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LEAN INTERNATIONALISATION OF HIGH-TECH STARTUPS: A BUSINESS MODEL PERSPECTIVE

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Abstract

Globalisation is becoming indispensable in terms of profitability and growth for international businesses. Today, internationalisation has become one of the most important components of the company's operation. Especially for startups, a key rule in starting new businesses today is to think global. Although many startups know that it is important to think global and expand internationally, the underlying actions required may not be always clear. Furthermore, although internationalisation is a key factor for business enterprises, it is relatively unknown how such companies as Born Globals are developing a successful process of entering the foreign market in a fast and lean way.

This study examines the factors influencing the speed of internationalisation from the perspective of business models, comparing fast and lean internationalisation with progressive and gradual internationalisation, such as the Uppsala model in the existing research. Thanks to the detailed case studies and thematic data analysis, the study compares three high-tech Finnish startups at various stages of the startup lifecycle. The study shows the importance of the business model perspective to explain the phenomenon of rapid internationalisation and lean internationalisation. One of the main results and contributions of the study is to develop a new framework to explain rapid and lean internationalisation. At the broader level of the new framework, the study suggests virtual presence, business model learning, and the ability to replicate business models are key aspects that can accelerate the internationalisation speed for high-tech startups. At the level of the specific components, four aspects of the business model (customer-centric value creation, market, internal capacity and strategic aspects) are identified to accelerate the internationalisation of the case companies.

Keywords
Internationalisation, lean entrepreneurship, business model, rapid internationalisation

Additional information

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1 INTRODUCTION

New and innovative business models have been transforming and disrupting traditional industries at an unprecedented speed (Downes & Nunes, 2013). At the same time, internationalisation has become an important strategic decision for both multinationals and SMEs in today's economy (Shakouri, Esmaeeli, & Sedighi, 2006). Firms' internationalisation processes have been extensively studied for decades. However, most of the studies have been focused on two types of linear internationalisation process grounded in "stage theories". For instance, those explained by Uppsala model: internationalizing gradually, incremental internationalisation process, starting from a few closest countries and simpler foreign operation modes (Bilkey, 1978; Johanson & Vahlne, 2009), and those called born global firms that enter several markets and use more complicated entry modes since establishment (Crick, 2009; McDougall & Oviatt, 1994; Zahra, 2005). These studies mainly focus on international growth and define the internationalisation as the process of increasing the involvement in international operations.

In regards with startups and SMEs, international entrepreneurship is an important concept, which is considered as connecting the theories of international business and entrepreneurship (Sainio, Saarenketo, Sengupta, Ahokangas, & Laaksolahti, 2015). Previous work in international entrepreneurship combines the internationalisation with business model studies from the value creation side of business model (Sainio et al., 2015). In this line of research, value creation as a key element of the business model is suggested as highly relevant to international entrepreneurship (Zahra & George, 2002). According to Sainio et al. (2015), business model in the international setting is a conceptual tool to explain how companies explore and exploit business opportunities across geographical boundaries. Business model is a contingency factor that can define and influence the international business performance of the company (Sainio et al., 2015; Zott & Amit, 2008).

The speed of internationalisation is another interesting concept that has been studied. The rapid internationalisation is defined as the rapid exploration and exploitation of the markets outside of the home country market. The rapid internationalisation can enhance the performance and growth advantages for the companies (Autio, Sapienza,

& Almeida, 2000; Powell, 2014; Schu, Morschett, & Swoboda, 2016). Speed is highly related to rapid internationalisation. Schu et al. (2016) studied the factors that determine internationalisation speed in the online retail sector and acknowledged that the internationalisation speed of a company changes over time. Several effects such as imitability, country diversity and geographic scope can generally affect the change of speed in the internationalisation process (Schu et al., 2016).

Basically, the speed of internationalisation is defined in the literature as follows (Wentrup, 2016): First, internationalisation speed is the time lag between the founding of a company and its first international operation (time lag to the first entry). Second, the internationalisation speed is also related to the company's subsequent international growth sequence (Autio et al., 2000; Yamin & R. Sinkovics, 2006).

In addition to the work of Schu et al. (2016), the existing researches examine the speed of internationalisation from different perspectives (Casillas & Acedo, 2013), which includes foreign experience (Bloodgood, Sapienza, & Almeida, 1996), global vision (McDougall & Oviatt, 1994), social network and alliances (Fernhaber, Mcdougall-Covin, & Shepherd, 2009; Johanson & Vahlne, 2009; McDougall & Oviatt, 1994; Yu, Gilbert, & Oviatt, 2011), imitation (Fuentelsaz, Gomez, & Polo, 2002; Yu & Cannella, 2007), resource-based view (Wentrup, 2016).

In the situation of Finland, the rapidly changing global business environment and advanced communication technologies have created unprecedented opportunities for Finnish startups and SMEs to extend their business across international borders. The internationalisation process of Finnish SMEs has been intensively studied, especially in the ICT industry. International new ventures or born global firms have been gained significant attention which characterises as not following the Uppsala model but rather enter several markets, some very distant geographically or psychically.

1.1 The rapid internationalisation phenomenon and speed of internationalisation

The phenomenon of Born Globals emerged as a major theme of scientific research in the field of internationalisation of companies in the early 90s (McDougall & Oviatt, 1994; Rennie, 1993; Rialp, Rialp, & Knight, 2005). Ganitsky (1989), in a study of Israeli companies, drew attention to a group of organisations that have been established specifically to meet foreign markets, which he called "innate exporters". Other researchers such as McDougall and Oviatt (1994, p. 45) point out some a particular type of companies, defining them as "organisations that, since inception, seek to derive significant competitive advantage from the use of resources and sale outputs in multiple markets". Knight (1997, p. 83) suggested that "born global is defined as a company which, from or near its founding, or next to this, seeks to derive a substantial portion of its revenue from the sale of its products in international markets." The author points out that managers of these organisations see the world as a single market without frontiers. According to Madsen and Servais (1997), Born Globals are companies that adopt an international or global approach to the market since birth or shortly after.

Perhaps the more precise criteria had been elaborated by Knight and Cavusgil (1996). They argue that Born Globals have at least 25% of its revenue from overseas sales, having started its exports within three years of its creation. Ganitsky (1989) and a few other studies have been conducted around the world in order to verify the occurrence of this phenomenon in different countries, their characteristics, background and consequences (Danik & Kowalik, 2013; Knight & Cavusgil, 1996). Thus, other terms and concepts associated with the rapid internationalisation phenomenon have been developed, such as leapfrogging, reflecting the behaviour of a company that jumps the early stages of involvement of the traditional model. Generally speaking, the reasons for this behaviour are related to the homogenisation of global markets and the fact that the internationalisation of business now features as a key strategy of the company (Madsen, 2013; Rasmussen & Madsen, 2002).

1.2 The importance of the business model perspective for internationalisation

Although the existent studies that focus on internationalisation with a business model perspective are generally low compared to mainstream internationalisation or business model research, it is a common understanding that making and implementing powerful and effective strategies which has grown to become a crucial issue for companies in today's dynamic, volatile, and disruptive business environments (Vecchiato & Roveda, 2010) and turned managers' and researchers' focus on the practices of strategy creation and implementation (Amit & Zott, 2015). In this way, the business model has built its position as a favourite managerial tool (Osterwalder & Pigneur, 2010; Teece, 2010; Zott, Amit, & Massa, 2011).

Based on (Porter, 1996), the strategy is about being different. Within the long haul only companies that succeed in building a sustained competitive advantage will be successful (Porter, 1996). Thus, in general, a company's value creation process should be distinct from the competitors. It requires to be both more effective and much more efficient.

On the other hand, product innovation no longer offers sufficient competitive edge in differentiating successful companies (McGrath, 2011). Competitors are capable of rapid duplication of innovations, product life cycles have become shorter. In addition, Information and Communication Technologies (ICT) offer unprecedented opportunities to rearrange value creation activities in new and various ways. Thus, companies consider business model innovation as a way to build sustainable competitive advantage (Teece, 2010), especially in the context of global economic integration and the prevalence of internationalisation and globalisation (Rask, 2014).

As Wentrup (2016) claimed, the internationalisation speed has been studied less than the the mode of entry and geographic choice. However, the interest in speed has increased during the past decade (Casillas & Acedo, 2013; Luo, Zhao, & Du, 2005; Wentrup, 2016). Therefore, this study can contribute to on-going research related to the speed of internationalisation.

Noticeably, the literature has not yet studied another theoretical and empirical perspective that can affect the internationalisation speed, the business model perspective. According to Blank and Dorf (2012) and Jabłoński (2016), a startup is a temporary organisation dedicated to looking for a scalable, repeatable and profitable business model. Gilbert, McDougall, and Audretsch (2006) conducted a literature review on new venture growth and suggest that "the most important predictors of new venture growth include the entrepreneur characteristics, resources, strategy, industry, and organisation structure and systems:" (Gilbert et al., 2006, p. 928). Therefore, the business model is increasingly considered as an important factor that can affect company growth (Jabłoński, 2016). For instance, business model scalability is seen as a desired capability of the business and its business model to increase revenues faster than the corresponding cost base (Hallowell, 2001).

Particularly, in entrepreneurship and business model studies, there is an emergent line of research as lean startup or lean entrepreneurship (Blank, 2013; Ries, 2011). Lean entrepreneurship is defined as an approach or method for creating new businesses with a shortened product and business model creation and development processe. An important characteristic of lean startup or lean entrepreneurship is to rapidly identify and verify if a business model is viable in the market. To achieve this result, the lean entrepreneurship adopts a distinct process that includes business demonstration and experimentation with potential customers early on, iterative product releases, and validated learning (Blank, 2013; Ries, 2011).

However, the lean entrepreneurship concept has only been studied with internationalisation in general (Autio, 2017), but has not been researched in relation to the speed of internationalisation. Thus, as another contribution, this study examines the rapid internationalisation of high-tech startups that adopt or is expected to adopt the lean entrepreneurship to speed-up their international growth. This research also adopts the business model perspective to understand and explain the phenomenon of rapid and lean internationalisation.

1.3 Theoretical research gaps

Through reviewing the current literature, this research identified two gaps related to internationalisation and business model in general:

Gap 1: Speed of internationalisation phenomenon requires more research in lean internationalisation approach

Cavusgil and Knight (2015) wrote that the internationalisation of Born Globals might challenge the traditional Uppsala internationalisation process model. According to Johanson and Vahlne (2009), the Uppsala model can also be applied to firms that start to internationalise soon after their birth like international new ventures (Oviatt &

McDougall-Covin, 2005) and Born Globals (Cavusgil & Knight, 2015), because the speed and the pace of internationalisation depends on the firms' ability to learn about new foreign markets and to adapt its strategies to the respective market needs. Due to advances in ICT technologies, increasing globalisation and the emergence of global social networks (Coviello, 2015) even traditional and conservative firms might internationalise faster and earlier. Therefore, they can either follow the Uppsala model or the rapid internationalizing companies.

Cavusgil and Knight (2015) listed a number of drivers for fast and early internationalisation. However, it is argued by Neubert (2016) that the list is not complete. First, those are external market conditions such as the size of the Born Globals' home market, globalisation trend, new ICT technologies, cheaper transportation, logistics, and the existence of global social networks. Second, there are internal characteristics, which drive internationalisation, like for example, international experience, entrepreneurial and market orientation, innovativeness, the existence of a global vision, agility, adaptability, high quality and profitable products and services, or strong marketing and sales capabilities (Cavusgil & Knight, 2015).

Although these drivers are very important, they do not support entrepreneurs to implement their international market entry and growth strategy as stressed by Neubert (2016). Unfortunately, these general aspects are difficult to implement for entrepreneurs. Entrepreneurs need more information about the design of their business model, their products and services, their pricing model, or the selection of the best distribution channels. This is only possible using a case study approach to get access to the information.

Gap 2: Contradicting perspective between the forward-looking and lean approach in business model for internationalisation

Even though it is frequently emphasised that business model is a forward-looking concept, the long term perspective is not coherently elaborated within the extant literature on this respect. Until recently, a number of researches emphasised the long run orientation of the enterprise model concept (Chesbrough, 2010; Teece, 2010; Zott & Amit, 2010b). As a future-oriented strategic tool (Zott et al., 2011) used for planning, communication and mapping financial flow for forward-looking operations due to its dynamic characteristics, a business model is seen as a method for exploring and exploiting future opportunities and competitive advantages (Chesbrough, 2010; Teece, 2010; Zott & Amit, 2010b). At the same time, a different stream of research has been focusing on the behavioural theories of the company and how business model innovation takes place in an agile development process through the mean of trial-and-error, or an experiment like the process to rapidly change and innovate business model (Ries, 2011). Having the above discussion in mind, we can see a research gap arising when we look at business model innovation from the futures thinking and lean and agile experiment perspectives.

For this study, it is identified that although being understood as a forward-looking concept, the business model for internationalisation lacks a coherent view of the future. Even the business model itself is considered often in the literature as any creation or transformation of a business model. On the other hand, the "Lean" approach has a quite different viewpoint on the business model or business model for internationalisation by focusing on short-term effectuation (e.g. in the software industry, the development cycle can be in days.) Therefore, the aim of this research is to reconstruct the meaning of internationalisation with business model perspective by taking into consideration the two approaches that seem to be contracted in the business model literature.

1.4 Research question

This thesis seeks to answer the following research question:

How to explain and understand the rapid and lean internationalisation from the business model perspective for high-tech startups?

What are the factors that affect the rapid and lean internationalisation from the business model perspective?

So, as a general objective, this study aims to investigate key factors that involve in the lean and rapid internationalisation process by examining the business cases of the study through business model concepts and frameworks.

Finland has been a pioneer in digital business as well as the digitalisation of traditional industries. The country is ranked as the world's top university-industry collaboration in the "World Competitiveness Report 2015–2016" published by the World Economic Forum (WEF, 2015). The government's effective policies and Business Finland (Finnish Funding Agency for Innovation)'s innovative ways of facilitating open innovation have played key roles in the country's digital growth. For every one euro of Business Finland's research funding, the startups and SMEs (small and medium-sized enterprises) can bring over ten folds of the return under one year (Business Finland, 2017).

The study will collect business cases that obtained the Finnish national fundings from Business Finland for high-tech innovations. Furthermore, the study will distinguish the selected cases based on their startup lifecycle stages. In total, the study has three cases. These cases include the successful high-tech startup that has entred international markets with a rapid speed and lean approach, the early stage startup that is entering foreign markets with rapid and lean internationalisation, and the pre-startup that is in the planning stage with the aim to launch international business rapidly, like a Born Global. By doing so, the collected data will help the study to obtain a comprehensive view of the research questions and find the relevant answers.

2 LITERATURE REVIEW

In this chapter, the key theories and concepts that are related to the study are reviewed and examined in details.

2.1 Internationalisation theories

Internationalisation is the process of adapting companies' operations (strategy, structure, resources) to the international environment (Johansson, 2000). According to Peng (2001); Teece, Rumelt, and Schendel (1994), international business has its closest ally in the strategy literature. For instance, internationalisation is studied as a strategy process by early day researchers (Melin, 1992). The diversity of the subject matter is clearly indicated by his definition of international business as concerned with activities across borders, both within an organisation and between organisations.

A survey of the literature reveals three core theories that deal with the internationalisation process; stage theory, contingency theory and the resource-based view of the firm. This study takes the main focus on the "stage theory" as its processual view is identified as relevant to how high-tech innovations develop lean and rapid internationalisation in practice. The following literature review uses a theme-based approach to discuss the development of thinking in respect of different stage theories.

In general, Perks (2003) proposed an internal organisational perspective, suggesting that international business includes the stage models of internationalisation, the process of internalisation of transactions in response to cross border transaction costs (Williamson, 1989) and intra-organisational trade. It also includes the control and coordination systems necessary to facilitate the efficient functioning of cross border operations. In relation to intra-organisational activities across borders, international business is seen as embracing international trade, marketing, foreign direct investments, joint ventures and alliances, business networks and technology transfer. Co-ordination mechanisms such as global strategies that span inter-organisational boundaries are also part of the international business field (Grant, 2002; Porter, 1986).

2.1.1 Stage theories

The internationalisation stage theory of the firm is one of the most prominent recurring themes across the international business literature. The theory emerged in Europe in the 1970s taking the perspective that "the firm first develops in the domestic market and that internationalisation is a consequence of a series of incremental decisions" (Wiedersheim-Paul & Johanson, 1975, p. 306). The theory sees the process of internationalisation as a series of stages through which a firm evolves from being a small exporter into a fully-fledged multinational corporation. The original research looked at the export behaviour of the Swedish companies (Wiedersheim-Paul & Johanson, 1975) and was then supplemented by research into Australian firms (Wiedersheim-Paul, Olson, & Welch, 1978). The research was important in looking at the behaviour of SMEs, in contrast to the majority of the research back then, which had been focused on larger companies (Wiedersheim-Paul & Johanson, 1975).

A key component of stage theory is the importance attached to the notion of experience and learning as a factor influencing the internationalisation process. It is stressed that there is a close relationship between attitude and actual firm behaviour. That attitudes are "the basis for decisions to undertake international ventures and the experiences from international activities influence these attitudes" (Wiedersheim-Paul & Johanson, 1975, p. 306).

As Welch and Luostarinen (1988) observe if international expansion is successful, there is a tendency to favour further international involvement, but if the international expansion fails then the experience induces a negative attitude to additional expansion. The theme of mental attitudes and internationalisation recurs in later research. For example, Dichtl, Koeglmayr, and Mueller (1990) discuss internal mental and psychological attitudes and the link to an outward movement of a firm's operations.

Some scholars accept the view that internationalisation is an orderly progressive process (Wind, Douglas, & Perlmutter, 1973). However, they use terminology to describe not the stage of internationalisation but the orientation of the business. These orientations are described as ethnocentrism (home country orientation); polycentrism (orientation to each national market in which the firm operates); regiocentrism (orientation to a region of the world) and geocentrism (global orientation) (Perks, 2003).

Critique of the stage theory

One of the criticisms of stage theory is its use of the concept of 'internationalisation' which is a term that suffers from lack of an agreed definition. Intuitively, internationalisation can be described as a process of increasing involvement in and commitment to business across international borders. However, this idea gives rise to two related problems. Firstly, how is 'involvement' or 'commitment' measured and secondly, how can the distinct stages of internationalisation be separated? (Perks, 2003)

In Wiedersheim-Paul and Johanson's (1975) research, they identified three distinct phases in the international evolution of a business, which they used as proxies for stages of internationalisation. The phases are, direct export/ indirect (agents) export, the use of a local sales subsidiary/office, and finally local manufacturing. Ansoff (1982) identified three phases namely, direct export, international and multinational. Rothschild (1984) also used a three-stage typology of domestic, quasi-domestic and multinational.

Bilkey and Tesar (1977) utilised a more complex 6-stage classification. Tookey (1969) sees firms firstly as exporters, then as international marketers seeking to maximise profits and meet customer needs in world markets and finally as international businesses focused on managing global operations. It would, therefore, appear that the three-stage classification of the internationalisation process is common in the literature, however, the explanation given to each stage varies between authors as identified by (Perks, 2003).

Another criticism of stage theory is that it does not explain the dynamics of the international growth of the firm (Leonidou, 1995; Welch & Luostarinen, 1988). The stage literature (Wiedersheim-Paul & Johanson, 1975) suggested that the process is sequential, but it does not explain the factors that trigger moves from one stage to another. Other research (Buckley, Newbould, & Thurwell, 1988; Turnbull & Valla,

1986) also argued that firms are not very consistent and instead respond to specific market conditions. Similarly, Penrose (1959) observed that companies adapt to situations and do not follow a predetermined route. Wiedersheim-Paul and Johanson (1975) also argued to defend the stage theory that it does not propose the export mode precedes an investment mode in all cases.

Andersen (1993) also saw the stage theory as too deterministic, failing to take into account other firm-specific factors. Reid (1983) suggested that since exporting results from a choice among competing for expansion strategies that are guided by the nature of the market opportunity, firm resources and managerial philosophy, it represents a selective and dynamic adaptation to the changing character of the foreign market. Market factors and requirements are therefore closely intertwined with the decision to go international and what form of international entry mode should be chosen. Thus, the stage theory is considered as incomplete to a certain degree in its explanation of how a firm is internationalised (Perks, 2003).

2.1.2 “Life cycle” concept for international trade

Sequential modes of internationalisation were introduced by Vernon´s “Product Cycle Hypothesis” (1966), in which firms go through an exporting phase before switching first to market-seeking foreign direct investment (FDI), and then to cost-oriented FDI. Technology and marketing factors combine to explain standardisation, which drives location decisions. Vernon's (1966) hypothesis is that producers in advanced countries are “closer” to the markets than producers elsewhere. Consequently, the first production facilities for these products will be in the advanced countries. With standardised products, the less developed countries may offer competitive advantages as production locations.

This model focuses on the advantages of taking “economies of scale” by standardised production in less-developed countries. It means that international companies focus on new products’ research and development while producing these products in their foreign subsidiaries. These subsidiaries usually are based in less-developed countries where the parent company can take the advantages of low-cost resources. This internationalisation approach is usually adopted by large international companies (Vernon, 1966).

2.1.3 Uppsala model

During 1970, a number of Swedish researchers at the University of Uppsala developed this model. There are two important points of this model. Firstly, this model is based on the assumption that the company's internationalisation development is step by step, or gradually going on. In the beginning, they will go to familiar and nearby foreign markets. Then, they will go to more faraway markets if the first entrance is successful. Secondly, in this model, companies first entered new markets through independent foreign intermediates exports not own sales organisations or manufacturing subsidiaries. Only after several years, with their successful exports, they start to set up their own subsidiaries (Wiedersheim-Paul & Johanson, 1975). The process of this model can be described as:

- Stage 1: No regular exports activities (sporadic export)
- Stage 2: Export via independent representatives (export modes)
- Stage 3: Establishment of a foreign sales subsidiary
- Stage 4: Foreign production/manufacturing units.

The reason for this step by step process is that foreign markets development are based on two factors including market commitment and market-specific knowledge. Market commitment consists of the number of resources and the degree of commitment. Market-specific knowledge is based on experience. In 1998, Welch and Luostarinen, developed this model into six dimensions including sales objects, operations methods, markets, organisational structure, finance and personnel.

The Uppsala model has gained strong support in studies of a wide spectrum of countries and situations. The empirical research confirms that commitment and experience are important factors explaining international business behaviour. In particular, the model receives strong supports regarding export behaviour, and the relevance of the cultural distance has also been confirmed (Hollensen, 2013).

The Uppsala internationalisation process model has its origin in the liability of foreignness, a concept that explains why a foreign investor needs to have a firm-specific advantage (FSA) to more than offset this liability. The larger the distance the larger is the liability of foreignness (Johanson & Vahlne, 2009) and the bigger the FSA needs to be. The speed of internationalisation depends on the speed of learning. Experience in a foreign market builds the firm's knowledge (Johanson & Vahlne, 2009). The firm must be able to transfer its FSA to a sustainable and relevant competitive advantage in the new foreign market to cover the cost or the liability of foreignness (Johanson & Vahlne, 2009). Thus, further investments in a foreign market depend on the firm's knowledge about this particular market. The speed and the pace of internationalisation depend on the ability of the firm to learn about new foreign markets and the quality of its FSA (Johanson & Vahlne, 2009).

The concept of liability of outsidership (Johanson & Vahlne, 2009) reflects the increasing importance of networks (Coviello, 2006) in foreign markets. This concept tries to explain – together with the concept of liability of foreignness because their main market entry barrier is access to clients. Thus, the speed of internationalisation depends on the speed of the development of a local client network and additional investments in a foreign market depend on the firm's network in this particular market (Neubert, 2016).

As part of the theoretical framework of this study, the Uppsala internationalisation process model developed by Johanson and Vahlne (2009) will be utilised in a later section. This theoretical perspective aligns with the purpose of the study in its identified research as the theoretical foundation of the early internationalisation of innovations and Born Globals (Cavusgil & Knight, 2015; Johanson & Vahlne, 2009; Neubert, 2016). Moreover, the argument that smaller firms can particularly benefit from the Internet to gather competitor or market intelligence, to promote themselves and service customers in new markets for relatively little expense is very persuasive (Chattell, 1998; Franson, 1998; Quelch & Klein, 1996). Knowledge of foreign markets has always been integral to internationalisation theories, including the work of the early seminal Uppsala theorists (Johanson & Vahlne, 1977; Wiedersheim-Paul & Johanson, 1975) who argued that a firm's market knowledge determines its internationalisation trajectory. It is now generally recognised that the internationalisation of firms is contingent upon specific foreign market knowledge in terms of knowledge of local business counterparts and their relations, as well as an understanding of social values and business cultures (Eriksson, Johanson, Majkgard, & Sharma, 1997; Forsgren, 2002; Johanson & Vahlne, 1990; Petersen, Pedersen, & Sharma, 2001).

The Internet has reduced the level of investment and resources required to operate, thus opening new avenues for companies to exploit. The Internet provides a direct channel to service customers and circumvents costly distributor arrangements. Direct interaction also permits greater potential learning, since intermediaries do not exist to impede information flows. However, (Bennett, 1997) argued that cannot be justified by SMEs' practical business activities that the use of the Internet for global marketing might enable companies to leapfrog the conventional stages of internationalisation.

2.1.4 Born Global model

Some small and medium-sized enterprises (SMEs) do not follow an incremental stage approach in the internationalisation process. Often they start their international activities from birth where they enter different countries at once and approach new markets both for exports and imports. The concept of born global firms was first used in a McKinsey study of manufacturing exporters in Australia (McKinsey, Company, & Council, 1993). The study highlighted a number of SMEs that from inception competed against established players on the global arena. The existence of these firms contradicted the previous conception of business internationalisation as a process of gradual commitment (Johanson & Vahlne, 1977, 1990; Vernon, 1966, 1971). Such a firm was coined born global and defined as "one which views the world as its marketplace from the outset; it does not see foreign markets as useful adjuncts to the domestic market" (Neubert, 2016).

A similar definition is found in McDougall and Oviatt's research (1994, p. 45). They define Born Globals as firms that ''from inception, seek to derive significant competitive advantage from the use of resources and the sales of outputs in multiple countries''. Numerous studies have followed after the inception of the concept with the phenomenon labelled differently: Born Globals (Knight & Cavusgil, 1996), global start-ups (McDougall & Oviatt, 1994), international new ventures (McDougall-Covin, G. Covin, B. Robinson Jr, & Herron, 1994) and instant exporters (McAuley, 1999).

Related is McDougall and Oviatt's (1994) research on International New Venture (INV). The nature of the product, industry norms, and the orientation of the entrepreneur are primary components of the INV model. High research and development costs and shorter product life cycles force companies to regain investments quickly and cover as large a market as possible. Converging international standards for some products have likewise created a global market where companies face global competitors.

In this study, it is important to distinguish between Born Globals and INV. The concept of INV (Oviatt & McDougall-Covin, 2005) analyses all international value chain activities (VCA) of a young firm. These VCA include exporting, but also offshoring, outsourcing, import, research and development, production, as well as sourcing. A born global is a young firm that is active through early export sales (Coviello, 2015).

Thus, the Born Global concept focuses on a market-seeking internationalisation strategy. Here, there is a link with the established chain of the Uppsala internationalisation process model (Johanson & Vahlne, 2009). Both concepts focus on the market entry mode: ‘export’ as the first step to enter a new foreign market. Further, the word ‘global’ in Born Global companies do not necessarily mean that Born Globals export immediately to all global markets (Neubert, 2016). Often, Born Globals start to export to a limited number of countries (e.g. countries with a low distance for example due to free trade agreements) or within a region (e.g. European Union) (Coviello, 2015). Thus, the terms Born Globals and INV cannot be used synonymously (Coviello, 2015; Neubert, 2016).

Overall, Cavusgil and Knight (2015) suggest that the internationalisation of Born Globals might challenge the traditional Uppsala internationalisation process model. According to Johanson and Vahlne (2009), the Uppsala model can also be applied to firms that start to internationalise soon after their birth like INVs (Oviatt & McDougall-Covin, 2005) and Born Globals (Cavusgil & Knight, 2015), because the speed and the pace of internationalisation depends on the firms’ ability to learn about new foreign markets and to adapt its FSA to the respective market needs. Due to advances in Information and Communication Technologies (ICT) as well as transportation technologies, increasing globalisation (e.g. free trade agreements) and the emergence of global social networks (Coviello, 2015), Neubert (2016) argues that even traditional and conservative firms might internationalise faster and earlier. Thus, they can have as a choice following the Uppsala model or else the rapid internationalising firms.

Drivers of a born global phenomenon

The factor that most explains the born global phenomenon, referring to several empirical studies, is the vision and guidance of managers in relation to the internationalisation of these companies. That is the manager's international orientation (Danik & Kowalik, 2013; Nummela, Saarenketo, & Puumalainen, 2004). Knowledge and experience in foreign markets, treated in various studies as international entrepreneurial orientation, are significant antecedents to the performance of these companies in foreign markets (Dib, Da Rocha, & Silva, 2010; Knight & Cavusgil, 2005).

According to Freeman and Cavusgil (2007), international orientation refers to a wide range of demographic and psychological characteristics. For these authors, executives with international orientation have high tolerance to psychic distance from markets (Freeman, Hutchings, & Chetty, 2012), good educational background, international experience, mastered foreign languages, are less averse to risk and have positive attitude toward internationalisation (Dib et al., 2010; Freeman et al., 2012).

According to (Machado, Nique, & Fehse, 2016), knowledge of the international business is another factor that affects the internationalisation of the company, because it facilitates the entry and operation of foreign markets. In addition, the knowledge of doing business abroad can serve to enhance the company's ability to understand and use the relationship between informational factors to achieve certain goals (Knight & Cavusgil, 2004; Zhang, Tansuhaj, & McCullough, 2009). Kyvik, Saris, Bonet, and Felício (2013) also identified that the global orientation or global mindset is associated with SME's internationalisation speed.

The role of the Internet and Born Globals

Hamill (1997) expects Internet-enabled companies to pursue international sales at earlier stages in their development. However, access to markets and customers is a double-edged sword. Donovan and Rosson (2001) argue that the Internet exposes companies to global competition from the beginning. This puts pressure on companies to consider/pursue international sales very early in their development.

As the Internet becomes more international, opportunities will increasingly lie outside of domestic markets and companies must be able to respond. Fillis (2002) found that the United Kingdom and Irish exporting SMEs experienced substantial price and promotion challenges from competitors. SMEs have to face this competition at an earlier stage of their internationalisation process when they are typically not ready for such rivalry (Chrysostome & Rosson, 2009).

The Internet does not only help SMEs to begin to internationalise. Beside, it also helps to maintain a strong position in foreign markets through activities such as marketing intelligence, global sales promotion and interfirm research and development (Hamill, 1997). In fact, because it is a gateway to foreign markets, the Internet enables SMEs to become international whether it was planned or not (Lituchy & Rail, 2000).

2.2 Lean and rapid internationalisation

2.2.1 What is the agile and lean approach?

The logic of lean business development can be traced to the adoption of agile and lean development practices has increased remarkably among software development companies (Olsson, Bosch, & Alahyari, 2013). The background for this broad adoption is that agile and lean practices serve various benefits to the companies and their customers. For example, by shortening and accelerating the software development it improves speed and responsiveness to customers (Olsson et al., 2013). Despite the wide adoption of agile and lean software development practices, it has been realised that even more innovative approaches that support continuous practices throughout the organisation are needed (Fitzgerald & Stol, 2014; Suomalainen & Xu, 2016).

Furthermore, Olsson et al. (2013) highlight that software development companies need to move beyond the concept of agile development and towards a situation in which software functionality is continuously deployed and where customer feedback is the main driver for innovation. Therefore, it has been suggested (Olsson, Alahyari, & Bosch, 2012) that the next evolutionary step after agile and lean software development is rapid and continuous software development called continuous deployment (CD). It refers to the organisational capability to develop, release and learn in rapid parallel cycles, such as in hours, days or very few weeks and turning it into a continuous flow.

Recently, wide systematic mapping study on continuous deployment conducted by Rodríguez et al. (2017) describes that the main concept of CD builds on three major themes:

1. deployment
2. continuity
3. speed.

Thus, CD means the ability to bring valuable product features to customers on demand and at will (deployment), in series or patterns with the aim of achieving continuous flow (continuity) and in significantly shorter cycles than traditional lead-times, from a couple of weeks to days or even hours (speed).

According to Rodríguez et al. (2017), the current literature revealed ten recurrent themes characterising continuous deployment. The fast and frequent release is one of these themes, which is achieved through continuous planning. Accordingly, CD requires that the planning activities should be done more frequently to ensure alignment between the needs of the business context and software development as well as requiring tighter integration between planning and execution. Similarly, Fitzgerald and Stol (2014) identify a number of continuous software development activities which are important to current software development companies, continuous planning being one of them.

Baghai, Coley, and White (1999) propose the three horizon model, arguing that sustained growth depends on concurrent management and investment in three types of businesses. The three horizons of growth are defined as follows (Baghai et al., 1999):

- Horizon 1. Mature businesses or core businesses that generate steady cash flow.
- Horizon 2. New potential businesses and markets that provide immediate business opportunity and growth.
- Horizon 3. Portfolios of experiments or trial projects that are expected to bring new growth in the long run.

As argued by Fitzgerald and Stol (2014), the integration between business strategy and software development should also be continuously assessed and improved. One solution to solve this problem is by using multiple horizons of growth to balance the tensions and conflicts of business strategy and software development by dividing the software product development and planning according to the horizon model.

2.2.2 Lean and rapid business development

In 2011, Eric Ries published his book Lean Startup that was widely adopted by entrepreneurship educators and accelerator programs. The book developed further ideas presented by Steve Blank in his methodology of Customer Development. Even though there is no scientific proof that the Lean startup method would work better than other ways of developing business ideas, the concepts are known and utilised widely. The Lean startup methodology brought entrepreneurs out from their garages to test their ideas before perfecting the products.

Lean startup has a good approach to a new radical idea and a new start-up trying to make a business out of it. Rather than building an elaborate technical prototype based on start-up founders vision and then trying to “sell the prototype to reluctant customers”, like often is the case, lean start-up method actually has a good approach minimizing risk and failing fast. Namely, one should talk to customers and ask the question “should this product be built at all”. So if the answer is no, one has failed fast without much of an investment. One’s attitude to failure should be positive as this leads to increased customer understanding and learning (Ries, 2011).

According to Ries (2011), in Lean start-up methodology, everything starts from an assumption or hypothesis which one turns into a concept that is tested and evolves immediately or after some customer feedback rounds into Minimum Viable Product (MVP). The phases form a Build-Measure-Learn cycle, which then repeats in the continuing cycle. The steps of a start-up, according to the Lean start-up book are the following:

- Have a vision,
- Create a set of assumptions
- Test the assumptions with fast pilots – create an MVP (Minimum Viable Product)
- Collect measurements (real measures, not vanity metrics)
- Pivot (redirect or change one/many assumptions) or persevere (continue forward)
- The magic formula found (problem/product fit)
- Find a formula for growth (product/market fit)
- Grow fast and take the markets (In Internet-based markets often the first success takes 80-90% of the market share)

Rasmussen and Tanev (2015) and Blank (2013) also introduced the 'lean global start-up' as a new type of firm in terms of internationalisation. In contrast to a born global, lean global start-up creates a new international niche market. In this study, high-tech innovations are considered as interchangeable between Born Globals or lean global start-up.

Assumptions and foundation of the lean approach

Assumptions are the key set of beliefs or hypotheses that fulfil the vision. Testing them shows quickly when the functionality and the business model is right. Thinking the functionality and business simultaneously gives focus. However, there are opinions in the start-up communities where the business model is seen to be developing and changing during the way.

Pivot/ Persevere

Pivot is a re-direction after it turns out that one or many of the assumptions were wrong. Based on the information one receives in the pilots, one may change or reformulate assumptions. If all of the assumptions get positive feedback one can continue forward (persevere). The pivoting point, for example, could be the feedback which leads to change one of the assumptions: the customer base is not consumers but business users. Pivoting would not mean that the vision is changed.

Minimum Viable Product (MVP)

An MVP is a product that fulfils the nucleus of the assumptions and its purpose is to be a vehicle for validated learning. In its primitiveness, it might be a set of screenshots combined to look like an app, or one could have several MVPs for each of the assumptions.

Vanity metrics

One needs to scientifically measure the outcome of the customer MVP rounds. The measurements can only provide accurate information if the measures are good. This means that one needs to measure the right things. Vanity metrics is a term for bad, unactionable metrics. An example of such bad metrics could be the number of downloads which then would not be enough to see how good the functionality is. It might be an OK metric to see if target audience knows that the product exists and if your marketing campaign to sign up is working. Actionable feedback for a later phase might be for example the question “how sad would you be if we took this product away from you and what would you miss the most?”

2.2.3 Lean internationalisation drivers

Neubert (2016) conducted research on the key factors regarding how companies perform internationalisation activities affecting the speed of internationalisation. Overall, there are six factors which are discussed below.

The first factor that how companies differ in their speed of internationalisation is the existence of a qualified sales management team. A successful sales management team can speed up internationalisation significantly, because it brings in to the product development process a market perspective, acquires the first clients and distributors, and maintains long-term relationships (Kumar & Yakhlef, 2015). In some cases, the first clients add additional value as a lead user and reference, which receive discounts in compensation for their expertise and advice (Neubert, 2016).

The second factor affecting the speed of internationalisation is a market opportunity with respect to a potential client. These market opportunities (Coviello, 2006; Gabrielsson, Gabrielsson, & Dimitratos, 2014) are created based on the existing network of the management team, investors, or the sales management team. In a quite unstructured process, the existing networks are leveraged to obtain the low hanging fruits and to generate quick wins in demo projects or lead users. In most cases, the segment and the location of these potential clients are less important (Neubert, 2016).

The third factor that why certain companies speed up their internationalisation process is the size of their home market (Zander, McDougall-Covin, & Rose, 2015), which is an exogenous factor to the organisation. A small home market increases the pressure to internationalise earlier and faster. According to Neubert (2016), this factor means that the high-tech startups need a born global business model without any significant global market entry barriers and management and operational structure that enables the creation and the exploitation of global market opportunities.

The fourth factor that influencing companies' speed of internationalisation is their business model, which is connected to factor three as Neubert (2016) identified. Due to the small size of their home markets, companies have to design business models, which are globally scalable. Companies must adapt their business models to internationalise faster and earlier. Rask (2014) calls this a business model innovation. In this research, it is considered as the business model innovation for internationalisation just to be concise. In this process, companies focus on value chain activities, which are not regulated. According to their understanding, regulation increases the cost and decreases the speed of internationalisation. Due to the low market entry barriers of their business models all the companies to consider the whole world as one global market.

The fifth factor to speed up the internationalisation process is the application of a structured market development process (Hagen & Zucchella, 2014; Hagen, Zucchella, Cerchiello, & De Giovanni, 2012; Zander et al., 2015) like the revised Uppsala internationalisation process model (Johanson & Vahlne, 2009). The establishment chain is based on the liability of outsidership respectively the personal networks. Neubert (2016) suggests that a structured market development process would increase the speed of internationalisation significantly. The internationalisation is a core process of a born global, which needs to be integrated into the initial business model. Such a market development process might reduce the recourses required to enter a new foreign market significantly (Neubert, 2016).

The sixth factor that causing a more rapid internationalisation is the choice of the market entry mode. Entry modes like the direct export of products, the licensing of intellectual property, or the franchising of business models allow a faster global market penetration in comparison to other more resource-intensive market entry modes. In these market entry forms, several markets can be entered simultaneously, because a local partner bears most of the market entry risk and investments. The local partner bridges the differences between the new foreign and the home market by helping companies to adapt its products and services. In other words, the high-tech innovators bring into this partnership their technological competence, whereas the local partners bring the market experience. The latter includes networks, opportunities, and existing clients. Thus, high-tech innovators can internationalise earlier and faster, because it does not have to build up local market knowledge in detail and for every foreign target market according to the concept of liability of foreignness (Johanson & Vahlne, 2009).

In the empirical part of the study, these factors will be examined and tested with high-tech innovation cases.

2.3 Business model

A business model is an idea that clearly divided the scientific in addition to managerial communities: the former make reference to it as a buzzword, a popular managerial concept; the latter considers it as a useful tool for describing, designing, challenging and even inventing business, despite the criticism from Porter (2001) as to be unclear and superficial. In this chapter, we will try to define “what is a business model?”. Then, how the business model related to the high-tech innovations’ internationalisation will be found out.

2.3.1 Business model concepts

According to Jabłoński (2016), there is a multitude of definitions for the concept of business model with diverse multidimensional approaches. Several researchers also recommend the academic community to study the business model construct through different perspectives and viewpoints (Atkova, 2018; Zott et al., 2011). For instance, Chesbrough and Rosenbloom (2002) conceive a business model as a focusing device that explains how economic value could be extracted from a technology or business idea. Morris, Schindehutte, and Allen (2005) define a business model as a set of decision variables, which are interconnected to create a sustainable competitive advantage. Other conceptualisations include an architecture model of business (Teece, 2010; Timmers, 1998), a recipe model (Sabatier, Mangematin, & Rousselle, 2010), a design model (Frankenberger, Weiblen, & Gassmann, 2014), an action model (Atkova, 2018), and conceptual tools (Ahokangas, Juntunen, & Myllykoski, 2014; Osterwalder & Pigneur, 2010).

There are many definitions for a business model concept from different authors' perspectives:

Timmers (1998) defines a business model as

- An architecture for the product, service and information flows, including a description of the various business actors and their roles; and
- A description of the potential benefits for the various business actors; and
- A description of the sources of revenues.

Hamel (2000) defined the business model starting from four main building blocks (i.e. customer logic, strategy, resources and network). Mahadevan (2000) provided a definition of a business model that includes the value stream, the revenue stream and the logistical stream. Afuah and Tucci (2001) described the business model as ''a model designed to make money for their owners in the long term'' composed by ten blocks (i.e. profit site, customer value, scope, price, revenue sources, connected activities, implementation, capabilities, sustainability and cost structure). Influenced by the Balanced Scorecard approach (Kaplan & Norton, 1992), Osterwalder (2004) proposed a framework based on four pillars (product, customer interface, infrastructure management, financial aspects) and nine building blocks (value proposition, target customer, distribution channel, relationship, value configuration, capability, partnership, cost structure and revenue model).

Yip (2004) echoes similar thoughts. For him, a business model consists of:

- Value proposition
- Nature of inputs
- How to transform inputs (including technology)
- Nature of outputs
- Vertical scope
- Horizontal scope
- Geographic scope
- Nature of customers
- How to organise

Rajala and Westerlund (2007) refer business models to the ways of creating value for customers, and to the way a business turns market opportunities into profit through sets of actors, activities and collaboration. Business model scholars consider the business model as "the logic of the firm, the way it creates and captures value for its stakeholders" (Baden-Fuller, MacMillan, Demil, & Lecocqs, 2008; Casadesus-Masanell & Heilbron, 2015). In summary, a business model consists of:

- The set of choices; and
- The set of consequences derived from those choices.
- Theories, an important element which embodies the analysts' suppositions about how choices and consequences are related.

Teece (2010) suggests that a business model, "defines how the enterprise creates and delivers value to customers, and then converts payments received to profits" (Teece, 2010, p. 173). He sees a business model with good performance as one that yields value propositions that are compelling to customers, achieving advantageous cost and risk structures, and enables significant value capture by the business that generates and delivers products and services (Teece, 2010). Morris et al. (2005) take a different approach and distinguish three categories of business models: an economic, operational, and strategic level where the perspective becomes more comprehensive as one progressively moves from economic to the operational and from operational to strategic levels.

In addition to the abstract or broad definition of business model discussed above, business model can be defined and understood as a collection of interconnected and inter-dependent components or elements. This detailed level of research can be seen in the literature (Atkova, 2018) such as Morris et al. (2005), Johnson, Christensen and Kagermann (2008), Osterwalder & Pigneur (2010). One of the most well-known business models is the business model canvas by Osterwalder and Pigneur (2010). The business model canvas consists of nine building elements or blocks: value proposition, partners, activities, resources, customer relationships, channels, customer segments, cost structure, and revenue streams (Osterwalder & Pigneur, 2010). Other examples of this detailed level of business model definition can include Johnson et al. (2008) four core component of a business model: the customer value proposition, the profit formula, key processes, and key resources.

In the field of high-tech and digital business model, Mason and Spring (2011) suggest technology, market offers, and network architecture as the key construct of a business model. Ahokangas, Juntunen, & Myllykoski (2014) suggest another business model framework that defines the business model in the elements of what, where, why and how for the cloud and software business.

In summary, by defining business model normatively these authors offer valuable guidance on what managers should be thinking about when designing their business models. The strengths of this literature stream lie in efforts to understand the business by decomposing strategy into a system of inter-related decisions, relationships and organisational boundaries. A primary weakness of this literature stream is its failure, to date, to accommodate location decisions and internationalisation (Onetti, Zucchella, Jones, & McDougall-Covin, 2012). Overall, the literature review of this study leads to the understanding that business model as a boundary-spanning unit and level of analysis related to value creation and capture, opportunity exploration and exploitation, as well as company performance improvement and competitive advantage establishment (Chesbrough, 2010; Onetti et al., 2012; Zott & Amit, 2013; Zott et al., 2011).

Critics of the business model concept

Several authors state that despite the recognised practical importance of business models, little academic research deals with them (Hedman & Kalling, 2003; Zott & Amit, 2010a). Consequently, there is also a lack of a generally accepted definition of what a business model is (Al-Debei & Avison, 2010). Morris et al. (2005) note that the diversity of definitions create challenges for determining core components, typologies and criteria for good business models.

2.3.2 Value creation and value capture

Matzler, Bailom, Friedrich von den Eichen and Kohler (2013) outline these two elements as the essence of a business model, namely value creation and value capture. Chesbrough (2006) supports the definition of Timmers (1998) by describing a business model as a useful framework to link and convert ideas and technologies into economic values. He asserts that every company of any size has a business model, whether that model is articulated or not. Alongside other things, a business model performs two important functions: value creation and value capture (Chesbrough 2006). Value creation is performed by defining a series of various activities throughout which values are created. The organisation, then, develops the model of the products and/or services based on the values that are captured from a portion of these activities.

Teece (2010)'s definition gives similar insight and defines it as the way in which a company generates value (value creation) and exactly how it captures several of this value as profit (value capture). It describes its internal logic and strategy. An effective business model innovation will usually embrace these two aspects. To be able to turn this "theory for the business" (Drucker, 1994) into a successful value-creation system.

Matzler et al. (2013) further suggest enriching these two core elements with two additional questions:

- How does our value creation system work: just how do we organise value delivery and just how can we build sustainable cost advantages?
- How exactly does our marketing and distribution logic function: just how can we attract and retain customers?

In service research domain, value is actually not embedded in the output such as products or services, but rather co-created with the customer (Vargo & Lusch, 2006). In other words, value is not something that customers get immediately when buying a product or service, but instead, the value is considered to be created when a good or service is consumed. Products and services are seen as resources that enhance the customers' ability to create value for themselves (Grönroos, 2008) such as for customers they act just as an enabler (Bouwman, Vos, & Haaker, 2010). This approach can be taken as one of the cornerstones of a business model (Hokkanen, Xu, & Väänänen, 2016) as it goes beyond the product-centric thinking into a more holistic, value-centric way of seeing and managing the business. Firms do not succeed by relying merely for example on superior technology but through the ability to realise and maximise the value potential of the technology with an appropriate business model (Chesbrough, 2010).

When examining business models through value creation, another important notion is the importance of the firm's external network in the value creation and capture. According to (Normann & Ramirez, 1993), "the only true source of competitive advantage is the ability to conceive the entire value-creating system and make it work". Value creation can be seen as a boundary-spanning process where value is co-created among various actors in a network (Grönroos, 2000; Vargo & Lusch, 2006). In terms of value capture, it can also be called as value co-capture. Whenever several actors within a network participate in the creation of value, they evidently should participate also in its capture (Grönroos & Voima, 2013).

Overall, as pointed out by Ahokangas and Myllykoski (2014), there are several basic principles which are commonly accepted among the scholars in the business model research stream. Although the discussion on the business models draws attention to the possible lack of common perspective and shared understanding, value creation and value capture are seemingly the core elements into the almost all the definitions of business model and its innovation.

2.3.3 Business model elements

When one looks at the development of the business model concept, the business model canvas proposed by Osterwalder and Pigneur (2010) is the initial generation of tools that connects business model concept research and practice. The business model canvas includes business model components such as activities, resources, partners, customers, costs and revenues and value proposition as suggested by (Osterwalder, Pigneur, & Tucci, 2005, p. 3), “a business model is a conceptual tool containing a set of objects, plans and their relationships with the objective to express the business logic of a particular company.”

Reviewing the extant bodies of opportunity and business model studies has led this study to the conviction that the existing theoretical frameworks are not operational enough to implement in organisational practice. For instance, (Chesbrough, 2006) defines a four-step process to start the development of new business models, with six functions that must be designed. According to Chesbrough (2006), such method primarily deals with how large companies create new business models, but no further explanation is made to describe the specific process. A similar observation can be pointed at Johnson et al.’s (2008) study, which presents what the four interlocking elements of their business model framework are, but they do not clarify how to generate new business models, or how to explore different alternative business model along with the business opportunities.

Osterwalder and Pigneur’s (2010) business model canvas is claimed to be operational (Brix & Jakobsen, 2015), which presents precise processes and tools, allowing practitioners to apply in their organisations for business model development. Still, even though Osterwalder and Pigneur’s (2010) present an operational method for implementing the business model canvas, it remains biased towards the strategy and commercialisation perspective that reduces its applicability in many specialised industries, for example, the ones where business (suppliers) and end customers (end users) can be the same entity as the prosumers in the energy sector (Brix & Jakobsen, 2015).

3 THEORETICAL FRAMEWORK OF THE STUDY

In this section, the theoretical framework of the study is developed, presented and discussed in detail.

3.1 Business model and internationalisation

Regarding the business model research field, the concept of business model has received increased attention in the past years (Magretta, 2002). According to a number of business model scholars (such as Amit & Zott, 2001; Massa, Tucci, & Afuah, 2017), a company′s business model captures how it creates, delivers, and captures value. The business model comprises the activity system (internal and external) for value creation and delivery (Zott & Amit, 2010a), the revenue models for value capture, and the company′s value proposition to the relevant stakeholders of the company (Zott & Amit, 2010b). According to Casadesus-Masanell and Ricart (2010), the business model is not a static concept. It is a system of inter-connected activities, and the companies can experiment the alternative configurations of its activity system and its governance and the different possible value propositions to enhance the performance of the company (Casadesus-Masanell & Ricart, 2010).

Despite the development of a business model as an emerging core concept of how a company operates, yet, the relationship between business models and internationalisation has been largely unexplored (Hurt & Hurt, 2007). Researchers have often limited their discussion to the need to reinvent business models for foreign markets (Tan, 2005) without scrutinizing the concept itself. Hurt and Hurt (2007) viewed that there are two reasons why the business model and internationalisation relationship has not been adequately developed. First, there is considerable uncertainty about the definition of the business model. Secondly, most researchers have tended to focus on the internal aspects of the business model, rather than on the impact of the environments in which they developed (Neubert, 2016).

In their research, Hurt and Hurt (2007) stress the influence of the home country environments on business model development and the impact of the host country environments on the success or failure of attempts to replicate business model internationally. The components of the framework model as a whole are encompassed by its culture and embedded in its societal and industrial contexts, in constant interchange with these contexts (Uzzi, 1997). Ahokangas and Myllykoski (2014) propose that it is needed to reconstruct the concept of the business model so that to better unfold how the concept is related to the international business context. Taking as the starting point the business model elements by Osterwalder and Pigneur (2010), the elements value proposition, cost structure and revenue streams from the centre of the business model whereas customer relationships, key channels and key partners connect the firm to its external network such as to its (international) business context (Neubert, 2016).

Onetti et al. (2012) suggest that business model definitions have to include location decisions that are more and more relevant in the competitive scenario. In a similar fashion, Mitchell and Coles (2004) offer the only definition that includes location decisions in its business model constituents. The international entrepreneurship/internationalisation literature is grounded on the assumption that location matters. Moreover, particularly for young and new high-tech companies, location decisions are among the most relevant ones.

In fact, for these firms, internationalisation is not just one of the possible growth options, but it is a natural condition of the business. What really makes the difference is the capacity to make fast and appropriate decisions regarding the most suitable locations for different activities (access to resources and knowledge, sales). With “location decisions” we do not just refer to decision choices like “which market to address,” but also to decisions like “where do we place our activities and, where do we locate our company?” as Onetti et al. (2012) suggested.

These choices can make the difference in terms of the company’s ability to access resources, develop competencies, create a network, benefit from knowledge spill-overs and therefore excel, innovate and implement its strategy. In Onetti et al.’s (2012) definition of the business model, they emphasise these kinds of decisions by the inclusion of “locus”. Accordingly, Onetti et al. (2012) define the business model as the way a company structures its own activities in determining the focus, locus and modus of its business whereby:

- The **focus** of the business is about the activities which provide the basis of the firm's value proposition (Feeny & Willcocks, 1998);
- The **locus** of the business relates to the location or locations across which the firms resources and/or value adding activities are spread (Doz, Santos, & Williamson, 2001; Dunning, 1998);
- The **modus** of the business is understood in the way that it is the modus operandi or business modes with regards to the internal organisation and the network design (Brouthers & Nakos, 2004; Zott & Amit, 2007).

Recently, the strategic entrepreneurship research emerges to connect the business model with entrepreneurial internationalisation through the normative framework from Autio (2017). By adopting the lean startup concept from Blank (2013) and Ries (2011), Autio (2017) explains that business model experimentation can enhance internationalisation competitive advantage. It is further suggested by Autio (2017) that the relevance of business model and business model experimentation to entrepreneurial internationalisation is not only about the learning and capability development that mainly emphasise the company's internal capabilities. The main proposition of Autio (2017) is that business model brings the new thinking that is related to configuration and governance of the external activity system and the venture′s value proposition. Thus, by testing and experimenting with new business models, international entrepreneurial companies can improve their competitive advantages in foreign markets.

To conclude the above discussion on internationalisation and business models, it can be stated that the business model has a central role if the researchers are to capture, understand, and analyse the internationalisation behaviour of any company utilizing such concept in their international businesses. It also emphasises the role of networks in the activities of the company.

3.2 The scalability and replicability of business model

Regarding the speed of internationalisation, existing literature has shown that the scalability and replicability of business model can be relevant to the discussion.

Scalability discussion is highly relevant and connected to business model studies. Hallowell (2001) states that scalability is a factor that enables more work and more efficient work with an increasing number of components. In business model studies, Jabłoński (2016) states that scalability is suggested as the capacity of the business model to sustain a good level of effectiveness when increasing or lowering the number of its components and adjusting the boundaries of the business model impact. Business model scalability is a key parameter that determines the company's ability to grow.

Other researchers such as Bouwman and MacInnes (2006) and Juntunen (2017) see the scalability of business model as a key element of innovative business models that can affect the company's performance. Thus, scalability is an important feature of the business model, which is often related to the growth of the company, positively influencing on the company growth (Berry, Shankar, Parish, Cadwallader, & Dotzel, 2006). Therefore, the existing business model literature provides scalability as a feature of the business model that is related to venture growth.

Another characteristic of business model that can be related to the venture growth and internationalisation is the replicability (Dunford, Palmer, & Benveniste Jodie, 2010). In the study of multinational company's rapid and early internationalisation of new ventures, Dunford et al. (2010) identify that a business model replication contributes to the accelerated internationalisation that is implemented both early and rapidly in the new ventures of the multinational companies in multiple domains such as knowledge-intensive industries, global commonalities in consumer markets, and some technological business (Dunford et al., 2010). Basically, the advantages related to the replication of a business model can emerge from several aspects, such as the international location choice that can be based on the potential for any new location to benefit from the experience gained in an earlier location chosen for internationalisation. The example of the benefit can be the ability of the business to diffuse rapidly in a new market than its competitors can imitate (Dunford et al., 2010).

Winter and Szulanski (2003) suggest that the replicability can create value in terms of refining an existing business model, choosing the necessary business model components to be replicated in other geographic locations, by developing capabilities to transfer knowledge in new markets, and by maintaining the replicated business models (Dunford et al., 2010). Overall, replicability can be seen as another characteristic of business model for the rapid internationalisation of the startups.

3.3 The theoretical framework of the study

Extending from the literature review section above, this study identifies the need to study the speed of internationalisation process by researching the two major internationalisation models in international business studies. The first one is the dominant gradual stage model. Kalinic and Forza (2012) suggests the stage model and the gradual internationalisation of the Uppsala model (Cavusgil, 1980; Johanson & Vahlne, 1977) has a gradualist logic of thinking. The gradualist view of internationalisation sees internationalisation as beginning with sporadic foreign sales and gradually increasing the international commitment and presence in the foreign markets (Kalinic & Forza, 2012).

The second model is the more rapid model of INV or the Born Globals that are internationally-oriented at the launching or early startup stage. The rapid internationalisation model manages to enter new markets with faster speed or a small number of years in business (Bell, McNaughton, Young, & Crick, 2003). These studies will focus on comparing the two types of internationalisation models to develop a deeper understanding of the speed aspect of internationalisation, especially for high-tech startups and technology entrepreneurship.

Referring to several studies (Ahokangas & Atkova, 2015), the origin of business model can be related to the idea of business: “what a company offers to whom and how”. It consists of components such as resources and competencies, internal and external organisational structure (Demil & Lecocq, 2010), customer value proposition (Chesbrough, 2007; Johnson et al., 2008) as well as cost and revenue structure (Osterwalder & Pigneur, 2010). As summarised by Schmid and Strupeit (2015), it remains that business models concisely describe what the business is and how the business is organised in order to create economic value and sustainable competitive advantage in a defined market. Several authors suggest sets of elements of business models (Hedman & Kalling, 2003; Wirtz, Schilke, & Ullrich, 2010; Zott & Amit, 2010a).

Morris et al. (2005) develop an entrepreneurship-focused business model framework, which comprises six components based on a meta-analysis of 18 scientific studies on business models. After the literature review, this framework is considered as matching with the focus and purpose of this study to support the development of high-tech startups. Overall, Morris et al.'s (2005) framework propose the following key components for entrepreneurial business models. The detailed description of each component is also provided in Table 1.

- Component 1 (factors related to product/service/solution offering): How do we create value?
- Component 2 (market factors): Who do we create value for?
- Component 3 (internal capability factors): What is our source of competence?
- Component 4 (competitive strategy factors): How do we competitively position ourselves?
- Component 5 (economic factors): How we make money?
- Component 6 (growth/exit factors): What is the market entry and growth model?

Table 1. Morris et al.'s (2005) entrepreneurial business model components

Business model component	Detailed elements to be investigated
Component 1: Factors related to the offering	• Offering: primarily products/primarily services/heavy mix • Offering: standardised/some customisation/high customisation • Offering: broad line/medium breadth/narrow line • Offering: deep lines/medium depth/shallow lines • Offering: access to product/ product itself/ product bundled with other firm's product • Offering: internal manufacturing or service delivery/ outsourcing/ licensing/ reselling/ value-added reselling • Offering: direct distribution/indirect distribution (if indirect: single or multichannel)

Component 2: Market factors	• Type of organisation: local/regional/national/international • Where customer is in value chain: upstream supplier/ downstream • Supplier/ government/ institutional/ wholesaler/ retailer/ service provider/ final consumer • Broad or general market/multiple segment/niche market • Transactional/relational
Component 3: Internal capability factors	• Production/operating systems • Selling/marketing • Information management/mining/packaging • Technology/R&D/creative or innovative capability/intellectual • Financial transactions/arbitrage • Supply chain management • Networking/resource leveraging
Component 4: Competitive strategy factors	• Image of operational excellence/consistency/dependability/speed • Product or service quality/selection/features/availability • Innovation leadership • Low cost/efficiency • Intimate customer relationship/experience
Component 5: Economic/revenue factors	• Pricing and revenue sources: fixed/mixed/flexible • Operating leverage: high/medium/low • Volumes: high/medium/low • Margins: high/medium/low
Component 6: Growth/exit factors	• Growth model • Market entry mode

However, the theoretical framework of the study does not stop at the business model framework. This research identifies a number of factors that can affect the speed of internationalisation in the rapid internationalisation literature, which are not connected to the existing business model frameworks. Thus, the study connects the factors that affect the speed of internationalisation with the business model framework of Morris et al. (2005).

Neubert (2016) investigates why Born Globals can differ in the speed of their internationalisation and identifies a number of key factors that can affect the speed of internationalisation. First, developing and creating a unique and high-quality product or service is a key factor. According to Neubert (2016), the benefits and value of the product/service can compensate for the disadvantages of being a young, foreign firm with a little track record. Taking business model into consideration, this factor matches with the offering component of the business model (Morris et al., 2005; Osterwalder & Pignuer, 2010).

Another factor from Neubert's (2016) research is called the "size of the home market". The basic assumption here is that a small home market increases the pressure to go international earlier and faster. The factor can be seen as related to the market factor in the above business framework. Furthermore, one factor in Neubert's (2016) study is related to the availability and quality of international market opportunities. For instance, whether the startups can identify the "low-hanging fruit" type of opportunities in the international market. These factors suggest that rapid internationalisation is not only about finding the different types of customers in Morris et al.'s (2015) more generic business model. Therefore, the study updates the business model framework above to focus more on the speed of internationalisation.

Internal capability is a key component in the business model (Morries et al., 2005; Teece, 2018). The same finding is found in internationalisation studies (Dunford et al., 2010; Neubert, 2016). The internal capabilities can include the abilities of the entrepreneur or entrepreneur team to fast learning and network building internationally. Internal capabilities can also cover the existence of a qualified sales management team that can speed up internationalisation significantly, because it acquires the first clients and distributors, and build customer networks (Neubert, 2016). Moreover, the ability to develop structured market development process can also be considered as a capability that can reduce the recourses required to enter a new foreign market significantly (Neubert, 2016). Therefore, these factors of fast internationalisation can be added to the business model framework.

At last, strategy-related factors can also speed up the internationalisation process, which can be considered as the competitive strategy aspect of the business model. For instance, Neubert's (2106) research suggests that some startups make a strategic choice of choosing an easy regional market first. These markets normally have low cultural, administrative, geographic/physical and economic differences comparing to the home country market. Additionally, a strategic factor is also related to the choice of strategic entry models. For example, these models can include the direct export of products, the licensing of intellectual property, franchising, or alliance (Dunford et al., 2010; Neubert, 2016).

By integrating the factors of rapid and lead internationalisation with the business model framework, the study initial develops a conceptual framework to explain the rapid internationalisation from the business model perspective. These aspects include the offering aspect of the business model for rapid internationalisation, the market aspect of the business model for rapid internationalisation, the internal capability aspect of the business model for rapid internationalisation, and the international strategy aspect of the business model for rapid internationalisation.

Thus, this study adopts the business model concept and framework developed by Morris et al. (2005) and develops the framework further by aggregating the rapid internationalisation factors from a number of relevant studies (Autio, 2017; Dunford et al., 2010; Neubert, 2016). The developed conceptual framework of this study is shown in Figure 1.

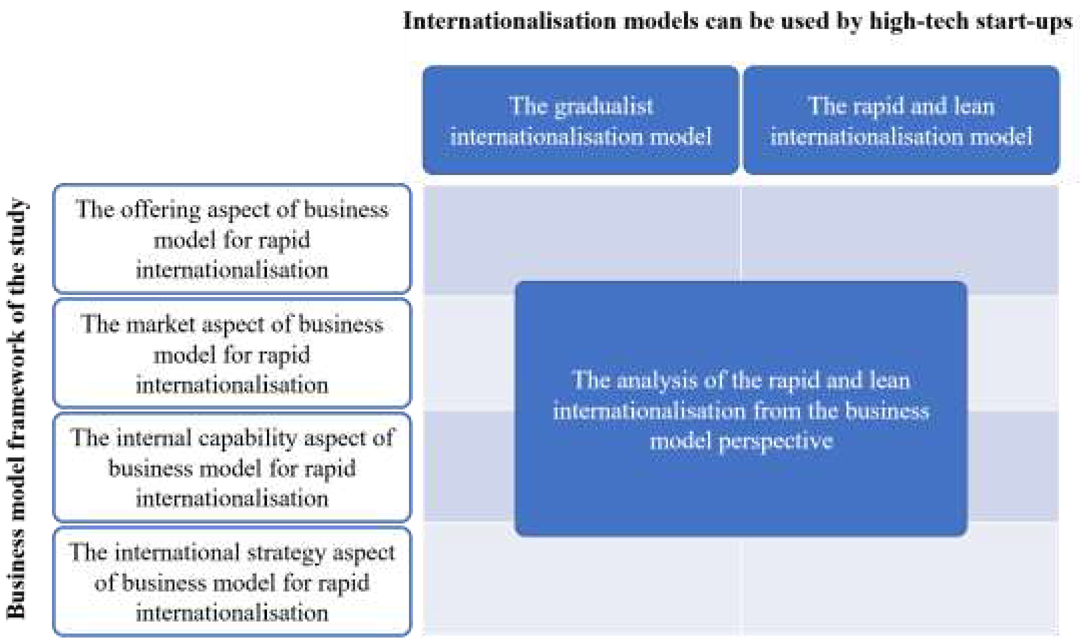

Figure 1. The theoretical framework of this study

As can be seen in Figure 1, the figure represents the initial conceptual framework of the study, on the horizontal dimension, there are two internationalisation models. The first one is grounded in the gradualist or "stage theory" of the internationalisation, such as the Uppsala internationalisation process model, while the second one is the rapid or lean internationalisation model, such as the Born Globals. These aspects and the relevant factors under each aspect will be used in the data collection and data analysis of this study. Furthermore, the detailed elements to be investigated within each key component of the business model are also listed in **Error! Reference source not found.**. These elements are adapted from Morris et al.'s (2005) research.

The detailed research design and methodology are discussed in the next section. The cases collected from the study are analysed in-depth through the above theoretical framework to compare and identify the factors that affect the speed of the internationalisation. The detailed analysis is presented in the data analysis section of the thesis.

4 DATA AND RESEARCH METHOD

This section presents and describes the research methodology of the thesis. Basically, the three components of the research method are discussed: the research design and method, data collection, and the inductive analysis approach of theme-based analysis.

4.1 Research design and methodology

To begin with, this study uses the qualitative-driven research method with multiple case studies. The reason behind this research design and the choice of method is discussed in this section.

According to Denzin and Lincoln (2003), the research design is an overall plan for how the research is carried out. The main purpose is that the research design should address the issues of using the best possible and feasible way to find answers to the research question. Thus, the research design should be in line with the research philosophy (Burman & Stjernström, 2017). Li (2017) also holds the same view that research design is not just a work plan, but a design to make sure that the results and outcomes of the research can enable the researcher to answer the research question as unambiguously as possible (de Vaus, 2001).

In the field of social science research, the qualitative and quantitative methods are generally considered as the fundamental dichotomy (Robson, 2002). Qualitative data is generally anything which is not a response chosen or achieved within the limits of a set or type of options preselected by a researcher, which can generally be described or coded in a numerical form. The most common form in which qualitative data is obtained is words, but it can also be observed actions, or even drawings or diagrams (Li, 2017). By evaluating the context and need of the study, this study uses the qualitative research approach.

Based on the previous studies in the realm of internationalisation (Li, 2017), this study recognises that it is important to match the research design with the research question. As discussed in the previous, this study is to achieve a deeper understanding of the differences between traditional process-focused internationalisation approach and the rapid internationalisation phenomena. This research context matches an exploratory study situation, in which a contrasting approach of a comparative design is needed (Bryman & Bell, 2007). An advantage of this choice of research method, as suggested by Li (2017) is that the comparative multiple case studies design acts as a platform on which several qualitative methods are able to be combined to extract better research findings and insights.

Furthermore, several studies suggest that the research design can be classified based on different time frames, such as longitudinal (Saunders, Lewis, & Thornhill, 2009) or cross-sectional (Burman & Stjernström, 2017). Specifically, a longitudinal research studies a topic or a subject over a period of time. On the other hand, the cross-sectional studies base the research in a snapshot of time (Burman & Stjernström, 2017; Saunders et al., 2009).

Regarding the horizon of time, the focus of this study is to identify the influencing factors of lean and rapid internationalisation of high-tech startups. Therefore, the cross-sectional study is considered more relevant than the longitudinal study. This choice is aligned with the study of Burman and Stjernström (2017), which is in a similar research context. The study is not about controlling the events but focusing on contemporary events. Thus, the study fits the use of the case study design (Yin, 2009). The comparative case studies are used to both empirically validate previous theories and develop a new theoretical explanation for the fast internationalisation phenomenon from a business model perspective.

At last, a novel aspect of the research design is that the study includes high-tech startups that represent in different phases:

The first case is one successful and established high-tech startup or small business that can be considered as Born Global startup when they initially start the company. The company has a track record of rapidly entering foreign markets in a shortened period of time comparing to the industry average.

The second case is an early-stage startup that has started its internationalisation after establishing the company. The startup company has entered a limited number of the international market with existing clients.

The third case is one potential high-tech pre-startup that receives the Finnish national funding and is in the planning phase with the aim of entering the international market at its inception.

The details of these startups will be presented in the data analysis section.

4.2 Data collection

Data collection is a critical part of any research. According to Li (2017), a concrete and practical plan for data collection can enhance the quality of research. Some common ways to collect data for qualitative case studies are through participant observations, focus groups, and in-depth interviews (Bryman & Bell, 2007). The data collection in qualitative research occurs very close to the reality that is being studied, which enables the analysis to be centred on events in their natural environment (Miles & Huberman, 1994).

Similar to the study of Burman and Stjernström (2017) on the fast internationalisation of Born Globals in Sweden, this study also uses the primary data collected from qualitative multiple case studies through semi-structured interviews. Numerous researchers consider case studies as a tool that can deepen the understanding of samples (Burman & Stjernström, 2017; Creswell, 2007; Saunders et al., 2009). In case of studies, the researchers can have a coherent understanding of why the interviewed cases make certain kinds of decisions, how such decisions are made as well as the resulting outcomes from such decisions (Yin, 2009). Burman and Stjernström (2017) further address that in an exploratory study, in-depth interview is an effective technique to derive a better understanding of the collected data and develop the understanding from such data.

Although this study builds on the existing researches that explore the similar topic or research domain, the study also goes deeper than just plain case study but using a theme-based approach that is suggested by Neale and Nichols (2001). Superficially, the theme-based approach is different from the general case study approach in the way that the predetermined and theme-based interview questions are created or collected based on the research hypotheses prior to the actual data collection, such as in interviews. This approach has been used in user experience-related studies. As described by Neale and Nichols (2001), by using the theme-based data collection approach, the researcher may have a hypothesis regarding the potential correlation between dependent and independent variables, predicting a direct link between variables to be tested. The researcher may then aim to collect data that supports or rejects this hypothesis, including asking the open-ended question or recording interview respondent's verbalizing their thoughts as they move around their thought process, and then the researcher transcribes the comments from the respondents for further analysis.

It is worth to mention that another qualitative approach that is often used in the social sciences is grounded theory (Strauss & Corbin, 1998). The fundamental characteristic of a grounded theory approach is that hypotheses are empirically derived. It is very rare that grounded theory is used to test a predetermined idea or hypothesis as it is more likely that a hypothesis will emerge from the data as it is collected (Neale & Nichols, 2001).

The semi-structured interview is used as the data collection mechanism in this study. Being different fully structured and fully unstructured interview, the semi-structured interview method provides a mix of the structured and unstructured interview methods, in which the researcher follows an interview guide that ensures that the same types of questions are asked to all samples (Bryman & Bell, 2007). Concurrently, the researcher has the possibility and flexibility to adapt to the research and interview situation if the interview respondents raise an interesting issue that is not predicted or expected by the researcher when developing the initial set of interview questions.

In the context of this study, the researcher adopts the process from the previous study (Burman & Stjernström, 2017) by using the semi-structured interview as a data collection method. Referring to Minichiello, Aroni, and Hays (2008), this study develops and uses an interview guide which usually contains a list of questions and prompts designed to guide the interview in a focused, yet flexible and conversational way to collect answers from the research participants. The advantage for the semi-structured interview is that the researchers have a clear idea of how the data will be analysed. In addition, some structure of the interview ensures the cross-case comparability (Bryman & Bell, 2007).

On top of the data collected from interviews, the study also tries to improve the richness of the data used as input for further analysis by using data triangulation (Carter, Bryant-Lukosius, DiCenso, Blythe, & Neville, 2014). According to Carter et al. (2014), the majority of the qualitative researchers in human science collect data through interviews with individuals or groups as the main data collection source for the study. However, it is also possible to collect other sources of data to stimulate the identification and sharing of various perspectives on the same topic. To ensure quality research, data triangulation is applied in this research and both primary and secondary data has been collected.

4.3 The inductive data analysis

After collecting the main data from the semi-structured and theme-based interview, the study enters the phase of data analysis.

According to (Collins, 2015), the main purpose of interviewing is to provide evidence on whether the interview questions under scrutiny are meeting their measurement objectives. This evidence helps the researchers in making decisions about whether and how to revise them. In analysing the interview data, the researchers are attempting to unearth evidence and finding regarding the knowledge and understanding from the research data to answer the research question developed in the first place. These data can be seen as being qualitative in nature, in so much as they are from the respondents' thought processes, understanding of the interview questions presented, and the factors that shape the participants' responses (Collins, 2015).

Moreover, Collins (2015) argues that there is little written on the subject of how to analyse interview data with concrete frameworks. There have been a few studies describing the development and use of standardised coding schemes to analyse cognitive interview data (Willis, Schechter, & Whitaker, 1999). In the previous studies (e.g. Neale & Nichols, 2001), a content analysis approach is used in interpreting the data gathered by in-depth interviews (Gould, Eklund, & Jackson, 1993; Neale & Nichols, 2001).

Referring to the above discussion, this study builds on the inductive approach for the analysis of the interview data. Consistent with inductive theory building from multiple cases, the study initiates the data analysis with the creation of individual case histories (Eisenhardt & Graebner, 2007) with the background data collected from a public data source such as the company websites and from the interview answers. These histories synthesise the interview data and archival data of the focal company or project and describe the background information regarding the international market entry for the established high-tech startup as well as the potential high-tech startup in the planning phase.

As is typical in theory building from multiple cases (Eisenhardt & Graebner, 2007), the study analyses the cases of the research with two types of analysis: within-case and cross-case. The within-case analysis focuses on developing theoretical relationships based on the insights from each company, while the cross-case analysis involves looking for the emergence of similar themes of rapid and lean internationalisation factors across multiple cases. This includes successive paired comparisons in order to develop an understanding of similarities and differences that may help to obtain new understanding and knowledge towards identifying the potential influencing factors for rapid internationalisation.

Based on the analysis framework from Collins (2015), this research carries out the interpretative analysis approach for the data collected in the study. It is an approach based on an analytical method that facilitates better content analysis of the interview data and other relevant data collected. The analysis of Collins (2015) has specific steps to organise data according to key themes, information and emerging new categories or factors from the study. Figure 2 summarises the main steps involved in carrying out this analysis.

The steps	The process inside each step
Step 1: Familiarisation with data	Reading transcripts, listening to interview recordings
Step 2: Identification of emergent concepts / themes	Highlight and summarise the findings
Step 3: Categorisation leading to description	Iterative process of refinement, starting close to the data and becoming more abstract and interpretative
Step 4: Developing and seeking explanations	Detailed within case analysis; comparison between cases; repeated interrogation of the data; moving back and forth between cases searching for new explanations

Figure 2. Steps involved in carrying out the structured and theme-based data analysis

It is key to understand that this data analysis approach is more structured to help better interpret the data and develop new understanding. The questions used during the analysis can be informed by theory and help to enhance the deeper understanding of the cases. As Collins (2015) suggests, if the analysis is rigorous and transparent then the data should be able to support or not support these.

4.4 The overall research processes

The overall research process involves both data collection and analysis.

At the data collection phase, the study follows the suggestion of (Neale & Nichols, 2001), which involves:

1. data collection
2. data collation

In the later data analysis phase, the study uses the analysis framework and process from Collins (2015), which includes:

3. Data familiarisation and comprehension
4. Identification of emergent concepts/themes
5. The categorisation of the findings
6. Developing and seeking explanations

The two broader processes of data collection and analysis are combined and described in detail below.

Step 1: Data collection. The method of data collection used in this research includes the semi-structured interview and secondary data gathering that both yield qualitative data.

Step 2: Data collation. Once the data has been collected, it is grouped according to the question or hypothesis that it addressed. This is in the form of simple forms and tables, with rows that are used for showing raw data from individuals, and columns for summarizing data. The use of a form and tabulation enables the researcher to easily view and analyse the data, and the tabulation is retained throughout the iterative process of data analysis later.

Step 3: Once the data has been collated, it is read through by the researchers a number of times until the responses of the participants become familiar. So, the third step is for the researcher to comprehend and familiarise with the collected data by carefully listening to the interview recording, reading the transcribed notes thoroughly.

Step 4: In the fourth step, the main themes are identified and refined through familiarisation with the raw data and cross-case analysis. Data from each case are synthesised into the corresponding parts of the thematic framework as the identification of initial concepts or themes.

Step 5: The fifth step involves the categorisation of the new findings. It is an iterative process of refinement, starting close to the data and becoming more abstract and interpretative.

Step 6: This last step mainly focuses on finding explanations and refining the relevant factors. The results can be developed from evaluating and updating the categorisation of information, reflecting the learning from fieldwork, data analysis and relevant theories, and updating the finding when new understanding is developed during the process.

4.5 Evaluation of the research method

According to Li (2017), the number of cases to be used in the case study method is difficult to decide. The suggested numbers range from 2 to 4 as a minimum, and to choose 10 to 15 as a maximum by different scholars (Creswell, 2007; Miles & Huberman, 1994). Therefore, this study fits within the range of the required number of cases for the research.

In qualitative research, reliability refers to the degree to which the same measurement procedure in the same context can yield the same information. Validity is the quality of fit between an observation and the basis on which it is made (Kirk & Miller, 1986). Basically, qualitative research should be judged according to different criteria than a quantitative study (Guba & Lincoln, 1994; Li, 2017). Trustworthiness and authenticity are the two primary criteria for qualitative study evaluation (Guba & Lincoln, 1994).

For a case study research, (Riege, 2003) develops a “generic” technique to evaluate its quality in term of credibility, which is similar to internal validity, transferability which is parallel to external validity, dependability which relates to reliability and conformability that is related to the construct validity. In this study, the researcher considers improving the conformability (construct validity) by an interview the key people (e.g. CEOs and project leader) for the case studies to ensure the collected data are meaningful and relevant for the study. Moreover, the study ensures dependability or reliability by using the same research protocol and process for all the cases and by developing a complete database in the data collection phase.

All the relevant tools used in this research for validity and reliability can be summarised in the following table:

Table 2. Checking the case study of this research (adapted from Yin, 2003)

Tests	**Case study tactics**	**Phases**	**Comments**
Construct validity	Use multiple sources of evidence	Data collection	Yes
	Establish a collection of evidence	Data collection	Yes
	Have reviewers review draft case study report	Composition	Yes
Internal validity	Do pattern matching	Data analysis	Yes
	Do explanation building	Data analysis	Yes
	Do time series analysis	Data analysis	N/A
External validity	Use replication logic in multiple case studies	Research design	Yes
Reliability	Use case study protocol	Data collection	Yes

	Develop case study database or repository	Data collection	Yes

According to the evaluation above, the quality of the research is improved in various ways. First of all, it should emphasise the justification of the comparative cross-case design. For the data collection method, a pilot study is conducted before the actual data collection to ensure that well-prepared data collection plan is developed to improve the quality of the research. A reliable voice recording application is used in the data collection process and a well-designed interview information guide for facilitating the semi-structured interviews is created to achieve construct validity. Furthermore, the researcher also tries to reduce the biases for the credibility and ask external help and advice from other researchers to check whether the process in the study is in line with the research question and well-designed.

To sum up, this study adopts the relevant research design, methodology, data collection and analysis approaches to sure that the research can deliver a quality result for testing theories, answering result questions and fulfilling the research objectives.

5 DATA ANALYSIS

From the initial selection of the three high-tech startup and pre-startup cases, this research conducted three in-depth and semi-structured interviews with the respondent from each case. The respondents are either the founders and CEO or the research project manager who is going to become the CEO for the pre-startup. By interviewing these key persons in the organisation, the study can ensure the collection of quality data and insights into how these companies are established or will be established. Also, the determining factors that either have contributed or are expected to contribute to the rapid growth and internationalisation.

As shown in **Error! Reference source not found.**, a unique setting of this research is that the researcher has recruited and invited the cases that can represent the high-tech startups in the different lifecycle stages of the startup. These cases cover the startups from the initial planning stage as a pre-startup to the established international startup that is on its track to grow to a small or medium sized company. This research setting helps the researcher to explore and collect more insightful understanding of the presence and impact of the business model on rapid and lean internationalisation.

As the same time, business model components can be observed in all these cases. Moreover, this research setting is aligned with the comparative multiple case study method presented in the previous section. The study can make a comparison among startups at the different stages to identify the thought process of the entrepreneurs when they are planning or implementing the business operations and business models for the rapid internationalisation. The basic background information of the startups is summarised in Table 3.

Table 3. The basic background information of the startups

Case	**Industry sector**	**Respondent position**	**Lifecycle stage of the company**
Alpha	B2B solutions for industry customers	CEO	An established startup or small business that is successfully established in multiple international markets
Beta	B2B solutions for industry customers	CEO	An early stage startup with new customers in several international markets
Gamma	B2B/B2C solutions for energy industry customers	Research project manager	A pre-startup that is planning to commercialise the technical products in the international markets

5.1 Descriptions of the case studies

This section presents the descriptive information and data regarding the three case studies within the research.

5.1.1 Case alpha

The first case of the study is named case alpha. Case alpha is a successful high-tech startup based in Finland. Case alpha offers breakthrough solutions to the heavy production industry. The unique strength of the company is the technical solution that combines unique image processing and laser technologies to inspect the production in extreme high-temperature condition.

“We created a new technical solution that is unique to the industry (internationally)”, according to the CEO, who participated in this research. The unique feature of case alpha’s solutions is that their solutions are designed to be compact, easy to maintain and customise. The solutions promise their customers with a short payback time when integrating the solutions into the heavy production process. Furthermore, case alpha also uses digital technology like IoT (Internet of Things) to offer a unique capability for their solution and enhanced usability for their customers. Their IoT-based digital platform enables real-time visualisation, acquisition and storing of large amounts of production data.

Regarding the business model of case alpha, the company has introduced a servitisation concept for their products. Generally, case alpha produces technical equipment and devices to enable real-time monitoring solutions. However, the company does not aim to profit from selling the hardware equipment. In contrast, they convert the product business into a service business by providing real-time online monitoring and visualisation solution for their business customers who are in the heavy production industries.

Moreover, the company’s service is enabled by the internet, communication technology and IoT technology. Once set up, the solution can be used and accessed over the internet without the requirement for the case alpha to locate themselves physically in their customer's premise or in neighbouring locations. Case alpha has also used the business development method like lean startup (Ries, 2011).

The company focuses on meeting and demonstrating the solutions with potential customers when the products and services of the company are still in the development phase. The company validated the product concept not only with domestic customers but also with international customers when the startup started internationalisation short after the company was founded. By doing so, the company does not need to pursue an international strategy that is similar to the Uppsala's internationalisation model of increasing the presence in the targeted international markets gradually over time. Today, the company's solutions are used in several European countries as well as in Japan and South Korea.

Overall, case alpha has been established for seven years in the industry. It has a relatively stable business model for both domestic and international markets. Thanks to the service business model utilised by the company, the case alpha now has a stable income on a recurring basis. The company has gained good predictability regarding how much the business can bring in each month and in the near future. Therefore, the company can be considered as a success case in terms of rapid internationalisation.

5.1.2 Case beta

Case beta is a newly found high-tech startup. The company was found in 2014 initially. Case beta focuses on developing new measurement, analysis and control systems for high-temperature industrial processes. Therefore, case beta's main business is to develop and commercialise advanced control systems for the heavy production processes.

Case beta's solutions have also focused on the sustainability aspect of the business. Their technical solutions are to enable the customers to make real-time measurements, giving them fast and precise process control capabilities. Ultimately, case beta allows the customers to have a more sustainable production with better environmental, social and economic benefits. As a result, the company is a member of Cleantech Finland and the company uses its expertise to develop sustainable products and services.

According to the CEO of the company, who is also the interview respondent, “we have a diverse team with different backgrounds… We have a team member with a background in the heavy industry, a team member highly specialised in the optical technology… I have a background in the high-tech industry as an entrepreneur”. Therefore, the uniqueness of the case beta is that the company has a diversified and multidisciplinary team who has unique sets of skills in different areas. All these skills and experience can contribute to the product and solution development, and solution commercialisation and internationalisation of the company.

According to the CEO of the company, case beta’s founding members altogether have over 50 years of combined experience in working in the relevant high-tech industries. Additionally, they have excellent research backgrounds and close connections with the research community. As a new startup, case beta has also created its business model. In fact, the CEO of the company confirms that the case beta has two business models are the same time: One is focused on the product sales, or a product business model, while the other one is a service business model. According to case beta’s CEO, both business models have different advantages in terms of acquiring and serving business customers internationally.

The internationalisation strategy of the case beta is still evolving since the company has been focusing on the development of the products and services with high quality and usability. Recently, the company has shifted its strategy from internal development-focused to a lean startup-like method. Case beta has participated in larger research projects with the universities and the industry companies. By doing so, the startup can connect and work closely with the industry partners during its product development. The startup can test the products, services and business models with the potential customers.

The early collaboration with research projects and industry partners allow the case beta to stay active in the technical community, creating awareness of their solutions. This becomes an effective way for the company to get some of the initial customers. They have also been active in participating in industry-focused trade shows and exhibitions. Through these ways, the startup has acquired several international customers in Europe.

Looking into the future, case beta has a plan to go international with larger and established business ecosystems that have established presence and trust in foreign markets. The company considers this ecosystem-based internationalisation as the next focus of the company. Furthermore, case beta also confirms that they started internationalisation by exploring the neighbouring countries in the Nordic region to have an easy market entry and low barrier from the liability of the outsidership. For instance, case beta has acquired a customer in Norway.

5.1.3 Case gamma

Case gamma is research to commercialisation project funded by Business Finland, the Finnish national funding agency. It is both a commercial innovation project and a pre-startup. According to the respondent, case gamma is expected to be established as a company upon the completion of the project. Since it is a commercialisation-driven project, internationalisation aspect of the business is being investigated in the project.

The background of the project or pre-startup is related to the energy industry. Based on the public information of the project, case gamma identifies an opportunity in the recent development of the energy industry towards a cleaner and more sustainable future. According to the press release of the project, the current electrification state of the world is at 85.3%. The growing energy demand and dependence on fossil fuel has become a global issue. EU has recently announced the ambitious clean energy goals, which requires an increase in the energy efficiency target from 27% to 30%, a cut in emissions by 40%, and a goal of 27% renewables in final consumption. The solution to be commercialised by case gamma is expected to be a proprietary low-cost solution that can transform and digitalise the existing and future electric mobility infrastructure. The solution will use the next generation communication technology and is considering and evaluating the commercial possibility in the international markets when the company is established.

As the case gamma is pre-startup phase under active development, the respondent or the project manager could not specify the core product with greater details. Based on the reflection of the interview and the structured data analysis used by this research, the researcher can identify that case gamma has a focus on the product business model that is to focus on the product sale for the technical solutions to be developed within the project to international markets. The respondent has mentioned “the software exporting model” in the discussion. Therefore, case gamma also has digitalised products for international customers. Furthermore, software exporting model can be considered as related to the direct export or licensing as market entry models (Dunford et al., 2010).

Although the respondent of case gamma states the pre-startup’s international business vision and willingness. The project manager has limited information on the internationalisation strategy. From the interview data, it can be seen that case gamma focuses more on the typical product development method when planning for the business. Unlike case alpha and case beta, case gamma is still focused on internal product development. It is understandable that at the planning and pre-startup stage, developing a working prototype is an important task. However, the data also shows that case gamma is more on the stage and gradual model of internationalisation thinking than the lean startup or lean entrepreneurship thinking.

Generally, case gamma has demonstrated the spirit and motivation of the future entrepreneurs in the pre-startup for international expansion even before the startup is established. This observation from the interview shows that the source of Born Globals and entrepreneurial internationalisation can come from the psychological factors and willingness of the entrepreneurs prior to the actual internationalisation plan or business model is created or formed.

5.2 The theme-based data analysis

With the help of structured data analysis method, the researcher conducts an in-depth analysis of the data related to the three cases with the initial conceptual framework developed prior to the empirical interviews.

5.2.1 The offering aspect of the business model for rapid internationalisation

As defined by Morris et al. (2005), the offering factors are associated with the product, service, or solution offering. From the business model literature, the offering is closed related to value creation aspect of the business model (Amit & Zott, 2017; Massa et al., 2017).

In the interview with the successful startup case alpha and the early startup case beta, the value proposition and value creation aspect are considered as an important factor for the realisation of the rapid growth in the international markets. However, both cases show that the existing understanding of value creation is too broad. In academic literature, value creation is often associated with product or solution creation. The respondent from case beta argues that “we do not sell product or solution, we sell the value that is compelling and meaningful to the customers”. It can be seen that in the research literature, value creation has a tight connect with product creation (e.g. Morris et al., 2005; Osterwalder & Pignuer, 2010) while in the real life, the realisation of value for the customers is more important than simply creating value. Both case alpha and case beta show the importance of creating compelling value that is desired by the customers instead of trying to sell the products and let the customers find value by themselves.

Case alpha shows a clear sign of a lean startup and the rapid and lean internationalisation method. The startup highly focuses on creating compelling value and work closely with the customers for further solution development as part of their business model. This method pays off by effectively reducing the time and lowering the speed to enter new international markets.

As an early stage startup, case beta initially focuses on the stage and gradual model for the business: creating the product or service internally and then sell to the customers. Later, the startup adopts a more agile and lean method to develop and test the product and service with the relevant stakeholders in their business network or ecosystem. So, case beta shows the adoption of a more lean and rapid way of internationalisation.

Case gamma has a different context than the first two cases as case gamma has only developed the product at the concept level or initial prototype internally. There is no clear sign of real-life testing with the customers in the product creation phase. Therefore, the respondent holds a similar thought process like the discussion in the literature that product may be interchangeable with the value proposition.

The finding from case alpha and case beta strengthens Autio's (2017) framework for the strategic entrepreneurial internationalisation. It proves that business model is a learning tool for lean startup and lean entrepreneurship. This can test and verify the business model (such as value creation and capture) with international customers to finetune and inform the effective business decision.

Overall, the research data from the more successful international startups show that customer-oriented value creation is an important factor for the rapid internationalisation.

5.2.2 The market aspect of the business model for rapid internationalisation

Morris et al. (2005) suggest that market factor is another aspect of the business model, which is concerned with a question such as "who do we create value for?". When combined with rapid internationalisation literature, this factor can be broadened as the market size and international market needs.

The interviews confirm that the size of the home market and the potential international market are both the drivers of rapid internationalisation. However, both drivers play different roles in the process of internationalisation. The smaller market size of the home country market is a motivating factor for the startups and entrepreneurs to seek for the opportunity in the international markets. Three cases all confirm that the size of the home market can affect the motivation, the smaller the market size, the higher the motivation. However, this factor does not influence whether the startups can realise market entry success and rapid international.

In contrast, the size and needs of the potential international market is a more determining factor. Case alpha and case beta argue for the importance of unique and effective solutions that can be applied in the targeted international markets. It is the assumption of this study that the home country market size and international market potential can be the motivation for the startups to seek more effective methods for rapid internationalisation. It is not a determining factor that the startups will actually achieve the fast speed in reality.

5.2.3 The internal capability aspect of the business model for rapid internationalisation

The internal capability factors of the business model are associated with the dynamic capability view for internationalisation (Sapienza, Autio, George, & Zahra, 2006; S. Zahra, J. Sapienza, & Davidsson, 2006). Kalinic and Forza (2012) suggest that the capability of the entrepreneurs or the founding entrepreneur team can impact the organisational capabilities and strategic focus.

The interview cases show that internal capability is a key factor that relates to the successful establishment of the startup. For example, case beta addresses that the company has a diverse and multidisciplinary team while case gamma mentions that the project manager wishes to have a more diverse team. Another aspect of the internal capability can be related to the professional sales team and the effective marketing management process. Rapid internationalisation literature suggests that professional sales and marketing process is an influencing factor for the speed of internationalisation.

The interview data from this study shows that all three cases do not have a professional sales team or structured marketing management as the companies are still relatively small in size. Besides, the existing team members or employees are mainly technical engineers who are specialised in technical and product development. However, the CEO from the more successful case alpha tells that he wishes to have a more professional sales team early in the startup stage, which can help to accelerate their international success.

At the same time, the CEO of case beta comes from an entrepreneurial and business background, which complements the technical skills of other founding members. Case beta shows the capability to manage two business models to adapt to customer needs and international market conditions. Furthermore, case beta demonstrates a shift to lean startup-oriented internationalisation or business development in general. One estimation is that the CEO's experience and knowledge as a high-tech entrepreneur before joining the company helps the company to adopt new methods such as the lean startup-like approach more easily.

5.2.4 The international strategy aspect of the business model for rapid internationalisation

In Morris et al.'s (2005) original framework, there is a strategic aspect for the business model, it is related to how companies can use a business model to compete in the market. By taking into consideration the rapid internationalisation literature, this study develops an updated framework that incorporates the international strategy factors of business model from the rapid internationalisation literature, including factors such as market entry models (Dunford et al., 2010).

So, this study provides a clear differentiation between international business models and market entry models. Since the business model is a more holistic concept that is core to how a company fundamentally operates whether in domestic market or foreign market. In comparison, market entry models are closely coupled with the internationalisation strategy of how to effectively enter in one or multiple foreign markets. The international strategy factors can provide another aspect for the business model that aims for scalability and applicability in international markets.

By analysing the data collected from the case interviews, the researcher identifies a difference between the successful international startups and the pre-startup. The successful case alpha has developed a coherent business model that adds the international strategy nicely into the major components of the business model, such as the scalable digital solutions that can be applied in multiple international markets, the revenue model that is accepted in both domestic and international markets, and a service business model that can be replicated in different international markets without significant entry barriers.

However, the case gamma of the pre-startup has a different story. The respondent expresses their internationalisation strategy as a software exporting model, which implies that case gamma's core business model may be separated from the market entry models. Therefore, although the pre-startup of case gamma addresses the importance of rapid internationalisation, they seem to follow a gradual process for internationalisation.

In addition, it can be assumed that the case gamma sees that the speed of internationalisation is coming from the nature of software product itself, as the software is a virtual product that does not require complications associated with physical products, such as shipping, delivery and storage. Therefore, the software is easy to be distributed to international customers. At the same time, software export may still need to have market entry strategies such as third-party distribution or local representative.

Overall, in the more established case alpha and beta, the two startups both use different strategies to speed up their internationalisation process. The international strategies may differ based on the company's background, business model and management decisions.

6 CONCLUSIONS

While internationalisation is one of fundamental importance to entrepreneurial companies, relatively little is known about how these companies such as Born Globals develop a successful foreign market entry process in a rapid and lean manner. This study shows the importance of business model perspective in helping to explain this phenomenon with theories and concepts from relevant studies in business model and rapid internationalisation.

When investigating the business model perspective, Morris, Shirokova, and Shatalov (2013) suggest that it is possible to conduct the analysis of company business models at both broader and more detailed levels, which means that the analysis regarding business model concepts can be done at a more holistic view of business model with high level of abstract or analysing the business model with a more a component-based (as opposed to holistic) approach, looking deeper into the comprising components of business models. In examining the results from the point of view of key issues in this research, it is noteworthy to point out that the research develops new findings and understanding at both broad holistic level and the more detailed component-based level. Most of the component-level discussion is presented in the theme-based data analysis section 5.2, as those findings are closely related to the initial conceptual framework and the theme-based analysis.

The research also discovers new findings through the reflection of the whole research data and process. These findings are more related to the broad holistic level of the business model and are presented in the conclusion section. Moreover, one modification and update of the component-level finding (customer-centric value creation and delivery) is also discussed in this section to create the updated conceptual framework of this study.

6.1 Research finding one: From a gradualist internationalisation to a virtual existence

At the broader level, the business model perspective shows there is a transition from a gradual and step-by-step model of internationalisation to a virtual internationalisation model. This is a key theme emerging from the interview data. The respondents from all three cases address the importance of virtual existence for their businesses. The virtual mode is considered as affecting the speed of internationalisation of each case.

In the case of alpha, the case company is an experienced high-tech startup that has successfully internationalised its technical solutions across a number of markets. However, the company has not been relying on the gradualist internationalisation approach as can be seen in the Uppsala model. The company has virtualised its product and solution through servitisation and digitalisation. By servitisation, it means that the company converts the traditional way of product selling to service selling when the company was established. The company does not focus on selling the products to earn revenue but rather adopting a service contract to acquire revenue on a continuous basis.

To achieve this, the company starts by offering a customised service trial for potential customers outside their home country. The trial is designed as a simple and rapid manner. The solution is easy to set up and demonstrates results to potential customers. Comparing to the industry average, normally a typical solution would take several months for a product demonstration to take place. With the service trial approach of the case company with its unique solution, it would only take about one hour for the trial to be set up and get ready for demonstration. Based on the respondent and CEO of the company, “some customers even think that we are joking with this method”. However, the result tells a different story. The company is not “joking” but also create a new selling record in the industry. A normal sale would take up to two years to be realised in this industry, while case alpha took only a few months to close the deal.

In addition to servitisation, the company further develops its solution to be implementable through the internet and the cloud. This digital solution allows the customers and the company to monitor the production process and potential issues with real-time data and visualisation. On the one hand, it creates convenience for the customers to improve their business and production process at a higher speed and reduce their business operating costs. Besides, the digitalisation eliminates the need for the case alpha to establish a physical presence in their customer's premise. The company can serve the customers right in their home office.

The key learning from this is that the company can virtualise its solution as a digital service whether at the trial phase or commercial phase. This significantly increases the speed of internationalisation without following the gradualist internationalisation model. The servitisation and digitalisation allow the company to minimise the physical presence in the international market with an enhanced virtual existence and accessibility in the international market. The second case beta, the early-stage startup adopts a similar model as the case alpha. The case beta has also servitised and digitalised their solution for the same reason, achieving a speedy internationalisation for their solutions.

A more interesting case is the case gamma. Case gamma represents a potential startup that is at the planning phase of establishing an international business right from the beginning, although they have not yet built any business presence. Case gamma does not show virtualisation of its core product and solution. It is mainly because case gamma is still working on the development of their prototype.

The interview with the project leader shows that virtualise the visibility of the case gamma is a core concern of the potential business. Generally, by using the internet and search engine, case gamma sees that an immediate international presence can be created from a marketing and promotional perspective. Obviously, with the help of the internet, case gamma can distribute the information about its product and solutions to the potential customers at a fraction of cost comparing to other traditional international sales and market processes. Furthermore, at the pre-startup stage, case gamma still needs to test and verify its product and solution concepts, the virtualised presence can help supports the opportunity exploration of the business.

Referring to Rialp et al.'s (2005) work, they identify three key dimensions of entrepreneurial internationalisation: the founder's (and/or founding team's) characteristics, organisational capabilities and strategic focus. For example, intangible assets and value creation sources have been highlighted by Resource-Based View, the Dynamic capabilities approach, the network approach, and the organisational learning approaches (Kalinic & Forza, 2012).

However, in the case gamma, although it is not yet possible to evaluate whether this pre-startup can actually develop a rapid and lean internationalisation approach, the observation of the case shows that the factor that can potentially affect the speed is not about resource, dynamic capability, network, or learning as the startup is still in the planning phase. The influencing factor here is the startup's motivation to enter and penetrate the international market at its inception. It is about entrepreneurial vision and motivation. Without such motivation, case gamma would probably adopt a more traditional and step-by-step approach. In the case of gamma, it shows that the entrepreneurial motivation for business growth and scalability drives the likelihood to adopt a virtualised approach for fast internationalisation.

Therefore, the current study contributes to the understanding of the rapid and lean internationalisation of high-tech startups by providing empirical-based explanations of the factors that influence the speed of internationalisation at the broad and holistic level. At this level, the study shows that high-tech startups are increasingly moving from the gradualist type of international growth to a Born Global type of growth. For the business model perspective, the influencing factor is the virtualisation of international presence. The virtualised presence is enabled by digitalisation that allows the startups to either develop a digital solution that is scalable for international customers or create an online identity of the company to get discovered by international customers.

It is important to recognise that the virtualisation is supported by digital technologies as can be seen in high-tech startups. This shows technology can be an enabler for the rapid and lean internationalisation or the more traditional way of internationalisation. However, the practice of rapid and lean method is still important with or without the technology.

The case studies of this research help to demonstrate that entrepreneurial motivation and the new possibility provided by digitalisation allow the high-tech startups to speed up the internationalisation process in new and unknown markets by becoming virtual international players. This contrasts sharply with existing frameworks such as resource-based view (Peng, 2001; Westhead, Wright, & Ucbasaran, 2001) and the learning approaches that suggest market knowledge and prior international experience as the determining factors of rapid internationalisation (Clercq, Sapienza, & Crijns, 2005; Kalinic & Forza, 2012; Oviatt & McDougall-Covin, 2005).

6.2 Research finding two: Rapid internationalisation and business model replication

This study also identifies another broad and general level factor of a business model that can affect the speed of internationalisation, it can be called a business model replication.

The formation of Born Globals has been increasingly characterised by accelerated internationalisation. Early and rapid internationalisation brings with it the potential for enhanced learning and the building of associated value-creating skills. Existing literature, such as Dunford et al. (2010), suggests that internationalisation may take place in a variety of different entry modes, such as licensing or strategic alliances. Rapid internationalisation may be realised by combining one or more of these entry modes with the use of a replication strategy. In this line of thinking, the creation of a replicable entry strategy can affect the internationalisation of startups and facilitate faster expansion into multiple international markets with the repeatable strategies and business model.

This study supports Dunford et al.'s (2010) proposition that the replicable international strategy and business model can influence the speed of the internationalisation. However, Dunford et al.'s (2010) concept are primarily focused on the assumption that market entry models and internationalisation strategy are parts of the business model. Also, through a literature review, this study identifies that one needs to distinguish between concepts like market entry models and business models. Based on the discussion in the literature review section, the business model is more central to how to do business, such as creating value for the customers while capturing value for the business. In contrast, market entry models (e.g. licensing or alliance) suggested by

Dunford et al. (2010) can be considered as central to a company's internationalisation strategy, in terms of choosing the appropriate approach to enter foreign markets. This study addresses that the two concepts should not be mixed or confused.

Building on the clarification of market entry models and business models, this study suggests that business model replicability exists in the sense that a company's core business model can be designed in the way that it can be applicable and replicable across a wide range of international markets and business contexts without being significantly affected by the liability of outsidership. For instance, in the case of studies of this research, case alpha and case beta both develop unique digital solutions that can be easily implemented in different markets. These cases then receive revenue from a service business model that is based on benefit and savings created by their solutions. While they still offer maintenance and warranty for the devices and equipment supplied to the customers, the sales of hardware are never the focus or the core component of the business model. To be aligned with the service business model, case alpha and case beta use a subscription-like revenue model that is widely accepted in their industry worldwide.

From the above discussion of the case studies, it is clear to see that these companies have developed replicable technical solutions and business models that can be replicated to serve multiple international markets. The use of such models means that these companies do not rely on typical market entry models, such as direct exporting or licensing to develop their businesses internationally. Instead, the design and creation of these new types of business models (enabled by the digital technologies), the case companies can rapidly expand to different markets with little change to their core businesses and processes. In contrast, traditional international businesses often need to stack the market entry models and strategy to their existing businesses and processes.

However, it is visible in the case gamma that the pre-startup has not realised the importance of creating and designing a scalable business model that is inherently replicable in international markets at its launch. The respondent could not distinguish clearly between a replicable business model and a replicable market entry model. Therefore, despite that case, case gamma shows a high level of commitment and motivation for developing international business, the case itself still adopts a more convention business logic of gradualist internationalisation strategy.

Accordingly, a key finding of this study is to discover the mixed understanding of the international strategy replicability and the business model replicability. This research provides a distinction and explanation of the difference between the two concepts. Furthermore, the study identifies how and why business model replicability can be another factor that affects the speed of internationalisation of high-tech startups. The study clarifies and deepens Dunford et al.'s (2010) claim that the potential benefits of business model replicability is the ability of the business to diffuse faster than its rivals can successfully imitate it. Moreover, a replicable international business model can be created in through the lean internationalisation method by working with potential customers, testing and improving the solutions early on. The replicable international business model is a result of the lean internationalisation process, and the replicability improves the speed of internationalisation to realise lean startup-like results.

6.3 Research finding three: Business model as a learning tool for rapid and lean internationalisation

The review of the literature shows that the business model is considered as an emergent factor connecting to internationalisation, especially in strategic entrepreneurship studies. Referring the Autio's (2017) normative framework for strategic entrepreneurial internationalisation discussed in the previous section. As a component of the frame is the business model experimentation. Basically, Autio (2017) adopts the lean startup thinking from (Blank, 2013; Reis, 2011), suggesting that internationalisation can be enabled by business model innovation and experimentation to discover the scalable business models in the international markets. This is in line with the previous discussion regarding business model replication at the holistic level of business model. It can be seen that the fundamental thinking or assumption of rapid and lean internationalisation can be related to speeding up the learning cycle or shortening the learning process based on the learn entrepreneurship concept.

Regarding the component level analysis from the business model perspective, the business model can be seen as a business template or blueprint as in the concept of the business model canvas (Osterwalder & Pigneur, 2010). The experimentation-driven practice allows the startup companies to test and validate the business model components such as value proposition, target customers, key processes and activities, and revenue model and growth models as hypotheses for the different aspects of a business model (Autio, 2017; Autio & Zander, 2016).

In the business model literature, business model's learning aspect is described as either the innovative capacity of new business models or the need for them to change over time to meet changing competitive conditions. For instance, Teece (2010) explains the business model learning as a process that an established business modifies its business model in the face of competition from a new business model. It is argued by Dunford et al. (2010) that business models do not come as 'fully-formed'. Baden-Fuller and Winter (2005) suggest that business model can entail the principles that show the underlying logic of the business. Therefore, from the business model learning perspective, the business model can be used in the heuristic and learn entrepreneurship process (Autio, 2017). At the component level, business models can be tested and modified through continuous experimentation and improvement.

The interviews of this study are consistent with the business model learning perspective. The two high-tech startups in case alpha and case beta both agree with the importance of developing effective learning in the international market, and finetuning the business model components such as value proposition, value delivery system, key partners and etc. For case beta, the CEO as the respondent states that the company has multiple business models at the same time. This allows the company to evaluate the potential of different business models in foreign markets. Furthermore, the existence of business models as portfolios allow the company to create and capture value from different ways, which enhances the company's market expansion capability.

In the case of gamma as a pre-startup, the respondent also addresses the importance of learning. Here, the key focus is about exploring different business possibilities and commercial potentials in the international markets, which is in line with the opportunity-focused perspective in the strategic entrepreneurship studies. The lean approach is expected to help the pre-startup to navigate through the uncertainty of establishing an international business as it is not possible to be fixated on any predetermined strategy. Therefore, the learning side of the business model becomes particularly important. Furthermore, as the pre-startup is not yet clear about its business model, thus the learning at business model component level becomes a feasible solution for case gamma.

In addition to the above findings, the learning aspect is common in all three case studies regarding the internationalisation. Business model as a learning tool is considered by the startups as both affecting the entry success and entry speed. However, none of the respondents seems to consider learning as having a significant effect on the speed of internationalisation. Rather, the learning aspect is more often associated with entry success. Therefore, this study considers that the capability of the startup to learn fast can be a more relevant factor. It is the learning speed rather than learning itself. However, as this study is exploratory research, further studies can be done to clarify this assumption.

6.4 Research finding four: Customer-centric value creation and delivery as a factor for rapid internationalisation

Previous research on rapid and lean internationalisation (Dunford et al., 2010; Neubert, 2016) show that creating unique and high-quality product or service is an influential factor that enables the startups to overcome the disadvantages of being a new, foreign company with no or limited track record. This proposition is aligned with mainstream business model concepts. For example, according to Teece (2010), a business model can define how a company creates and delivers value to customers, and then converts payments received to profits as a conceptual model. Teece (2010) suggests that a "good" business model can provide compelling value propositions to the customers, realising advantageous cost and risk structures, and eventually rewards the business with capturing the value that is generated through delivering products, services and value to the customers.

Analysing the data from interviews, this study confirms the importance of value creation and delivery which can affect the ability of the business to penetrate foreign markets. One way to explain this situation can be found in Autio's (2017) normative framework for strategic entrepreneurial internationalisation particularly, the asymmetry exploitation as an internationalisation competitive advantage. Autio's (2017) research points out that a major potential benefit of internationalisation is that it exposes the internationalizing companies to asymmetries that exist between country-specific markets for different products, services and alike. Autio (2017) states that asymmetries can act as a source of opportunity to create new advantages in the cost and quality of production.

The findings from this study generally support Autio's (2017) claim. However, for the business model perspective, the study sees the possible asymmetry exploitation from the opportunities in the broadened international markets. Moreover, it also shows the compelling value that the international businesses and startups can create and deliver to their customers.

This is confirmed by the interview respondents. As companies that have internationally accepted new solutions, both case alpha and case beta address that their solutions are not only new and unique to the market but their solutions can create and deliver significant value recognised by the customers. Due to this reason, their solutions are able to attract international interest without much of the effort to extensively promote themselves or try to hard sell their solutions to the customers. Especially in the case alpha, the CEO as the respondent confirms that by only using a simple demonstration of the potential and compelling value from their solution, the company is able to get customers to make a faster purchase decision within months when normally the purchasing decisions are made in years. Thus, a key outcome from the lean method is the discovery and creation of the real value that the customers appreciate. This creates a "pull effect", especially in some high-tech industries where the customers are networked and connected.

Overall, the findings of this study add new insights to the existing theories regarding entrepreneurial internationalisation by identifying that the asymmetry exploitation can come from the creation of compelling value to the customers that are not available in other country markets besides the home market that has already been penetrated by the new solutions of the startups. Therefore, in addition to the broadened opportunity as a driver for effective internationalisation, value creation and delivery as the core components in the business model concept can be seen as a new factor that has an impact on the speed of internationalisation.

Overall, by combining the broad-level factors and the component-level factors, this study has updated the initial framework with a new framework that takes into consideration both the broad-level and component-level factors of a business model that can affect the speed of internationalisation. The new framework is shown below in Figure 3.

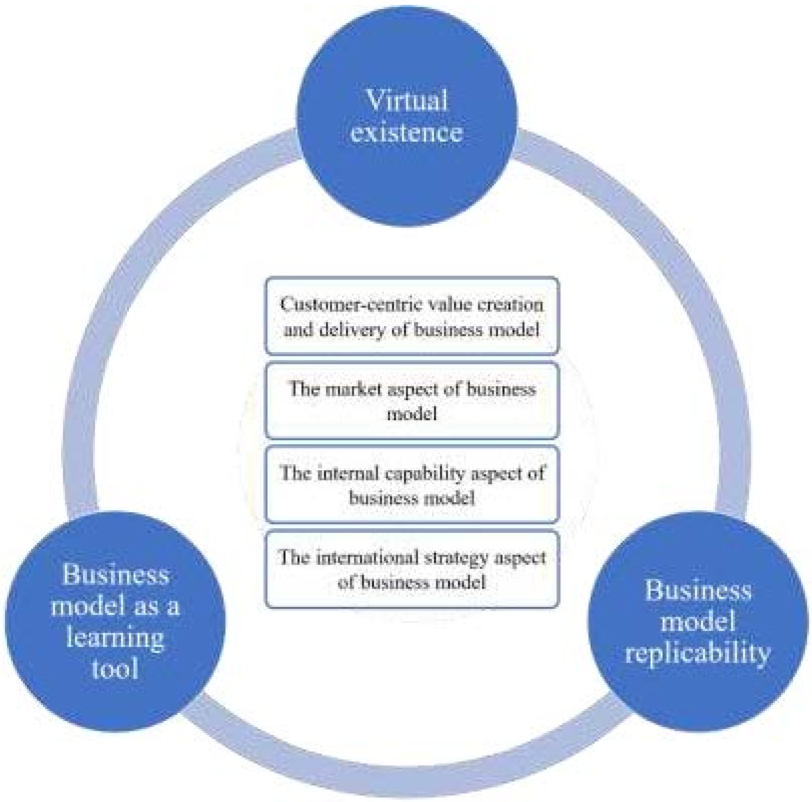

Figure 3. The updated framework of the study

6.5 The implication of the research

Dunford et al. (2010) suggest that business model replication can be so much more than its common characterisation as the relatively unproblematic repeated application of a basic business model. The discovery from this study clarifies that an important factor that influences the speed of internationalisation can come from the design of the core elements of the business model for replicability and scalability in internalisation markets. The business model can be utilised in the template and blueprint-based replication to enhance the startup’s internationalisation performance, e.g. in terms of speed. This study discovers a new distinction between the concept of replicability in the existing literature on international strategy and entry model as well as the business model studies. Thus, this study expands on the basis of conventional replication thinking and identifies a new perspective of understanding the replicability aspect in internationalisation and speed of internationalisation. While this finding is derived from exploration-oriented research, the study considers this aspect is key to the speed of the internationalisation of startups.

The cases in the study show that the business model replication can be a dynamic process in which opportunity exploration and exploitation, as well as business model experimentation, can all have an impact on the rapid internationalisation from business model learning. However, the key factor here is not learning itself but the speed (and accuracy) of the learning by the startup.

As part of this broader contribution, this study provides a new perspective, the business model perspective, on the concept of Born Globals and rapid internationalisation for both academic research and empirical practices. This study also raises some important issues and key insights for scholars and managers to consider.

First, the study demonstrates that rapid internationalisation can involve virtualised internationalisation model than the conventional gradualist international model. The virtualisation of location and presence can play a significant role in speeding up the internationalisation process.

Second, the study shows that the business model replicability can be a coherent design in the core of a company’s business model rather than a process that is only adopted and used when there is a need to sell the products or services to other country markets than the domestic one.

Third, the study provides evidence to the importance of value creation and delivery, not only as critical components of a business model in general but also as key factors to attracting international customers and therefore accelerating the internationalisation process.

Fourth, the study identifies the template and blueprint-based business model learning perspective that is aligned with the lean startup concept in the entrepreneurial literature as well as the framework of strategic entrepreneurial internationalisation.

In conclusion, this study contributes to the knowledge regarding the processes and determining factors in the domain of internationalisation. Specifically, the study explains and provides a new understanding of the rapid and lean internationalisation from the business model perspective. Through comparative case studies, semi-structured and theme-based interviews, and a structured data analysis method, the study provides concrete examples of how high-tech companies can speed up their internationalisation practices. The study also collects and evaluates the influencing factors for the phenomenon of Born Globals and the rapid internationalisation. Thus, answering why the rapid and lean internationalisation can take place as a contribution to both academic research and entrepreneurs and entrepreneur teams.

6.6 Limitations and future research directions

A key issue in this study is whether the finding of this research can be generalised from high-tech startups to other business settings, such as non-high-tech startups. This study also focuses on entrepreneurial startups operating in volatile business environments. However, the same situation may be relevant to the business managers in large corporations when dealing with international expansions. Therefore, these new settings can be studied by future researches.

Regarding the research methodology, a benefit of this work is the in-depth collection of the high-tech startups at a different stage or business life cycle, from pre-startup to established and successful international startup or small business. Further research can be conducted with a quantitative-driven research methodology to verify the findings from this research and develop a better generalisable framework for internationalisation and entrepreneurial studies.

Going deeper into the concept of replicability as a key factor for rapid internationalisation. This study only proposes a business model replicability at the general level. In Dunford et al.’s (2010) study. There is a distinction between the template-based replication that is more relevant to replicating the prescribed actions closely as well as the principle-based replication which is dependent on how people within the company to take their own initiative based on the principles. This study considers the comparison of template-based replication and principle-based replication as an interesting research area to be further explored and understood for business model replicability.

In summary, while existing literature focuses on the internationalisation strategy (e.g. competitive advantage) as the key concept of explaining the rapid and lean internationalisation of the startups, such as a resource-based view or opportunity perspective. This study provides added value to the existing research by using the business model perspective, providing new ideas and insights to support the on-going research on internationalisation and entrepreneurial studies.

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APPENDIX

Appendix 1 Outline Of the Semi-Structured Interview

1. Can you talk about your company's business briefly?
2. Can you describe your company's business model?
3. How do you think that your company's business model affect the company's internationalisation in general and the speed of internationalisation?
4. What are factors that affect the speed of internationalisation?
5. How those factors affect the speed of internationalisation?

The following factors were also discussed as part of the main discussion in question 4 and question 5:

- Uniqueness and high-quality of the product or service
- Size of the home market
- Prior experience in the industry
- Abilities of the entrepreneur or entrepreneur team
- Choosing an easy regional market first
- Creating a scalable business model
- Replicability of the business model
- Focusing on value creation and capture
- Focusing on opportunity exploration and exploitation
- Virtualizing the international presence via digital services and platforms
- Existence of a qualified sales management team
- The access to potential new clients in foreign markets through existing networks
- Structured market development process
- Choice of the market entry mode
- Multiple simultaneous market entry through the internet
- The availability and the quality of international market opportunities
- External support from startup incubating programs or services
- Choice of internationalization intermediary