the test of this hypothesis, the services were already existing, but in a different business field or geographic area. One noticeable point was that hypotheses in both projects were derived from the CEO's initiatives. Second, the project teams did market research and different experiments throughout the development processes. Up to the point of this study, these experimental projects were either evolved into a new one, for Project B1, or continued like the case of Project B2. Third, although the services and responsible members were different between the projects, each of the participants gained some learning points for themselves and used them to continue developing the work they were doing. Finally, the only distinct aspect was "*Validation*" which was less strong in the earlier project.

With the matching characteristics above and a close fit to Lean Startup methodology, the two projects have led to some similar effects on the project team's individual, working processes and formal structure. These team-level learning effects could be grouped into Attitudes, Alliances, Knowledge integration, Standardization and Autonomy. Specifically, on the individual microfoundation, the projects further attached and enhanced the relationship among the team, giving them a hopeful while encouraging self-learning and self-development to adapt to diverse situations. On the processes and interaction microfoundation, the specialized work in the project emphasized the need for an intermediary to connect the internal and external stakeholders and the efforts to actively learn or change the external market. As the projects brought new services to the firm portfolio, they also generated more contexts and situations that required the flexibility of all company members. On the structure microfoundation, there was the transfer of power and expansion of the project mostly horizontally, namely to other fields, sectors or themes.

On the firm level, both projects were found to have positive learning on Company B, each in slightly different variations around the four categories, including (1) member cognition, (2) management structure, (3) specialization-based collaboration, and (4) knowledge-sharing processes. Specifically, in terms of business mindset, Project B1 and Project B2 both allowed Company B's managers to explore and validate new market approaches. With more interconnection and autonomy given, the project participants were encouraged to speak up comfortably, introducing more relevant ideas for the company to test out [BI-1]. Regarding management structure, decentralization and near decomposability were emphasized more and more after each project. For example, the CEO held an essential and active role in Project B1 to test their assumptions, whereas they only acted as an advisor in Project B2 whose underlying hypothesis belonged to some other member during their job interview with Company B [BI-2]. Next improvement was witnessed in the company's divisions and partnerships according to specialization. The two selected projects were performed by two different departments, which were broken down into several smaller branches afterward, e.g., one part taking care of Service B1 and one part focusing on Service B2. During the implementation, the projects also brought more strategic partners for Company B, namely the digital platform in Project B1 [BI-6] and a diverse of collaborators in Project B2 [BI-8]. Finally, both Lean Startup-based projects introduced consistent guidelines and codified templates to Company B to adjust accordingly, stressing the internal communication and knowledge management system.

#### 4.2.5 Transforming Capability

Company B was confirmed by the respondents that it has become more transformative, dynamic and up-to-date after the two examined projects. One clear manifestation of high Transforming Capability at Company B was its plan to run new parallel projects along with the current ones, aiming for the scaling up of the company [BI-1]. For example, [BI.06] claimed that a head of the marketing department was into a new social media channel and raised the idea of advertising Company B's brand there. The CEO has approved this proposal and Company B was making a plan for this development at the moment this study took place.

*"We will implement [a new business model] soon. When we scale up, our team grows bigger and there are more projects, we need to invest more... Because we are working in the service field, we need to keep on innovating and adding new things"* [BI-1]

Besides the presence of the "plan for change" shortly, the company has been implementing changes more frequently following the needs of the business field [BI-1] as well as the changing market trends [BI-5, BI-8]. Under this high consistency and frequency of change, the interviewees also showed a positive attitude and "perception" towards the (substantially) new things happening in the company. Though the development plans seem consistent and aligned with Company B's vision, there could be some slightly different viewpoints about some specific future projects. Using the same example of the new social media channel, although it caused excitement to the management team, [BI-6] was afraid that the new channel may not align with the current image of the company. As a result, this employee decided not to actively join the execution team. That to say, this respondent still shared the same positive perspective about the company's future in general.

*"There are now more things to do and also more positive changes happen. We made a plan for [an idea] early this year and will make it happen soon."* [BI-5]

The fifth dimension of Transforming Capability was also archived as information can be spread easily and quickly internally through an official learning program and closer communication between the top manager and all staff members. However, even before this new offer, Company B's staff had already had so strong learning motivation and job commitment to their job that they were willing to pay for the external courses themselves. 5 out of 8 interviewees directly mentioned and listed some online courses they have taken, ranging from English language and communication skills to project management and computer skills. Another training method at the company that became more common was case study-based, solving problems and forming know-how to speed up the creation of new ones [BI-1]. However, as observed, the disadvantage of this method is that the method was not fully codified and written down, thus requiring the repetition of the whole training.

*"I invited other members to join my meetings with [the customers] to passively absorb knowledge... I train each member specifically on a case-study basis... If [the team members] need any online courses, they can make a request or what they did sometimes was to save the bonus to buy extra courses for the whole team."* [BI-1]

Regarding the "internal communication" side, while the CEO was involved in and well aware of all projects, they were less involved in more recent projects, e.g., comparing Project B2 to Project B1. Additionally, the more the staff worked together on specific work-related tasks, the more they understood the other person's cooperation style and developed a close-knit relationship. Although most work-related communication with the customers occurred online, via email and instant chatting applications, [BI-2] and [BI-4] both claimed that they also hung out with other people in the company after working hours.



“Because [Company B] is small, the team members still work with each other in the later projects, thus the relationship is quite closed and it is easy for us to talk to each other. And, we also know who to ask.” [BI-3]

### 4.3 Cross-case analysis

#### 4.3.1 Context and external environment

The two companies were purposefully selected based on their size and activities, which passed the initial check for Lean Startup principles. Besides, the cases also shared the leading stories about how they started the projects (**Table 12**), which highlighted the influences of the external environment, topic familiarity and accumulated experience.

Regarding external factors, the first project at each company originally came from new ideas to adapt to an unfamiliar and urgent situation or request. It was the “fight” in the “fight-or-flight” reaction to deal with the financial threat or solve a customer request. Secondly, the continuity and success of a project were also affected by the topic's relevance to the established knowledge base. Although focusing on the firm’s existing customers, the newness of Service A1 and Service B1 stopped the two companies at the basic line, having no update plans scheduled. On the other hand, Project A2 and Project B2 touched one of the core business relationships of the company with collaborators, thus being repeatedly modified and scaled up. Third, it was experience gained from running the first Lean Startup-based projects that Company A and Company B execute the latter ones more smoothly and proactively, i.e., giving more power to the project leaders and collecting feedback from a variety of sources.

In addition to the commonalities above, each company has some unique characteristics, namely management structure and organizational culture, that act as pre-conditions for Lean Startup optimization. According to the author’s observations and conversations with the employees, the central decision-making capacity in Company B lay in the hands of the CEO, and this person understood all organizational aspects in detail. On the other hand, in Company A, the CEO did not intend to micro-manage the team nor interfere with the decisions of the project leader whom they had great trust. Furthermore, as Company A was established earlier, there was already a tie among members before the projects took place. In combination, the autonomous structure and bonding connection in Company A’s project team was not much different than their normal state, and cross-border collaboration could be natural. However, it was a great encouragement to both sides of the power transition in Company B with the CEO referred to step back to an advisory position and the project members raising their voices.

**Table 12 Compare the context of Lean Startup-based projects**

	<b>Project A1</b>	<b>Project A2</b>	<b>Project B1</b>	<b>Project B2</b>
<b>Leading reason</b>	External threats on survival	Organizational reconstruction	Customer’s challenge	Organizational development
<b>Source of idea</b>	An employee	A manager	The CEO	An employee
<b>CEO involvement</b>	Advisor	Advisor	Project leader	Advisor
<b>Project leader position</b>	Manager	Manager	CEO	Manager
<b>External parties</b>	Customers	Collaborators	Customers	Collaborators
<b>Source of feedback</b>	From customers to the project team member	From collaborators and firm staff at any time	From customers through an intermediary	From collaborators to project leaders in different stage
<b>Project team background</b>	Different from the project’s	Cross-function	Specialized for the project	Specialized for the project

### 4.3.1 Lean Startup activities

By evaluating their activities according to the five dimensions of Lean Startup operationalization, four examined projects were proved to be based on Lean Startup methodology (**Table 13**).

For “*Customer insight*”, before the launch of a (substantially) new service, both companies had different approaches to understanding market needs. Company A preferred to collect information from its existing networks, for example, talking to the current customers, asking for opinions from internal organizational members, and getting a collaborator into the team. Company B did market research more thoroughly, including discussing with the customers, identifying the service positioning and checking the competitors’ works.

Regarding “*Hypothesis testing*”, there were some assumptions or expectations underlying each project. When one was proven or rejected, another one would arise. This flow was seen in Project B1 where the potential of Service B1 in data collection was confirmed, leading to a new question about its other benefits.

From the “*Iterative experimentation*” dimension, both enterprises were actively involved in multiple trial-and-error attempts and seeking relevant information about helpful technologies. Noticeably, when a team stops experimenting and improving a service, the whole project will be halted as in Project A1 or evolve as in Project B1, switching to a new relevant broader service, Service B3.

Qualitative metrics and testimonials were the most common measurement and source of *Validation*” for the Lean Startup-based projects. One core reason was that the two companies were both working in the service sector, which emphasized human interaction [BI-1]. Interestingly, those projects in which the CEO was involved more, i.e., Project A2 and Project B1, relied more on qualitative indicators. However, this does not necessarily mean less success as long as stakeholder comments were taken into account.

“*Learning*” was well done in all projects as team members always claim to gain something positive and practical from being part of the process. They could be the development of new skills and knowledge, or a better mindset about technology and standardization.

**Table 13 Summary first inductive codes of Lean Startup activities**

	<b>Project A1</b>	<b>Project A2</b>	<b>Project B1</b>	<b>Project B2</b>
<b>Customer insight</b>	Partially, with current customers	Partially, with various parties	Completed, focusing on potentials	Completed, focusing on competitors
<b>Hypothesis testing</b>	Form an assumption	Form several expectations	Form technical assumptions	Form an expectation
<b>Iterative experimentation</b>	A few trials	Continuous experiments	Part of another service	Collect market information
<b>Validation</b>	Both types of metrics	Mostly qualitative	Mostly positioning	Both types of metrics
<b>Learning</b>	Standards for external tasks	Standards for evaluation	Standards for other projects	Standards for planning
<b>Overall</b>	Medium	High	High	High

### 4.3.2 Team-level learning mechanisms

Being selected according to the observation of the process, all Lean Startup dimensions could be found in all service development projects under examination, thus they shared many common outcomes and learning mechanisms. First inductive codes of the cases from **Table 8**, **Table 9**, **Table 10** and **Table 11** were grouped into the second inductive codes as in **Table 14**.

Besides introducing new services to their business portfolio, the Lean Startup-based projects also led to the spread of knowledge through reflection and repetition within the project boundaries. Classifying the outcomes of all projects into three microfoundation categories, i.e., individual, process-interaction and structure, revealed five main “*learning contents*” on a team level, namely “*Attitudes*”, “*Alliances*”, “*Knowledge integration*”, “*Autonomy*” and “*Standardization*”. Overall, the more a project implemented Lean Startup, the better the learning outcomes were.

**Table 14 Compare team-level learning mechanisms**

Deductive code	1 <sup>st</sup> inductive code				2 <sup>nd</sup> inductive code
	Project A1	Project A2	Project B1	Project B2	
<b>Individual</b>	Commitment with obligation	Commitment with passion	Commitment with shared belief	Commitment with appreciation	Attitudes
<b>Process and interaction</b>	Isolated connection	Deep connection	Intermediary between team and customers	Intermediary among several channels	Alliances
	Apply obtained skills to other tasks	Apply multiple skills to improve the project	Apply learned skills to expand the project	Apply learned skills to expand the project	Knowledge integration
<b>Structure</b>	Power transfer	Power transfer	Power transfer	Power transfer	Autonomy
	Basic standards	Clear standards	Clear standards	Shared standards	Standardization

With Project A1, despite the service's radicalness, Lean Startup principles were not well implemented by the project team, having only slight market research and a few experiments (**Table 14**). Hence, knowledge from Project A1 was learned in a constrained way without much support from each other. The new skills earned were also so basic that they were not efficient for the team to improve the project without external experts. This knowledge was then used to optimize other aspects of the organization, for example applying video-making skills to create training videos [AI-2]. Nevertheless, thanks to the feedback-based adjustment loop in the Lean Startup methodology, the team was able to form some basic guidelines to develop several versions of the root service, Service A1' and Service A1''.

Project A2 was almost opposite to Project A1. By engaging a variety of stakeholders for validation, the project stimulated passion and close cooperation among team members. Not only validation, but the combination of all Lean Startup dimensions has allowed the project team to learn and fill “*room for improvement*” [AI-8]. The diversity of voices and insights about the collaborators also drew multiple scenarios for the team to broaden their service scope and flexibility to keep on improving the project. Lastly, validated expectations that were tested have become the new norms and standard base for following rounds of improvement.

Project B1 and Project B2 were aligned to the Build-Measure-Learn (BML) cycle of the Lean Startup approach, leading to similar positive learning contents, such as shared belief, intermediary, power sharing, knowledge integration and knowledge spillover. Because all project members were involved in the first few stages of the Lean Startup-based projects, specifically forming the assumptions and conducting market research, they showed voluntary commitment and an optimistic view about the service potential. With the diversity of interactions and fast pace of development, less than 1-month of preparation for each launch, an intermediary position was introduced to ensure the communication flow in and out of the group. Later steps in the process, such as running experiments and asking for customer comments, embraced reflection for knowledge integration into improved activities and new solutions. That was how Company B came up with other versions of Service B1, Service B2 and the creation of Service B3. Additionally, the repetition of Build-Measure-Learn (BML) was also a chance for project members to constantly improve performance, form new routines and codify gained knowledge into standards, such as planning templates [BI-2, BI-4].

### 4.3.3 Firm-level learning mechanisms

By taking the first inductive codes from the firm-level learning deductive dimensions from **Table 8**, **Table 9**, **Table 10** and **Table 11**, new aggregated second inductive codes regarding Lean Startup outcomes and Transforming Capability microfoundations emerged. Generally, through different organizational communication channels, outcomes of examined Lean Startup-based projects influenced the firm-level individual, processes-interactions and structure – the three core microfoundation categories, to reach the constructive blocks of strong Transforming Capability (**Table 15**).

The common outcomes of all four Lean Startup-based projects were commitment attitude, internal and external teamwork, performance efficiency – application scope – flexibility, power transfer and guidelines. Overall, the more positive the outcomes were, the more likely they could combine to form the undergirding microfoundations for Transforming Capability, namely (1) managerial cognition, (2) decentralized and near decomposable structure, (3) co-specialization strategies, (4) knowledge management and governance systems.

First, regardless of their statistical and perceptive success, all evaluated Lean Startup-based projects facilitated the top management cognition in accordance with the shared attitudes and perception of the project team. For example, expectation towards new technologies and skills used in Project A1 has encouraged the top managers to look for and invest more in digital applications. This improvement was made almost immediately when the CEO acted generously with a technology-for budget in Project A2 [AI-4]. Customer engagement from Lean Startup methodology combined with passionate commitment has led to a welcoming mindset for agile and seasonal updates of Project A2 itself. While the new mindset in Company A focused more on the internal techniques and processes, the knowledge integration gained from Project B1 and Project B2 widened commercialized fields for Company B to reach out to. An example was the implementation of Project B3 based on Project B1 [BI-1, BI-3]

Second, the team-level disciplines and standards in Lean Startup-based projects also promote decentralization and near decomposability in firm-level management structures. This was also applied in the case of the isolated project, Project A1, whose distinguishing knowledge possibly kept its operations in the hands of the few project members, skipping the need to ask for permission from higher managers. Meanwhile, as other projects under discussion followed Lean Startup principles, they were more likely to bring different arrangements and new job positions into the firm's structure. For example, due to the high expectation of "*productivity*" [AI-2] as well as the added amount of tasks and differences in working processes, Project A2 shifted parts of the duties of a particular position to a totally new one,

changing the organizational structure and workflow [AI-1]. In Company B, as both projects were closely aligned to the Build-Measure-Learn (BML) loop and were kept running simultaneously, they motivated the act of power transfer from a previous team member to a new one [BI-3, BI-6], allowing the formers to start on new projects with their integrated knowledge [BI-1]. Similarly, it was the great amount of collaborator-related interaction in Project B2 that required the company to facilitate job promotion for existing members and hire new ones, especially from the alumni collaborator groups. However, unlike the unawareness of Company A's CEO about Project A1's current implementation, Company B's CEO still remained in the loop on the working timeline of Project B1 and Project B2.

Third, the processes and interactions, especially closer relationships with different stakeholders, in Lean Startup-based projects have fostered new co-dependent cooperation inside and outside of the firms. Non-verbal communication in cross-functional collaboration and verbal communication through intermediary roles was the gateway for the internal experience to spread company-wide. However, among the four projects, Project A1 was the only exception that did not generate any alliances beyond the team border. As a result, the Project A1 team was isolated with unfamiliar tasks and failed to be continuously reconfigured. This limitation was solved in Project A2 through strong customer engagement activities, such as having an ex-collaborator on board or constantly discussing with current collaborators. Thus, cross-border partnerships between the company and the collaborators and among the organizational members were formed, helping the project team to adjust their Service A2 according to the collaborator's needs. Rather than opposing each other like the two projects of Company A, the cross-border teamwork in Company B's projects was slightly different in collaboration scope. While Project B1 connected Company B with a new long-term strategic partner that provide a digital platform for Service B1, Project B2 strengthened the connection among internal departments to utilize functional knowledge from other teams, such as graphic designing.

Lastly, integrated knowledge resulting from the Lean Startup-based project was encouraged to be shared and applied broadly within the company boundary, thus requiring the firms to coordinate and reconfigure their organizational procedures and rules to maintain the project's meaningful outcomes, such as commitment and autonomy. In Company A, the new set of collaborator selection criteria in Project A2 was quickly accepted and used to form new rules for collaborators, which represents the development of formality and governance systems in the company. In Company B, as Lean Startup-based projects were implemented by a very small team that kept on passing down the authority to new participants [BI-6], its knowledge-sharing processes were more documented and visible. After the two projects, a shared template for planning [BI-4], a sharing meeting after every batch of Service B2 [BI-3] and a new online learning platform for self-development [BI-1] were introduced company-wide.

The "*learning content*" or outcomes of Lean Startup-based projects were transferred to the firm-level base through both verbal communication and non-verbal communication. Noticeably, as non-verbal communication includes observation and collaboration, this learning mechanism would be more visible when cross-functional teamwork takes place, mostly witnessed in later projects of each case study, i.e., Project A2 and Project B2. For example, [AI-7] did not want to "*cross the line*" and was not much affected by Project A1, this person was more engaged in Project A2 and aligned their working style with the customer engagement dimension of the Lean Startup approach, being more flexible and personal in dealing with collaborator-related issues. In Company B, with the formal meetings, written standards and clear technical instructions generated from Lean Startup-based projects, the organization was able to reuse and share the accumulated knowledge from experimental learning with other departments. Some helpful documents were Service B1 itself [BI- 6] and Service B2's planning



templates [BI-3], allowing the company to keep old projects running and develop new ones quickly.

**Table 15 Compare firm-level learning mechanisms**

Deductive code	1 <sup>st</sup> inductive code				2 <sup>nd</sup> inductive code	
	Project A1	Project A2	Project B1	Project B2	Outcomes	Microfoundations
<b>Individual</b>	Promote digitalization	Promote updates	New market approach	New market approach	Attitudes	Cognition
<b>Process and interaction</b>	Isolated connection	Cross-border connection	New strategic partnership	Optimize external support	Alliances	Co-specialization
	Require external supports	Scale up and automation	Expand to other fields	Expand to other departments	Knowledge integration	Knowledge management
<b>Structure</b>	Work on demand	New structure	Transferable tasks	Management training	Autonomy	Decentralization
	Basic technical requirements	New rules and updated documents	Basic guidelines and procedures	Codified and shared documents	Standardization	Governance system

#### 4.3.4 Transforming Capability manifestation

As Transforming Capability is forward-looking (Teece, 2023), this research assessed the post-project Transforming Capability through the plan and perception for upcoming changes, change consistency throughout the experience, recently available training method and internal communication.

In general, when being asked about the recent organizational changes after the Lean Startup-based projects took place, all managers and employees at the two companies shared positive responses and plans for more development (**Table 16**). This has led to the high score for “*perception toward change*”, change consistency and frequency manifestation of Transforming Capability. For example, in Company A, the firms changed so often that the members were familiar with and felt comfortable with it [AI-6]. Similarly, members at Company B patiently looked forward to more changes in the market to improve its project, e.g., Project B1 [BI-7]. Another improved dimension was the communication among the company members. While Company A maintained and enhanced its open-door policy among the current and new staff respectively, Company B developed a close friendship beyond the working environment, allowing members to understand other people’s work across functions.

Despite the commonalities above, Company A and Company B had different ways of preparing for future changes and providing training to their employees after the Lean Startup-based projects. At Company A, these activities were less formal, which was possibly due to the close bonding among participants and the high degree of decentralization. Potential transformation or reconfiguration would be discussed at weekly manager meetings, and the changes focus on existing projects. The training program was also available and improved. However, because the organization “*keeps on changing*” [AI-2] and experimenting, direct training from the manager or project leader to the executive staff was more preferable. Meanwhile, at Company B, most ideas came from one top manager’s initiatives. Besides the informal meetings and brainstorming sessions, there were also written change-oriented plans and official on-demand learning courses. The CEO of Company B tended to aim at scaling up



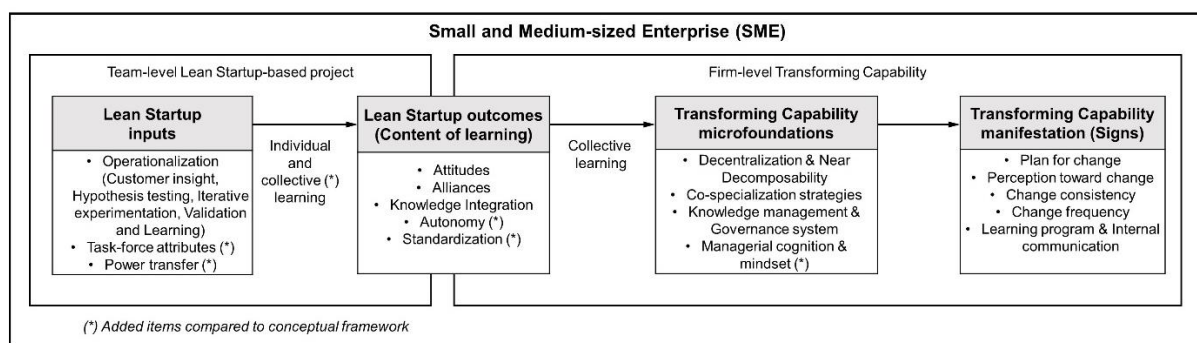
and expanding the service portfolio, which could include radical and disruptive innovation to the target market.

**Table 16 Compare post-project Transforming Capability**

Aspect	Description	Company A	Company B
<b>Plan for change</b>	To plan or make (substantially) new changes or reconfiguration	No formal plan	Based on CEO's plan
<b>Perception toward change</b>	To be better and/or more confident at making changes	Positive and confident	Positive and confident
<b>Change consistency</b>	To make relevant reconfiguration efforts	Return to old projects	From CEO's initiatives
<b>Change frequency</b>	To constantly make reconfiguration efforts	Become part of the job	Update according to the market trends
<b>Learning program and internal communication</b>	To promote knowledge sharing and/or have different way to spread the information within the organization	Recorded video training and hands-on training (more preferable)	On-demand online program and case study-based (more preferable)
		Open-door communication policy	Develop friendship
<b>OVERALL</b>		<b>Medium – High</b>	<b>High</b>

#### 4.4 Retained framework

Merging the inductive codes with the conceptual framework led to the retained framework with some extra items in the content of involved concepts (**Figure 10**). In general, by fulfilling the five dimensions of Lean Startup operationalization, the project's new knowledge can be spread within the team boundary via team-level individual and collective learning mechanism. Then, the knowledge outcomes are transferred to the organizational level through collective learning mechanism of social communication, thus contributing to the construction of required microfoundations for Transforming Capability.



**Figure 10 How team-level Lean Startup facilitates firm-level Transforming Capability**

To analyze the relationship between Lean Startup and Transforming Capability, each of the concepts was broken into two smaller blocks to put them on similar grounds. First, the Lean Startup methodology was assessed through the five operationalized dimensions. As the project members performed activities in line with these dimensions, all selected projects at the two companies were confirmed to be Lean Startup-based. A repeated process was formed from multiple practices, including (1) collecting information from customers about their needs (Customer insight); (2) forming those pieces of information to assumptions and expectations for testing (Hypothesis testing); (3) trying new strategies or artifacts (Iterative experiment); (4)

asking for stakeholder feedback (Validation); (5) codifying learning points into basic guidelines; and taking the feedback into a new development cycle (**Table 13**).

Besides this operating process, other inputs, such as members' attributes and leadership, showed to affect the project results. For example, without prior technical knowledge, Project A1 members were not able to optimize and constantly improve Service A1. Nevertheless, such complaints were not found in other project teams. The project leader's leadership skills, an individual attribute, were also important to recognizing the talents of other members and connecting them [AI-1]. This skill, however, would only be utilized when the project leader received complete decision-making power over the project. As a result, "power transfer" and "task force attributes" were added to the initial conceptual framework. They were also the representations of individual and structure microfoundations along with the five Lean Startup dimensions, which represented the process-interaction microfoundation.

Another part that belongs to the Lean Startup perspective is its outcomes. Theory-based codes were used to aggregate the representative quotes, thus, as expected, the positive outcomes related to "*attitudes*", "*alliances*" and "*knowledge integration*" were found in all four projects, except for Project A1. The reason behind the exceptional case could be found when comparing Project A1 with the remaining, thus indicating its limited usage of market research and experiments. In other words, the Lean Startup project team needs to follow the original principles to improve different project aspects. Specifically, while "*attitudes*" were found from questions about individual microfoundation, the other two were found from the "process-interaction" level. Regarding "*structure*" microfoundation, as Lean Startup-based projects led to power transfer and standardized guidelines, "*autonomy*" and "*standardization*" codes were identified.

Coordinating the influences of Lean Startup inputs to its outcomes were individual and collective learning mechanisms, i.e., repetition, reflection, teamwork and internal communication. Because the Lean Startup approach consisted of a Build-Measure-Learn (BML) loop, e.g., Project B1 and Project B2, it triggered the repetition mechanism. It was also an effort to experiment and test new hypotheses and/or technologies, thus encouraging reflection. Finally, working as a team toward the same goal, such as testing assumptions, and frequently asking for stakeholder opinions allows non-stop communication flow and interaction among members. Without this communication mechanism, such as in the case of Project A1, the knowledge flow may be blocked and kept within a few members, which limits the transfer of power and learning to new members.

From the side of Transforming Capability, as it is a strategic firm-level capability, the study focused on its lower constituent pillars, which are microfoundations. Therefore, signals for a strong Transforming Capability in the frameworks remained the same, including the act of planning for organizational changes, which are consistently and constantly, as well as the shared positivity of members, more official training programs, and engaging internal communication. Although Company A and Company B showed some improvement in these dimensions, those changes were not significantly different than before the projects. One possible explanation was the given situation at the firm, such as the typically decentralized structure and open-door policy at Company A. Hence, autonomy was already part of the organizational culture and did not change much after the Lean Startup projects. Another reason could be that it takes some time for the companies to absorb the influences of Lean Startup practices and change the organization as a whole.

Looking at Transforming Capability from the microfoundation level, the interlink between required elements and the capability is claimed by prior literature and was not a focus of this study. Instead, undergirding elements for strong Transforming Capability as suggested

by Teece (2007) were used as the bridge between a team-level effort to company-wide capability. Specifically, they are (1) decentralization and near decomposability, (2) co-specialization, (3) knowledge management and governance system. Putting into Felin et al.'s (2012) microfoundation definition, the above elements were an interplay among individual, process-interaction and structure. If separating is requests, the first and the third elements lean more toward "*structure*" microfoundation while the remaining is more about "*process-interaction*". In that case, as "*individual*" microfoundation tended to be missing, "managerial cognition and mindset" arose vividly. For instance, both CEOs from Company A and Company B have gained a more digital-favor mindset after the Lean Startup projects and planned to invest more in this dimension. With the prior emphasis on literature review, this aspect was added to the retained framework.

However, Transforming Capability microfoundations were just a lower ground for the strategic firm-level capability to be closer to team-level initiatives. Another bridge was needed to connect these microfoundations and Lean Startup practices. That bridge was confirmed in this study to be collective learning mechanisms, mainly verbal and non-verbal social interaction. Thanks to the emphasis on the stakeholder engagement principle via "*customer insight*" and "*validation*" activities, Lean Startup-based projects A2 and B2 have encouraged cross-functional collaboration through co-working, shared templates and specific project-focused meetings. Moreover, the content of learning traveling through that bridge was the knowledge from Lean Startup outcomes. Indeed, by coding the representative quotes twice, case-by-case and cross-case, Lean Startup outcomes were found to be relevant to the necessary constructing blocks of Transforming Capability.

## 5. Discussion

This research aims to address the following research question: “**How does team-level Lean Startup facilitate firm-level Transforming (Dynamic) Capability in SMEs?**” The results of this study propose a framework in which team-level Lean Startup facilitates firm-level Transforming Capability in SMEs from its undergirding microfoundations via organizational learning mechanisms (**Figure 10**).

To further investigate the research results and draw the connections between team-level practices and firm-level strategic capability, this section is going to discuss some implications (1) in theory and (2) in practice before coming up with some (3) recommendations. This information will not only enrich the current understanding of the core concepts and their relationship, but also provide a solid foundation for future research endeavors and practical applications in leveraging Lean Startup for transformative changes in SMEs.

### 5.1 Theoretical implications

The study presents the Lean Startup practices in SMEs, their outcomes and influences on Transforming Capability from microfoundation levels. While the detailed activities differ across contexts, their underlying characteristics can still be identified and evaluated according to some predefined aspects of Transforming Capability and the operationalization of Lean Startup. These findings also help to broaden the current knowledge and understanding of the relevant topics.

#### 5.1.1 Lean Startup practices and outcomes

The main contribution of the findings on Lean Startup is the confirmation of how (1) non-stop characteristics, (2) external environment and (3) outcomes of this methodology coordinate its influences on SMEs’ Transforming Capability. Despite not being directly claimed by the executors, the Lean Startup operationalization dimensions of all four examined projects reached medium to high levels, allowing them to be considered as Lean Startup-based projects. Therefore, details of these projects can be used to match with respective theories about Lean Startup methodology.

First, most of the examined project’s processes were in line with how van Kollenburg & Kokkinou (2021) defined Continuous Improvement. Hence, it was the effects of constantly working on a development project that helped the team to generate meaningful outcomes for the wider scope of the organization. Without this effort, the project would have little effect on organizational learning and capabilities. On another note, if Project A1 was assumed to be discarded upon the rejection of its initial hypothesis, this action can still be a help to organizational changes as it allows the rearrangement of the firm’s resources for other prioritized opportunities, such as Project A2. This implication once again stressed the effects of performing Lean Startup practices to facilitate Transforming Capability.

Second, since Lean Startup is a business approach to ensure market alignment, the external environment has a strong influence on its application and results. This element is similar to one of the theoretical propositions made by Gutierrez-Gutierrez & Antony (2020) that the “*dynamism of the environment*” will affect how Continuous Improvement Initiatives enable Dynamic Capabilities. According to the author, stable conditions lead to adaptive activities to retain the firm’s offering values while changing environments request firms to renew their resource combination for innovative values. In this study, it was the external force of the COVID-19 pandemic that caused the innovative actions and Lean Startup-based activities in Project A1 directly and Project A2 indirectly. Hence, their outcome services required more diverse organizational changes and transformations during the initial stage of operations,

namely applying new technologies. This finding implies that Lean Startup also consists of transforming activities within its small scale, thus possibly blending into Transforming Capability.

Finally, the research results suggest that common advantages of Lean Startup, such as stakeholder engagement, organizational collaboration and pre-launch testing (Lizarelli et al., 2021), can have further benefits to the organizations than its simple presence. Noticeably, because the case studies were small existing enterprises with niche market segments, they shared more similar characteristics with startups than large corporations, such as flexibility and flat structure. As a result, the benefits they received from Lean Startup implementation fit into the prior literature in the context of the new venture (Blank, 2013; Ries, 2011) rather than those about the challenges of Lean Startup application in incumbents (Chesbrough & Tucci, 2020; Felin et al., 2019). Furthermore, the Lean Startup-related results support Scheuenstuhl et al.'s (2020) claim that Lean Startup practices can improve the project's innovation process and success rate, which are similar to the demonstration of Transforming Capability. In this study, projects with higher Lean Startup criteria gained more organizational attention, user feedback and executor's attitude. Project B2 was a shred of evidence for this, hence leading to a business model transformation in Company B afterward (**Figure 9**).

### **5.1.2 Transforming Capability microfoundations and manifestations**

Among the inconsistent literature about Dynamic Capabilities and Transforming Capability, the study explicitly leaned toward some similar line of arguments on their antecedents or enablers, such as (1) continuous improvement efforts, (2) some specifically required microfoundations, (3) top manager's mindset, and (4) collective learning. Besides, the study also suggested (5) the possibility for SMEs to have strong Transforming Capability. While the results of Transforming Capability at two SMEs reconfirmed the limited literature on the same topic, they contribute to elaborate those papers.

First, this study focused on the one-way influences from Lean Startup to Transforming Capability for organizational transformation. However, there was a contrasting order of transformation events in the two selected case studies. In one SME, there was a business model reconfiguration that occurred before the Lean Startup-based projects, raising the "*chicken and egg problem*" when seeking a causal relationship. It would also be the reasons why there are three different directions in the research about these concepts' relationship, arguing whether Continuous Improvement Initiative is an enabler, a result or a part of Dynamic Capability (Gutierrez-Gutierrez & Antony, 2020). Among these three argument lines, the findings of this study mostly contribute to the first one.

Second, by using Teece's (2007) proposed microfoundations as predefined codes, all three of them are confirmed along with an undeniable factor to construct Dynamic Capabilities, i.e., managerial cognition and mindset. The finding of these microfoundations in the study also implies the positive effect of Lean Startup outcomes on these concepts, and in turn allows the study to confirm that Lean Startup facilitates Transforming Capability in SMEs by fostering its required microfoundations, including decentralization and near decomposability, co-specialization strategies as well as knowledge and governance management system.

Third, though being seen as the root of Dynamic Capabilities, the re-adding of the "*managerial cognition*" theme during the search for affected firm-level elements provides some extra implications. One is the confirmation of the vital role of top managers in building Dynamic Capability (Teece, 2023). Another suggestion is the possible direct influence of Lean Startup on Transforming Capability without going through its constituent blocks like how Gutierrez-Gutierrez & Antony (2020) proposed the impacts of Continuous Improvement Initiatives on Dynamic Capabilities.



Fourth, similar to previous literature (Gutierrez-Gutierrez & Antony, 2020; Wilden et al., 2013; Teece, 2007), this study confirms the importance of knowledge building and sharing to Transforming Capability development by highlighting the knowledge resulting from Lean Startup practices as the content for firm-level collective learning. Although many papers considered the learning contents in this study as the influencing mechanisms (Bojesson & Fundin, 2021; Gutierrez-Gutierrez & Antony, 2020), it was not a conflict to this study but rather a detailed description of the learning mechanism. In other words, “*learning*” is a general term that can ensure the coverage of multiple elements that would possibly emerge within the Lean Startup-based project. As Pavlou & El Sawy (2011, p. 245) stated, Transforming Capability requires the integration of “*individual knowledge and patterns of interaction into a collective system*”. Without the collective learning mechanism or work-related cross-border communication, the new obtained skills and knowledge obtained from Lean Startup-based experiments would be isolated in the project without further development. This was the situation of Project A1 in Company A.

Finally, using a mix of “*activity-based*” (Wilden et al., 2013) and “*outcome-oriented*” (Kump et al., 2019) dimensions to collect and analyze the primary data, the study found strong Transforming Capability in both cases. Specifically, the respondents’ views on “*organizational changes*” were also in line with how the scholars defined “*change-related activities*”, ranging from new offerings in the business portfolio, and new geographical branches, to the implementation of different organizational working methods, structures, roles or policies compared to the past. The positive evaluation of Transforming Capability also suggests that SMEs can also have relatively strong Transforming Capability and Dynamic Capability in general, which is in line with the discussion in Kump & Schweiger’s (2022) paper.

However, the findings provide mixed responses to the claims of Grimaldi et al. (2013). In particular, the SMEs in this study followed the typical “*learning by doing*” for product/service development, having little market research and validation for the Lean Startup-based projects. On the other hand, the selected cases’ evaluation showed that SMEs’ small size and rather concentrated ownership helped them to be flexible for internal activity reconfiguration with a narrow focused “*entrepreneurial formulae*”, thus developing some strategic competitive advantages, like Service B1 of Company B. This finding contrasts with the prior literature that said SMEs tend to “*follow inappropriate strategic paths*”. One possible reason for this mixed response is the context-specific characteristic of Dynamic Capabilities among SMEs (Weaven et al., 2021), which can range from micro-size firms with less than 9 employees to medium-size enterprises with nearly 250 employees and 50 million euros in turnover (European Commission, 2020).

### **5.1.3 Organizational learning mechanisms**

To the best of the author’s knowledge, this study is one of the first research that directly looks at the relationship between the practices of Lean Startup and the microfoundations of Transforming Capability through the lens of organizational learning. The study demonstrates not only the outcomes of Lean Startup implementation in an existing SME context, but also the bridge where these distinguishing mindsets, behaviors, processes, interactions and structures spread into the organization’s scope. In a similar but wider quest, Fainshmidt & Frazier (2017, p. 559) claimed that “*The system of social exchange within the firm shapes collective learning and action and, therefore, requires more attention within the dynamic capabilities view.*” Therefore, this study contributes to this effort, confirming two main parts of the knowledge evolution, within the project and across the organization.

In general, the research results confirm that Lean Startup facilitates the microfoundations of Transforming Capability in SMEs by (1) forming the content of learning



through the team-level learning mechanisms, i.e., reflection and repetition, among the project members; and (2) transferring the content of learning through firm-level communications, i.e., verbally and non-verbally, among the organizational members. These results were also in line with their original literature that individual knowledge evolves to a high-level collective form of organizational learning through social interaction and communication by Kump et al. (2015).

Focusing on the unique outcomes of the Lean Startup approach, almost all propositions by Gutierrez-Gutierrez & Antony (2020) can be confirmed, especially the three extracted groups of influences that were used as predefined codes for data analysis, i.e., (1) employee willingness and adaptation towards changes, (2) development of strategic partnerships and (3) achievement of knowledge integration upon efficiency, scope and flexibility. Besides, the study also found significant emphasis on two other categories proposed by the same authors, namely (4) specialized leading positions and (5) standardization. Although most prior authors (Gutierrez-Gutierrez & Antony, 2020) consider the above factors and similar ones, such as teamwork (1997 et al., 1997) or “*organizational climate for trust*” (Fainshmidt & Frazier, 2017) as antecedents of Dynamic Capabilities, these concepts are seen as contents of organizational learning in this research. Respectively, the findings from this study show that organizational learning was the mechanism carrying the individual perception, alliances, integrated knowledge, autonomous structure and new standards from a team-level to a firm-level grounds. Without social communication across departments, these outcomes would only stay within the project boundary, not spreading to the company-wide.

Looking at the two stages of organizational learning flow one by one, since a project task force consists of a group of people, collective learning mechanisms have already taken place within the team level. Specifically, within the project boundary, both individual and collective learning mechanisms interplay to develop new “*behavioral outcomes*” for a particular member and transfer those lessons learned to the whole group (Fiol & Lyles, 1985). First, if Lean Startup principles are followed, the approach itself is a constant trigger for project members to perform repetitive tasks, build up new routines and improve task efficiency for further knowledge integration (Kump et al., 2015). Second, although the study did not dig deeply into the psychological aspects, it can still be seen from the analysis that Lean Startup practices can give a cue for individual reflection. As suggested by Knipfer et al., (2013), those cues include any different project elements compared to those in the firm’s normal works. For example, they can be customer needs from “*Customer Insight*”, usage of new technologies from “*Iterative Experimentation*”, and communication channels and team interaction from taking feedback for “*Validation*”. Third, as soon as a member works or interacts with another member, for example, by sharing digital artifacts or joining group meetings, they communicate with each other and co-construct the collective knowledge. Due to the high emphasis on stakeholder engagement in Lean Startup methodology, there is an express pipe for external knowledge to flow into the project team’s collective knowledge. Therefore, the above learning mechanisms explain why selected projects that met Lean Startup operationalization had better outcomes regarding both quantity and quality.

On an organizational level, because external members are not involved in the implementation of Lean Startup, social processes of interacting and communicating are necessary to initiate a loop of co-evolution (Kump et al., 2015). By closely engaging with various stakeholders as an input activity and forming alliances as well as standards as outcomes, the Lean Startup methodology has already consisted of necessary communication mechanisms for knowledge co-evolution. In a reverse direction, without cross-border communication, Lean Startup’s continuous improvement effort would also be hindered. The example was witnessed in Project A1, when there was a lack of both verbal and non-verbal communication between the internal and external members. This interdependence of knowledge integration and

communication also highlighted the knowledge-related processes in any kind of organizational activities (Lee & Yoo, 2019), flowing from Lean Startup practices to Transforming Capability manifestation. As Pavlou & El Sawy (2011) and Teece (2012) mentioned Transforming Capability, as a Dynamic Capability, is formed by the integration of individual knowledge into a collective and strategic form. The implications of the collective learning mechanism in this study help to elaborate the prior scholars' statements more straightforwardly, suggesting "*organizational learning*" as the pathway to developing organizational Transforming Capability.

## 5.2 Practical implications

The findings of this research shed light on some practical implications and critical success factors for the adoption of Lean Startup principles to facilitate Transforming Capability in an SME. Specifically, the study identifies some best practices in (1) implementing a Lean Startup-based project and (2) managing a learning environment to facilitate organizational reconfiguration. These insights would offer guidance for managers to implement Lean Startup methodology effectively and embrace transformative change for sustainable competitiveness.

### 5.2.1 Lean Startup practices

Since the study looks deeply into the differences between the internal works of "*a task force team*" and those at the firm level, it emphasizes some practical management practices for SMEs at large. These Lean Startup practices, which are classified into five operationalized dimensions (Harms & Schwery, 2020), and two other aggregated inputs, can serve as a strategic approach to help firms facilitate their Transforming Capability and effectively structure reconfiguration or innovation projects.

First, company managers or project leaders can leverage the Lean Startup principle of "*Hypothesis Testing*" to facilitate the cognition-related microfoundations of Transforming Capability. By continuously forming and testing assumptions, firms can gather data-driven insights to make comparisons between their expectation and the actual outcomes, which possibly reveals some discrepancies that can trigger a reflection process for building new knowledge to modify existing schemas (Kump et al., 2015). This approach will not only help practitioners validate their brainstorming ideas and identify viable paths for reconfiguration, but also promote co-evolution learning cycles among the group of members who are aware of the falsifiable assumptions. In fact, Lean Startup projects can be a transforming effort themselves as they bring (substantially) new elements, which can be a distinct delivery method like the case of Service A1 or a unique marketing method in the case of Service B1, into an assessment.

Second, practitioners can gain a deep understanding of stakeholders' needs and preferences through "*Customer Insight*" activities, such as conducting market research and collecting stakeholder opinions. However, in the context of established SMEs with limited resources, the market research attempts can be as simple as reaching out to organizational members and existing customers and inviting any committed ones to engage in the development project. An example practice was how the Project A2 team collected information about the challenges and needs of different parties in the business relationship. By integrating stakeholder feedback early in a development or innovation project, firms can quickly refine their transforming strategies to align with the envisioned outcomes and user expectations.

Third, as the Lean Startup approach emphasizes experimental learning, practitioners are encouraged to perform the "*Iterative Experimentation*" dimension to utilize Lean Startup benefits. As observed in Project A1 of this study, the stop of small-scale experiments also put a stop to the whole project, holding back the project from reaching its potential. Learning from

this shortcoming, in shaping innovation projects, executors can seek information about the market and technology as well as experiment with trial-and-error processes in various aspects of the project, such as designing or marketing. These activities would enable the project team to refine strategies based on external real-time situations, which is one of the goals for Transforming Capability – maintaining evolutionary fitness and profitability.

Fourth, in pursuing a new product development project, project leaders should not neglect the gathering of statistical and especially reflective data for “*Validation*”. Data-driven decision-making closely aligns with the “*knowledge management*” microfoundation and “*learning program*” of Transforming Capability as it provides a solid foundation for steering the reconfiguration or reconstruction journey. Visual metrics are also evidence for the project supervisors and managers to identify areas of success and those that require further refinement, thus modifying the initial hypothesis and adapting their strategies accordingly. For example, systematically collecting and analyzing data related to project milestones and outcomes have helped the Project B2 team to scale up Service B2 itself and expand to other business fields. With Company A, if the company decides to restart Project A1, it is recommended to take the collected validation data seriously and update Service A1 accordingly. Otherwise, the company should consider outsourcing rather than doing everything on its own.

Fifth, the “*Learning*” dimension of a Lean Startup-based project is the key to harnessing organizational transformations. According to the “*Learn*” stage in a Build-Measure-Learn (BML) loop, the project team would analyze collected data from “*Customer insight*” and “*Validation*” to decide whether to continue, escalate or discard the tested hypothesis. Therefore, it can avoid being overly attached to initial assumptions and be more willing to explore alternative paths that emerge from experimentation. Furthermore, by sharing experiences, codifying knowledge into written documents and promoting self-learning, Lean Startup-based projects can embrace a learning culture where members can communicate openly, promote cross-functional learning and embrace individual flexibility and adaptation respectively. For example, standardization has helped both companies to shape their formal guidelines and utilize lessons learned for scaling up.

The other two important inputs for a successful Lean Startup-based project are team member attributes and power transfer. It is necessary that the project leader and members have some knowledge and relevant skills regarding the development projects. Otherwise, they would need to spend much time and energy just to get themselves familiar with the completely new tasks like the case of Project A1. In a small-sized company with limited resources and a few key offerings, formal training is not required. In that case, the best way to spread the knowledge is case studies or on-the-job training by the more expertized or previous executive members to the new ones. In addition, autonomy is also another critical success factor of a Lean Startup-based project as it will allow the members to quickly engage in trial-and-error experiments without waiting for formal approval from the top managers. In another scenario, when a new idea is proposed by an employee, it is better led by that person and another manager in the focused field of the project.

Noticeably, as one Lean Startup-based project will lead the way for another one, it is a great motivation for existing SMEs to implement any kind of project with a Lean Startup approach to switch on the chain of being more dynamic. In fact, through checking the documents from the two case studies, there was almost no significant service development project that had taken place before the examined ones. Meanwhile, comparing recent movements, the later projects in both companies better met Lean Startup dimensions than the previous one, and also received greater appreciation from the organizational members. Furthermore, there was evidence that Lean Startup principles helped the project team and top

managers to explore and exploit the opportunities to facilitate other two sub-categories of Dynamic Capabilities, i.e., Sensing and Seizing Capabilities. The sources for new business chances can be varied, ranging from individual ideas and stakeholder feedback to integrated knowledge upon task efficiency, application scope and context flexibility.

### 5.2.2 Organizational learning mechanisms

It is found from this study that outcomes of Lean Startup-based projects foster the construction of required blocks of Transforming Capability (microfoundations) through organizational learning mechanisms. Hence, to maximize the influences of Lean Startup-based projects, practitioners do not only need to ensure the implementation of Lean Startup methodology but also need to promote an environment for organizational learning mechanisms to take place. Specifically, the occurrence of (1) cognitive reflection, (2) repetitive behaviors, (3) verbal communication and (4) non-verbal communication are required for knowledge to evolve from individual to collective form and also from team-level to firm level (Kump et al., 2015).

First, to ensure the repetition for individual learning mechanisms within the project, which is also the background for skills and habits to be formed and improved, commitment is needed to maintain the continuous improvement cycle of a Lean Startup-based project. Commitment is necessary in the process of reconfiguration because committed members are willing to devote more time to projects that are aside from their normal responsibilities. This idea was also stated by [AI.07], *“Most of the time, there's somebody not doing a good job. It's not because of they're lazy or bad, it's because it's something they don't enjoy doing.”* That to say, almost all mechanisms come down to human resources, including the ability, attitude and interaction of each individual, thus requiring great care from the company's top managers. Commitment can be enhanced through a trust-based culture, close relationships with other team members and an aligned mindset with the top managers.

Second, as reflection is triggered when there is a discrepancy, new ideas should be stimulated and welcomed in a product/service development project. Hence, two noticeable ways that have brought external knowledge into the project boundary were the presence of relatively new staff, e.g., Project B2, and the application of substantially new technologies, techniques, tools or methods, e.g., Project A1.

In the case of Company B, several relevant hypotheses for the organization to try out were brought up by new talents who have already had some working experience in the same sector or connection with the company. In other words, hiring new members is more likely to enhance the firm's transformation if they have already had some expertise and/or have worked with the firms before, for example, company's partners, collaborators or interns. The advantages that new members bring to the scene support the relevant theories of external knowledge, which *“has a key contribution to enhance open innovation”* in SMEs (Asad et al., 2020). From a reverse perspective to adding new members, reducing staff is a risk to an SME. With a small company, each person has such multiple tasks that removing them equals a big loss of knowledge and skills. If a change in human resources needs to take place, the responsibilities should be transferred gradually to another one. Otherwise, they will become completely unfamiliar tasks for the replacement, causing confusion and disinterest.

Another way to foster individual and collective reflection is by introducing new technologies, techniques, tools or methods into existing SMEs. Despite the service sector relies heavily on human interaction, technology has great impacts on organizational learning and helps SMEs compensate for their limited resources in scaling up. The integration of technology enhanced the efficiency of service operations and offered valuable insights into customer preferences, such as the social media tracking in Project B2. However, embedding technology

into the organization may come with a risk. If the new tools are too unfamiliar and far away from what the firm has been doing, it can cause great confusion among the project team members and generate little sustainable outcomes like the case of Project A1. The most treasured learning point from that project turns out to be the digital mindset, which may not be as appreciated if the company was used to high-tech earlier.

Third, verbal communication for knowledge evolution can be enhanced through the act of codifying knowledge or standardizing processes. The outcomes of codification and standardization processes would include written documents, such as guidelines and planning templates, periodic meetings and training programs. While written guidelines and templates would leverage the advantage of Lean Startup methodology in reducing the wasted time by setting a working baseline, periodic meetings and training allow individuals to verbally externalize and discuss their knowledge with others. In addition, to apply the idea from the experiments to the whole firm, the project is suggested to have a project member acting as the intermediary to coordinate the information flow in and out of the project team. Another option is to invite members from different functional groups to work on their relevant majors in the project.

Finally, collaborative and autonomous structures, which can also result from the Lean Startup approach, are necessary to foster non-verbal communication for knowledge evolution. Collaboration is a critical success factor for a Lean Startup-based project as well as a smooth co-evolution of learning content to the organization level. By fostering a collaborative culture, organizational members are encouraged to keep an eye on different available projects in the company, work together across functions and utilize their strengths to support other people's works. Similarly, autonomy is believed to ease the hierarchy barrier among members. Therefore, an autonomous structure would possibly grant each individual more responsibilities and in turn encourage them to look out for support from different sources, including collaborating or observing other team members. These activities are different forms of non-verbal communication. As both alliances and autonomy are among the Lean Startup outcomes, they tend to create a self-evolution cycle for the Lean Startup approach to reinforce its influences on different aspects of an enterprise.

### **5.3 Limitations and Future research**

Based on the results and implications of this study, this section encompasses the (1) identified limitations of this research, and (2) research directions for further studies. In light of this information, scholars may overcome the limitations that this research faced and offer more nuanced insights into how Lean Startup principles drive Transforming Capability in different contexts of SMEs. Similarly, by considering the practical recommendations, businesses can leverage Lean Startup principles effectively and navigate their organizational strategies in the near future, thus enhancing their development projects and staying responsive to the market.

#### **5.3.1 Limitations**

With the scarcity of literature on the same topic, namely how the Lean Startup approach influences Transforming Capability, this research is highly exploratory in nature. Although it is based on some relevant papers to pre-defined the codes, it emphasizes discovering more insights. Therefore, the study comes with certain limitations, including (1) case selection, (2) data collection, (3) interpretation, and (4) timing bias. Acknowledging these limitations encourages a more comprehensive understanding of the topic and further investigation into Lean Startup practices and Transforming Capability in SMEs. Acknowledging these limitations encourages a more comprehensive understanding of the topic and further investigation into Lean Startup practices and Transforming Capability in SMEs.

First, one of the largest biases of the study lies in case selection. Particularly, the case studies examined in this research may not fully represent the entire population of SMEs. Both of them are very small companies, with less than 25 full-time employees, working in the service sector. They also share the management structure where sales depend on external short-time collaborators. These common characteristics of a small number of case studies might limit the generalization of the findings to SMEs, especially those in more mature industries or different contexts where the need for continuous change may not be as prevalent.

Second, despite efforts to maintain objectivity during the data collection process, there might have been some level of bias created due to the sources of information, which were mostly direct from the companies, such as public websites, marketing materials or employees. Companies tend to showcase their successes and positive aspects, leading to an incomplete representation of the actual challenges and outcomes of adopting the Lean Startup methodology. Furthermore, the interviewer's question phrasing, interviewees' misunderstanding of the questions and/or the interviewees' inclination to present positive aspects of their current company could influence the data collected and analyzed.

Third, there could be some risks in the processes of translation and interpretation. The research involved translating data from another language to English for one of the case studies. Besides, poor internet connection and other background noise during the interviews may affect the recording quality, thus blurring some information without notice. Therefore, these issues possibly caused language-related discrepancies in later pattern-matching analysis. Abstract terms and misunderstanding between “*changes*” and “*transformation*” by the company members may introduce some misinterpretation. Because changes in ordinary capabilities, such as day-to-day management, and microfoundations may not always lead to changes in Dynamic Capabilities (Wójcik et al., 2015), “changes” perceived by respondents and researchers may not completely represent the true state of Transforming Capability.

Finally, this study may consist of some timing bias in terms of point of time and length. The projects themselves and the research were conducted during or after the peak period of the COVID-19 pandemic. Such external events could have a significant impact on the firm performance and may not fully reflect or ensure their Transforming Capability on usual occasions or in the long run. Moreover, the first project at each company was implemented a while ago, thus the interviewees' recollections of detailed processes or experiences might have faded. In other words, memory recall bias could lead to incomplete or inaccurate information. Meanwhile, with the second project, as it took each participant around 2 hours straight to finish all concerning aspects in one interview, the respondents' mental status and answer quality may drop in the later part of the interviews.

### **5.3.2 Future research**

In light of this study's limitations, future research should consider (1) modifying the case selection, (2) changing the data analysis method, and/or (3) zooming into one of the concerned aspects of the conceptual framework. By considering these future research ideas, scholars can enhance the understanding of how Lean Startup facilitates SMEs' Transforming Capability and offer detailed recommendations for practitioners in adopting Lean Startup principles.

Firstly, researchers could modify the case selection approach by either expanding it horizontally to other sectors or digging deeper into one specific industry. The case studies in the former approach shall be SMEs from mature business fields, such as manufacturing. This approach would enable a more comprehensive comparison of Lean Startup adoption and outcomes across diverse sectors. The latter recommendation entails the comparison among competitors in the same field, which also includes companies with no Lean Startup-based



projects. Each of these sampling techniques will provide a detailed understanding of Lean Startup's effects on Transforming Capability.

Secondly, while the case study method has been the most common approach for Dynamic Capabilities in the SME context (Zahra et al., 2006), researchers could consider adopting a different data analysis method, such as quantitative research. Moving beyond the common methodologies would not only strengthen the findings of this study and previous literature but also yield fresh perspectives and uncover hidden patterns in how SMEs leverage Lean Startup for Transforming Capability.

Lastly, future research can zoom into specific aspects within the conceptual framework proposed in this study. For example, scholars with specialization in the Financial and Accounting department may want to focus on the application of Lean Startup principles in their specific department or how Lean Startup-based projects in other departments affected the microfoundation of Transforming Capability at the department level. Alternatively, researchers could concentrate on one required constructive microfoundation as Teece (2007) suggested, e.g., co-specialization strategies, to gain insights into how these characteristics of the Lean Startup project team contribute to the firm-level Transforming Capability of SMEs.

## 6. Conclusion

The research aims to identify the implementation of the Lean Startup methodology as well as the manifestation and internal antecedents of Transforming Capability (Reconfiguring Capability) at existing SMEs. The central research question is **“How does team-level Lean Startup facilitate firm-level Transforming (Dynamic) Capability in SMEs?”**

To address this question, a qualitative analysis of four Lean Startup-based projects in two small companies was conducted. Using the three microfoundation levels (i.e., individual, process-interaction and structure) as the starting point, the research indicates a positive effect of the Lean Startup approach on the microfoundations of Transforming Capability via an organizational learning process. The content of learning that was transferred and evolved in this process are the outcomes of Lean Startup implementation, including attitudes, alliances, knowledge integration upon efficiency-scope-flexibility, autonomy and standardization. Through verbal and non-verbal communication, the above team-level knowledge gradually constructs the undergirding blocks for strong firm-level Transforming Capability, namely managerial cognition, decentralized and near decomposable structure, co-specialization strategies, knowledge management and governance system.

Within the project, the higher the different dimensions of Lean Startup’s operationalization, the more likely that a project would lead to responsible behaviors, cross-functional teamwork, diverse applications, power transfer and standardized processes within a team boundary. These distinct outcomes then spread across the SMEs on an organizational level. For instance, a committed attitude and knowledge integration is shared with the top management via direct involvement and meetings, fostering an open mindset toward digitalization, optimization and monetization. Additionally, by working together across borders and introducing new partnerships into the project, co-specialization strategies tend to receive more attention. Codified documents upon Lean Startup-based integrated knowledge also shape the management system for collective knowledge and governance. Finally, it was the autonomous structure in these projects in combine with the stakeholder engagement principle of the project that encouraged the organizational structure to move towards decentralization and near decomposability.

In theory, this study supports the existing literature about the practices of Lean Startup and Transforming Capability in SMEs while enlightening the potential connections between the two concepts. Beyond the key findings, there are some other noticeable implications, such as the push impact of the Lean Startup-based project and the effects of the external environment. Therefore, to reap more insights into the same topic, future studies could address some limitations of this research by expanding the sampling scope, changing the analysis methodology or zooming into a single link in the suggested relationship. In practice, practitioners, especially the two selected case studies, should consider (re)starting or continuing to implement Lean Startup principles in product/service development while paying attention to the organizational human resources and technology application.

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