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Lean startup for international market entry strategy making

An exploratory study on a lean startup approach and its patterns on the internationalization of new high-tech ventures

MASTER THESIS

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ABSTRACT

With the majority of startups failing shortly after founding, the question arises as to which factors exactly are responsible for it, and, most importantly, how startups can prevent these. Among concepts aimed at counteracting early failures, lean startup (Ries, 2011) is one of the most popular approaches, focusing on the importance of customer needs. While numerous studies demonstrated its relevance for product and business model development, only few studies related it to internationalization, specifically to strategizing foreign market entries. This study attempts to fill this gap by examining the patterns of a lean startup approach that emerge during the international market entry strategy making. A mixed-method approach was used, combining a qualitative comparative analysis (QCA) with a subsequent analysis of semi-structured interviews. Questionnaires aimed to identify lean startup dimensions in the context of internationalization, in particular internationalization success. A total of twelve European high-tech startups participated in the study, whose founders received the online survey in advance. A fuzzy-set QCA was used to investigate the survey and identify configurations that produce the outcome of internationalization success. Surprising findings emerged, such as the absence of validation and, so it seemed, sole importance of hypotheses testing. Semi-structured interviews were conducted to explore these configurations, including how startups implement the conditions internally. A grounded theory approach was used, with interviews coded in a three-step coding process. Network analyses were conducted to visualize and explore relationships among the configurations. Results showed that customer insight and learning were most important for international market entry strategy making. Moreover, validation indeed seemed to be hindering, unless being conducted by using a minimum viable product. Hypotheses testing proved to be a subcategory of customer insight, learning, and iterative experimentation, with the latter three occurring in a cyclical pattern. Finally, the results showed that the application of a systematic lean startup approach significantly differed among startups, with resource availability being one of the most important factors for the implementation. Since internationalization success differed among the startups as well, the results suggest a relation between a systematic application of a lean startup approach and internationalization success. In conclusion, the study led to new insights, such as the possibility of applying a lean startup approach in areas apart from its original focus. In addition, startups benefit from the insights gained by better understanding which processes are particularly promising for designing international market entry strategies.

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1. INTRODUCTION

The internationalization of international new ventures (hereinafter INV) and subsequently the speed, precocity, scope and extent of such (Hagen & Zucchella, 2014; Zahra and George, 2017) has been studied tremendously over the past decades (e.g., Knight & Cavusgil, 2004; McDougall & Oviatt, 1996; Rhee, 2002). Recently, scholars further brought the approach of the lean startup methodology (hereinafter LSM) in the context of new venture internationalization of which concepts such as lean global startups emerged that try to explain the subsequent phenomenon of operating global in a lean manner (Coviello & Tanev, 2017; Rasmussen & Tanev, 2017; Tanev, 2017). Generally spoken, LSM, and a lean startup approach, translate entrepreneurial visions regarding business models and products into falsifiable hypotheses. Further, as explained by Rasmussen and Tanev (2015), "the hypotheses are then tested using a series of well-thought prototypes and minimum viable products that are designed to rigorously validate specific product features or business model specifications" (p. 14). Nonetheless, paucity remains in explaining how in particular a lean startup approach might serve as a strategy for entering foreign markets. More specifically, the possibility of a lean startup approach as a strategy making approach for the internationalization of INV has not yet been explored extensively (Autio, 2017; McPhee & Tanev, 2017; Neubert 2017).

Although recent studies dive into potential advantages of a lean startup approach on general internationalization patterns (Autio, 2017; Autio & Zander, 2016), little is yet known about its patterns during the strategy making in the context of international market entries. In other words, how for example customer insight, hypotheses testing, or validation unfold during the internationalization of INV remains rather unexplored. As such, the present research tries to close the examined research gap by investigating the following research question:

What are the patterns of a lean startup approach on the internationalization of new high-tech ventures?

As a general objective, this study strives to identify configurations of a lean startup approach in the context of internationalization by specifically targeting high-tech ventures. Additionally, it is assumed that these configurations unfold in certain patterns. To clarify, the present paper will not focus on lean global startups in particular. The reason for doing so lies in the assumption that internationalizing in a lean manner may not automatically qualify a venture as being lean in general. The decision to focus on international new high-tech ventures will not withal exclude lean global startups. Secondly, the decision to place INV instead of born

globals at the core of this research lies with the remaining unclarity and lack of substantial distinction between these two terms (e.g., Coviello, 2015; Coviello & Tanev, 2017; Lopez et al., 2008; Tanev, 2017). With the latter being a breed of startups merely focusing on exporting as a primary entry mode to foreign markets (Cavusgil & Knight, 2015; Knight & Cavusgil, 2004), therefore excluding a variety of additional entry modes, the present study carefully considered such implications of using the terminology of born globals. Regardless, it will again not exclude startups that indeed classify as *true* born globals.

Through the exploration of such well-known and yet rather unexploited phenomena in combination (i.e., international market entry strategy making and lean startup approach), it is firstly hoped to place emphasis on the importance of both concepts for INV, and secondly to provide a solid ground for further research. By exploring how a lean startup approach emerges during the internationalization and the specific roles its steps play individually and in combination likewise, scholars and entrepreneurs can both profit from the research on different aspects. First and foremost, such findings will reveal whether there is a possibility of LSM as a strategy making approach. The patterns and necessary steps to implement a lean startup approach will then act as potential guidelines to follow a lean internationalization pattern. Second, through the emergence of these guidelines and subsequently its steps, LSM becomes more tangible and hopefully, on a third aspect, gains increased acknowledgment as a strategic approach beyond business model and product development.

The present paper will start with a theoretical framework that covers the exploration of the literature on several concepts of importance for the chosen topic, including international entrepreneurship, internationalization, LSM, and strategy making. It will further provide a link between these concepts to ultimately position the potential of a lean startup approach as a strategy making approach for the internationalization success of new ventures. Further, the methodology will be described, including a description of the research population and the data collection procedure. Additionally, the data analysis section will provide a description of the used mixed-method approach, the analyses as well as the data processing. Moreover, the results section will demonstrate findings obtained from both analyses by means of different approaches. The discussion will then connect and explore these findings while relating it to emergent literature. Lastly, conclusions will be drawn as well as the study's limitation, subsequent recommendations and areas for future research.

2. CONCEPTUAL BACKGROUND AND THEORY

2.1 Conceptual background

2.1.1 International entrepreneurship

As a prerequisite for all endeavors concerning international trade, globalization can be defined as one of the most crucial developments, having fundamentally changed how business is conducted. The globalization and as such the aim for a liberalized market by unifying countries from around the globe (Tran & Batas, 2016), can be described as a process in which geographical constraints abate, impacting cultural, political, economic, and social developments (Waters, 1995). Its implications, such as significant advances in information and communication technology (Cavusgil & Knight, 2015), international transportation and logistics (Pett et al., 2004; Tran & Batas, 2016), increasing wealth, economic growth, and the emergence of free trade zones (Zucchella & Magnani, 2020), are ultimately anchored in what is now perceived as the status quo. As brought forward by Johnson (2004), "today's business environment has been fundamentally transformed as a result of the world's recent evolution into the information age, along with the advent of the global economy" (p. 139).

With these transformations, it comes as no surprise that several concepts within management research have now been linked to a global perspective, with international entrepreneurship being one example. Generally, entrepreneurship can be defined as a small firm's capacity to innovate by leveraging resources and transforming existing markets (Steensma et al., 2000). Additionally, "entrepreneurial firms continually seek to create products and operating methods that improve organizational performance" (Knight & Cavusgil, 2004, p. 130), and thus proactively manage evolving uncertainty (Onetti et al., 2012). More specifically, international entrepreneurship (IE) encompasses business activities conducted across national markets through the combination of proactivity, innovation, and risk-taking (Tran & Batas, 2016). This new line of research gained attention due to its incongruence with traditional frameworks within the international business and entrepreneurship fields (Amorós, 2016). Although it overlaps with a variety of aspects from these streams, it has become an important field in its own, with its focus being the establishment of small firms that internationalize early with the aim "to find different characteristics between international and non-international new ventures" (Amorós, 2016, p. 286).

Small firms that coordinate several value chain activities across domestic borders can generally be defined as international new ventures (INV; McDougall & Oviatt, 1996). This definition encompasses multiple activities, including joint ventures and production subsidies, and distinguishes between four types of firms: export/import startups, multinational traders,

geographically-focused startups, and global startups (Tanev, 2017). Moreover, the terminology includes companies founded no more than six years ago, which has now become a common threshold in the literature (Coviello, 2015). Despite its accuracy, however, the concept of INV has come under debate, in part because of the problematic ambiguities to other definitions, such as born globals (BG). Originally brought forth through a study by McKinsey & Co. (1993), BG describes firms that internationalize faster than firms with similar age and size characteristics, since they are founded with the intention to serve globally (Coviello & Tanev, 2017). As described by Tanev (2017), "there is a difference between firms that were truly born with the intent to serve multiple foreign markets and firms that simply happen to export early" (p. 7). To penetrate different markets from inception, BG are mostly technology companies with digitized products that can be scaled quickly (Coviello & Tanev, 2017; Lopez et al., 2008; Tanev et al., 2015). The debate thereof arose when scholars began to use the definitions of INV and BG interchangeably and synonymously, while not acknowledging differences within IE terminology (Coviello, 2015).

Thus, by definition, BG encompasses a much narrower breed of startups. If this term is now used generally for international ventures, startups are grouped that are actually too different to be considered under the same terminology. For this reason, the present study focuses instead on INV to be inclusive. Although it could be argued that the term global startup, defined as a specific type of INV that "coordinates many organizational activities across many countries" (Tanev, 2017, p. 8) might also be applicable for the present study, we chose to use the general term INV for the same reason of inclusivity.

2.1.2 Internationalization

While the internationalization of multinational corporations (MNC) has been intensively studied, international market entries of new ventures has gained attention only over the last decades (Hagen & Zucchella, 2014). As mentioned, scholars such as Knight and Cavusgil (2004) and McDougall and Oviatt (1996) researched this new area of international entrepreneurship by investigating the emergence of INV. Thanks to this special focus, it became clear that startups' internationalization process is far from conventional internationalization process theories and specifically different from the slow, incremental patterns within traditional process and stage models (Cavusgil & Knight, 2015; Hagen & Zucchella, 2014).

Generally speaking, internationalization can be defined as a process by which companies increase their exposure to international business (Welch & Luostarinen, 1988). Slim and Slimane (2015) define the internationalization process of new ventures in particular as an

entrepreneurial act that focuses on the exploitation of international activities. As mentioned, most research so far has focused on incremental internationalization processes of MNC, taking place after the companies operated in their domestic market for years (e.g., Johanson & Vahlne, 1977). In contrast, Knight and Cavusgil (2004) define the internationalization of new ventures as an innovative process, taking place quickly and early after their founding - which in turn led to the neologism of born globals, international new ventures, and global startups (Burgel & Murray, 2000). As Rhee (2002) states it, "it is not unusual anymore that new ventures enter into a global market right after they are 'born' or while they are still 'new'" (p. 1). Unsurprisingly, given the unique characteristics of new ventures, a distinction between the internationalization of MNC and INV was long overdue. With their young age as a primary characteristic (Johnson, 2004), their innovative culture and smaller firm size (Cavusgil & Knight, 2015), and their limited financial and management resources (Choo & Mazzarol, 2012), it becomes apparent that a slow, gradual internationalization might not be the primary option for INV.

Although certain entry modes apply to MNC and INV alike, others are targeting INVs' unique circumstances of being new and foreign. Specifically exporting (Burgel & Murray, 2000; Tanev, 2017), foreign investors and distributors (Burgel & Murray, 2000), and cooperative arrangements and strategic alliances (Choo & Mazzarol, 2001) apply to INV for entering foreign markets. Although put forward easy, the decision regarding one of these entry modes remains of strategic importance due to the high risks new ventures face (Burgel & Murray, 2000). Hereby, INV operating in the high-technology sector face an additional dilemma due to their high initial development expenditures, negative cash flows in early years, and higher lack of resources (Burgel & Murray, 2000; Hashai & Markovich, 2017). As Burgel and Murray (2000) conclude, high-tech ventures "must make complex and highly strategic trade-offs, because the choice of the foreign sales mode may have profound implications for both costs and revenue generation" (p. 36). Moreover, new ventures are driven by a need to sustain, becoming especially problematic given the necessity to stay competitive and the subsequent issue of local market constraints (Pett et al., 2004). Further, the pace of global technological innovation, high R&D costs, and intense competition (Johnson, 2004) force high-tech ventures to internationalize early (Oakley, 1996). The technological industry, thus, comes with its own particularities that require going beyond domestic borders to sustain business. Selling across multiple countries, therefore, allows INV to achieve economies of scale, compete with foreign companies, source resources to counteract their resource shortage, and participate in global networks to leverage social and financial capital (Tran & Batas, 2016). The choice to

enter international markets therefore depends on complex aspects that must be taken into account while evaluating the risks and potential outcomes probable to face.

2.1.3 International market entry strategy making

The acceleration of organizational knowledge and, thus, organizational learning, is indisputable an important process for pursuing an internationalization strategy. Organizational learning can be defined as a shift in the firm's knowledge due to made experiences (Argote & Miron-Spektor, 2011; Autio et al., 2000), which, once effective, positively influences future growth (Sekliuckiene et al., 2018). By means of it, firms can "generate innovations, adapt to environments, take advantage of emergent market opportunities, and create competitive advantage" (Bingham & Davis, 2012, p. 611). Further, accelerating organizational knowledge has been found to minimize the risks of liability of foreignness and newness (Bingham, 2009; Rhee, 2002). Liability of foreignness emerges from disparities in culture, institutions, and laws (Neubert, 2017; Rhee, 2002). Liability of newness, on the other hand, results from new ventures often having little experiences and history of operations, as well as inability to build up a solid reputation yet (Zahra, 2005). To minimize these, research has identified direct and indirect learning mechanisms, with the former describing the means through which firms generate knowledge based on their own experiences (e.g., experimental learning or trial-and-error learning), and the latter defining learning through the experiences of others (Argote & Kane, 2003). As described by Bingham and Davis (2012), knowledge generated from own experiences is often of higher quality and more likely to reduce the probability of future mistakes, despite the processes being more time-consuming. The latter, on the other hand, might be more easy to conduct, but most likely results in weaker inferences.

Moreover, learning sequences have been found to facilitate successful internationalization processes, i.e., multiple, iterative learning mechanisms over time (Bingham, 2009; Bingham & Davis, 2012). In particular, research has demonstrated that a specified country order facilitates a more successful internationalization process (Bingham, 2009). In line, Bingham (2009) explored the existence of improvisation within the decision-making for foreign markets, with results showing that some startups are less improvisational and some are more improvisational. The latter process, he found, resulted in less successful country entries, as immediate opportunities had been pursued (Bingham, 2009). Thus, the scholar concludes that less improvisation is beneficial for the selection of foreign markets, hence a specified country order, while more improvisation is beneficial for executing these strategic choices, by allowing agile reactions to sudden arising changes (Autio et al., 2000;

Bingham, 2009; Crossan, 1998). By carefully considering the opportunities that arise with certain country entries and building upon generated knowledge, new ventures can additionally counteract the liability of newness and foreignness (Bingham, 2009).

Through these learning processes, thus, ventures can generate organizational knowledge that will subsequently facilitate their strategy making to enter international markets. Due to the close link between learning and enhanced entrepreneurial achievement (e.g., Sekliuckiene et al., 2018), it is to be expected that learning likewise influences the internationalization of new ventures and positively relates to internationalization success:

Proposition 1: Learning is positively related to internationalization success.

2.1.4 Lean startup methodology

Among business model development, there is an underlying fact that is too often ignored or neglected: there must be a group of customers willing to buy the product or pay for the service. Although one may consider this to be self-evident, reality shows that one of the reasons behind the high failure rate of startups is the development of products that do not meet customer needs (Cantamessa et al., 2018). The introduction of the customer development process by Steve Blank (Blank, 2013; 2020), and the subsequent evolution of his approach by his former student Eric Ries (2011), sparked a worldwide movement that sought to find a solution to this problem. By combining customer-centric development principles with an agile, rapid product development grounded in lean management tools (Mueller & Thoring, 2012), Ries developed the lean startup methodology (LSM) that has since then inspired entrepreneurs to originate viable business models.

In essence, LSM is based on the translation of entrepreneurial opportunities through a hypothesis-driven development approach of an associated business model (Tanev, 2017; Rasmussen & Tanev, 2015), making it especially suited for the entrepreneurial environment characterized by a high uncertainty (Ramussen & Tanev, 2015; Shepherd & Gruber, 2020). Hereby, hypotheses are "tested using a series of well-thought prototypes and minimum viable products that are designed to rigorously validate specific product features or business model specifications" (Ramussen & Tanev, 2015, p. 14). A lean startup approach bases its efficiency on the idea of developing only what is wanted by customers, as outlined within Ries' (2011) build-measure-learn cycle. Hereby, the approach sets an "explicit focus on experimentation-driven, practice-oriented learning, constant testing, and validation of assumptions […], and frequent, iterative pivoting as assumptions are rejected and new ones tested" (Autio, 2017, p.

219). Moreover, through its focus on viable business models, it is rooted in the business model methodology as proposed by Osterwalder and Pigneur (2010), and subsequently treats its elements (e.g., cost and revenue structure, channels, value propositions) as hypotheses to be tested, validated, and adjusted (Autio & Zander, 2016; Mueller & Thoring, 2012; Shepherd & Gruber, 2020).

While a lean startup approach was largely explored as a stand-alone concept, Harms & Schwery (2019) later unbundled LSM by examining several lean startup capabilities (LSC) that collectively determine the ability to perform activities related to the build-measure-learn cycle: customer insight, hypotheses testing, iterative experimentation, validation, and learning. It is for this reason that this study will examine a lean startup approach as a sum of individual conditions rather than as a whole. While its positive influence on business model development has been greatly studied (e.g., Ramussen & Tanev, 2015; Shepherd & Gruber, 2020; Silva et al., 2020), it remains uncertain for now, however, whether the various conditions have a positive influence on internationalization processes as well – and, more specifically, whether all these are equally necessary. Thus, while success has been demonstrated for the development of business models, potential success in internationalization has yet to be explored.

Nonetheless, based on the literature, it is possible to make several propositions regarding the potentially positive influence. First and foremost, a lean startup approach involves the premise of targeting customer feedback, which is, in turn, adapted depending on the market needs (Ghezzi & Cavallo, 2020). By doing so, startups strengthen their market position through adding services regarding the customer demand and, ultimately, differentiate themselves from their competitors. Moreover, early interactions with customers allow them to increase "their chances of success without necessarily investing large amounts of capital" (Silva et al., 2020, p. 598). Thus, it seems plausible to assume that a stronger customer insight will ensure a better market standing not only for national but also for international markets:

Proposition 2: Customer insight is positively related to internationalization success.

Experimentation can be considered a core activity of a lean startup approach, whereby new companies try to find "the successful business model" (Bingham, 2009, p. 322) through continuous testing and pivoting (Autio, 2017). Scholars thus demonstrate the positive impact of continuous experimentation on improving value propositions and enhancing ventures' competitive position in international markets (Autio, 2017). In that regard, Thai and Chong (2013) strengthened an internationalization strategy guided by small-scale experiments, being

particularly promising for smaller companies. Additionally, when conducted continuously, scholars found that the costs stemming from these adaptations were in fact smaller than "when compared to management based on traditional business plans" (Silva et al., 2020, p. 609). In this context, it can be assumed that experimentation, whether for strategizing international business models or other tasks, is positively related to internationalization success. Furthermore, since experimentation is usually defined as taking place within a continuous, iterative process, it can be assumed that iteration is likewise positively related to internationalization success and, moreover, that these two activities occur in combination:

Proposition 3: Experimentation is positively related to internationalization success.
Proposition 4: Iteration is positively related to internationalization success.
Proposition 5: Experimentation and iteration combined are positively related to internationalization success.

While learning, experimentation, iteration, and customer insight are important factors that potentially influence internationalization success, it remains necessary to fathom that everything there is to iterate, and experiment, must be validated in the end. A lean startup approach highlights a 'product-market fit' as a result to be achieved (Ghezzi & Cavallo, 2020), stemming from the validation of all remaining assumptions (Mansoori, 2017). In addition, it was demonstrated that validating business assumptions by testing hypotheses about customer demands leads to more successful startups than "an approach that relies on unguided activities and entrepreneurs' intuition" (Shepherd & Gruber, 2020, p. 17; Camuffo et al., 2020). Thus, it seems reasonable to apply this search-of-fit to international markets as well. In other words, due to its nature of validating hypotheses to increase the certainty of venture strategies, we assume that validation has a positive relation with internationalization success. Given that validation connects to hypotheses testing (e.g., Camuffo et al., 2020; Mansoori, 2017; Tanev, 2017), we likewise assume the latter to be positively related to internationalization success:

Proposition 6: Validation is positively related to internationalization success.
Proposition 7: Hypotheses testing is positively related to internationalization success.

LSM thus consists of strategic steps to decide which changes to make or discard, depending on the outcome of the iterative cycle, and customer feedback as the most important originator. Although it is not compatible with common planning approaches, it is still possible

to derive an iterative strategy making approach for the internationalization of new ventures. For this reason, and since the definition of the build-measure-learn loop encompasses a cyclical process (e.g., Ries, 2011), we assume a cyclical sequence of the conditions as well:

Proposition 8: The conditions occur in a cycle that is positively related to internationalization success.

2.2 Theory

2.2.1 Relation of LSM and international market entry strategy making

With previous sections having discussed the importance of venture internationalization and the possible connection between a lean startup approach and internationalization success, it becomes necessary now to relate a lean startup approach to strategy making, to ultimately explore its potential as an approach for international market entries. Although research on lean startup has focused almost exclusively on general business creation and development, it was expected that scholars would eventually recognize its applicability to the context of internationalization because of its focus on learning. However, because the approach has been considered relatively detached from internationalization processes, few studies have actually linked it to international market entry strategy making.

A systematic literature search by means of literature databases (e.g., Scopus) found that of 188 scientific articles that included lean startup and internationalization as topics, only a dozen combined them in the context of new venture internationalization. Among those, McPhee and Tanev (2017) and Coviello and Tanev (2017) argued for studying the potential of the lean startup approach in the context of international entrepreneurship. The scholars reiterated their point by recognizing lean as a mode of operation rather than a new firm, and thus call for future studies in the field of internationalization using a lean startup approach (Coviello & Tanev, 2017). Autio (2017), moreover, proposes internationalization to be realized through a "learning- and experimentation-driven process, during which the international new venture (INV) builds a transnational business model with built-in sources of sustainable competitive advantage" (p. 213). On the basis therefore, he concludes that internationalization once combined with a lean startup approach comprises an effective facilitator to scale business models internationally.

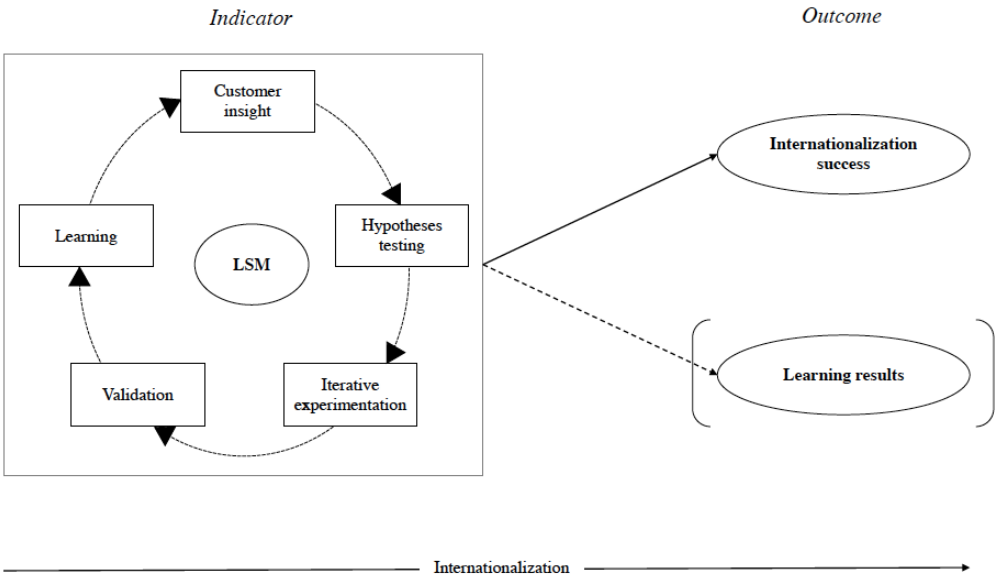
In addition, about six articles specifically examined the lean startup approach in the context of developing international market entry strategies. Neubert (2017) was one of the few to prove the added value of a lean startup approach for the internationalization of high-tech companies in small and open economies. He concluded that the startups should adopt a lean

startup approach as that would increase their efficiency, enables a higher structure, and a market selection based on strategic attractiveness (Neubert, 2017). Cavallo et al. (2019) also demonstrated a possible extension of the lean startup approach, specifically for strategizing international execution plans. Hereby, they argue for the adoption of "strategic and scientific approaches to entrepreneurship in both early stages of development as well as for internationalization" (p. 21). Although not tested among startups, Orero-Blat et al. (2020) recently researched LSM as an international market entry strategy making approach. Due to its focus on time reduction, performance measurement, and adaptation (Orero-Blat et al., 2020), the researchers found it particularly applicable for the internationalization, making them among the first to intentionally use the methodology to design internationalization strategies.

Given this lack of extended research on the combination of international market entry strategy making and LSM, this paper aims to fill this gap through a mixed-method study by examining the patterns of a lean startup approach on the internationalization of new ventures. In other words, how new ventures behave during the international market entry strategy making, whether that is in a *lean manner*, and how these patterns emerge in light of internationalization success will be investigated upon in the following sections. A visualization of the current research model is outlined in Figure 1, based on the foregoing conceptual background and propositions. LSM is seen as an indicator with distinct conditions that occur in a repeating cycle. Moreover, internationalization success is displayed as an outcome. The inclusion of learning results as an outcome (in brackets) stems from the foregoing theoretical framework,

Figure 1

Research Model visualizing LSM, Internationalization Success and Learning Results



and remains additional and exploratory. Since a company's internationalization can be seen as a process, definitions and timeframes may differ depending on the research background. Based on the theoretical knowledge outlined so far, LSM is portrayed as taking place at the beginning rather than as a recurring process. Moreover, the conditions are seen as being equally important for resulting in internationalization success. Whether these assumptions and the outlined propositions are hold correctly will be explored in the upcoming sections.

3. METHOD

3.1 Research design

Exploring the potential phenomenon of a lean startup approach for international market entry strategy making, the present study explores its patterns on the internationalization of new high-tech ventures. Therefore, the associated research question is as follows:

What are the patterns of a lean startup approach on the internationalization of new high-tech ventures?

The present study attempts to fill the aforementioned research gap, providing a foundation on which future studies can build. In addition, it is hoped that by bringing together two important elements within international entrepreneurship (i.e., internationalization and lean startup approach), the potential areas of application for LSM will be broadened. Moreover, the study aims to understand conditions and combination of conditions (i.e., patterns) that emerge and lead to the outcome of internationalization success. Learning results, meaning the improved understanding of international markets due to the application of a lean startup approach, will be included as an additional, exploratory outcome and has been decided upon given the apparent connection between LSM and learning.

To achieve the required value of information, the phenomenon is studied with a mixed-method sequential research design by combining qualitative comparative analysis (QCA) on the basis of a questionnaire, with subsequent in-depth semi-structured interviews. This combinatorial approach has been relatively common in academia to provide a deeper understanding of the context of interest (Bryman, 2006; Faihnshmidt et al., 2020). Moreover, a grounded theory approach is used, fitting the exploratory nature of the present study by searching for emerging conceptualizations (de la Espriella & Gómez Restrepo, 2020).

3.2 Research population

Considering that the study evaluates a lean startup approach in the context of new high-tech ventures, the population of the study is all new high-tech ventures (INV) whose internationalization happened relatively recent. We define an INV as a company that has been founded no longer than six years ago and whose last internationalization happened no longer than three years ago. Doing so, we follow the definition provided by Coviello (2015), including solely ventures that can still be considered as relatively new. Second, we define a high-tech venture as a company that operates in one or several high-technology industries. Given that these ventures internationalize shortly after their inception due to the overall peculiarity of their industry (Johnson, 2004), focusing on this industry has been found most appropriate. Potential high-technology industries include nanotechnology, telecommunications equipment and services, robotics, software, and so forth (Quas & D'Adda, 2018).

Setting these criteria, purposeful sampling was applied as a sampling technique, which is often used to combine standardized questionnaires with in-depth follow-ups (Palinkas et al., 2013). Criterion-i sampling was used in specific, meaning that ventures and respective employees were selected based on their inclusion in the categories of INV and high-tech industries. To identify the sample population that would fit these benchmarks, venture databases (i.e., Crunchbase, Pitchbook) were employed. Business networking sites (i.e., LinkedIn, Xing) helped in identifying the founders and the management team, and further served in determining additional prospects.

A total of 25 startups was then contacted via LinkedIn or mail. The study's goal was stated to be the exploration of factors that marked the startups' internationalization (see Appendix A). Although this did not obscure the explicit reason for the study, it also did not refer to a lean startup approach, so as not to discourage startups from the outset that do not self-identify as lean. Once data saturation was achieved, the final sample included 12 ventures whose inception ranged between 2014 and 2018. Headquarters were Germany ($N = 8$), France ($N = 1$), Finland ($N = 1$), UK ($N = 1$), and Czechia ($N = 1$). Industries were IT security (software and hardware), PropTech (software and hardware), and HealthTech (software). Respective participants were founders ($N = 9$), alliance directors ($N = 1$), and executives ($N = 1$). Such positions were required to make sure that the interviewees possess enough knowledge about their internationalization, thus resulting in adequate results. The amount of international markets the startups operate in ranged from minimum two to maximum 35. Years of their first international market entry included 2016 ($N = 2$), 2018 ($N = 4$), and 2019 ($N = 6$). Last

international market entries included Austria (N = 1), France (N = 3), Namibia (N = 1), Netherlands (N = 1), Quatar (N = 2), Switzerland (N = 1), and the US (N = 3).

3.3 Research procedure

Due to the mixed-method research design, the methodology encompassed two subsequent phases. The first phase included a self-administered questionnaire, which participants received via mail. This questionnaire sought to identify a lean startup approach as used by the ventures for their international market entry strategy making by focusing on internationalization success as an outcome. Overall, it included 16 questions that covered demographics, LSM dimensions, internationalization success, and learning results, having an approximate completion time of 15 minutes. Answers were firstly investigated by means of a statistical software (i.e., SPSS). To then explore the research question, a software was used that would facilitate the procedure of conducting a QCA as a method of analysis (i.e., fsqca).

The second phase sought to develop an understanding of the patterns that emerged through the QCA, by generating qualitative data through semi-structured interviews (see Appendix B). The decision to conduct semi-structured interviews lies in the flexibility to adapt the questionnaire structure to fit the specific responses of the individual respondent. Interviews took place via Zoom and Microsoft Teams in a one-on-one setting. The interviews lasted on average 36 minutes, ranging between 24 and 42 minutes. After participant's verbal consent, interviews were recorded, transcribed, and all sensitive information (e.g., startup name) anonymized. Given the aim to explore the topic of lean startup approach in a rather new context, making use of the grounded theory approach supported this exploratory nature. By implementing it thereof, a systematic procedure was followed that facilitated the construction of theory *grounded* in data. Via ATLAS.ti, codes were assigned to relevant concepts to explore emergent relationships. Further, concepts were grouped into categories once found to be representative of a specific theme. Finally, the relations among those concepts representing a lean startup approach and, hence, the conditions as indicated by the QCA, were analyzed by means of network maps.

3.4. Operationalization

For the self-administered questionnaire, several concepts were adopted from the literature and adapted to fit the focus of the present study (see Appendix C). First, LSM was operationalized by adopting a scale provided by Harms and Schwery (2019). Hereby, eight concepts are measured by a respective four-item scale on a five-point Likert-type scale: hypotheses testing,

customer orientation, experimentation, prototyping, validation, knowledge sharing, learning, and iteration. Second, the respective outcome variable internationalization success was measured by adopting a scale from Vorhies and Morgan (2005). Hereby, three concepts are measured by a four-item scale on a five-point Likert-type scale: customer satisfaction, market effectiveness, and current profitability. As intended by the scholars, these concepts later form one construct indicating the internationalization success. Additionally, two items adopted from Nummela et al. (2009) measuring subjective views of the venture's international performance were included (e.g., 'Internationalization has had a positive effect on our company's productivity'). Lastly, learning results from the international market entry was measured by adopting a scale from Teo et al. (2005), which originally measures learning capacity and executives' attitudes. Hereby, four statements are measured on a five-point Likert-type scale. As indicated by the scholars, these statements later form one construct forming the learning results. In addition to these concepts, demographic data was generated by asking several questions relating to the startup, its internationalization, and the participant's role within the company.

4. DATA ANALYSIS

4.1 Method of analysis

Rather than defining statistical causal relationships, the present research aims to identify patterns among LSM dimensions for which an approach was needed that explores these causal complexities. Hereby, QCA was chosen given that it is an ideal method for small to intermediate N-sizes (e.g., Faihnshmidt et al., 2020; Pappas & Woodside, 2021), and therefore applicable to the present research population. As a theory-building approach, it allows exploring connections among categories, and to develop and test these categories further (Miles & Weitzman, 1994). Doing so, it displays outcomes as consequences of distinct combinations of causal conditions (i.e, configurations; Schneider & Grofman, 2006). Through the analysis of asymmetrical connections, taking into account equifinality (i.e., identification of alternative causal paths) and conjunction (i.e., identification of alternative combinations of conditions; Wagemann & Schneider, 2007), configurations will be identified that are necessary or sufficient to produce the outcome of *a lean startup approach as a strategy making approach for the internationalization*. Thereby, applying this method denotes that configurations are interpreted as set relations in which each venture has a certain degree of belonging (i.e., represented by means of a score; Ciravegna et al., 2018).

According to literature (i.e., Harms & Schwery, 2019), a lean startup approach can be perceived as a bundle of capabilities (e.g., hypotheses testing, validation), which we will now present as conditions. Since the data generation took place by means of Likert-type scales, we will make use of fuzzy-set QCA (fsQCA). Instead of having a dichotomous value as commonly characterized by a crisp-set QCA, ventures will hereby hold different grades of membership for each condition. Generally, scores are given that vary between 0 and 1, with 0 being full non-membership and 1 being full membership (Woodside et al., 2011). A truth table will then be produced to provide configurations, which will be analyzed to provide a causal recipe leading to the outcome of internationalization success. Based on this analysis, the study will continue with semi-structured interviews, for which an interview guideline is constructed to explore the configurations and investigate potential success factors. To explore the generated data, a grounded theory approach as aforementioned is used that allows for a systematic coding procedure.

4.2. Data processing

4.2.1 Quantitative data

During the self-administered questionnaire as part of phase one, participants were asked to provide basic demographic information. Due to the purposive sampling used, the homogeneous characteristics allowed to control for the effects of industry background (i.e., high-tech), and founding year. Table 1 summarizes basic demographic information about the ventures, including an anonymized name and abbreviation for the upcoming sections.

Questionnaire responses were assessed with SPSS. After cleaning the data set and recoding items, exploratory factor analyses (EFA) were conducted for the three concepts of LSM, internationalization success, and learning results. Given the small sample size, it was not assumed that EFA will portray significantly valid factor loading. Rather, it has been used to explore the constructs and see whether these are in line with foregoing research (i.e., Harms & Schwery, 2019). To measure internal consistency, Cronbachs Alpha was assessed for each construct of LSM as portrayed by the factor analyses, as well as for the constructs of internationalization success and learning results (see Appendix D).

First, the EFA for LSM revealed five underlying categories with three items each: hypotheses testing ($\alpha = .8$), iterative experimentation ($\alpha = .69$), validation ($\alpha = .79$), learning ($\alpha = .86$), and customer insight ($\alpha = .7$). This result was expected given the reference to past studies (i.e., Harms & Schwery, 2019). Second, the EFA for internationalization success revealed one underlying category. This was expected, given that the scale was intentionally

Table 1

Demographic Information of Research Participants

Startup	Abbreviation	Industry	Foreign markets	Last market
24Health	24H	IT security	2	Quatar
Annogy	A	HealthTech	3	France
Cerveillance	CE	PropTech	8	France
Corpus	CO	IT security	6	Namibia
Elephantus	E	PropTech	7	Switzerland
Immort	IM	IT security	5	France
Innogy	IO	PropTech	2	US
Iphell	IP	PropTech	10	US
Orphus	O	IT security	3	Netherlands
Questio	Q	IT security	35	Quatar
Rennessaince	R	IT security	3	US
Stationery	S	HealthTech	4	Austria

implemented to form one construct. The final scale included 11 items (α = .91). Within internationalization success (M = 3.5; SD = .7), startups were ranging from somewhat disagree (i.e., 2) to strongly agree (i.e., 5; see Appendix E). Lastly, the EFA for learning results revealed one underlying construct which was likewise expected. The final learning results scale included three items (α = .75). Based on the results (M = 4.2; SD = .54), startups were ranging from neither disagree nor agree (i.e., 3) to strongly agree (i.e., 5; see Appendix E).

Since the present study aims to identify patterns rather than define statistical causal relationships, an fsQCA analysis was performed using the respective fsqca software. Firstly, the dataset was calibrated from interval-scale to fuzzy-set membership scores in order to alternate the quantitative, correlation-based analysis to a qualitative, set-theoretic analysis (Goertz & Mahoney, 2012). The literature provides several calibration methods, depending on the context of the research. For the present research and by the reason of calibrating five-point Likert-type scales, a three-value calibration had been found most appropriate (Pappas & Woodside, 2021). The thresholds were therefore set to be 0.95, 0.50, and 0.05 (i.e., Likert-type scale score 2, 3, and 4; see Pappas & Woodside, 2021). To not exclude conditions from the analysis that are exactly on the value of 0.5 (i.e., intermediate-set membership), 0.001 was added to membership scores below 1 (see Fiss, 2011).

Necessary conditions were then analyzed by means of consistency and coverage values. While the former indicates to what degree a condition or a combination of conditions demonstrate an outcome (threshold value is 0.8), the latter provides support for the empirical relevance of conditions (threshold value is 0.010; Ragin, 2008). Finally, sufficiency analyses

were conducted by producing so-called complex, intermediate, and parsimonious solution formulas (Schneider & Wagemann, 2010). A truth table firstly displayed various configurations of conditions. Doing so, it was needed to determine a threshold of consistency between outcome and configuration, as well as a minimum number of cases (i.e., frequency cut-off). For the present study, the cut-off consistency was set to 0.85 and the frequency cut-off to be at one case given the small sample size (see Ragin, 2008). The analysis then led to the solution formulas, i.e., causal recipes, which were decided upon to be displayed by means of intermediate and parsimonious formulas. Thereby, both core and peripheral conditions are displayed, with the former included in both solution formulas, and the latter included only in the intermediate solution. For the interpretation of results, the intermediate solution has been found most appropriate in the literature (e.g., Fiss, 2011; Schneider & Wagemann, 2012; Thiem, 2019), given that it does not allow necessary conditions to be removed (Ragin, 2009). As Ragin (2008) argues, it "strikes a balance between complexity and parsimony" (p. 175), and therefore has been found "superior to both the 'complex' and 'parsimonious' solutions" (Ragin, 2009, p. 22).

4.2.2 Qualitative data

In phase two of the present research, in-depth interviews were conducted to provide clarification on the casual recipes as indicated by the fsQCA. In other words, how the configurations evolve throughout the strategy making leading to internationalization success were explored. Given that the participants ranged in their degree of internationalization success, also shown in for example their amount of foreign markets, the conditions that may have led to the absence or presence of success were likewise explored. The interviews were transcribed (see Appendix F) and coded through a deductive coding process. Hereby, the coding process was concept-driven, with the aim to form categories to examine the interplay of lean startup conditions as indicated by the fsQCA.

The coding process itself involved three phases which, due to the grounded theory approach, included several iterations. First, open coding was applied by assigning in-vivo and systematic codes to the data in a sentence-by-sentence manner, with the former being applied once interviewees' expressions were found to be rich in themselves. After completion, it became clear that some codes appeared more frequently than others due to similar expressions among participants. Thus, as the dataset included codes with both low and high frequency, splitting and merging code techniques were used. Within the second phase, axial coding was used to group similar codes into concepts that emerged from the data and the overall coding process.

Within the third phase, concepts were then grouped together within categories. To a large extent, these categories reflected the conditions that were extracted from the preceding analysis.

Given the richness of data resulting from applying the grounded theory approach, relations among concepts needed to be explored. However, since the qualitative analysis largely served the purpose of investigating the fsQCA results, the decision was made to either omit categories that seemed less relevant or, once mentioned, to not provide a detailed description. Categories, selective, and open codes once found to be relevant are therefore going to be presented in a table format. Within a second step, network analyses were conducted to visualize the relations and thus allow for a simplified recognition of relationships between concepts. When being significant in explaining the interplay of conditions, the final step included theorizing these relationships and relating them to emerging literature.

5. RESULTS

5.1 Fuzzy-set QCA

As a starting point, a necessity analysis was conducted for the presence of internationalization success. Doing so, it indicates whether each causal condition, that is the LSM dimensions, is by itself necessary for the respective outcome (Ragin, 2008). Regarding internationalization success, consistencies ranged from 0.49 to 1.0. Two conditions exhibited the 0.9 threshold (customer insight = 1.0; learning = 1.0), indicating that these conditions are almost always necessary for the occurrence of the internationalization success outcome (e.g., Schneider & Grofmann, 2006). Customer insight and learning have the highest, sufficient consistency, meaning that they are necessary but do not guarantee the outcome. Despite the relatively low consistency of validation (0.49), all conditions were retained for the sufficiency analysis given their relevance as LSM dimensions. Moreover, a truth table was produced that indicated various, possible configurations (see Appendix G).

The results of the sufficiency analysis for the outcome of internationalization success indicate that three causal recipes are necessary for the presence of it (see Table 3). As aforementioned, intermediate solutions are displayed, based by assuming that the conditions' presence contributes to internationalization success. Solution coverage (i.e., 0.81) as well as solution consistency (i.e., 0.81) demonstrate that these configurations produce the presence of internationalization success and explain substantial membership in the condition. Additionally, parsimonious solutions are displayed, whose solution coverage (i.e., 0.81) and solution consistency (i.e., 0.76) indicate that these conditions produce the presence of

Table 3

Intermediate Causal Recipes for Internationalization Success

Causal condition	Configuration	
	A	B
Hypotheses testing		●
Customer insight	●	●
Validation	○	
Learning	●	●
Iterative experimentation		●
Raw coverage	0.69	0.49
Unique coverage	0.32	0.12
Consistency	0.84	0.88
Solution coverage	0.81	
Solution consistency	0.81	
Startups	IP, CO, S, O	R, 24H, A, CO, IM, IP, Q

Note. Black circle indicates a condition's presence, blank circle indicates a condition's absence, and empty cells indicate irrelevant conditions

internationalization success and explain substantial membership (see Table 4). Although the consistency cut-off was set to 0.85, an additional parsimonious solution is displayed (i.e., configuration B), being lower than the agreed upon value. Nonetheless, it was still produced as a substantial condition for the outcome of internationalization success and therefore agreed upon to be kept for exploratory reasons.

The intermediate solutions suggest that two paths explain the outcome of internationalization success with a lean startup approach as a strategy making approach. The first causal recipe is where startups employ customer insight plus learning in absence of validation. Given this recipe, it is very likely that internationalization will be successful, irrespective of whether startups employ hypotheses testing or iterative experimentation. That the absence of validation is not a *necessary* condition can be seen when observing the second causal path. Hereby, internationalization success as an outcome results of startups employing hypotheses testing, customer insight, learning, and iterative experimentation. Given this recipe, it is very likely that internationalization success occurs irrespective of the absence of validation.

Yet again, hypotheses testing and iterative experimentation are not *necessary* conditions, as can be seen when examining the first causal recipe. Thus, internationalization success is not dependent on there being hypotheses testing and iterative experimentation. In these cases, customer insight and learning are partly responsible for internationalization success. Importantly, though, these conditions are responsible as part of a recipe rather than on their own.

The parsimonious solutions (see Table 4) suggest that two paths are explaining the outcome of internationalization success with lean startup as a market entry strategy making approach. The first causal recipe indicates that hypotheses testing alone can explain internationalization success on a high level of consistency. Given this recipe, it is very likely that internationalization will be successful when employing hypotheses testing. As mentioned, a second causal recipe was included for exploratory reasons. Hereby, internationalization success seems to be an outcome of the absence of validation. Considering its low consistency however (i.e., lower than 0.85), the absence of validation is not enough on its own to explain

Table 4

Parsimonious Causal Recipes for Internationalization Success

Causal condition	Configuration	
	A	B
Hypotheses testing	●	
Customer insight		
Validation		○
Learning		
Iterative experimentation		
Raw coverage	0.55	0.69
Unique coverage	0.12	0.26
Consistency	0.90	0.77
Solution coverage	0.81	
Solution consistency	0.76	
Startups	R, 24H, A, CO, IM, IP, Q	CO, O, IP, S

Note. Black circle indicates a condition's presence, blank circle indicates a condition's absence, and empty cells indicate irrelevant conditions

the outcome, and must occur in the presence of other conditions.

It seems apparent that customer insight and learning are necessary conditions of causal recipes in generating internationalization success. Although the data is used to examine the presence of conditions, these findings can only be used in tandem with the qualitative insights which are crucial for the interpretation of the results.

5.2 Interviews

All interviews were analyzed using ATLAS.ti. In the first phase of coding, open coding resulted in a total of 873 codes. The codes were assigned based on interviewees' statements. Once the merging and splitting of the codes was completed, the dataset yielded a total of 287 codes. Within the axial coding phase, 65 concepts were created to allow similar themes to emerge. Finally, in the selective coding phase, concepts were aggregated once they were found to be representative of a similar category, resulting in a total of 26 categories (see Appendix H). The following section presents the categories that proved to be most significant for the present research context in explaining the fsQCA results. Findings are reported in accordance with tables. Most frequently occurring results are presented with numerical values in brackets. These numbers do not represent the amount of startups, but the frequency these concepts have been mentioned. Moreover, a semicolon within brackets indicates that the quote applies to the former startup, but the same statement being mentioned by another startup likewise.

5.2.1 Categories

5.2.1.1 Validation

Validation was one core theme that emerged during the interviews, with 'Validation strategy', 'Validation enabler', and 'Validation timing' as important selective codes. Table 6 presents the selective and open codes within the category.

Validation strategy

Non-systematic validation ($N = 21$) and *systematic validation* ($N = 13$) emerged as two opposing processes. Among the coding scheme, systematic describes the translation of opportunities through a specific approach and its steps, as for example a lean startup approach. It therefore follows the definition provided by Mansoori and Lackéus (2019), that lean startup methodology assumes that "uncertainty is reducible through employing a systematic and scientific approach to formulating working guesses about the idea and testing the validity of them" (p. 797). For

Table 6

Validation Core Theme

Category	Selective codes	Open codes
Validation ←	Validation strategy ←	Non-systematic validation, gut feeling, internal meetings, internal reporting, quarterly meetings, systematic validation
	Validation enabler ←	Business plan, customers, gut feeling, market
	Validation timing ←	Validation after market entry, validation before market entry

Non-systematic validation, startups indicated their validation to 'not having it done yet' (Elephantus), and 'postponing it to a later stage' (Cerveillance, Orphus). Even when they do validate, 'it is not systematic' (Immort, Innogy, Orphus) and rather 'a messy process' (Cerveillance), being 'not as rigorous' (Innogy). *Through gut feeling* hereby emerged, as many startups validate 'by gut instinct' (Cerveillance), 'as much as by 90%' (Orphus). For *systematic validation*, 'specific validation plans' (Corpus) and 'other systematic mechanisms' (Iphell, Rennessaince) were cited, including *Territory planning* (Iphell), *Internal reporting* (Questio), *Internal meetings* 'to reflect and validate processes' (Stationery) and *Quarterly meetings* 'to review our strategy' (Innogy). *Internal meetings* are likewise a means for some startups to reflect on their general market entry approach, that is, a market entry blueprint that is 'validated once and then iterated and adjusted' (Questio; Iphell, Corpus).

Validation enabler

Among startups that validate their strategy, whether that is done systematically or not, four enablers (i.e., ways that facilitate the validation process) were identified. *Gut feeling* was cited most often ($N = 13$) with startups using it when 'analyzing online data' (Immort) or 'statistics' (Orphus), and rather relying on their 'intuition and not on fact' (Immort; Innogy). *Customers* was identified as another way of validating market entry strategies (Questio), especially 'with some of the key players to see whether they like it' (Immort) and with whom conversations enable such validations 'although that is not based on hard numbers and rather on qualitative feedback' (Stationery). Moreover, for some, validation happens through the *Market* itself by 'either becoming active or not' (Iphell) or by the financial forecast being reached (Annogy). Finally, some startups mentioned their *Business plan* as a validation enabler (Rennessaince, Stationery), such as through the prospect of reaching their financial targets (Annogy).

Validation timing

Finally, startups reported validating either *Pre-market entry* (*N* = 3) or *Post-market entry* (*N* = 10). In the former, startups validate before internationalizing (Innogy, Questio) by, for example, talking to potential customers (Stationery), and having an MVP (Rennessaince, Corpus). In the latter, startups validate their strategy 'also on the go by analyzing customer metrics' (Questio), through experiences (Orphus), and their sales (Elephantus).

5.2.1.2 Learning

In conjunction to Validation, Learning was another core theme that emerged during the interviews, with 'Learning process' and 'Learning enabler' as important selective codes. Table 7 presents the selective and open codes within the category.

Learning process

Cyclical learning and *Continuous learning* were mentioned as learning processes through which learning takes place. Startups mentioned to pursue *Cyclical learning* (24Health), meaning that their learning occurs before implementing new strategies from 'end customer understanding' (Immort), which in turn translates into further versions. *Continuous learning* was mentioned by startups whose strategy implementation is based on intensive learning (Corpus, Innogy), that 'seems to be a continual journey' (Innogy).

Learning enabler

Among startups learning from international customers, five enablers (e.g., ways that facilitate the learning process) could be identified. *Customers* (*N* = 21) was mentioned most frequently and was also reinforced as most important. Accordingly, startups learn from their customers through conversations (Cerveillance, Innogy, Rennessaince, Stationery), product usage (Immort, Annogy), and 'customer lifecycle metrics' (Questio; Corpus). Further, *Use cases* and *Past problems* enable startups to learn from 'problems that we know from working with other companies' (Stationery). Elephantus mentioned that they increasingly learn from their

Table 7

Learning Core Theme

Category	Selective codes	Open codes
Learning ←	Learning process ←	Cyclical learning, continuous learning
	Learning enabler ←	Use cases, past problems, experienced people, customers, competitors

Competitors, for example, when it comes to their 'pricing strategy through which we noticed that competitors sell their product much cheaper'. Rennessaince prefers to learn from their network and 'talk to people that internationalized beforehand' (*Experienced people*).

5.2.1.3 Hypotheses testing

Hypotheses testing was another core theme that emerged during the interviews, with 'Hypotheses', 'Hypotheses testing', and 'Hypotheses testing timing', as important selective codes. Table 8 presents the selective and open codes within the category.

Hypotheses

Among those using hypotheses testing, hypotheses are formulated and tested on *Segment*, *Local authorities*, *Industry*, *Go-to-market message*, *Customer income*, and *Customer demand*. Hypotheses about *Industry* were most common ($N = 7$), with startups indicating they formulate hypotheses around 'industry criteria' (Rennessaince; Questio, Corpus), e.g., the proportion of 'private and public customers' (Corpus). Other startups formulate such hypotheses to prioritize (Annogy) or establish core industry hypotheses (Rennessaince). *Go-to-market message* was cited as a key factor, with 'hypotheses testing to date […] [being] more on the messaging [than] product' (Innogy).

Hypotheses testing

Hypotheses testing presence and *Hypotheses testing absence* emerged as two contrasting codes. *Hypotheses testing presence* occurred, for instance, through the formulation of market (Immort), messaging (Innogy), and value proposition hypotheses (Rennessaince). Other startups more generally reported to 'strategically hypothesize' (Iphell; Questio). *Hypotheses testing absence* emerged from startups 'not having the force to do it since we have increasing demand' (Elephantus) and those 'not having the need to do it yet' (Orphus).

Table 8

Hypotheses Testing Core Theme

Category	Selective codes	Open codes
Hypotheses testing ←	Hypotheses ←	Segment, local authorities, industry, go-to-market message, customer income, customer demand
	Hypotheses testing ←	Hypotheses testing presence, hypotheses testing absence
	Hyptoheses testing timing ←	Post-market entry, post-market decision, post-customer feedback

Hypotheses testing timing

The timing at which hypotheses are tested varied among startups. *Post-market entry* (N = 5) emerged most frequently, with startups testing after 'launching the product' (Questio) to 'see how big the pushback is' (Iphell). *Post-market decision* emerged likewise, with startups hypothesizing after deciding to expand into a particular market to 'save resources and test with minimum effort' (Orphus). Lastly, *Post-customer feedback* emerged from 'testing hypotheses after talking to customers' (Stationery).

5.2.1.4 Iteration

Iteration was another core theme that emerged during the interviews, with 'Iteration timing', 'Iteration strategy', and 'Iteration process' as important selective codes. Table 9 presents the selective and open codes within the category.

Iteration timing

Most startups conduct *Iteration post-customer feedback*, either based on conversations (Stationery, Immort, Corpus) or systematic A/B testing (Questio). Corpus also performs *Iteration post-research*, indicating a combinatorial approach by likewise focusing on general market research.

Iteration strategy

The strategic approaches used to iterate varied, with four main approaches that could be identified. Most startups iterated their international market entry strategies *Through prioritization*, meaning that it was important for them not to iterate daily (Cerveillance), or to be selective depending on relevance (Cerveillance, Questio). *Through gut feeling* emerged, with startups stating either their 'executive's gut feeling' (Cerveillance) to be important or mentioning an unstructured process guided mainly by intuition (Stationery). Cerveillance and Annogy mentioned that their iteration is implemented *Through fast flexibility*, e.g., 'fast and flexible

Table 9

Iteration Core Theme

Category	Selective codes	Open codes
Iteration	Iteration timing	Iteration post-research, iteration post-customer feedback
	Iteration strategy	Through small team, through priorizitation, through gut feeling, through fast flexibility
	Iteration process	Cyclical iteration, continuous iteration

adoptions of the strategy depending on market needs' (Annogy). Finally, 24Health mentioned that their iteration is centralized within a small team that is 'responsible for the market and conducting iterative strategy development'.

Iteration process

When expressing the time frame in which iterations on their market entry strategies are conducted, most startups mentioned the relevance of *Continuous iterations* (N = 9), e.g., 'constantly measuring and iterating' (Iphell), 'continuously realigning the strategy through iterations' (Rennessaince), and having these iterations strictly integrated in the expansion plan (Questio). Further, startups mentioned the importance of conducting iterations in a cyclical manner (Annogy, Rennessaince, Immort), 'to understand the problem, define it, implement a spectrum of ideas, and then iterate in cycles' (Rennessaince).

5.2.1.5 Experiments

In conjunction with Iteration, Experiments was another core theme that emerged during the interviews, with 'Experimental process' as an important selective code. Table 10 presents the selective and open codes within the category.

Experimental process

Iterative experiments emerged most frequently (N = 10) among startups, highlighting the importance of iterations through, for example, 'rapid prototyping' (Immort) and MVPs (Rennessaince, Questio). Iphell mentioned iterative experiments to be 'absolutely key to everything to see what works and what doesn't' while Innogy declared to experiment iteratively 'almost too much'. On the contrary, *Irregular experiments* indicates experiments happening at irregular basis. Startups admitted to 'not have the stamina for iterative experiments' (Immort) and not having as many experimental trials as other companies (Annogy). Innogy also mentioned that their experiments tend to be exploratory, 'with many trials and a lot of learning involved' (*Exploratory experiments*).

Table 10

Experiments Core Theme

Category	Selective codes	Open codes
Experiments ←	Experimental process ←	Iterative experiments, irregular experiments, exploratory experiments

5.2.1.6 Customer

Several core themes relating to customers emerged during the interviews. Table 11 presents those categories, selective and open codes that were found most representative of customer insight for the present study.

Customer feedback learning

When asking about factors that facilitate gaining customer insight, startups mentioned *Customer projects*, *Customer metrics* (*N* = 10), and *Customer conversations* (*N* = 18). While Orphus applies project-based learning, meaning to 'derive customer feedback from directly working with them during projects', the majority of startups learns from the latter two factors. *Customer metrics* emerged from startups learning from metrics, e.g., customer usage (24Health, Annogy, Orphus), contract-based targets (Innogy), and conversion rates (Questio, Rennessaince). *Customer conversations* emerged from startups learning 'from the customer perspective' (Immort) when talking to them about their strategy (Cerveillance, Iphell, Stationery), seeing whether 'they understand what we are doing' (Innogy). Further, sales conversations (Orphus) and those around the MVP (Rennessaince) enable startups to gain customer insight. Stationery strengthened the importance of 'deriving learnings from talking to international customers'.

Customer feedback assessment timing

Weekly feedback assessment as well as *Monthly feedback assessment* emerged as two timeframes. Whereas Questio mentioned weekly meetings with their core team and responsible country managers, Corpus and Stationery evaluate their customer feedback monthly.

Customer understanding

When asked about customer factors to understand for the market entry strategy making, five

Table 11

Customer Core Theme

Category	Selective codes	Open codes
Customer feedback	Customer feedback learning	Customer projects, customer metrics, customer conversations
	Customer feedback assessment timing	Weekly feedback assessment, monthly feedback assessment
Customer understanding		Customers' local agents, customer pain points, customer needs, customer liquidity, customer journey, customer job

main factors emerged, with *Customer needs* ($N = 15$) being mentioned most frequently. Here, startups reinforced the relevance of understanding 'customer needs, problems, and questions' (Corpus; Rennessaince, Questio) and their individual challenges (Iphell). Orphus puts customer needs 'right at the beginning due to our individual solutions', while Rennessaince assesses 'potential customer needs' before expanding into another country 'to understand their wishes'. Putting themselves in the perspective of those who use the product emerged through *Customer job*, with Corpus finding it necessary to understand the job in which their software is used, and other startups placing value on gaining a detailed understanding of the challenges among their customers' jobs (Rennessaince, Innogy). Questio emphasizes understanding the entire *Customer journey* along their software, while Elephantus needs to understand *Customer liquidity* to assess their strategy. Finally, the necessity to understand *Customer pain points* was mentioned (Corpus, Annogy).

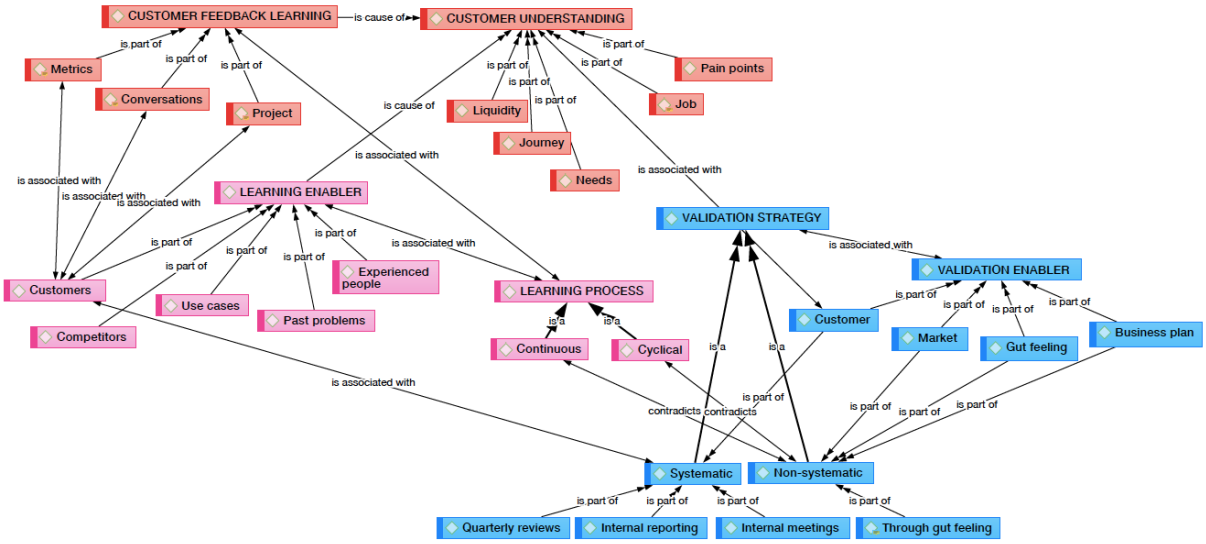
5.2.2 Networks

To conceptually explore the conditions as indicated by the fsQCA, and thus connect these with the foregoing qualitative analysis, it remains necessary to link data across the associated conditions. The following section thereof presents these connections and illustrates patterns of the data. Each causal recipe is displayed by means of a network analysis, showing the selective concepts and open codes with some of them extending the foregoing, displayed results once found appropriate. Selective concepts (in capital letters) are chosen once found to be most representative of the associated condition. Relations are indicated by means of arrows. Findings are explained in accordance with these figures. Given the complexity and breadth of connections, the explanations will solely present insights that were found most representative for the causal recipes.

The first network (see Figure 2) depicts the relations between the selective concepts and open codes on the presence of customer insight (red), learning (pink), and the absence of validation (blue) on internationalization success, as indicated by the intermediate causal recipe configuration A (see Table 3). The relations of selective concepts include the cause of 'Customer feedback learning' on 'Customer understanding' and of 'Learning enabler' on 'Customer understanding'. Moreover, relations include associations between 'Customer feedback learning' and 'Learning process', 'Validation strategy' and 'Validation enabler', and 'Learning enabler' and 'Learning process'. Relations of both selective concepts and open codes include the association between 'Customer understanding and *Customer*. Finally, relations of open codes include, for instance, associations between *Systematic* and *Customers*, and between

Figure 2

Customer Insight, Learning, and Absence of Validation on Internationalization Success

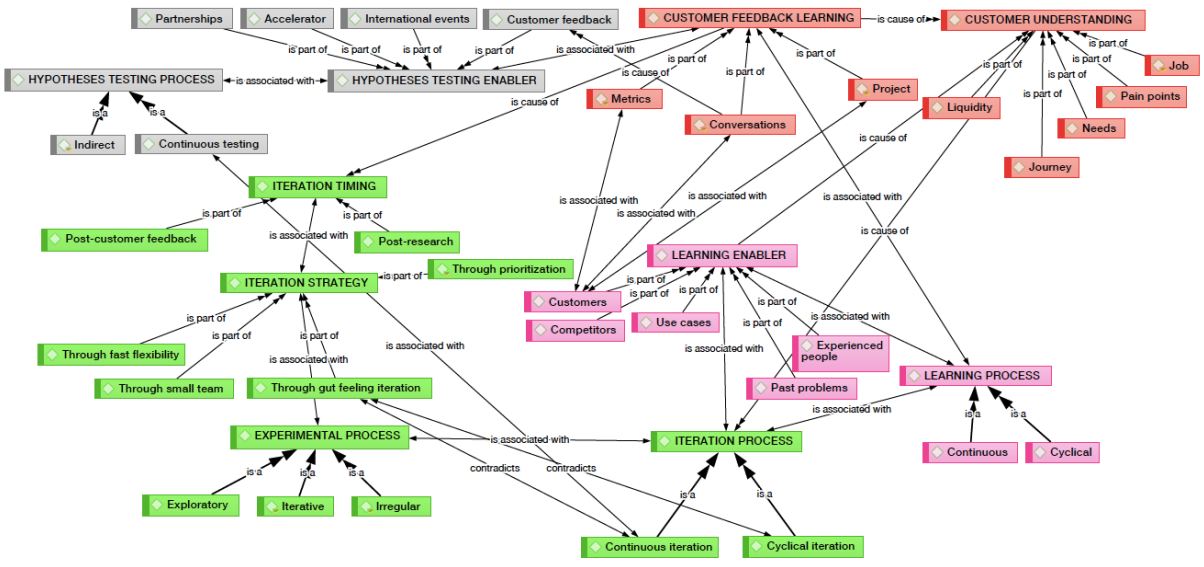


Customers and *Metrics*, *Conversations*, and *Projects*. Moreover, *Market*, *Gut feeling*, and *Business plan* are being part of *Non-systematic* whereas *Customer* is being part of *Systematic*. Lastly, relations include the contradiction of *Non-systematic* and *Cyclical* and *Continuous*.

The second network (see Figure 3) depicts the relations between the selective concepts and open codes on the presence of hypotheses testing (gray), customer insight (red), learning

Figure 3

Hypotheses Testing, Customer Insight, Learning, and Iterative Experimentation on Internationalization Success

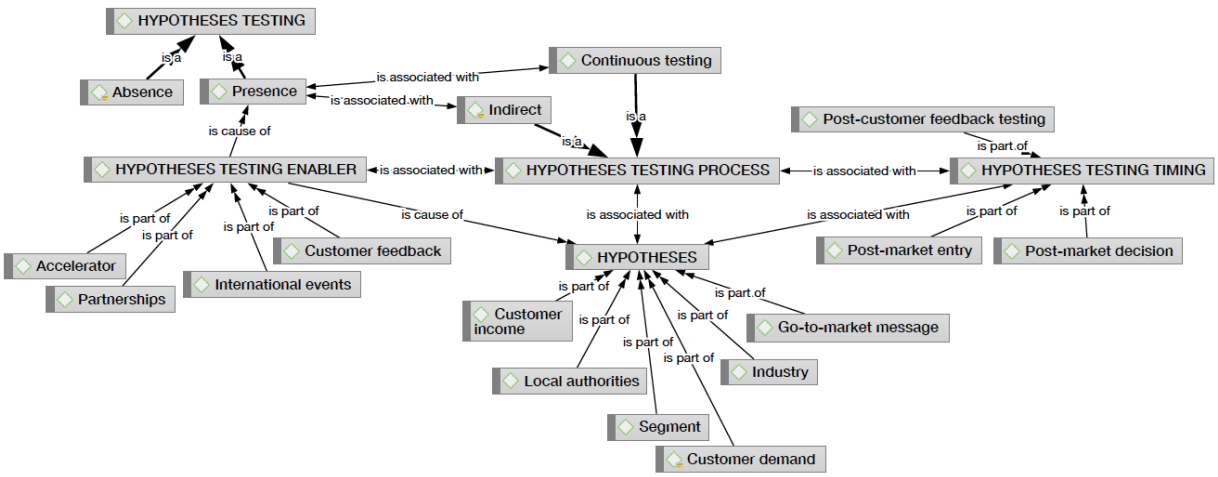


(pink), and iterative experimentation (green), as indicated by the intermediate causal recipe configuration B (see Table 3). The relations of selective concepts include the cause of 'Customer feedback learning' on 'Iteration timing', of 'Customer feedback learning' on 'Customer understanding', of 'Learning enabler' on 'Customer understanding', and of 'Customer understanding' on 'Iteration process'. Moreover, relations include associations between 'Customer feedback learning' and 'Learning process', 'Iteration timing' and 'Iteration strategy', 'Iteration strategy' and 'Experimental process', 'Experimental process' and 'Iteration process', 'Iteration process' and 'Learning process', 'Customer feedback learning' and 'Hypotheses testing enabler', and between 'Hypotheses testing enabler' and 'Hypotheses testing process'. Finally, relations of open codes include, for instance, the association between *Continuous iteration* and *Continuous testing*, between *Customers* and *Metrics*, *Project*, and *Conversations*, and the cause of *Conversations* on *Customer feedback*. Lastly, relations include the contradiction of *Cyclical iteration*, Continuous *iteration* and *Through gut feeling iteration*.

The third network (see Figure 4) depicts the relations among the presence of hypotheses testing (gray), as indicated by the parsimonious causal recipe configuration A (see Table 4). The relations of selective concepts include the cause of 'Hypotheses testing enabler' on 'Hypotheses'. Moreover, relations include associations between 'Hypotheses' and 'Hypotheses testing process' and 'Hypotheses testing timing', and 'Hypotheses testing enabler' and 'Hypotheses testing process'. Relations of both selective concepts and open codes include the cause of 'Hypotheses testing enabler' on *Presence*. Lastly, relations of open codes include, for instance, associations between *Presence* and *Continuous testing* and *Indirect*.

Figure 4

Hypotheses Testing on Internationalization Success



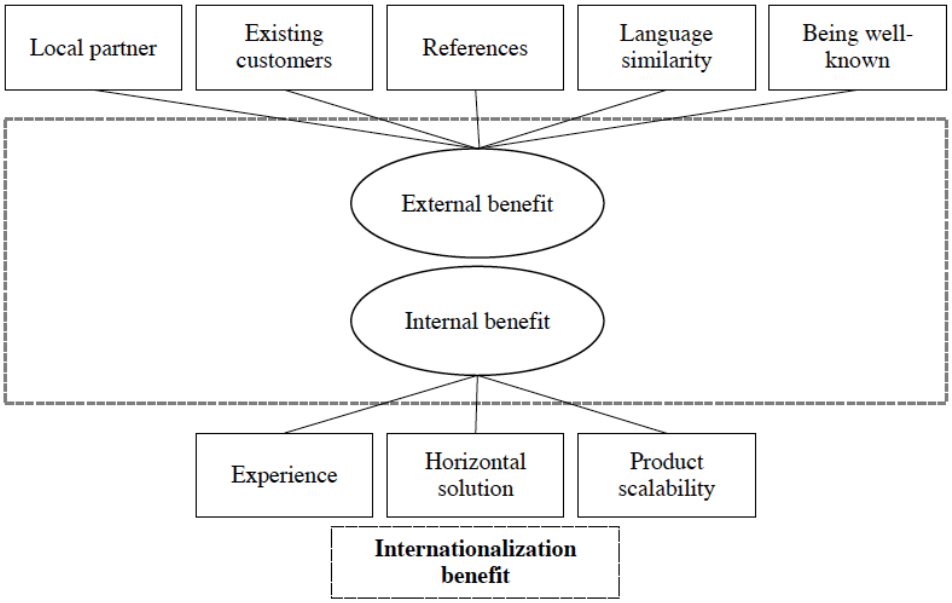
5.2.3 Additional findings

Some additional findings are worth mentioning to better understand the startups' internationalization. The following figures briefly highlight categories along with their selective and open codes. A selection of open codes is explained in the text. Appendix I encompasses additional findings.

Several factors were mentioned that favor the startups' internationalization, with a selection displayed in Figure 5. 'External benefit' and 'Internal benefit' emerged as two concepts. While the former highlights mostly market-dependent benefits on which startups have little control over, the latter highlights company-dependent benefits. Having a *Local partner* was mentioned most frequently. Startups therefore profited from someone based in the country they want to internationalize into, supporting them with deep sector knowledge, contacts, and lead generation (Rennessaince, Innogy, Elephantus, Corpus, Annogy, Cerveillance). Likewise, startups profited from having *Existing customers* with whom they could test their internationalization strategy (Elephantus, Immort, Iphell, Orphus, Cerveillance, Annogy), most often leading to positive *References*. Internally, startups' internationalization benefits from them having *Experience*, either through their last internationalization (Innogy, Rennessaince) or through prior job experience (Iphell, Elephantus, Cerveillance). Moreover, *Horizontal solution* (i.e., relevant for many industries; Iphell, Questio), as well as *Product scalability* (i.e., the option to introduce additional functions; Questio), facilitate the startups' internationalization.

Figure 5

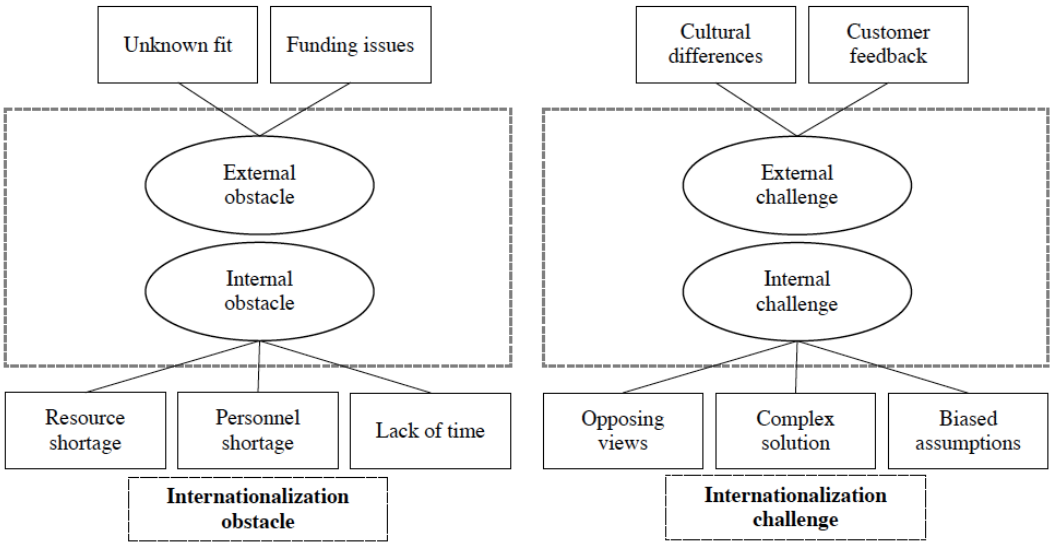
Benefits Influencing the Internationalization



Several factors were mentioned that hinder the startups' internationalization, with 'Internationalization obstacle' and 'Internationalization challenge' emerging as two core themes, with a selection displayed in Figure 6. While the former highlights factors making internationalization almost impossible, the latter highlights factors making internationalization more challenging. For both, internal and external factors could be distinguished. *Unknown fit* and *Funding issues* were two obstacles that were mentioned most frequently. The former highlights startups shying away from internationalization due to 'the external market moving to slow [and not having] the perfect solution for it' (Immort), and because they are unsure whether their product will work in international markets (Innogy, Orphus). The latter underscores that startups are unable to internationalize due to a lack of funding (Annogy, Orphus, Immort, Innogy). Relatedly, *Resource shortage* and *Personnel* shortage, and thus resource availability, were two prominent factors hindering internationalization, leading startups to focus on working with existing resources (Orphus, Immort, Elephantus, Annogy, 24Health) and personnel (Cerveillance, Orphus, Stationery). *Cultural differences* were mentioned as a common challenge to internationalize, with startups struggling after not paying attention to cultural factors (Elephantus, Orphus) or being challenged in the first place due to different cultural behavior (Annogy, Elephantus). The challenge of receiving *Customer feedback* to move forward with the internationalization strategy was mentioned by Cerveillance and Innogy. *Opposing views* on foreign market choice (Immort, Innogy), a *Complex solution* hampering customers' comprehension (Rennessaince, Innogy, Corpus), and *Biased assumptions* (i.e.,

Figure 6

Obstacles and Challenges Influencing the Internationalization



internationalizing solely with understanding the home market; Orphus, Cerveillance) were mentioned as internal internationalization challenges.

Lastly, as 'Market entries strategy', *Strict country order* and *Flexible country order* were mentioned among the startups. Questio, Iphell, and Corpus make use of the former by having penetration plans that enable them to orderly target countries similar in language (Iphell, Corpus), and geographical distance (Questio). On the other hand, Cerveillance and Orphus make use of the latter, hence not defining beforehand where they want to expand to but deciding entirely based on demand.

5.3 Interpretation of results

Before the following section connects these findings to the propositions and, thus, relates them to internationalization success (see Appendix J for learning results), it remains important to interpret the emergence of the individual conditions with regard to the fsQCA outcome.

The absence of validation proved to be one of the most surprising findings, reinforced by the fact that not a single causal recipe indicated its necessary and sufficient presence. Thus, the question arose whether startups are indeed deliberately not performing validation - or, if they are, why it might not be relevant for their internationalization. The interviews revealed that most startups struggle to implement validation, either due to a lack of resources and personnel, funding issues, or because of other priorities. Instead of adopting a systematic approach to validation (i.e., deciding upon it as a crucial procedure of their overall international market entry strategy making), most startups tried to achieve validation through other mechanisms. The scarcity of resources therefore led them to validate through the market itself (e.g., Annogy), their business plan (e.g., Stationery), and their gut feeling (e.g., Immort, Innogy, Orphus). Although few startups used a systematic validation method of market entry blueprints (Questio, Corpus, Iphell, Rennessaince), that shall later be discussed in-depth, these three validation methods were found to contradict the use of a systematic learning process. It therefore becomes clear why in the case of the present research, validation, or the lack thereof, proved to be a crucial part.

Another important finding is the occurrence of customer insight and learning in all causal recipes with more than one condition, illustrating these as most important for international market entry strategy making. Additionally, the interviews showed that most startups agree on prioritizing customer feedback, such as the understanding of customer needs (e.g., Questio, Rennessaince), and that customer conversations are being of particular importance for their learning (e.g., Innogy, Cerveillance). Despite this agreement, however, the

way feedback is collected, its evaluation, and the understanding that startups derive from it differs. It seems as if these differences are specifically dependent on the products and services, being plausible given that the solutions range from subscription-based apps (e.g., 24Health), hardware solutions (e.g., Cerveillance), to individual property devices (e.g., Corpus). What deviates from the focus on prioritizing customer feedback, however, is that for some startups their gut feeling is still important when making their strategies (e.g., Cerveillance, Stationery). This clearly contrasts customer-feedback-over-intuition of a lean startup approach, therefore raising the question whether they design their strategies by predominantly prioritizing their intuition. Regardless, this supports the previously described finding that gut instinct cannot be neglected and remains an important factor for some.

The finding of hypotheses testing as a causal recipe suggests at first glance that startups do not need to implement other conditions for their internationalization success, once they at least apply hypotheses testing. However, when examining the interviews, it becomes clear that this finding is misleading, raising the question of why the fsQCA indicates it as solely sufficient for the outcome. Through the network analyses, it crystallizes that hypotheses testing relates to and involves aspects of other conditions, specifically of learning, customer insight, and iterative experimentation. Such relation is illustrated by, for example, the hypotheses stemming from a foregoing learning process, mostly targeting customer aspects, and being tested in a continuous, iterative approach. This, in turn, may explain why the exact same startups that created the sufficiency of hypotheses testing also created the causal recipe with the four conditions (i.e., learning, customer insight, iterative experimentation, hypotheses testing). Interestingly, as described earlier, literature suggests that LSM treats the elements of the business model methodology as hypotheses to be tested, validated, and adjusted (e.g., Autio & Zander, 2016; Mueller & Thoring, 2012; Shepherd & Gruber, 2020). This may then partly explain why the present study has found the association between hypotheses testing and other conditions, through which we can consequently derive two interpretations: Either hypotheses testing is a subcategory of each of the other three conditions, or the main category encompassing all three conditions. Looking at the majority of startups not applying systematic hypotheses testing, the first interpretation seems more appropriate in that regard. This interpretation, however, may change depending on the research population.

Finally, the presence of iterative experimentation is consistent with the outlined importance of experimentation within strategy making (e.g., Bingham, 2009), and its essential role for INV in learning and implementing new knowledge. This is reinforced by the fact that startups mentioned iterative experiments to be conducted continuously (e.g. Renessaince), for

example by having them integrated in their expansion plan (Questio). The question remains, however, as to why it is that iterative experimentation, like hypotheses testing, appears in only one causal recipe despite its essentialism. A possible explanation hereby could be that is has not been reinforced as much as customer insight and learning among the startups. Moreover, when examining the memberships within this causal recipe, we notice that among four startups, two startups are being part of both solution formulas (Iphell, Corpus). A third startup (Orphus), which is not part of the solution formula including iterative experimentation and hypotheses testing, clarified during the interviews that hypotheses testing is far from being applied in their company due to lack of resources. This absence of a certain condition seems to match the fourth startup's expression of iterations being unstructured and merely based on intuition (Stationery). It therefore appears that the finding of iterative experimentation, and hypotheses testing, being part of only one causal recipe is due to the premise of applying fsQCA. While it is striking that two startups are part of both causal recipes (Iphell, Corpus), it does not seem unlikely that different approaches exist for them to develop market entry strategies. In other words, the differences in causal recipes may stem from the simple assumption that there is not one route to success, but several.

6. DISCUSSION

6.1 Research problem

Within the academic and entrepreneurial community, lean startup established momentum as an important concept for business model and product development. Despite its popularity, it has not been widely studied yet in the context of internationalization, specifically in the area of international market entry strategy making. This becomes problematic in that an unknown potential of the two factors (i.e., lean startup and international market entry strategy making) may be overseen. Therefore, the present research sought to explore a combination of these through the following research question:

What are the patterns of a lean startup approach on the internationalization of new high-tech ventures?

6.2 Main findings and interpretation

With exploring the occurrence of conditions, the present research revealed rather unexpected findings that deviate from the previous research model, with largely consistent results among

the two analyses: the absence of validation, the high importance of customer insight and learning, and the association of hypotheses testing with other conditions. Although the present study did not statistically address the question of causality, the results indicate certain relations to internationalization success that shall be discussed in the following.

The startups put most importance on customer insights and learning when it comes to internationalization success, though the application of these tended to vary in explicit priorities, such as which customer insights to collect or at what time intervals to evaluate them. Since the literature emphasized the importance of a customer-centric approach for success (e.g., Silva et al., 2020), as well as the linkage between learning and higher entrepreneurial achievement (e.g., Sekliuckiene et al., 2018), this finding was expected. Strikingly, customer insight and learning occurred only in tandem with other conditions, as evidenced by either the absence of validation or the presence of iterative experimentation and hypotheses testing. It seems reasonable to assume that in order to succeed in their internationalization, steps must be derived from the customer insights gained and the learning that ensues. The presence of iterative experimentation and hypotheses testing *on the path* to internationalization success thereby seems reasonable, especially given the emphasis in the literature of continuous testing and pivoting to find the successful business model (Autio, 2017; Bingham, 2009). Thinking of this overall relation, it becomes clear that startups seem to view every strategy as an initial experiment, and iterate it with adjustments based on customer insights and the learning derived, to ultimately remain competitive.

Nevertheless, the question arises as to why customer insight and learning are associated with internationalization success in the absence of validation. While it may be possible that both conditions alone would have been sufficient, the non-systematic validation mentioned by most startups has hindered systematic learning, and thus may cause the necessary absence. What stands out is that the startups belong to one of two categories, with either applying systematic validation, or not. Considering that a lean startup approach emphasizes the importance of validation (e.g., Harms and Schwery, 2019; Autio, 2017; Rasmussen & Tanev, 2015), this finding was clearly unexpected. What seems to, among other conditions, have caused this division, and thus the feasibility of applying a lean startup approach, is for example the availability of resources. That is, insofar as startups have sufficient resources to sustain their core business, they expressed to apply systematic validation. As soon as they do not have these resources, they rely on other mechanisms (e.g., gut feeling), that make systematic validation irrelevant for them. As most startups achieve some form of validation through these other mechanisms, systematic validation plays a minor role in our sample population. Thus, it is a

condition that *can* be applied but does not have to be applied in order to make international market entry strategies.

That internationalization success relies on the precise application of validation becomes clear when looking at the minority of startups that do in fact deliberately apply systematic validation. These startups, that for example established a higher number of foreign markets (e.g., Questio) or indicated greater international success (e.g., Iphell), used a market entry blueprint that was tested, pivoted, and implemented once effective (Iphell, Questio, Corpus). Interestingly, these blueprints mirror minimum viable products that are undeniably an important part of a lean startup approach (e.g., Rasmussen & Tanev, 2015; Ries, 2011). Also, this finding matches the literature, in that a systematic validation has a higher relevance to and impact on success than, for example, intuition (Camuffo et al., 2020; Shepherd & Gruber, 2020). To strengthen, validation based on intuition was prioritized among those startups that indicated that either their internationalization success had largely failed to materialize to date (Innogy, Immort, Orphus), or that refrained from applying a lean startup approach (Cerveillance). Nonetheless, the validation differed from what we expected. That is, instead of applying it continuously within their strategy making as suggested in the literature (e.g., Autio, 2017; Rasmussen & Tanev, 2015), the startups conducted systematic validation once and then adjusted their market entry blueprints depending on the market of interest. We can, thus, assume that validation is positively related to internationalization success when performed in a time-efficient manner. Although this does not imply that those startups not having the resources to apply it were predominantly less successful, it does show that none of the startups using it were unsuccessful.

Furthermore, hypotheses testing has been found to be mostly integrated within into other activities, specifically as part of gathering customer insights, learning from them, and iterating their strategy based on those insights. In line, several startups argued that they mostly test hypotheses after entering international markets (e.g., Iphell). These findings deviate from our expectation, given that Ries (2011) and scholars (e.g., Autio & Zander, 2016; Rasmussen & Tanev, 2015; Tanev, 2017) highlight the importance of translating entrepreneurial opportunities through a hypotheses-driven approach *before* executing these, with the advantage being the reduction of high uncertainty (e.g., Rasmussen & Tanev, 2015; Shepherd & Gruber, 2020). What becomes apparent, however, is that several startups that are part of the causal recipe generating its sufficiency, are in turn those that use the market entry blueprints and are internationally successful (Questio, Iphell, Corpus). Looking at the outlined literature, this

relation is unsurprising, as researchers emphasize hypotheses to be tested through minimum viable products (e.g., Rasmussen & Tanev, 2015).

Through these findings, it is clear that the proposed research model did not occur in the present study, as the validation and hypotheses testing findings deviate from the assumed cyclical process. However, even though a cyclic pattern was expected, the deviation does not mean that no pattern has been established. Rather, a new pattern emerged that not only illustrates what most startups prioritize, but also reveals differences in success factors based on those priorities. It suggests that several conditions may be related to internationalization success, but it is the applicability of additional ones that seem to guarantee it.

6.3 Research model

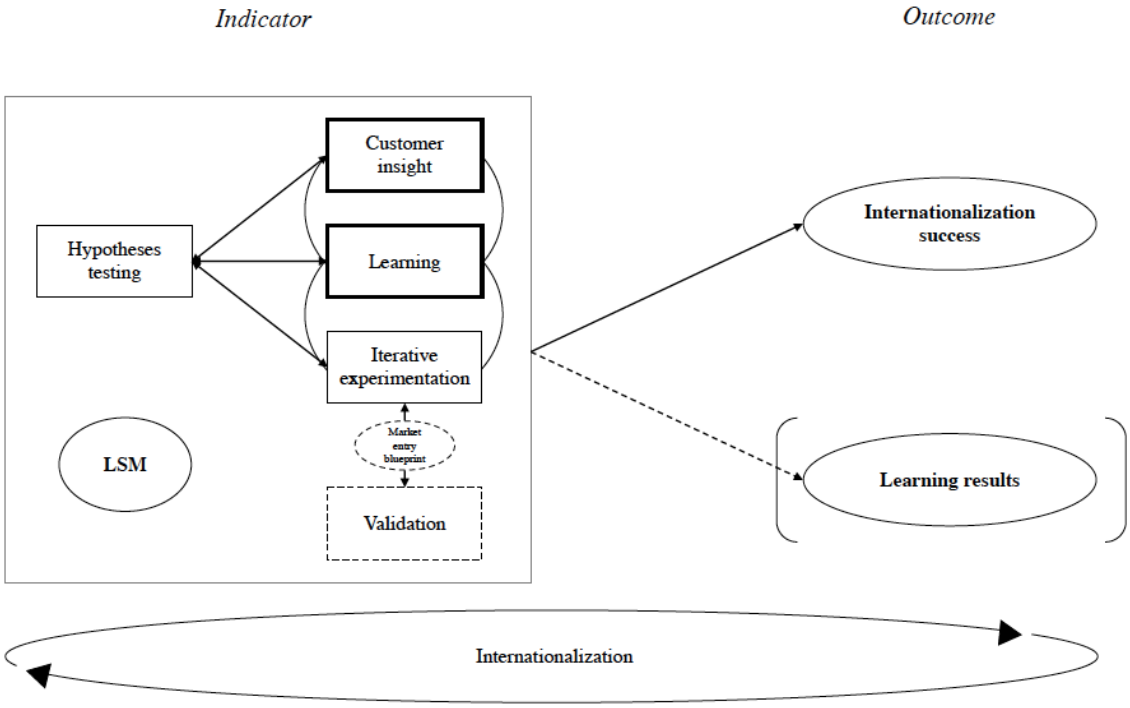
With the foregoing interpretations, it becomes necessary to update the initial research model. Findings indicate that both validation and hypotheses testing are not complementary with the prescribed build-measure-learn cycle that treats all conditions as equally important. Moreover, customer insight and learning stood out as the most important factors for the international market entry strategy making, being consistently highlighted by all startups to achieve internationalization success. Further, the findings indicate that startups iteratively experiment their strategies, although this has not been highlighted as much as the other two factors.

Figure 7 displays customer insight and learning with a bold line to imply their importance. Iterative experimentation is presented by means of a regular line. All three conditions are connected to display their relation. As a subcategory, hypotheses testing is connected to the three conditions by means of arrows. Validation, as well as market entry blueprint, are indicated through an arrow pointing from validation to iterative experimentation and vice versa, given their interconnectivity of continuously adapting the blueprint. Both are displayed by means of a dotted line, since it remains that internationalization success has not been exclusive to those startups implementing systematic validation. As startups argued to continuously pursue the conditions, internationalization is now displayed by a circle.

Regarding the research question, the present study showed that the pattern of a lean startup approach on the internationalization of new high-tech ventures is composed of three factors. That is the insights startups gain about their customers, the extent to which they learn from these insights, and the iterations and experimentation that take place both based on these insights and then leading to new insights. Regarding those startups that achieved high internationalization success, validation does become relevant, but only in such a way that it is complementary to the routines that are implemented internally. In other words, only if it is a

Figure 7

Updated Research Model visualizing LSM, Internationalization Success and Learning Results



time-efficient process that can be implemented with minimum effort, e.g., through market entry blueprints, it is of relevance for the startups and, hence, the research model. While the startups using blueprints to enter international markets were also the ones expressing to deliberately implement a lean startup approach, one can assume that those implementing it are on average more successful in their internationalization - while those that do not implement a lean startup approach are on average less successful. However, this remains speculation and, moreover, goes beyond the focus of the present study.

6.4 Implications

As mentioned, the results challenge the existing theory of a lean startup approach that, so far, focused on hypotheses testing and validation as primary important factors (e.g., Autio, 2017; Rasmussen & Tanev, 2015). It remains necessary, however, to take into account the fact that with the present research, a lean startup approach had been investigated upon within a rather new area, that is of international market entry strategy making. It can therefore be argued that the findings may have emerged from and deviate due to the different context - thus, not all conditions have to be of equal importance as presumed based on the literature. Nonetheless, the finding that those startups that systematically implement certain conditions for their strategy

making are invariably successful internationally does seem to complement earlier studies in the field of lean internationalization (e.g., Autio, 2017; Neubert, 2017; Orero-Blat et al., 2020). Whereas Neubert (2017) concluded the increased efficiency once internationalizing by means of a lean startup approach, he did not cover explicit steps that are of relevance. The present study has therefore shed light on what exactly new ventures integrate from a lean startup approach for their international market entry strategy making.

Furthermore, the results suggest that most startups implement concepts depending on their specific context rather than simply following a theory-driven approach. Even if they are aware of the relevance of a systematic, lean-resembling process, they may set different priorities based on, for example, their available resources. For those startups having available resources, the study shows that they implement systematic validation, such as by developing market entry blueprints as a simplified adaptation of validation. New insights are therefore provided into, first, the necessity of available resources for and, second, potential adaptations of the implementation of a lean startup approach. That is, whatever patterns among it exist for the internationalization of new high-tech ventures, the overall implementation depends largely on the resources available and the priorities startups set. Among other things, this paves the way for further studies to investigate the dependence of both factors in greater detail.

What do these findings now suggest, and how can the startup community benefit from them? While it became clear that the startups are strongly resource-driven, with trying out new concepts, however promising and proven they may be, always being weighed against available staff, time, funding, and other priorities, it seems sensible to approach internationalization with lean principles right from the outset. What seems to count, thereby, is the deliberate, systematic implementation of conditions. Although startups then have to set their priorities differently, implementing a systematic lean startup approach will most likely save resources and time along the way and counteract future mistakes. Moreover, these processes can complement existing resources, with an example being team meetings in which international market entries are discussed, implications derived, and the strategy iterated.

Another practical recommendation resulting from this study is the development of a minimum viable product for validating the internationalization strategy. The implementation of, for example, a market entry blueprint, when possible and the startup's solution allowing it, may require a significant amount of work initially, but ultimately will facilitate the international market entry strategy making. While this once again relates to and depends on the availability of resources, it can be one of those tools that startups may decide to prioritize on to save time and resources in the future. Because, based on what the study has shown, startups do not need

to implement heavy procedures or develop time-consuming tools to validate their strategy. Rather, they can work with the available resources once they have prioritized a systematic procedure, and then adapt theoretical concepts (i.e., lean principles) to their liking.

7. CONCLUSION

Prior research on a lean startup approach has focused a great deal on its impact on product and business model development (e.g., Autio, 2017; Blank, 2013), while only little research started to acknowledge its potential as a strategy making approach in the context of internationalization (e.g., Coviello & Tanev, 2017; McPhee & Tanev, 2017; Neubert, 2017; Orero-Blat et al., 2020). The present study tried to fill the gap by means of a mixed-method study integrating a grounded theory approach. Being based on a prior study conducted by Harms and Schwery (2019), the possibility of a lean startup approach for the international market entry strategy making was explored in the case of high-tech startups. The study found a particular, emerging pattern through which it became apparent that the individual steps of the build-measure-learn cycle, and thus some key premises of a lean startup approach, differ in the context of international market entry strategy making compared to its initial application area.

Therefore, the implied theory of this study states that customer insight, learning, and iterative experimentation are most important for making the international market entry strategy, with hypotheses testing being grounded in the application of these steps. Strategy making appears to be particularly promising once accompanied by a systematic validation process designed to be as simple as possible, ideally through an MVP in the form of a market entry blueprint. Nonetheless, once validation is grounded in mechanisms far from a lean startup approach (e.g., gut feeling), it contradicts the application of the prior conditions. Resource availability emerged as an important factor, possibly influencing the overall, systematic implementation of the startups' international market entry strategy making.

Despite the care taken in conducting the research, this study is not without limitations. First, the final dataset included only startups that are based in Europe. Despite most having internationalized outside Europe, the generalization should be taken with caution, as it may well be that startups originating from other continents operate under different structural conditions and, hence, with different strategies. Future research should address this matter and include a broader research population, ideally studying it through group comparisons. Second, although the startups differed in whether they were supported by external funding (and thus relied on it), results were not examined to account for this difference in funding background. Future research is therefore needed to explore this difference and whether the international market entry strategy

making and the application of a lean startup approach vary in terms of external funding. Additionally, resource availability's relation to funding background should be investigated, to lay the foundation for whether a lean startup approach is mainly applied by startups that are supported by external capital and, thus, have the appropriate resources. Third, the qualitative data were examined only in tandem with the quantitative data. Thus, the fsQCA result implied the study of concepts that were considered representative of the outcome under investigation. Although this selection was necessary due to time and space constraints, future research should seek to identify relationships between concepts beyond this study's focus to explore additional findings and theoretical assumptions. Finally, generalizing the results should be done with caution given the small sample size, as it may well be that differences in internationalization success and its relation to a lean startup approach appear more salient than they actually are. Future studies should therefore aim for a larger study population to facilitate the generalization.

The implications of the present study are twofold. First, the startup community benefits from the insights gained, as a lean startup approach has now become tangible for international market entry strategy making. Thus, even if startups did not implement the approach for their product or business model development, their internationalization may now become an area that could benefit from this systematic yet iterative process. Moreover, a lean startup approach can be seen as some form of guidance, being especially helpful for both high-growth startups scaling and internationalizing at a rapid pace and for startups having no previous internationalization experience. The study further showed that the cyclical process of the steps along the build-measure-learn cycle is flexible and differs according to, for example, resource availability, which hopefully removes a potential burden of strict implementation. Second, the academic community benefits from new insights, as this study provides increased knowledge of a lean startup approach's applicability and extensibility. It is therefore hoped that through this visibility, future studies will further explore the topic within international market entry strategy making. For only through a further, deeper consideration and a critical examination will the approach gain long-term significance beyond its current scope of application.

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APPENDICES

APPENDIX A

Hello XY,

how are you today? I hope you are doing great at XY!

Hopefully you remember me - if not, I am part of the KPMG Venture Matching team together with Nga. Also, I am currently in the last meters of my business studies and accordingly in the middle of my master thesis phase. In order to complete my studies before the summer (toi toi toi), I'm looking for startups that have successfully internationalized in recent years. Of course you came to my mind.

I would be super happy if you have the time and desire to be part of my study which is about the internationalization of tech startups. Participation requires the timely completion of an online survey as well as a subsequent interview of about 30 minutes, which however will not take place until the end of April / beginning of May (depending on how it suits you). If you don't have the opportunity to participate, but someone else from your team is familiar with the internationalization of XY, that will of course work as well.

Do you think you can support me here? If yes, I will send you the study and we can arrange a short interview slot for the end of April / beginning of May.

I look forward to your response and wish you a hopefully sunny day,
Alicia

APPENDIX B

Interview Guideline

Interview question	Rationale
Broad questions irrespective of fsQCA outcome	
What does internationalization mean for your company? → What is the importance of internationalization for your business?	Starting rather broad to ease building rapport with the participant and to stimulate his/her thinking towards the internationalization aspect
When thinking about the internationalizations of your company, how does your company approach new internationalization decisions?	Going more specific in the international strategy-making topic to obtain more detailed, but still broad, insights of the process
Specific questions irrespective of fsQCA outcome	
What are in your view crucial elements of strategy-making?	Exploring the importance of activities without already pushing towards the outcomes of the analysis
Have you been following the same activities during the various internationalizations that took place? → If so, could you please elaborate on these activities?	Exploring the potential iteration of activities without already pushing towards the outcome of the analysis
What is in your view the relevancy of spontaneity for strategy-making when it comes to the internationalization?	Exploring whether the companies approach internationalization without clear strategies
Specific questions based on fsQCA outcome	
The analysis indicated the importance of customer insight and learning during the strategy-making process (including for your startup). Could you elaborate on how exactly this is implemented within your company?	Given that **customer insight and learning** are sufficient and necessary conditions of the outcome, this needs to be explored further.
The analysis indicated hypothesis testing to be important as well. How does hypothesis testing take place within your company? → Which specific activities belong to testing the hypotheses about the international market?	Given that **hypothesis testing** is a sufficient condition of the outcome, this needs to be explored further – specifically to see how it can be that the single condition produces the outcome.
Validation can be defined as proving (hence validating) the assumption you hold about the international market. Does your company validate decisions during the strategy-making? → Additionally, how does your company make sure that the strategy implemented is fruitful? → The analysis showed that validation isn't contributing to the strategy-making process. Could you elaborate whether this matches with your company's activities?	Given that the absence of **validation** is a sufficient condition of the outcome, this needs to be explored further – specifically to see whether validation potentially takes part in other activities instead.
Could you please elaborate on the interplay of hypothesis testing and iterative experimentation within your company? → Would you see hypothesis testing and iterative experimentation as distinct or combined activities?	Given that the analysis showed **hypothesis testing and iterative experimentation** to be sufficient conditions in presence of customer insight and learning, this needs to be explored further – specifically to understand how it comes that iterative experimentation emerges only in presence of hypothesis testing.
What is in your view crucial to develop a deep understanding of the international market? → Which activities have resulted in the greatest learning outcome for your company during the internationalization process? → Which activities are most important for you to enable the greatest learning about the international market?	Since almost all companies showed membership within **customer insight, learning and iterative experimentation** on **learning success**, this needs to be explored and substantiated further.
The analysis showed that your company scores above average on successful internationalizations. Which relevant internal (or external) factors contributed to this success?	This depends on the startup and is only going to be asked for those that score above average on the internationalization. It might generate further insights of activities that especially take place within successfully internationalizing startups.
When thinking about your company's internationalizations, when do the strategy-making activities end – if at all? → How does your company approach the activities in terms of timing? → Are there certain steps you conduct more regularly than others, perhaps even beyond the implementation of the strategy?	Given that we do not possess much knowledge of the time frame in which the activities take place, this needs to be explored further. Specially to explore whether certain activities are iterated, and others are not or whether certain activities are repeated at some point.
Broad questions irrespective of fsQCA outcome	
How do you in retrospective assess your company's internationalization and the way you approached it?	Asking more direct questions at the end of the interview to obtain further information, specifically and potentially on whether companies wish to have known some activities earlier
Are there things you've wished to have known earlier when it comes to the strategy-making process of your internationalizations?	Asking more direct questions at the end of the interview to obtain further information, specifically and potentially on whether companies wish to have known some activities earlier

Note. Questions were adjusted during the interview depending on answers

APPENDIX C

Table 12

Constructs, Adjustments and Reasoning

Original Construct	Adjusted construct	Reasoning
LSC (Harms & Schwery, 2019)		
To determine the conditions and configurations of conditions (hence patterns) of the LSM dimensions (i.e., lean startup approach) that lead to the outcome of both internationalization success and learning results		
Hypothesis testing We formulated a series of hypotheses about what the market needs are and how best to deliver it. We translated the vision about our product/service and its value proposition into falsifiable hypotheses. Among all the hypotheses in our business model, we tested and validated the riskiest assumptions first. We (rarely) frequently design experiments to test hypotheses on our business model.	We formulated a series of hypotheses about what the international market needs are and how best to deliver it. We translated the vision about the international market and its value proposition into falsifiable hypotheses. Among all the hypotheses in our business model, we tested and validated the riskiest assumptions first. We frequently design experiments to test hypotheses on our business model for the international market.	*International* was added due to the different focus point and to clarify the context *Products and services* were changed to *international market* due to different context
Customer orientation It is important to gain deep market insight (= talking directly to customers) to better understand our customer's problem. When we developed the solution we never (always) had the customer in mind. We invested significant effort in understanding of the problem and learning about the user and its social context. It is important to gain a deep insight (= talking directly to customers) into how our solution solves the customer problem.	It is important to gain deep market insight of the new international market (= talking directly to international customers) to better understand our customer's problem. When we developed the international market strategy, we always had the international customers in mind. We invested significant effort in understanding the problem and learning about the international customers and their social context. It is important to gain a deep insight (= talking directly to international customers) into how our solution solves the customer problem.	*International market* was added to clarify the context *International* was added due to clarify the context *Solution* was changed to *international market strategy* due to different focus *User* was changed to *international customer* due to different focus
Experimentation We tested assumptions about our new product/service from the beginning with potential customers. We took an experimental approach that relied on frequent trial and error to find the right product solution. We did not test our product/service with potential customers before commercializing to the market. We frequently design and run experiments on elements of our business model.	We tested assumptions about the new international market from the beginning with potential international customers. We took an experimental approach that relied on frequent trial and error to find a suitable international market entry strategy. We did not test our international market entry strategy with potential international customers before commercializing to the international market. We frequently design experiments to test hypotheses on our business model for the international market.	*Products and services* was changed to *international market* due to the different context *International* was added due to clarify the context *Product solution* and *Our product/service* were changed to *international market entry strategy* due to different focus
Prototyping We used prototyping to test key assumptions about technical viability. Our customers rarely (frequently) interacted with prototypes during the development process. We used prototypes to validate specific product/service features and business model specifications. In developing the product/service we aim to use the simplest way to build and test our requested product features.	We used prototyping to test key assumptions about the viability of our international market entry strategy. Our international customers were frequently exposed to different international market entry approaches during the strategic development process. We used prototypes to validate assumptions about the international market and our business model specifications. In developing the international market entry strategy, we used the simplest way to define and test the required strategic actions.	*Technical viability* was changed to *international market entry strategy* due to different focus *International* was added due to clarify the context *Prototypes* was changed to *international market entry approache*s due to different focus *Strategic* was added to clarify the context *Specific product/service features* was changed to *assumptions about the international market* due to the different focus point *Product/service* was changed to *international market entry strategy* due to the different focus *Requested product features* was changed to *required strategic actions* due to different focus
Validation We used metrics to measure the impact of product/service improvements on customer behavior. We did not use data driven tests to improve our human judgement and overall decision making. We validated as many assumptions as possible about the viability of the product/service	We used metrics to measure the impact of our international market entry strategy on our international customers' behavior. We did not use data driven tests to improve our human judgement and overall decision making. We validated as many assumptions as possible about the viability of our international market entry strategy before expending enormous effort and financial resources.	*Product/service improvement* was changed to *international market entry strategy* due to different focus *International* was added due to clarify the context *Product/service* and their *acceptance* were changed to *international market entry strategy* and *acceptance* due to different focus

before expending enormous effort and financial resources. We have metrics available to test the product/service acceptance by customers and the sales performance.	We have metrics available to test the international market entry strategy's acceptance by international customers and the sales performance.	
Knowledge transfer		
We used information about our gained real customers' needs in the development of the new product/service. We actively transferred information gathered from real customers to the development team. The transfer of information about customers' needs and preferences took place rarely. We have specific mechanisms for sharing lessons learned in our venture.	We used gained information about our international customers' needs in the development of the international market strategy. We actively transferred information gathered from real international customers to the development team. The transfer of information about international customers' needs and preferences took place rarely. We have specific mechanisms for sharing lessons learned in our company.	*International* was added due to clarify the context *Product/service* was changed to *international market strategy* due to the different focus *Venture* was changed to *company* to maintain uniformity
Learning		
The organization's ability to learn is not considered as key to our competitive advantage. The basic values of our organization include learning as key to improvement. Venture learning is an investment, not an expense. Learning in our organization is a key commodity which is essential to guarantee organizational survival.	The company's ability to learn is not considered as key to our competitive advantage. The basic values of our company include learning as key to improvement. Company learning is an investment, not an expense. Learning in our company is a key commodity which is essential to guarantee organizational survival.	*Organization* and *venture* were changed to *company* to maintain uniformity
Iteration		
We viewed new product/service development as cycles of experiments, learning and additional experiments. We did not try many different product/service solutions before we found the right one. We engaged in many trial and error processes in product/service development before we had a complete understanding of the market and technology. We repeated the process of testing until all the key business model hypotheses have been validated.	We viewed new international market entry strategy making approaches as cycles of experiments, learning and additional experiments. We did not try many different international market entry strategy making approaches before we found the right one. We engaged in many trial and error processes in developing an international market entry strategy and thus had a complete understanding of the international market and its required entry We repeated the process of testing until all the key business model hypotheses for the international market were validated.	*Product/service development* was changed to *international market entry strategy making approaches* and *developing an international market entry strategy* due to different focus *Product/service solutions* was changed to *international market entry strategy making approaches* due to different focus *Market and technology* was changed to *international market and the required entry* due to different focus and to clarify the context *Have been* was adjusted to *were* to maintain uniformity
Internationalization success (Vorhies & Morgan, 2005) I/II		
To facilitate the understanding of the outcome internationalization success.		
Customer satisfaction		
Delivering what your customers want Retaining valued customers Delivering values to your customers Customer satisfaction	We are successful in delivering what our international customers want. When it comes to holding on to valued international customers, we do well. We are effective in delivering more value to our international customers. Overall, our international customers perceive our products/ services with great satisfaction.	Likert-scale was adjusted to a five-point Likert-type scale to achieve uniformity with the other scales Bullet point style was changed to full sentences to avoid flexible interpretations Comparison with competitors was omitted as we do not compare to other market players *Customers* was adjusted to *international customers* to clarify the context
Market effectiveness		
Acquiring new customers Increasing sales to existing customers Growth in sales revenue Market share growth relative to competitors	We are regularly acquiring new international customers. Current international customers contribute to increasing sales. Sales revenue is growing quickly. Regarding international market share growth, our competitors cannot catch up with our tempo.	Likert-scale was adjusted to a five-point Likert-type scale to achieve uniformity with the other scales Bullet point style was changed to full sentences to avoid flexible interpretations Comparison with competitors was omitted as we do not compare to other market players *Customers* was adjusted to *international customers* to clarify the context *International* was added to clarify the context
Current profitability		
Reaching financial goals. Return on investment (ROI) Return on sales. Business unit profitability	We are continuously reaching our international financial goals. Return on investment (ROI) is continuously high. Return on sales (ROS) is continuously high. The business units are performing profitably.	Likert-scale was adjusted to a five-point Likert-type scale to achieve uniformity with the other scales Bullet point style was changed to full sentences to avoid flexible interpretations Comparison with competitors was omitted as we do not compare to other market players *International* was added to clarify the context
Internationalization success (Nummela et al., 2009) II/II		
To include subjective measures and to then facilitate the understanding of the outcome internationalization success.		

Subjective performance		
Internationalization has had a positive effect on our company's profitability. In general, we are satisfied with our success in the international markets.	Internationalization has had a positive effect on our company's profitability. In general, we are satisfied with our success in this international market.	Only two of six items were used to categorize them under prior concept of current profitability
Learning results (Teo et al., 2005)		
To measure the attitude of gained understanding of the international market as the result of the market entry, thus indicating the learning result.		
Executive's attitudes		
Overall, I believe that my firm's adoption of EDI is good. Overall, I believe the effect of my firm's adoption of EDI is positive. Overall, I believe that my firm's adoption of EDI is helpful for business. Overall, I believe that my firm's adoption of EDI will provide the opportunity for the firm's improvement.	Overall, I believe that our company's gained understanding of the international market is good. Overall, I believe the effect of our company's gained understanding of the international market is positive. Overall, I believe that our company's gained understanding of the international market is helpful for business. Overall, I believe that our company's gained understanding of the international market entry will provide us the opportunity for improvement.	*Adoption* was changed to *gained understanding of the international market* due to different focus *My* was changed to *ours* to maintain uniformity with the other scales *Firm* was changed to *company* to maintain uniformity

APPENDIX D

Table 13

Scale Items with Mean, Standard Deviation and Factor Loading

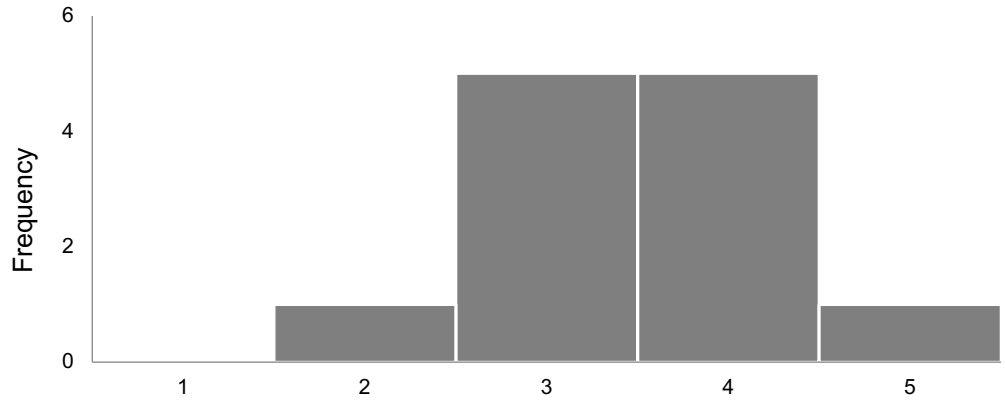
Construct and scale items	Mean	S.D.	Loading
Hypotheses testing (α = .8)	2.7	1.01	
1. We translated the vision about the international market and its value proposition into falsifiable hypotheses.	3.0	1.20	.83
2. Among all hypotheses in our business model for the international market, we tested and validated the riskiest assumptions first.	2.3	1.07	.77
3. We frequently design experiments to test hypotheses on our business model for the international market.	2.9	1.31	.85
Validation (α = .79)	3.0	0.97	
1. We used metrics to measure the impact of our international market entry strategy on our international customers' behavior.	2.7	1.28	.71
2. We validated as many assumptions as possible about the viability of our international market entry strategy before expending enormous effort and financial resources.	3.3	.98	.81
3. We have metrics available to test the international market entry strategy's acceptance by customers and the sales performance.	3.0	1.16	.74
Iterative experimentation (α = .69)	3.8	0.67	
1. We viewed new international market entry strategy making approaches as cycles of experiments, learning and additional experiments.	4.0	.79	.70
2. We tested assumptions about the new international market from the beginning with potential international customers.	4.0	.79	.78
3. We frequently design and run experiments on elements of our business model for the international market.	3.2	.96	.60
Learning (α = .86)	4.5	0.45	
1. The company's ability to learn is considered as key to our competitive advantage.	4.5	.51	.89
2. The basic values of our company include learning as key to improvement.	4.6	.49	.92
3. Venture learning is an investment, not an expense.	4.5	.52	.54
Customer insight (α = .7)	4.3	0.54	
1. It is important to gain deep market insight of the new international market (= talking directly to international customers) to better understand our customer's problem.	4.5	.51	.73
2. We invested significant effort in understanding the problem and learning about the international customers and their social context.	4.1	.71	.87
3. It is important to gain a deep insight (= talking directly to international customers) into how our solution solves the customer problem.	4.5	.79	.87
Internationalization success (α = .91)	3.5	0.70	
We are successful in delivering what our international customers want.	3.9	.90	.88
When it comes to holding on to valued international customers, we do well.	4.1	.71	.91
We are effective in delivering more value to our international customers.	3.5	1.00	.77
Overall, our international customers perceive our products/ services with great satisfaction.	4.1	.71	.79
We are regularly acquiring new international customers.	3.9	1.08	.70
Current international customers abroad contribute to increasing sales.	3.9	.90	.61
Sales revenue is growing quickly.	3.5	1.16	.79
We are continuously reaching our international financial goals.	2.9	.90	.73
Return on investment (ROI) is continuously high.	2.9	1.08	.69
Return on sales (ROS) is continuously high.	3.3	.98	.74
In general, we are satisfied with our success in this international market.	3.4	.79	.69
Learning results (α = .75)	4.1	0.54	
1. Overall, I believe the effect of our company's gained understanding of the international market is positive.	4.0	.60	.96
2. Overall, I believe that our company's gained understanding of the international market is helpful for business.	4.1	.38	.83
3. Overall, I believe that our company's gained understanding of the international market entry will provide us the opportunity for improvement.	4.3	.88	.77

APPENDIX E (I/III)

Histograms displaying distribution of constructs

Figure 8

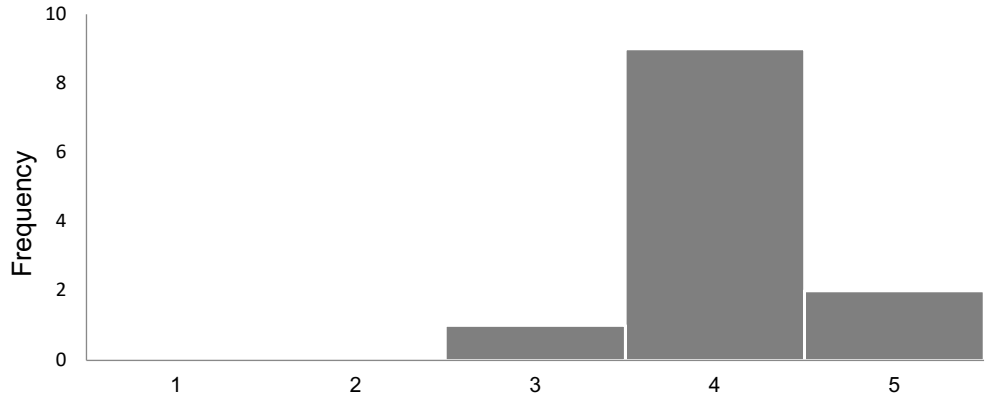
Distribution of Internationalization Success Among Startups



Note. X-axis presents rounded Likert scale results for simplicity.

Figure 9

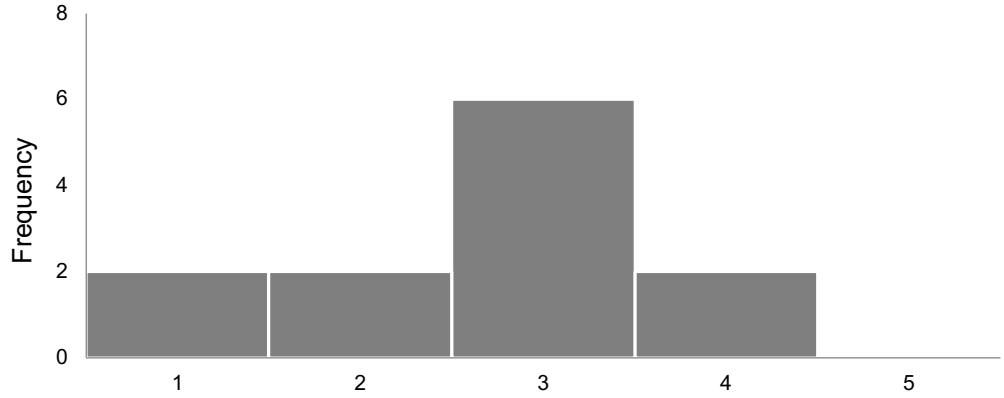
Distribution of Learning Results Among Startups



Note. X-axis presents rounded Likert scale results for simplicity.

Figure 10

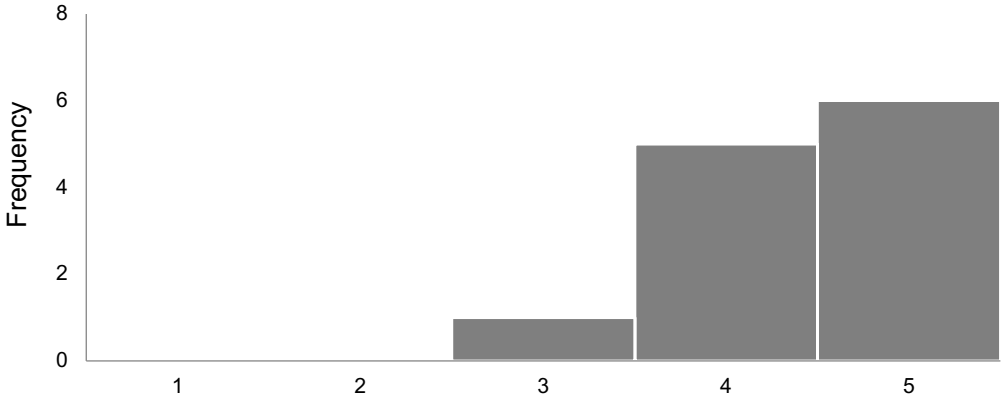
Distribution of Hypotheses Testing Among Startups



Note. X-axis presents rounded Likert scale results for simplicity.

Figure 11

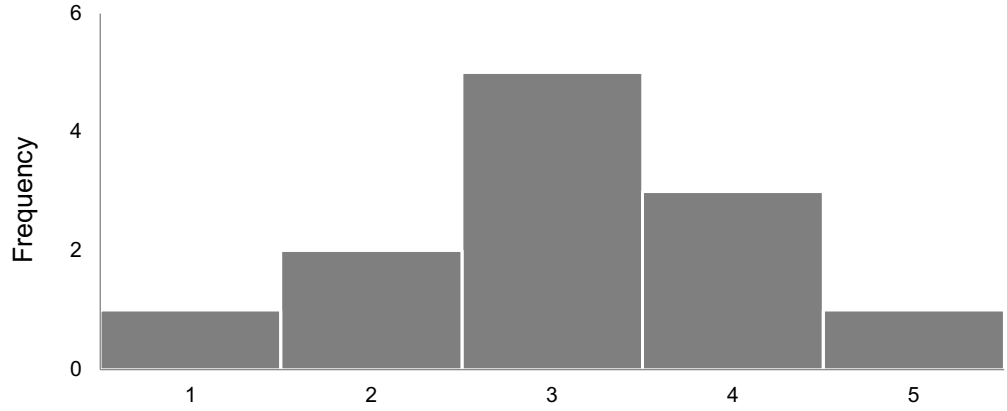
Distribution of Customer Insight Among Startups



Note. X-axis presents rounded Likert scale results for simplicity.

Figure 12

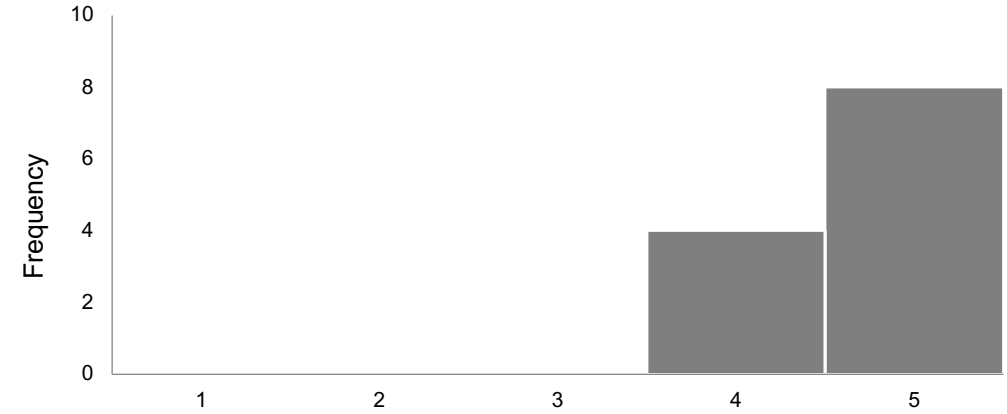
Distribution of Validation Among Startups



Note. X-axis presents rounded Likert scale results for simplicity.

Figure 13

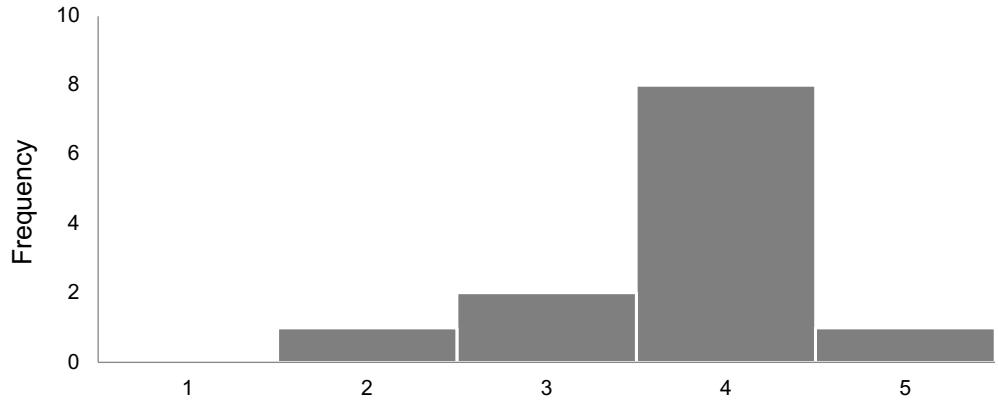
Distribution of Learning Among Startups



Note. X-axis presents rounded Likert scale results for simplicity.

Figure 14

Distribution of Iterative Experimentation Among Startups



Note. X-axis presents rounded Likert scale results for simplicity.

APPENDIX F

Transcripts will be provided upon individual request.

APPENDIX G

Table 14

Truth Table for Internationalization Success

Conditions					Outcome	*N*	Raw consistency
H	C	V	L	I	IS		
0	1	0	1	0	1	1	1
0	1	0	1	1	1	1	1
1	1	0	1	1	1	2	1
0	1	1	1	1	0	3	0.78
1	1	1	1	1	1	5	0.85

Note. *H* hypotheses testing, *C* customer insight, *V* validation, *L* learning, *I* iterative experimentation, *IS* internationalization success

APPENDIX H

Table 15

Codebook

Category	Selective codes	Open codes
Assessment		Deal representation, focus assessment, iteration relevance, right timing assessment, validation necessity
Customer contact	Initial customer contact	Accelerator contact, international events, network, partnerships, personal contacts, references, trade fairs, travel
Customer feedback	Feedback assessment timing	Monthly assessment, weekly assessment
	Customer feedback assessment	Extent of representation assessment, extent of urgency assessment
	Customer feedback learning	Conversations learning, metrics learning, project learning
	Customer feedback process	Lengthy process, messy process, data storage
Customer relation	Customer relation focus	Active communication, active declining, active listening
Customer understanding		Customer job understanding, customer journey understanding, customer liquidity understanding, customer needs understanding, customer pain points understanding, customers' local agents understanding
Expansion factor	External expansion factor	Change of laws, customer demand, funding rounds, geographical distance, language similarity, market size, technological developments
	Internal expansion factor	Board influence, budget availability, company valuation, establishing mainstay, country of origin size
Experiments	Experimental process	Exploratory experiments, iterative experiments, irregular experiments
	Experiments	Customer collaboration, field testing, lab testing
Hypotheses testing	Hypotheses testing enabler	Accelerator, customer feedback, international events, partnerships
	Hypotheses testing process	Continuous, indirect
	Hypotheses testing timing	Post-customer feedback, post-market decision, post- market entry
	Hypotheses testing	Absence, presence
	Hypotheses	Customer demand, customer income, go-to-market message, industry, local authorities, segment
Internal necessity	Behaviour	Automatization, criteria-setting, efficiency, fast reactions, focus-setting, honesty, no continuous requestioning, preparation, prioritization, problem identification, reflection, transparency, weighing up
	Character	Courage, drive, flexibility, global ambition, patience, vision, willingness
	Prerequisite	Maturity, business model understanding, realistic view, solid overview, strict leadership, trust
Internationalization	Internationalization focus	High internationalization focus, low internationalization focus
	Internationalization outcome	Ambivalence success, unsuccessful
	Internationalization process	Chaotic process, on-site process
	Internationalization starting point	Business plan, key criteria, MVP, solution
Internationalization benefit	External int. benefit	Being well-known, equal customer demands, European solution demand, existing customers, few competitors, language similarity, local partner, references, patient customers
	Internal int. benefit	Horizontal solution, international team, investor independence, experience, product scalability
Internationalization challenge	External int. challenge	Cultural differences, high demanding customers, non-supportive partner, customer feedback
	Internal int. challenge	Strategy justification, aspirations and resources imbalance, complex solution, declining opportunity, opposing views, biased assumptions, financial risks, finding starting point, generalization, lack of time, no flexibility, strategy changes
Internationalization obstacle	External int. obstacle	Conservative markets, funding issues, research costs, unforeseen events, unknown fit
	Internal int. obstacle	Distorted decision-making, doing too much, fast track, group thinking, gut feeling, lack of time, mistrust, personnel shortage, prior success, remote business, resource shortage

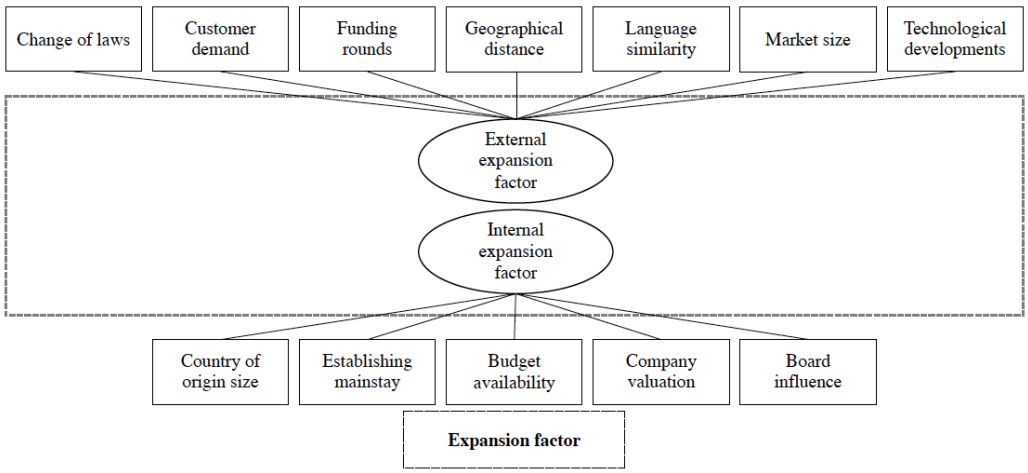
Iteration	Iteration strategy	Through fast flexibility, through gut feeling, through prioritization, through small team
	Iteration process	Continuous iteration, cyclical iteration
	Iteration approach	Market dependent, successful market only
	Iteration timing	Post-customer feedback, post-research
	Iteration	Business plan, internationalization strategy
Learning	Learning enabler	Competitors, customers, experienced people, past problems, use cases
	Learning process	Continuous learning, al learning
Market entries	Market entries enabler	Accelerator, contacts, early adopters, investor, network, partnership, sales agent, subsidiary, tender, test projects
	Market entries focus	Main markets, niche markets
	Market entries timing	Entry post-validation, entry pre-validation
Market entries strategy	Market entries approach	Active push, contact, territory planning, detailed planning, passive pull
	Market entries process	Lengthy entries, stepwise entry
	Market entries strategy	Born global, establishing market blueprint, exporting domestic solution, exporting standard price, fast market access, flexible country order, minimum resources, strict country order
Market research		Competitors, customers, industry, liquidity risk, metrics, opportunities, pricing, regulations, segments
Market research strategy	Market research process	Continuous
	Market research strategy	Approaching network, categorizing understanding, colleague conversation, IT and customer conversation, local customer conversation, partner conversation, passive insights, strong containment
Market understanding		Competitors, foreign environment, local perspective, market dynamics, politics, sector, technological metrics
Opportunism		By default, change of laws, getting approached, political need
Partnership	Partner assessment	Negotiation skills, partner network, partner revenue, partner structure
	Partner assessment strategy	Through gut feeling, through metrics
	Partner necessity	Avoiding challenges, deep sector knowledge, local benefits, own company size, value addition
Strategy	Strategy process	Duplication per market, few adjustments, continuous adjustments, uniqueness per market
	Strategy evaluation process	Continuous evaluation, early evaluation
	Strategy	Not systematic strategy, systematic strategy
Strategy assessment	Qualitative strat. assessment	Benefits, feedback, partner behaviour, proposition understanding
	Quantitative strat. assessment	Conversation rates, cost vs. gains analysis, customer lifecycle, fixed problems, marketing metrics, messaging, sales funnel, search volume, usage, website analytics
Strategy changes	Strategic change	Customer amount, language adjustment, price adjustment, process change, storytelling change
	Strategy change enabler	Customer feedback, customer insight, market feedback, metrics, prior unsuccessfulness
	Strategy change process	Immediate, stepwise strategy change, trial strategy change
Validation	Validation strategy	Non-systematic validation, gut feeling, internal meetings, internal reporting, quarterly meetings, sprints, systematic validation
	Validation enabler	Business plan, customers, gut feeling, market
	Validation process	Continuous validation, fast validation, stepwise validation, trial validation
	Validation timing	Validation post-market entry, validation pre-market entry

APPENDIX I

Additional findings

Figure 15

Expansion Factors influencing the Internationalization



APPENDIX J (I/III)

Findings among learning results as an additional outcome

Table 16

Complex Causal Recipes for Learning Results

Causal condition	Configuration	
	A	B
Hypotheses testing		○
Customer insight	●	●
Validation		○
Learning	●	●
Iterative experimentation	●	
Raw coverage	0.73	0.43
Unique coverage	0.38	0.08
Consistency	0.94	1.0
Solution coverage	0.82	
Solution consistency	0.95	
Startups	CE, CO, E, IM, IO, 24H, R, A, IP, Q, S	S, O

Note. Black circle indicates a condition's presence, blank circle indicates a condition's absence and empty cells indicate irrelevant conditions

Figure 16

Customer Insight, Learning, and Iterative Experimentation on Learning Results

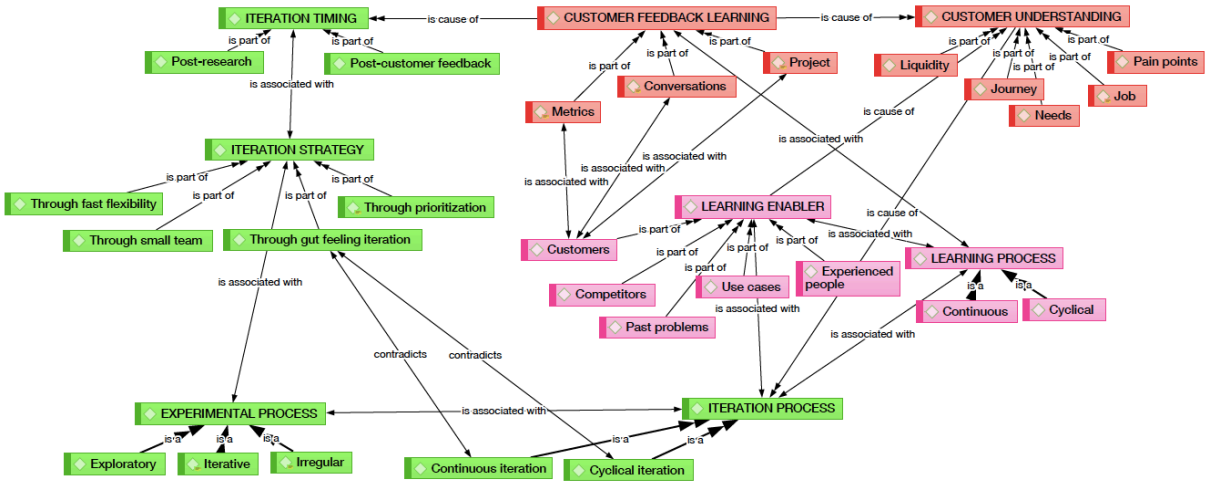
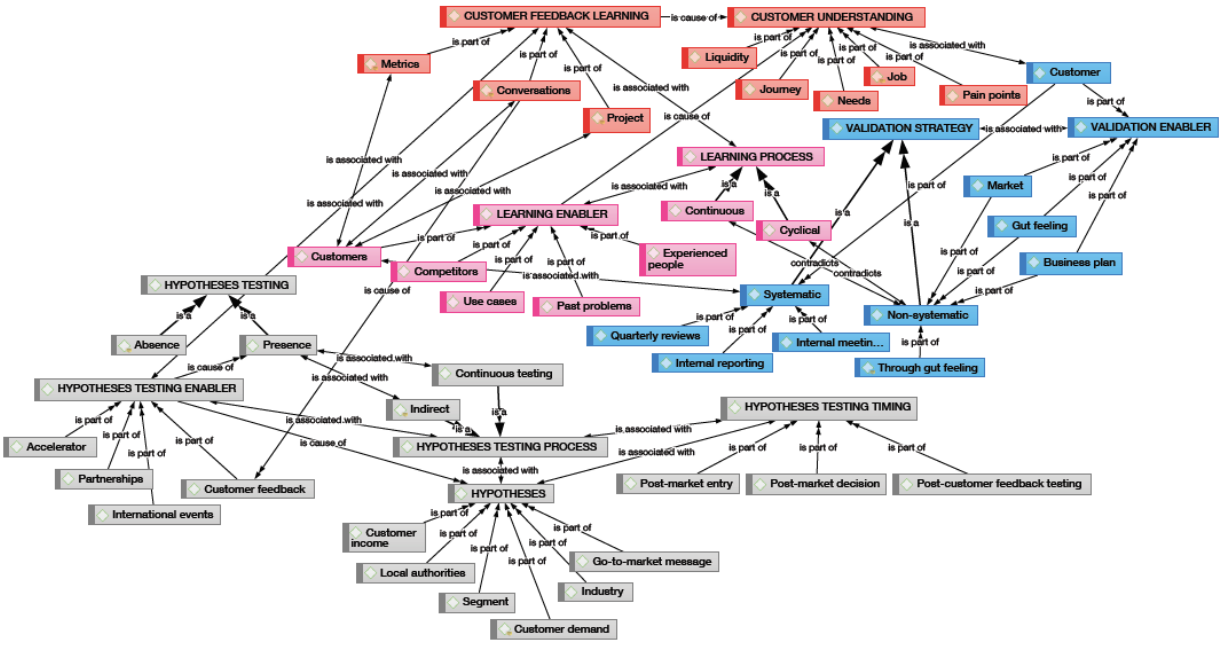


Figure 17

Customer Insight and Learning, and Absence of Hypotheses Testing and Validation on Learning Results



APPENDIX J (III/III)

The inclusion of learning results as an additional, exploratory outcome resulted from the foregoing theoretical framework. It was assumed, thereof, that the gained market understanding would stem from specific learning sequences – that is in, for example, an entry order for foreign countries. Moreover, the process of applying less improvisation in specifying this country order seemed to greatly match the premise of LSM.

Based on the interviews, it becomes apparent that a strict country order was mentioned by specifically those startups that apply systematic validation via market entry blueprints (i.e., Questio, Iphell, Corpus). In contrast, a flexible country order was applied by those startups refraining from using systematic validation and hypotheses testing, and, thus, from applying a lean-resembling international market entry strategy making (Cerveillance, Orphus). While this finding fosters the expectation that learning sequences can be potentially put in context with a lean startup approach, a generalization of whether a strict country order is more successful remains speculation and should be taken carefully due to the small sample size. Therefore, given the interesting yet hardly-to-generalize results and the focus of the present research on internationalization success, more research needs to be done in the context of learning results to examine a possible connection.