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ABSTRACT

'Fail fast and learn fast' is a common principle advanced to quickly grow and scale startups and SMEs. However, the literature is lacking detailed insights into how such learning processes are organized. The paper aims to investigate how knowledge-intensive SMEs learn from failures through organizational learning processes. Case studies of three high-tech SMEs that operate in a highly dynamic context are presented. The findings are summarized in the learning from failure process, which includes three phases, each with underlying sub-activities and principles: 1) failure recognition, 2) interactive sensemaking, and 3) organizational adaptation. We summarize our insights into a framework disentangling how SMEs succeed and fail in learning from failures. We contribute to prior literature on organizational learning in an SME context by explicitly focusing on knowledge-intense SMEs and practices that enable effective learning from failures.

Keywords: *SMEs, Startups, Organizational Learning, Mistakes, Failure, Success*

INTRODUCTION

'Fail fast and learn fast' is a common business principle to quickly grow and scale start-ups and small and medium-sized enterprises (SMEs) by embracing failures as a crucial part of a learning process. The importance of learning from failure is particularly evident in the context of knowledge-intensive SMEs operating in high-tech industries. Such firms operate in highly dynamic and volatile industries where constant renewal and adaption to market changes are critical (Alvesson, 1995). In addition, failure is an inherent characteristic of a fail fast and learn fast mindset in which firms allow their employees to fail to learn from it and

reconfigure their organization processes accordingly (McGrath, 2011). However, failure is still not well-understood and conceptualized in the literature (Friend et al., 2019), with learning from failure being far from automatic. Failure can demotivate, lead to conflicts, and create a negative reputation of a company. Thus, there is a need for finding ways of conceptualizing failure as a source of learning and reconfiguration.

First, we argue that there is a need *to understand a more nuanced perspective on failure*. This is due to prior studies on learning from failure being focused almost exclusively on learning from complete and detrimental failures (e.g., Cope, 2011; Mayr et al., 2021; Politis & Gabrielsson, 2009). The problem with such a perspective is that "understanding of learning becomes limited to two performance extremes—extreme success and failure—while most organizational experience falls somewhere in the middle" (Kim & Miner, 2007, p. 688). In this study, we propose that both failures and near-failures provide important learning opportunities for firms.

Second, *knowledge-intensive SMEs' perspective on learning from failure needs further investigation.* Most studies on learning in SMEs assess the role of knowledge creation and transfer processes on task performance, while the research stream dealing with learning from failure experiences is still under-researched (see, e.g., Haunschild and Rhee, 2004; Baum and Dahlin, 2007; Madsen and Desai, 2010; Desai, 2015). This paucity of knowledge is especially important since knowledge-intensive SMEs operate in dynamic contexts driven by constant change, turbulence, and a need for learning and innovations.

Third, there is a *need for a more processual understanding of how knowledge-intensive SMEs can learn from failures through organizational learning processes*. Only recently, a limited number of empirical studies have started to explore learning from small failures in experimentation in large firms, where the failure is perceived as an integral part of learning (Khanna et al., 2016; Friend et al., 2019; Friend et al., 2020). These rare studies examine innovations as the outcome of learning from failures, in which an "intelligent failure mentality" is being embraced and encouraged (Friend et al., 2020, p. 113). However, these studies discuss specific mindsets to be applied in exploratory work in R&D and are not primarily focused on the organizational learning processes (e.g., Crossan et al., 1999). In fact, to the best of our knowledge, no studies have explicitly studied and defined organizational learning from failure processes.

Therefore, this study investigates *how knowledge-intensive SMEs learn from failures through organizational learning processes*. To answer this question, we build on in-depth case studies of three knowledge-intensive SMEs and 42 interviews. These SMEs operate in a highly dynamic context where quick adaption to changes, failures, and learning are natural modes of practice. Our findings are summarized in the learning from failure process, which includes three phases, each with underlying sub-activities and principles. Phases include 1) failure recognition, 2) interactive sensemaking, and 3) organization reconfiguration. Thus, this study contributes to prior literature on organizational learning in SMEs by explicitly focusing on knowledge-intensive SMEs and their 'fail fast and learn fast' mentality.

THEORETICAL BACKGROUND

This study seeks to contribute to an increased understanding of how organizations, specifically SMEs, learn from failure. To further advance this research agenda, we reviewed

the literature on learning from failure. Our review shows that this literature is still quite nascent and there has been a limited systematic examination of the processes of learning from failure. Specifically, we only detected a small amount of conceptual and empirical studies being done on the topic and even fewer focusing on SMEs. However, this emerging literature offers several important insights and segments of knowledge.

First, there is a different conceptualization of failure which may hinder the advancement of the literature on learning from failure. For example, failure has been studied with different connotations, such as being negatively perceived as a termination of a business (e.g., Politis & Gabrielsson, 2009), a firm's bankruptcy (e.g., Mayr et al., 2021), end of a business relationship (e.g., Arino & De la Torre, 1998), as failure in experimentation (Khanna et al., 2016), or more positively as 'intelligent failures' (McGrath, 2011; Sitkin, 1992). Since we are interested in organizational learning from failure, we are not focusing on venture failure (e.g., bankruptcy). Instead, we follow Dahlin et al. (2018) and others in adopting a broader definition of failure within business activities as *a departure from the desired results and goals of the firm* (e.g., Dahlin et al., 2018; Sitkin, 1992). This broader conceptualization illustrates that failures can result from a variety of mistakes and errors, including improperly carried out procedures and tasks (Dahlin et al., 2018). They may be preventable or unavoidable, deliberate or accidental. They can include different organizational processes, as well as human actions (e.g., Ramanujam & Goodman, 2003). Thus, regardless of the type or source of failure, it can provide an important learning opportunity (Dahlin et al, 2018; Edmondson, 2011; Friend et al., 2019).

Second, learning from failure has multiple benefits, as discussed in the literature. Failure triggers sensemaking, learning, and constant organizational adaptation (Weick et al., 2005), which is an essential part of a firm's productivity and survival. As Edmondson (2011, p. 16) argues: "Those that catch, correct, and learn from failure before others do will succeed. Those that wallow in the blame game will not." Learned lessons can serve as a knowledge source on what to avoid in the future, they can bring solutions to similar challenges and provide the space to develop different business strategies (Kim & Miner, 2007; Miner & Haunschild, 1995; Miner et al., 1999). Other studies have described the benefits of learning from failure as wake-up calls that bring insights into practices that do not work well, that demonstrate behaviors to avoid, or offer templates that a firm can employ to address similar issues in the future (e.g., Kim & Miner, 2007; Miner et al., 1999). Moreover, lessons from failures are beneficial for modifying organizational practices, to improve the performance of the firm in the long run (Dahlin et al., 2018). Besides, failure is considered a crucial part of experimenting and innovating, which leads to firsthand experience, and is helpful for the firm experiencing it, as well as others (Cope, 2011; Mayr et al., 2021). Indeed, recent literature suggests embracing failure early, as the main source of learning and the basis for the development of a fail fast and learn fast mindset (Friend et al., 2019, Friend et al., 2020; Khanna et al., 2016, McGrath, 2011).

Third, we find relatively little empirical evidence on the processes of learning from failure. While some studies claim a processual perspective on learning from failure, we find no study that would clearly delineate the phases and core activities of learning from failure processes. For example, the study by Kim and Miner (2007) explored learning from near-failure and failure experiences of other banks, as important components of failure-related learning. However, they did not conceptualize the actual process of learning, its steps, or its outcomes. In addition, the study by Friend et al. (2019) focused on the process of learning from an

individual salesperson's failure (e.g., rejection from a customer) in large firms. Although it relates to learning from 'intelligent failures', and encourages fail fast mindset, the study focuses on the sales process only, which is a limited view when examining start-ups and SMEs, due to their limited resources (where a single person has several roles) and fast-changing environments, where novel challenges occur almost daily. Overall, these nascent studies indicated a positive outcome from learning from failures, but they did not conceptualize a processual view on learning from failure in SMEs, especially knowledge-intensive SMEs in a highly dynamic and fast-paced market context.

Towards a Process View on Learning from Failure

This study builds on the concept and literature of organizational learning (Argote, 2021; Crossan et al, 1999), which refers to the process of creating, retaining, and transferring knowledge within an organization (Crossan et al., 1999). In particular, we argue that adopting an organizational learning perspective on failure allows further detailing of the processes of change, learning, and refinement in complex and uncertain contexts. Organizational learning, therefore, presents a promising perspective to increase understanding of the processes and practices of learning from failure in knowledge-intensive SMEs. To conceptualize that process, we build on the foundational processes of organizational learning: intuiting, interpreting, integrating, and institutionalizing (Crossan et al., 1999), by integrating it with insights from the literature on learning from failure.

In an initial phase, the learning process starts with *intuiting*, the preconscious recognition of the pattern and possibilities inherent in a personal stream of experience (Weick, 1995: 25). To progress with learning, *interpreting* underlying patterns of organizational experience is required (Crossan et al., 1999), by analyzing the failure and its causes (Edmondson, 2011). Arguably, a critical function is sharing and explaining an insight into the failure, to oneself and others. For example, interpreting, sharing, and discussing the failure with team members and trying to make sense of its underlying dimensions, means, and the wisdom that it brings, becomes crucial for learning (Cannon & Edmondson, 2005). *Integration* of new understanding within groups and organizations (Crossan et al, 1999) also requires failures to be socially constructed and integrated through interaction with larger groups of stakeholders (Schou et al., 2022). Integrating new learning from failure can thus initially be ad hoc and informal and require coordinated action to make learnings institutionalized. *Institutionalizing* is the final component of the learning process and requires concrete actions for embedding learning that has occurred by individuals and groups into the organization, as a part of its systems, structures, procedures, and strategy (Crossan et al, 1999). This requires defining tasks and putting in place organizational mechanisms to ensure positive change. Thus, institutionalizing learning from failures is critical to a fail fast and learn fast mindset and aids in the facilitation of organizational change and renewal.

METHODOLOGY

This study aims to investigate *how knowledge-intensive SMEs learn from failures through organizational learning processes.* To address this aim and generate theoretical insights from empirical data, the study implements a qualitative, in-depth, case study approach (Yin, 1994) of three knowledge-intensive SMEs combined with inductive reasoning (e.g., Eisenhardt & Graebner, 2007).

The cases used in the study were selected purposefully, to illustrate different viewpoints on the phenomenon, and to provide validity to the empirical findings (Creswell & Poth, 2017). The primary data was collected through 42 semi-structured interviews with CEOs, owners, as well as operational and business development managers of the case companies. As researchers have a close connection with the SMEs, interviews were collected throughout years of collaboration, and open discussions about failures were encouraged. This resulted in the possibility to collect sensitive data on failures, needed to portray the underlying aspects of the organizational learning processes. In addition, semi-structured interviews with open-ended questions enabled respondents to freely share their stories and narratives without pre-set limitations (Creswell & Poth, 2017).

FINDINGS

This section presents the findings that emerged inductively. In explaining how knowledge-intensive SMEs engage in learning from failure, this study defines phases and core activities for a process for learning from failure. Our data analysis identified three phases of the learning from failure process, each with underlying sub-activities and principles: 1) failure recognition, 2) interactive sensemaking and 3) organizational adaption. After describing the phases separately, a process framework specifying the interrelationships among the aggregated dimensions and themes is presented.

Phase 1: Failure Recognition

Naturally, the first phase of learning from failures is failure recognition. This relates to the ability and mindset to detect and recognize failure so that it can be dealt with, and similar issues avoided in the future. In this domain, we identify two sub-activities: *identifying failures* and *embracing failures as learning opportunities.*

As our informants stated, the learning processes begin with the *identification of a failure.* This requires openness to identify failures in current internal business activities, but also past failures, and even failures from competitors to learn from. As our data show, a key trigger for identifying failures is active monitoring of business performance deviations, which can allow identifying internal failures that entrepreneurs or their team members experienced recently. A common theme was that interaction with customers was a critical point for identifying failures. In addition, many informants mentioned reflecting on negative past events and experiences as a principle for identifying failures in the current enterprise. Industry scanning can also trigger failure recognition by illuminating mistakes of competitors, business partners, colleagues, or simply, other companies from the market. For example, the CEO of Robotcorp described how a conversation with an industry competitor had sparked a realization of a critical mistake they were currently committing, which sparked an internal learning process.

Another critical factor underlying learning from failure recognition is *embracing failures as learning opportunities.* This relates to not viewing failures as something to be avoided, but rather focusing on viewing them as a learning process. For example, the CEO of MedTechcorp succinctly described: "*I think failures are the best teachers. Accept them as something you learn from.*" On the contrary, several informants described that when company culture and individuals are not embracing failures as learning opportunities, this creates different risks for the company, which constrains productivity. In addition to that, our

respondents stated that it is crucial to avoid blaming individuals for failures, as ultimately, what matters is that the focus goes on recognizing and dealing with a failure, instead of spending time interrogating whose fault it was. Finally, it is important to adopt and maintain a fail fast and learn mindset in the team and the whole company. The CEO of Gamecorp described how they had been trying to implement this mindset within their company: *"Mistakes will be made, no matter what, but letting your team members experience those mistakes and learn from them firsthand is priceless."*

Phase 2: Interactive Sensemaking

The second phase of learning from failures refers to interactive sensemaking, which relates to the process of failure interpretation and meaning giving. In this domain, we identify two sub-activities: *interpretation of failures and causes* and *giving meaning to the failure*.
As our data shows, after the failure recognition phase, the learning process continues with the *interpretation of failures and their causes*, which results in mutual understanding of the issues, brings strength to the team, and the ability to achieve interactive sensemaking. This process requires the team leader to focus on encouraging openness and sharing of failures. After failures have been acknowledged, the next step includes the sensemaking of the causes and consequences of failures. This allows team members to analyze and discuss why a failure has happened and form a novel understanding of potential sub-causes of why something occurred. Finally, after failures have been evaluated in a team, the important next step relates to coming to a joint interpretation of a failure. This requires the openness of team members and the ability to share their sensemaking and understanding of each failure and its causes so that they can be avoided in the future.

The second theme of interactive sensemaking refers to *giving meaning to the failure* and the first principle relates to converting the failure into a positive learning experience. As the representative of Gamecorp shares, when she recognizes a small failure, she tries to take the biggest learning from the experience and convert failures into something that will benefit her team and the company in the future. The next step furthermore refers to anchoring a joint interpretation of that failure. At the end of this process, the final step includes choosing paths to move forward. In other words, what are the next steps that the team and company itself should focus on.

Phase 3: Organizational Adaptation

The third phase relates to organizational adaptation, which includes taking action in implementing modifications and changes to existing processes inside of a company, with the aim to improve future activities based on learning from failures. This phase consists of two sub-activities: *exploring adaption opportunities* and *responsive reconfiguration of resources and processes*.

As our respondents argue, after interactive sensemaking and figuring out how to move forward, the company needs to focus on *exploring adaption opportunities*. In essence, this relates to exploring what steps should be taken next to resolve the failures that occurred and improve the company. This requires embracing change by accepting the failures and learning from them through the feedback from the team and partners, while reflecting on the process, instead of simply moving on. The next step relates to experimenting with alternatives related to organizational adaptation. What respondents mainly argue, is that they love to try different

things, test different new processes, and see what functions the best for the team. Finally, adaptation and agility are crucial factors, when it comes to staying open-minded toward new learning and exploring new opportunities for organizational adaptation. For example, the CEO of MedTechcorp described the importance of constantly exploring adaption opportunities when faced with failures: "...*Because the only way to learn and go beyond where we are is to test new practices and adapt to challenges coming our way.*"

The second sub-activity of organizational adaptation relates to a *responsive reconfiguration of resources and processes*. This realizes itself by prioritizing action-oriented responses, which lead to the actual implementation of those improvements and change processes in an SME. Finally, by experiencing failures, SMEs are capable of adapting and evolving actions based on their effect, faster with each new experience. As Gamecorp's CEO describes, they learned a lot by making the mistake of not securing steady payments in one of their first projects. As a result of learning from this small failure, they are now able to create detailed contracts that secure each team member's responsibility and pay, so that they can continue working, without monetary interruptions.

A Process Framework for Learning from Failure

Based on the inductive analysis, this article proposes a process model with detailed activities that enable effective learning from failures. It aims to explain how knowledge-intensive SMEs can leverage failures as points of learning, i.e., routinize fail fast and learn fast mindset while operating in dynamic business environments.

Figure 1 depicts the relationships among the emerging constructs to create a process view on learning from failure in SMEs. The model is grounded in the phases identified in our analysis: *failure recognition (Phase 1), interactive sensemaking (Phase 2), and organizational adaptation (Phase 3)*, and adds different activities conducted by individuals and teams to ensure progression from one phase to another (see Figure 1), towards the outcome, which is organizational learning.

Figure 1. Understanding the process of learning from failure in SMEs
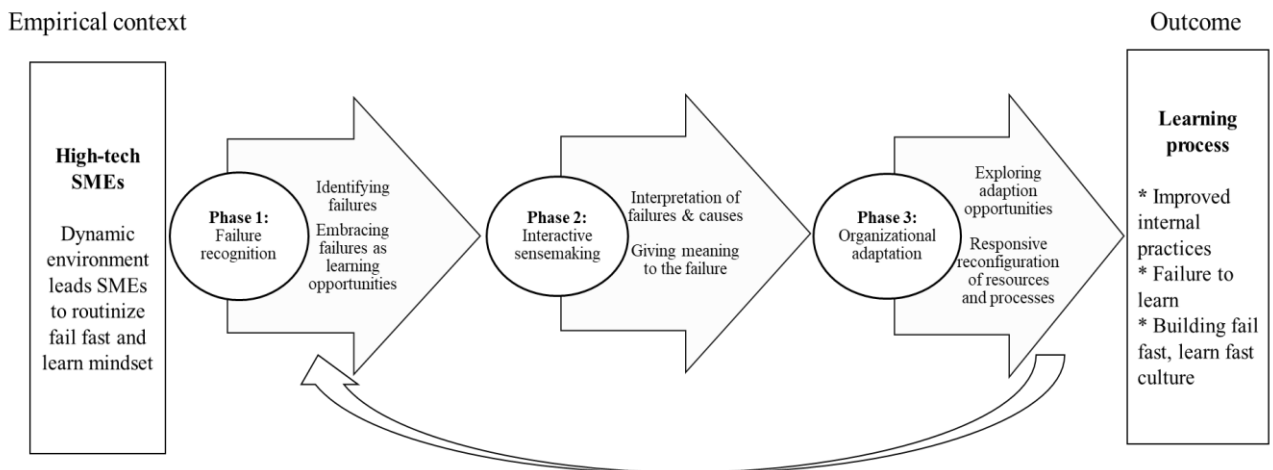
According to the process model, learning refers to the process of recognizing and interpreting failures and adapting accordingly, to create, retain, and transfer the learning outcomes within the SME. In the initial phase (Phase 1), the learning process starts when an individual or a

team recognizes the failure. As presented by our findings, there are different ways of identifying failure, as it can be your own, or the failure of others, but the key aspect is to embrace it as a catalyst for the learning process, avoid blaming individuals, and adopt a fail fast and learn fast mindset, which encourages and welcomes failure. Only when this has been accomplished, one can move to Phase 2, which relates to interactive sensemaking. Interaction indicates the involvement of others, which helps in interpreting the failure through different lenses and detecting its potential causes and consequences. Once the team comes to a joint interpretation and shared understanding of the failure, the process turns to giving meaning to the failure and choosing paths to move forward, taking the lessons learned along. As the process unfolds, Phase 3 occurs through organizational adaptation. First, the team needs to explore adaptation opportunities, by embracing change, examining all the alternatives, and adapting to new perspectives, while being agile and responsive to a needed reconfiguration of internal resources and processes. This final phase of the learning process ensures that the change occurs through specific actions so that similar failures are avoided in the future.

As a positive, i.e., the desired outcome of this process, SMEs will be able to create improved internal practices, as the result of embedding learning outcomes into organizational structure, processes, and strategy. Or contrary, it will fail to learn from a failure. In addition, SMEs will be able to avoid similar failures in the future, or, in a case where the learning did not occur, they will face the repetition of similar mistakes, which could ultimately lead to the bankruptcy of an SME. Finally, if learning from failure occurs, it will strengthen the emphasis on a fail fast and learn fast culture within the firm, where failures are encouraged and celebrated as learning opportunities.

After the learning process from failure has been conducted, the firm is returning to Stage 1, identifying new failures, and embarking on the next learning journey. This denotes continuity and learning from failures as a process, in which every step forward is empowered by the firm's culture that cultivates learning from failures. By consciously focusing on learning from failures, SMEs can avoid catastrophic outcomes in the future, and ultimately, a business closure. However, this learning should be continuous and included as an ongoing part of SME's practices and activities that underline the organizational learning process.

DISCUSSION AND CONCLUSIONS

This paper aimed to investigate *how knowledge-intensive SMEs learn from failures through organizational learning processes.* Knowledge-intensive SMEs were the focus of research as they heavily rely on their employees, built relationships and networks, and provided services, while operating in dynamic, volatile markets, examining the ways to retain accumulated knowledge, especially from failures, which they face regularly. Based on multiple in-depth case studies of three high-tech B2B SMEs, we propose a framework, which depicts the learning from failure process. This process includes three phases: 1) failure recognition, 2) interactive sensemaking, and 3) organizational adaptation; together with their sub-activities and principles. The results indicate the importance of continuously identifying, monitoring, interpreting, and embracing failures as a crucial part of an organizational learning process. This is especially important for SMEs operating in dynamic, fast-changing markets, where constant learning and organizational adaption are critical for their survival.

THEORETICAL IMPLICATIONS

This paper empirically examines and conceptualizes the phenomenon of learning from failure in knowledge-intensive SMEs, by introducing the fail fast and learn fast mindset. As such, the study offers three key theoretical contributions to the literature on organizational learning. First, we synthesize literature on organizational learning and learning from failure to conceptualize a process perspective on learning from failure. Accordingly, we extend the literature on organizational learning (see e.g., Saunders et al., 2014; Schous et al., 2022), which have not looked closely into failure, by providing an explicit focus on the processes for learning from failures.

Second, we provide an in-depth process framework detailing the phases and activities of organizational learning from failure (see Figure 1). Fundamentally, we describe three overall phases: 1) failure recognition, 2) interactive sensemaking, and 3) organization reconfiguration. Each phase includes underlying sub-activities and principles embracing a fail fast and learn mindset. To the best of our knowledge, this is the first study to conceptualize, systematically examine, and illustrate the organizational process of learning from failures, especially in the context of knowledge-intensive SMEs.

Third, the study extends the literature on fail fast and learn fast mindset (see e.g., Sitkin, 1992; McGrath, 2011; Edmondson, 2011; Khanna et al., 2016; Friend et al., 2019; Friend et al., 2020) by incorporating it within the scope of the organizational learning process. While this emerging stream of literature has been focusing on different domains and industries, this study provides insights into the dynamic context of knowledge-intensive SMEs, where failure is an inherent part of existence, to advance a process view on the phenomenon. The framework adapts the fail fast and learn fast mindset to organizational learning, by suggesting only a few simple stepwise practices, to learn effectively in complex and uncertain contexts (e.g., high-tech industries), where failures can be seen as an important source of learning. We describe the cumulative effect of applying such principles systematically. Specifically, as a company goes through the process of learning from a specific failure, the next time it becomes easier to face a similar challenge and fail fast to learn even faster. Thus, systematized organizational efforts will ingrain fail fast and learn-fast mindset into the organizational culture, where failures are celebrated, encouraged, and treated as learning opportunities.

MANAGERIAL IMPLICATIONS

For knowledge-intensive SMEs, to survive and succeed in dynamic environments, their owners have to understand the benefits of adapting a fail fast and learn fast mindset, in which a collective mindset of continuous learning is fostered. To benefit the most from failure-related learning, we argue that processes of learning from failure are the key. From the empirical cases, we have witnessed that this learning process is often unpredictable and abrupt. How well business owners use the knowledge gained from these learning opportunities will influence how successful their SME ultimately is.

Therefore, this study provides several implications for CEOs of knowledge-intensive SMEs on how to facilitate rapid learning from failure in their SMEs. We identified three distinct phases of learning from failures, which are furthermore accompanied by a set of distinctive sub-activities and specific principles that have the potential to lead SMEs towards

incorporating a fail fast and learn fast mindset and result in pivoting fast when new potential failures come across. The paper also provides a framework illustrating how SMEs succeed and fail in learning from failures through their underlying learning processes.

Overall, this study emphasizes the importance of recognizing failures as beneficial for the learning process. As such, failures can be considered and approached as a fundamental part of the firm's innovation process (Khanna et al., 2016). By experimenting and searching for alternatives, firms are creating a base of their organizational learning, which is crucial for innovation capacity building (March, 1991; Khanna et al., 2016). Experimentation should, therefore, be encouraged, even if most of them will ultimately fail. However, failures can serve as ideas, lessons, and valuable learning points for future activities, especially when feedback is provided, and the next steps planned. Thus, it is crucial to take an active part, i.e., engage in continuous learning from failures, by involving all team members, across different departments and units, throughout all the phases of the learning process. At the same time, the team needs to have the freedom to do mistakes and fail fast, to learn from each failure, and do better, while succeeding faster, the next time.

LIMITATIONS AND FUTURE RESEARCH SUGGESTIONS

As an inductive and exploratory study, this paper is not without limitations. First, we collected in-depth data on three knowledge-intensive SMEs. Although data saturation has been achieved, the choice of our methodology indicates that the findings are not generalizable in all contexts. Thus, future research could investigate the phenomenon in different empirical contexts and domains, which can complement our findings with additional phases, sub-activities, and specific principles. Second, our data is based on insights from the management perspective, which might consist of biases. Therefore, future studies could consider other team members and their viewpoints on the learning from failures process. Third, our empirical focus is on cultures (Finnish and Swedish) that are known for their proactiveness, innovativeness, and openness toward experimentation, which might have influenced the results. Thus, future studies could complement our findings with insights from different cultures, such as British culture, which has little tolerance for entrepreneurial mistakes.

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