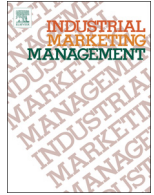




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Entrepreneurial marketing of international high-tech business-to-business new ventures: A decision-making process perspective

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ABSTRACT

Knowledge of how entrepreneurial marketing in industrial markets is currently rather weak. This study explores the marketing decision-making process of entrepreneurs undertaking entrepreneurial marketing in international new ventures (INVs) operating in high-tech business-to-business markets. A qualitative study conducted with entrepreneurs from four case firms reveals that due to the iterative, incremental, and co-creative nature of the process, marketing decision making in high-tech business-to-business INVs that is more effectual than causal results in more entrepreneurial marketing. A novel finding is that entrepreneurs alternate causal and effectual marketing forms as a result of their ambidextrous entrepreneurialism, and variations in the internal uncertainty, technological uncertainty, and any market turbulence faced by the firm. We develop a dynamic model presenting the alternation between effectual and causal processes, and the feedback loop of entrepreneurial marketing. The research offers implications for the management of organizations operating under conditions of uncertainty on how their decision-making processes can optimize entrepreneurial marketing, how to create new markets, and how to reduce the perceived uncertainty in industrial markets.

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1. Introduction

As a marketing stream at the interface of marketing and entrepreneurship, entrepreneurial marketing is especially important to support the rapid growth of resource-constrained firms in dynamic industrial markets (Bjerke & Hultman, 2002; Carson, Cromie, McGowan, & Hill, 1995; Hills, Hultman, & Miles, 2008). For such firms, marketing becomes an entrepreneurial process requiring a creative approach, for example, involving leveraging the resources of others through partnerships (Morris, Schindehutte, & LaForge, 2002). International new ventures (INVs) are firms with early and rapid growth in international markets (Coviello, 2006; Shrader, Oviatt, & McDougall, 2000) and are usually affected by the liability of smallness, newness and foreignness (Zahra, 2005). An INV is “a business organization that, from inception, seeks to derive significant competitive advantage from the use of resources and the sale of outputs in multiple countries” (Oviatt & McDougall, 1994, p. 49). Here entrepreneurial marketing as employed by INVs is defined as the proactive creation of market opportunities in international markets in order to acquire and retain customers through innovative approaches to risk management, resource leveraging, and value co-creation (Hallböck & Gabrielsson, 2013; Morris et al., 2002; Webster &

Lusch, 2013). Despite the importance of entrepreneurial marketing for INVs operating in high-tech industrial markets, the decision-making process that precedes such marketing is not well understood. The situation is not helped by existing literature often reporting on traditional marketing decision tools that may not be appropriate for the entrepreneurial marketing undertaken by high-tech INVs (see, e.g., Hughes & Morgan, 2007; Leeflang & Wittink, 2000).

A wealth of literature illustrates how marketing decisions are made in firms, and such research generally suggests that a marketing decision maker first recognizes an existing marketing environment, then reacts to it by developing several alternatives, and finally evaluates the alternatives to determine those likely to yield the greatest long-term profit (Curren, Folkes, & Steckel, 1992; Hirsch, 1960). Moreover, modifications of marketing decisions are based on predicted changes in environmental conditions (Leeflang & Wittink, 2000; O'Dell, 1966; Roberts, 1957). Such decision-making mechanisms can be used to develop a clear strategic direction for high-tech firms (Hughes & Morgan, 2007). Hence, the fundamental assumption of research on marketing decision making is that marketing decisions are carefully planned to contribute toward achieving organizational goals; however, that is not necessarily the case with marketing decision making in high-tech business-to-business INVs. That is because the marketing decisions of such firms are influenced by operating in an uncertain environment. First, decision making is complicated by their resources being more constrained than those of established international firms, and particularly those of

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multinational corporations (MNCs) (Laanti, Gabrielsson, & Gabrielsson, 2007; Zahra, 2005). Second, INVs operate in rapidly changing international markets and therefore need to take account of the prevailing environmental uncertainty and performance ambiguity inherent in international marketing activities (Helm & Gritsch, 2014; Katsikeas, 2006). Third, high-tech environments are characterized by market and technological uncertainty, and also competitive volatility (Fink, James, & Hatten, 2008; Jia, Cai, & Xu, 2014; Mohr, Sengupta, & Slater, 2009). Finally, operating in a business-to-business market involves more complex decision making on products and solutions than is required of firms in the consumer market (Ulaga & Sharma, 2001). Therefore, owing to the high levels of uncertainty in the high-tech business-to-business industry, changes in the business environment can be unpredictable, and market goals can be unspecified or unknown (Gabrielsson & Gabrielsson, 2013). Furthermore, the marketing decisions made by the firm can influence the existing market, rather than the decisions being shaped by the changes in the market (Read, Dew, Sarasvathy, Song, & Wiltbank, 2009). In addition, existing work on marketing decision making has often overlooked the role of the marketing decision maker (Wierenga, 2011). Entrepreneurs in INVs (INV entrepreneurs) are the key decision makers in the firm, and it is crucial to understand that the processes they adopt can propel the firm toward entrepreneurial marketing behavior. It is also important to explore how international high-tech business-to-business new ventures can undertake entrepreneurial marketing when facing various forms and levels of uncertainty.

Accordingly, the research question guiding this study is: How are marketing decisions made by entrepreneurs to deliver entrepreneurial marketing in international high-tech business-to-business new ventures? We selected effectuation theory as the theoretical basis on which to scrutinize the marketing decision-making process of INV entrepreneurs. Effectuation theory suggests there are two types of decision-making logic: (1) effectual decision making, which focuses on making selections from among the best possible outcomes that can be achieved with the available resources; and (2) causal decision making, which focuses on selecting the resources needed to create a predetermined outcome (Sarasvathy, 2001). The rationale for the choice of effectuation theory as the theoretical foundation is first that it emphasizes the decision making of individual entrepreneurs, who are key actors in INVs. The focus of the current study is the underlying logic of the decision-making process of entrepreneurs. Second, effectuation theory is an emerging theory in entrepreneurship and hence offers opportunities to generate novel marketing insights (Read et al., 2009). There is a problem when applying marketing decision-making literature emphasizing only planning to the study of entrepreneurial marketing. However, effectuation theory embraces both effectual decision making and causal decision making. The fundamental assumption in the marketing literature on decision making is consistent with causal decision making, whereas entrepreneurship and market creation are facilitated by effectual decision making. This study aims to advance the knowledge on the dynamism of the decision-making processes leading to entrepreneurial marketing and why the outcome of those processes is entrepreneurial marketing.

The current research makes several contributions. First, we conceptualize the marketing decision-making process of entrepreneurs that leads to entrepreneurial marketing in high-tech business-to-business INVs. This provides a better understanding of how marketing decisions are made and how entrepreneurial marketing is fostered by this process. Second, we offer new insights to extend decision-making theory. We challenge the assumption that entrepreneurs choose to apply either effectuation or causation methods (Andersson, 2011; Mort, Weerawardena, & Liesch, 2012), and investigate the two factors creating the dynamism between the causal and effectual forms of decision-making process, variation in uncertainty, and the ambidexterity of entrepreneurs. Ambidexterity at the individual level refers to “the ability to pursue both exploration and exploitation with equal dexterity”

(Volery, Mueller, & von Siemens, 2015, p. 113). Third, we expand current knowledge on entrepreneurial marketing to encompass an international context. The current study therefore integrates marketing, entrepreneurship, and international business into the process. Moreover, we use thought experiments alongside interviews in a multiple case study, and thus advance methodology while enhancing the trustworthiness and novelty of the study (Eisenhardt, 1989a; Jick, 1979; Lincoln & Guba, 1985). Finally, we offer practical implications by suggesting an entrepreneurial approach to international marketing for high-tech industrial firms. Our results can guide practitioners in selecting decision-making processes to optimize entrepreneurial marketing in their organizations when they operate under conditions of uncertainty.

The paper is organized as follows. We first establish the theoretical background by introducing entrepreneurial marketing and decision-making theory, and also present the preliminary research framework. We discuss the methods used and the empirical results. The level of analysis is both at the individual level, typified by decision making by individual entrepreneurs, and at the firm level as reflected in entrepreneurial marketing behavior. Next, we develop a dynamic model of the decision-making process in the entrepreneurial marketing of high-tech business-to-business INVs and formulate propositions. Finally, we conclude by discussing the theoretical contributions, practical implications, and limitations of the study, and also outline some directions for future research.

2. Theoretical background

2.1. Entrepreneurial marketing

There are four main perspectives on entrepreneurial marketing (Gross, Carson, & Jones, 2014; Hansen & Eggers, 2010): the first perspective focuses on the commonalities of entrepreneurship and marketing (e.g., Carson & Coviello, 1996; Collinson & Shaw, 2001; Kocak & Abimbola, 2009). The second perspective views entrepreneurial marketing as entrepreneurship in marketing, investigating entrepreneurship issues through a marketing theoretical lens (e.g., Miles & Darroch, 2006; Murray, 1981). The third perspective—marketing in entrepreneurship—investigates marketing issues through an entrepreneurship theory lens (e.g., Bjerke & Hultman, 2002; Carson et al., 1995), and the fourth perspective stresses the distinctive issues emerging from the combination of entrepreneurship and marketing and defines entrepreneurial marketing as a unique concept (e.g., Hallbäck & Gabrielsson, 2013; Morris et al., 2002). Morris et al. (2002) have identified several dimensions typical of entrepreneurial marketing. However, the concept of entrepreneurial marketing applied in this study must take the research context into consideration. Moreover, the third and fourth perspective are consistent with our research setting: studying marketing decision making in entrepreneurial firms through the theoretical lens of effectuation theory, but seeing entrepreneurial marketing as a unique outcome.

The above mentioned perspectives and the content of existing literature led to the development of seven dimensions of entrepreneurial marketing in an INV: (1) *Market creation* refers to creating new markets guided by the creative insights of the entrepreneur. High-tech business-to-business INVs seek to create new markets through new ideas or radical innovation, which is the central reason why these firms can grow rapidly despite the high levels of uncertainty in international markets (Gabrielsson & Gabrielsson, 2013; Mohr et al., 2009; Read et al., 2009). (2) *Value co-creation* refers to cooperating with various partners in the value chain to create value together (Grönroos & Voima, 2013; Payne, Storbacka, & Frow, 2008; Ranjan & Read, 2014). This is important for INVs because they work under far greater resource constraints in international markets than do established MNCs. Market creation and value co-creation are the key differences between our definition and that of Morris et al. (2002). These two dimensions support the elevated

concept of marketing by Webster and Lusch (2013), which advocates co-creating customer-defined value with stakeholders, creating new markets or sub-markets, and educating potential customers. The remaining five dimensions are based on the work of Morris et al. (2002), but with additional support from more recent literature. They are (3) *proactiveness*, which refers to addressing the future needs of customers in international markets (Blocker, Flint, Myers, & Slater, 2011; Ottosson & Kindström, 2015); (4) *innovativeness*, referring to pursuing creative approaches to marketing that differ from conventional practices (Baack, Wilson, van Dessel, & Patti, 2015; Hallböck & Gabrielsson, 2013); (5) *risk management*, which means that marketing functions seek to reduce a firm's vulnerability to and dependence on the external environment and enhance the firm's flexibility through collaborative marketing programs; (6) *resource leveraging*, which means to achieve more with less resource through marketing, thereby creating greater value; and (7) *customer intensity*, referring to building customer intimacy, establishing an emotional link with customers (Morris et al., 2002), educating potential customers (Webster & Lusch, 2013), and interacting with individual customers to achieve profitable customer relationships (Ramani & Kumar, 2008). Our study investigates the marketing practices of high-tech business-to-business INVs, which we expect to be characterized by the seven dimensions of entrepreneurial marketing noted above.

2.2. Decision-making theory and the preliminary research framework

Several disciplines contribute valuable research on decision making. Classical and neoclassical theories a rational decision-making model assuming the decision maker is perfectly rational and has complete information on all possible alternatives and consequences (Simon, 1977). However, rational decision makers are not always comprehensively informed, and thus do not always make optimal choices, as is suggested by the model of bounded rationality (Simon, 1979). Unfortunately, neither the rational decision-making nor the bounded-rationality model is helpful when studying marketing decision making by INV entrepreneurs, who cannot rely only on existing marketing information to create changes in the market (Nijssen, 2014). Instead such firms require a proactive market orientation to drive the market (Jaworski, Kohli, & Sahay, 2000; Tuominen, Rajala, & Möller, 2004; Ulf, Deligonul, Ghauri, Wade, & Tarnovskaya, 2012), and therefore rely on market information acquired from partners through interactions, experimentation, and exploration. Moreover, organizational decision-making theory (e.g., Cohen, March, & Olsen, 1972; March, 1988; Pfeffer, 1981) does not offer a suitable theoretical lens, because many INVs do not have clearly defined subunits, and accordingly, it is the entrepreneurs themselves who are the central decision makers. Furthermore, the strategic decision-making literature emphasizes an incremental and emergent process in which strategies remain open to adjustment and change (Brown & Eisenhardt, 1997; Mintzberg & Waters, 1985). However, INVs often do not begin with the formulation of a strategy. That is because of the unpredictability of the future, which makes it difficult to set concrete goals; moreover, the decisions they make may affect the external environment (Andersson, 2011; Gabrielsson & Gabrielsson, 2013), for instance, by creating a new market with innovation or changing the existing market structure by introducing new distribution channels.

Entrepreneurial characteristics such as innovativeness, proactiveness, and risk-taking are crucial for INVs to identify opportunities in international markets and leverage network resources for rapid internationalization (Coviello, 2006; Covin & Selvin, 1991; McDougall, Shane, & Oviatt, 1994). Compared to domestic new ventures, INVs place more emphasis on product innovation and aggressive strategies in multi-channel distribution. They also tend to operate in industries with a high degree of global integration; moreover, the entrepreneurs of INVs possess higher levels of international and industry experience (McDougall, Oviatt, & Shrader, 2003). Therefore, INV entrepreneurs are better equipped to make swift decisions to progress in rapidly

changing international markets. INV entrepreneurs are also often able to exploit their knowledge and experience to work with real time information, and to access a broader selection of options (Eisenhardt, 1989b).

In this study, we use the alternative theoretical lens of effectuation theory (Sarasvathy, 2001, 2008) to investigate how entrepreneurs in high-tech business-to-business INVs make decisions to progress entrepreneurial marketing. Effectuation theory suggests two decision-making logics: the effectual and the causal. The effectual logic suggests that decision-making processes, “take a set of means as given and focus on selecting between possible effects that can be created with that set of means” whereas the causal logic suggests that decision-making processes, “take a particular effect as given and focus on selecting between means to create that effect” (Sarasvathy, 2001, p. 245). Hence, effectuation places little emphasis on prediction, but great emphasis on control through a co-created future (e.g., shaping the environment, new market creation); in contrast, causation places great emphasis on prediction but little emphasis on control, because the future can only be predicted (Wiltbank, Dew, Read, & Sarasvathy, 2006). The effectuation process is consistent with Johanson and Vahlne's (2009) business network internationalization process model, where the decision makers are the carriers of knowledge, trust, commitment, and network relations. These two types of decision-making process can be differentiated by studying the five key principles presented in Table 1.

Existing literature suggests effectuation is the suitable marketing approach for conditions of uncertainty (Read et al., 2009; Sarasvathy & Dew, 2005a). The effectual process highlights the importance of experimentation, and learning through trial and error (Gabrielsson & Gabrielsson, 2013). Although uncertainty affects many business environments, it is particularly pronounced for high-tech business-to-business INVs. First, INVs target international markets, a strategy always likely to encounter greater uncertainty than a domestic market strategy (Katsikeas, 2006). Second, high-tech business-to-business firms are subject to technological pressure, dealing with competitive volatility, and often have decision-making units organized by products and solutions (Fink et al., 2008; Mohr et al., 2009; Ulaga & Sharma, 2001). Uncertainty can therefore affect the extent of entrepreneurial marketing in high-tech business-to-business INVs. Fig. 1 presents the preliminary research framework of this study, and reveals several open issues. It is clearly important to examine which types of uncertainty strongly influence the marketing decision making of entrepreneurs in high-tech business-to-business INVs. Second, we need to investigate whether effectuation and/or causation can be used to deliver entrepreneurial marketing. Third, we need to explore to what extent entrepreneurial marketing might vary among different high-tech business-to-business INVs, and what impact the variation has. We used the preliminary research framework to devise the research method, as is explained in the following section.

3. Method

The method of the current study is determined by the need to generate rich data that could illuminate current theory and also

Table 1
Effectuation versus causation (Source: adapted from Sarasvathy, 2008; Dew, Read, Sarasvathy, & Wiltbank, 2009).

Principle	Effectuation	Causation
Basis for taking action	Means orientation	Goal orientation
View of risk and resources	Affordable loss	Expected return
Attitude toward outsiders	Co-creation partnership	Competitive analysis
Attitude toward unexpected events	Leverage contingency	Bypass contingency
View of the future	Co-created future	Predictive future

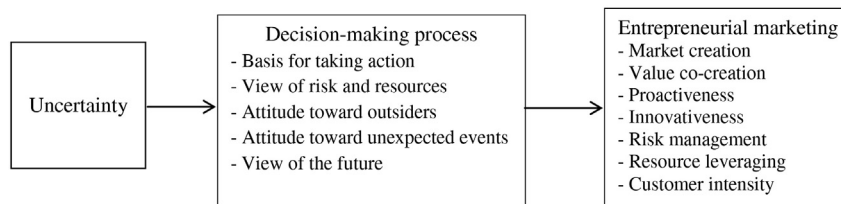


Fig. 1. Preliminary research framework of the study.

complement it. This study seeks to develop effectuation theory and the theory of entrepreneurial marketing in the context of high-tech business-to-business INVs. Hence, to uncover rich explanations and acquire deep insights into the decision-making process, we adopted the multiple case-study method as our research strategy (Eisenhardt & Graebner, 2007). We first identified the research focus based on a literature review (i.e., the preliminary research framework); then we chose the focal cases and analyzed empirical data that could extend the research framework; finally, we assessed the validity and analytical generalizability of the empirical results to develop a new model (Dubois & Gadde, 2002; Järvensivu & Törnroos, 2010).

3.1. Case selection

The cases were selected from a database from a government development office listing high-tech firms in the energy sector. The case selection was conducted on the basis of theoretical sampling (Eisenhardt & Graebner, 2007; Yin, 2009), and the following criteria. The case firms had to be high-tech business-to-business firms and meet the theoretical definition of an INV advanced by Oviatt and McDougall (1994). They also had to meet the quantitative criterion of foreign sales accounting for more than 25% of total sales within three years of their foundation (Gabrielsson & Gabrielsson, 2013). Four cases were chosen according to the four INV typologies defined by Oviatt and McDougall (1994) based on two criteria: the number of countries the firm is involved in, and the coordination of value chain activities. Two case firms are involved in only a few countries: WE Tech, an export start-up with little coordination, and The Switch, a geographically focused start-up with a great deal of coordination. Two case firms operate in several countries: Arcteq, a multinational trader with little coordination, and Vacon, a global start-up also exhibiting a great deal

of coordination. Although the four cases vary in size and age, each represents a single INV typology, which enabled better theoretical generation based on robust findings from all types of INVs. Moreover, the data analysis confirmed that the uncertainty circumstances and the degree of entrepreneurial marketing vary among the four case firms. The heterogeneity evident among the cases aids building explanations and improves the analytical generalizability. We can crystalize viewpoints from cases with various types of decision-making process, and different levels of uncertainty and entrepreneurial marketing (Järvensivu & Törnroos, 2010). Although the firms studied were of different ages, we collected retrospective data from the founders focusing on the earlier development of the firms to balance the study.

3.2. Case background

General information on the four case firms is shown in Table 2. The degree of internationalization in each of the cases exceeded 25% (i.e., foreign sales constituted 25% or more of total sales) within three years of their foundation. (1) *WE Tech* was established in 2010 by two founders who had worked for an MNC. The firm provides energy-efficient solutions based on frequency converter and shaft generator technology in the maritime industry. Although it is a small firm established during the European financial crisis, *WE Tech* had an internationalization degree of 53% in 2013. (2) *Arcteq* was established by five founders who had worked for a firm specializing in protection and control products for power distribution networks. *Arcteq* offers protection relays to electrical utility, power generation, maritime, off-shore, mining, institutional, and commercial users, among others. The firm is small but is growing rapidly and had an internationalization rate of 96% in 2013. (3) *The Switch* was founded in 2006 from a merger of three small firms: *Rotatek* and *Verteco* from Finland and *Youtility*

Table 2
General information on the case firms.

Case firm	WE Tech	Arcteq	The Switch	Vacon
Foundation	2010	2010	2006	1993
Ownership	Private	Private	Private	Publicly listed
Size	8 employees	15 employees	210 employees	1600 employees
Products/services	Frequency converter shaft generator solutions	Protection relays	Generator and converter packages	Frequency converters
Industrial segments	Maritime	Electrical utility, conventional and renewable power generation, industrial, off-shore, maritime, mining, institutional, and commercial users	Wind, solar, maritime, and other renewable energy applications	Building automation, cranes and hoists, maritime and off-shore, mining and metals, water and waste water, elevators and escalators, pulp and paper, food and beverages, oil and gas, and solar and wind applications
Production	None	Own assembly workshop, outsourced production in Finland	Own production in Finland, China, United States	Own production in Finland, Italy, China, India, United States
Foreign sales	Sales representatives in China	Sales representatives in 40 countries worldwide	Sales offices in Denmark, Germany, Italy, China, USA	Sales offices in 30 countries worldwide
Internationalization degree in the 3rd year	53%	96%	98%	51%
Internationalization degree in 2013	53%	96%	94%	94%

from the United States. Because the merger was a critical incident that triggered the firm's rapid internationalization, we argue that The Switch does in fact fulfill the definition of an INV (Gabrielsson, Gabrielsson, & Dimitratos, 2014). The firm supplies permanent magnet generators and full-power converter packages to the wind, solar, and maritime industries. The Switch grew rapidly between 2006 and early 2011, especially in China. After the Chinese wind power market stagnated due to changes in legislation, the firm entered the maritime industry. Nevertheless, The Switch is highly internationalized, with foreign sales accounting for 98% of total sales in 2009 and 94% in 2013. (4) *Vacon* was established in 1993 by 11 founders who had worked for an MNC but shared a vision of developing more innovative products. With an internationalization rate of 94%, the firm focuses entirely on frequency converters, which are used in a wide range of industries. *Vacon* is now a large firm with 1600 employees, and we studied its whole development since it became an INV, and accordingly we believe including *Vacon* as a case firm adds value to our study.

3.3. Data collection

Data were collected from multiple sources. Primary data were collected via 13 in-depth interviews and seven thought experiments with entrepreneurs in each firm (see Table 3). Each interview lasted between two and three hours and was recorded and transcribed. The interviews were semi-structured with open-ended questions and probing techniques designed to explore responses related to the dimensions of entrepreneurial marketing and the principles of effectuation/causation (see Appendix). The thought experiments were conducted separately from the interviews.

The thought experiment process adopted the so-called think-aloud method, and involved the following steps (Sarasvathy, 2008; van Someren, Barnard, & Sandberg, 1994). We asked how each entrepreneur would solve new decision problems involving international marketing at their current firm by providing them a scenario, and then recording and transcribing their answers. We sought to validate the decision-making processes presented when the entrepreneurs answered the interview questions. Occasionally we found that when an entrepreneur described making entrepreneurial marketing decisions *ex post*, that person used causal reasoning during the interview; whereas the entrepreneur demonstrated effectual reasoning during the thought experiment. For example, when interviewing entrepreneur no. 6 on how the marketing alternatives for the product were identified in 1993, the person produced the business plan of the time and answered: "It is a business plan, including our targets in different market segments," but when asked in the thought experiment how the marketing alternatives for the next-generation product might be determined, the person stated: "you should have experience...contacts and also experience." We obtained 187 pages (107,250 words) of transcriptions encompassing both interviews and thought experiments.

Furthermore, we investigated secondary archival data, including news reports, press releases, company websites, brochures, annual

reports, and internal documents. For example, an entrepreneur from *Vacon* provided us with an original copy of the firm's detailed business plan written in 1993 to help with the retrospective study, and we used such secondary data to gather background information on the case firms and conduct data triangulation (Yin, 2009) to ensure the primary data collected from the entrepreneurs were accurate.

3.4. Data analysis

Data analysis was based on an iteration approach with systematic combining. We repeatedly compared the theory and the empirical data during the data collection and analysis process, and then noted new issues emerging in each case (Dubois & Gadde, 2002). The 187 pages of transcriptions and archival secondary data (comprising 107,250 words) were imported into NVivo 10 research software to support content analysis (Sincovics, Penz, & Ghauri, 2008). This study utilizes an embedded case-study design (Yin, 2009) with two levels of analysis: (1) the entrepreneur-level decision-making process and (2) the firm-level entrepreneurial marketing behavior. We developed the nodes according to the preliminary research framework, which includes uncertainty, the five principles of effectuation (vs. causation), and the seven dimensions of entrepreneurial marketing. We coded the data under the existing nodes deductively, and also inductively created new nodes that emerged from the data. We first analyzed each case, produced summaries and then sent them to the informants to confirm their accuracy. We then conducted cross-case analysis to ensure systematic combining of the data, to build explanations, and develop propositions (Dubois & Gadde, 2002; Yin, 2009). We mapped the marketing decision-making process by posing probing questions related to effectuation/causation in the interview with a cycle of deduction and induction (Pettigrew, 1997).

3.5. Trustworthiness

The trustworthiness of this study is evaluated by assessing its credibility, transferability, dependability, and confirmability, according to the criteria set by Lincoln and Guba (1985). The credibility of the study is reinforced by triangulation, using multiple data sources, such as interview transcripts, thought experiment transcripts, and archival secondary data, to ensure the truth of the findings in the case study (Patton, 2001; Yin, 2009). Our results support "natural generalization" (Blatter, 2008, p. 69) through a thick description of the cases and their context (Holloway, 1997). The transferability of the findings is limited to the high-tech business-to-business context. Case summaries were sent to the informants at each case firm to be examined to improve the dependability of the findings. The confirmability of the study was established by the thorough examination of the case informants and data triangulation so as to minimize the bias accruing from either researchers or informants (Lincoln & Guba, 1985).

Table 3

Background on interviews and thought experiments.

Case firm	No. of interviews	Interviewees	No. of thought experiments	Participants
WE Tech	3	(no.1) Managing Director (no.2) Founder	2	(no.1) Managing Director, (no.2) Founder
Arcteq	2	(no.3) Founder & Managing Director	1	(no.3) Founder & Managing Director
The Switch	3	(no.4) Founder & CFO (no.5) Marketing Director	2	(no.4) Founder & CFO (no.5) Marketing Director
Vacon	5	(no.6) Founder & former CEO (no.7) CEO (no.8) Vice President Marketing (no.9) Executive Vice President	2	(no.6) Founder & former CEO (no.8) Vice President Marketing

Table 4
Cross-case results of the study.

	WE Tech	Arcteq		The Switch	Vacon	
Uncertainty	<ul style="list-style-type: none"> – Relatively high internal uncertainty because the firm is young and small and seeks growth and stability. – Relatively high technological uncertainty as perceived by a conservative shipping industry. – Relatively high market turbulence caused by the financial crisis and legislation changes. 	<ul style="list-style-type: none"> – Relatively high internal uncertainty because the firm is small and young and seeks growth and stability. – Relatively low technological uncertainty. – Relatively high market turbulence caused by industrial consolidations. 		<ul style="list-style-type: none"> – Relatively low internal uncertainty because of sufficient resources acquired following a merger. – Relatively low technological uncertainty. – Relatively low market turbulence due to rapid market growth. 	<ul style="list-style-type: none"> – Relatively high internal uncertainty in the past, but relatively low internal uncertainty currently. – Relatively high technological uncertainty in the past, but relatively low technological uncertainty in the present. – Relatively high market turbulence caused by market dynamics. 	
(Variation) Ambidexterity	(None) N/A	(Yes, high and low) <ul style="list-style-type: none"> – Entrepreneur shows flexibility. – Entrepreneur uses exploitation in deciding products causally. – Entrepreneur uses exploration in deciding promotion and distribution channels effectually. 		(None) N/A	(Yes, high and low) <ul style="list-style-type: none"> – Entrepreneurs show flexibility and agility. – Entrepreneurs are driven by goals but use unpredicted control^a to create the future. – Exploring new market opportunities effectually. – Exploiting existing market opportunities casually. 	
Marketing decision-making process	Effectual <ul style="list-style-type: none"> – Knowledge, experience, and networks of entrepreneurs. – Considers affordable loss. – Co-creation partnerships in products, promotion, and distribution. – Leverages effects of changes in legislation. – Creates the future by market creation. 	Effectual <ul style="list-style-type: none"> – Knowledge, experience, and networks of entrepreneurs. – Considers affordable loss. – Co-creation partnerships in promotion and distribution. – Leverages contingencies of uncertainty in international markets. 	Causal <ul style="list-style-type: none"> – Market discovery based on knowledge and experience of entrepreneurs. – Product planning is driven by goals. 	Causal <ul style="list-style-type: none"> – Driven by marketing goals. – Strategic goals based on experience of entrepreneurs and competitive analysis. – Emphasizes partnerships in achieving marketing goals. – Considers expected return. – Accounts for contingencies and predicts the future by creating scenarios. 	Past Effectual <ul style="list-style-type: none"> – Leverages contingencies of internal and external crises. – Creates the future by market creation. 	Present Causal <ul style="list-style-type: none"> – Based on strategic goals. – Consider expected return for certain issues. – Competitive analysis.
Entrepreneurial marketing	<ul style="list-style-type: none"> – Product: innovative and proactive solutions; risk management and resource leveraging by co-creating value with suppliers; improving customer intensity; creating a new market. – Promotion: resource leveraging and risk management with co-created promotion; innovative promotional activity with suppliers. – Distribution: proactive, emphasizing customer intensity. 	<ul style="list-style-type: none"> – Product: leveraging its own resources; discovering a niche market for products; adding new features. – Promotion: risk management by utilizing local partners; leveraging resources of sales representatives proactively for value co-creation. – Distribution: proactive in seeking partners; multiple channel distribution by leveraging resources of sales representatives for value co-creation. 		<ul style="list-style-type: none"> – Product: discovering a new market for existing technology; customer--focused, emphasizing customer intensity. – Promotion: effective marketing communication, leveraging internal resources. – Distribution: partner networks to manage risks; leveraging external resources. 	<ul style="list-style-type: none"> – Product: proactive, innovative products; co-creating value with customers; creating a new market. – Promotion: customer-oriented, emphasizing customer intensity. – Distribution: multiple channel distribution; leveraging resources; managing risks. 	

^a Unpredicted control means there is no need to predict customers' behavior and forecast the future; instead, the market is created by the actions of the firm and the future is controlled in this way.

4. Results

Here we report the empirical results across the cases based on the preliminary research framework, and also the results that emerged during the data analysis (see Table 4). Those results include the marketing decision-making process adopted by entrepreneurs in the case firms, the antecedents of the process, the influence of the process on entrepreneurial marketing, and the impact of entrepreneurial marketing.

4.1. Marketing decision-making process

The marketing decisions included in our study are critical decisions regarding products, promotion, and distribution (Varadarajan, 2010). We tried to obtain data on pricing decisions; however, they were so confidential that the informants would not discuss them. The results suggest that when making marketing decisions, entrepreneurs from WE Tech employed the effectual process; entrepreneurs from The Switch employed the causal process; and entrepreneurs from Arcteq and Vacon employed both the effectual and the causal processes.

4.1.1. Effectual decision-making process

WE Tech entrepreneurs adopted the effectual process when making marketing decisions (see Table 4). Product decision making began with the extensive experience entrepreneur no.2 acquired from working at an MNC, and by accessing the intensive networks developed in international markets. “You need to have some ideas, broad targets... then you need to have a constant dialog with many ship owners and other companies in this supply chain,” entrepreneur no.2 said. After testing the product idea with potential customers and partners, WE Tech developed a close partnership with suppliers to co-create their product. “We actually have grown very strongly with Vacon [an important supplier] in developing this product,” entrepreneur no. 1 stated. Entrepreneurs at WE Tech leveraged the contingency of regulatory changes on shipping emissions and created a new market by offering solutions to improve the energy efficiency of ships. Moreover, they decided to utilize co-created promotion. “This decision came from... how much we could afford,” entrepreneur no.1 stated. When asked how distribution decisions were made, entrepreneur no.2 said, “I have known the ship owner for more than 25 years”, and “You are working with friends and they trust you”. Archival data show that WE Tech received 11 orders from Chinese shipyards with the assistance of close contacts in entrepreneur no.2’s networks, including ship owners and previous colleagues. The WE Tech founders used these distribution channels to test product ideas and proactively developed them through constant dialog. To summarize, the WE Tech case suggests that INV entrepreneurs follow an effectual decision-making process in which they use their knowledge, experience, and networks to decide on initial ideas, and then account for the downside potential, before experimenting with input from potential partners to co-create new opportunities.

4.1.2. Causal decision-making process

The Switch entrepreneurs followed the causal process when making marketing decisions (see Table 4). The product decision started with the entrepreneurs applying their extensive experience to discover the market for technology. Entrepreneur no.4 commented: “[It was] completely based on management experience... The technology was used in almost all other industries but not in the wind industry.” When asked in the thought experiment section how The Switch would determine its initial marketing options for the next-generation product, entrepreneur no.4 answered, “We devise scenarios; we always have a running three-year plan and update it continuously... We have a base case, an optimistic case, and a pessimistic case. Based on these three cases, we tried to figure out what should be done strategically.” This indicates a predictive attitude

deployed to avoid surprises. After setting their strategic goals, entrepreneurs sought distributors for their products. “We decided on the organizational strategy that we would go together with the customers where the market is... we would try to pick distribution channels, meaning partners, who would take us into the maritime market,” entrepreneur no.4 said. The interviews show that to manage the risks inherent in being new to the maritime industry, the firm established a partnership with WE Tech on the basis of competitive analysis. Entrepreneur no.5 explained how this occurred: “We analyzed the market [and found that] the maritime market is very suitable... we first made the plan to enter the maritime market, then [built a partnership with] WE Tech for implementation”. Furthermore, when asking how promotional decisions are made, entrepreneur no.5 answered, “I plan the year based on the marketing strategy.” Therefore, The Switch case suggests INV entrepreneurs might also follow a causal decision-making process: the management first discovered a market, then conducted a competitive analysis, and then developed scenarios to predict market behavior; then they formulated marketing goals, taking expected return into consideration: finally, they acquired the necessary resources and partnerships to achieve the goals. However, prior knowledge and experience are a prerequisite of market discovery by entrepreneurs.

4.1.3. Both effectual and causal decision-making processes

We found Arcteq and Vacon entrepreneurs adopted both effectual and causal decision-making processes. Arcteq provides protection relays to a niche market. The entrepreneur used causal logic to make the product decision; he first discovered the market, then set the target product, and then acquired the resources necessary to reach the target. However, the entrepreneur’s promotion and distribution decisions were effectual in form. The firm currently has sales representatives in 40 countries that leverage their local networks to promote Arcteq products. “The most important [promotional] activity is face-to-face dialog, with the local people in front of the customers every day... the local people arrange it, we come and support.” Entrepreneur no.3 described what his firm could afford to do as a small start-up: use co-creation partnerships to undertake promotion. The entrepreneur leveraged this contingency and co-created multi-channel distribution with partners, including original equipment manufacturers (OEMs), system integrators, agents, and distributors. To summarize, the Arcteq entrepreneur adopted an effectual process when making promotion and distribution decisions, but a causal one when making product decisions.

When Vacon was established in the 1990s, the marketing decisions of the founders were effectual. For example, the product decision was made on the basis of the entrepreneurs’ knowledge of frequency converters and extensive experience of working with their potential customers: “We tried to find a solution to make software-based frequency converters... actually before founding Vacon, I visited a couple of customers [to test the idea],” entrepreneur no.6 explained. Promotion and distribution decisions were made by leveraging the entrepreneurs’ experience and networks. “Several of the founders have been in business for 10 or 15 years and our faces are very well-known, so we showed our faces [in the advertisement] at the airports. It was quite innovative because many customers knew us,” entrepreneur no.6 commented. During the last two decades of development, decision making has shifted toward a more causal form. Production decisions have become more goal-oriented, and there is now a road map for new product development. The firm has set strategic goals for promotion to further increase its growth in international markets. Nevertheless, Vacon has retained effectuation to leverage the resources of partners to achieve multi-channel distribution, “We approach the global market by offering our solutions, competence, and know-how to OEMs, brand-label accounts, system integrators, end-users, and distributors; we also manufacture our own Vacon-brand drives,” entrepreneur no.9 stated.

4.2. Antecedents of decision-making process

4.2.1. Uncertainty

Our empirical analysis showed that uncertainty faced by the firms affected the marketing decision-making process adopted by the firms' entrepreneurs. The case firms faced a variety of different types and levels of uncertainty (see Table 4). WE Tech faced relatively high internal uncertainty because the firm was small and young, and in the process of seeking growth and stability, "One of the biggest problems by far is how to get the finance," entrepreneur no.1 said. WE Tech also faced relatively high technological uncertainty because the firm was a technological pioneer in the marine industry where many conservative ship owners are reluctant to adopt new innovative technology, "We want to be a forerunner in technology," entrepreneur no.1 said. Moreover, the firm had faced high market turbulence since their establishment in 2010 because of the financial crisis and legislation changes to limit harmful emissions from ships. However, the situation is the opposite in the case of The Switch. Archival data revealed the firm had sufficient resources from the merger of three companies and venture capital, hence the internal uncertainty in the firm was relatively low. The Switch also faced relatively low technological uncertainty, because as entrepreneur no.4 explained, "This was absolutely not a new technology." The firm also experienced relatively low market turbulence due to rapid growth in its target market, "The Chinese wind market was growing very rapidly when we entered the market... Based on China's political decisions and need for power, it was obvious that China would experience huge growth," entrepreneur no.4 said. To summarize, all three types of uncertainty are relatively high at WE Tech, which leads the firm's management to employ an effectual process. Conversely, all three types of uncertainty are relatively low at The Switch, which leads to the firm employing a causal process.

Variation in uncertainty makes entrepreneurs alternate between an effectual process when levels of uncertainty are relatively high and a causal process when they are relatively low. In the Arcteq case, the product decision was made causally due to relatively low technological uncertainty. Entrepreneur no.3 stated, "The protection relay technology is quite mature; we just added some trend-setting features in our products." However, Arcteq faced relatively high internal uncertainty, "In order for us to grow, we need capital," entrepreneur no.3 said: "Ever since we founded the company, there has been a financial crisis." Moreover, market turbulence was relatively high due to industrial consolidation caused by mergers and acquisitions among production relay manufacturers. Consequently, the entrepreneur switched to the effectual process when making promotion and distribution decisions.

Vacon was initially faced with a situation of high internal uncertainty: "We did not have so much in 1993...at that time there was no venture capital business [in Finland]," entrepreneur no.6 said. For example, the firm suffered from a lack of financing in 1995. The Vacon entrepreneurs sold a license agreement to a large US firm. "With the license fee, Vacon was able to survive in 1995, but we opened up the US market with the license partner," entrepreneur no.7 explained how they were leveraging contingencies of lacking finance and turning it into opportunity of a distribution channel in a new market. In the earlier stages of Vacon's development, the relatively high technological uncertainty meant the firm's founders adopted an effectual approach to product decision making. "We created a new market for software-based frequency converters," said entrepreneur no.6. Nevertheless, the technological uncertainty facing Vacon has decreased over the past two decades as the technology becomes more established. Moreover, internal uncertainty reduced considerably as the firm matured. Consequently, production and promotion decisions are now more causal. However, the market turbulence remains relatively high, as was particularly evident during the financial crisis that started in 2009. The entrepreneurs maintain a positive attitude, believing even that financial crisis will generate opportunities for products that deliver energy savings.

4.2.2. Ambidexterity of entrepreneurs

Our results indicated that ambidexterity also has an impact on entrepreneurs' marketing decision making. Ambidexterity refers to the capability to employ both exploration and exploitation methods. It is what allows entrepreneurs to simultaneously use the effectual process to explore and create a new market, and the causal process to exploit the existing market. The concept is apparent in the narrative of entrepreneur no.3 from Arcteq during the thought experiment: "I try to be very flexible...I can suggest different alternatives and look for the best set-up." In Arcteq's case, that involved exploiting an existing market opportunity and making the product decision causally, and adding some features to the existing products to suit market needs: "I know that there will be lots of opportunities in the market dynamics because of the merger," explained the entrepreneur. In contrast, Arcteq was able to explore new market opportunities and make promotion and distribution decisions employing the opposite logic, effectuation. The entrepreneur utilized his knowledge, experience, and networks to co-create promotion and multi-channel distribution with partners. The entrepreneur said of his experience, "From 2000 onwards I have been doing marketing and sales, and I have been responsible for global sales since 2005. I know all the partners and lots of customers."

The entrepreneurs running Vacon explored new market opportunities by creating a new market for software-based frequency converters. Entrepreneur no.6 explained the effectual process in making the product decision: "The customer made a really big decision that they would base their new designs on our converters...we made [the product] together with the customer." Meanwhile, entrepreneurs also exploited opportunities causally in the market: "We have selected strategic countries we call 'the strong seven' where Vacon will grow rapidly and we have the greatest potential for bringing the product to the market...we did quite an extensive planning exercise with our sales subsidiaries," entrepreneur no.8 said. During the thought experiments investigating promoting the next-generation product, the entrepreneurs demonstrated ambidexterity in terms of marketing decision making, as when entrepreneur no.8 commented: "For a customer-specific product it would just be an integrated project [co-created promotion] with the customer...For a segment-specific product the [promotional] activities would depend on the market planning and market entry type." Entrepreneur no. 9 also said: "We are driven by goals and objectives," highlighting the application of a goal-driven causal logic; but the same person also hinted that the firm applied the effectual logic of unpredicted control: "We can no longer forecast the future; we need to develop our agility and flexibility, so we don't need to predict our customers' behavior, and we are able to take control in a flexible way."

4.3. The influence of the decision-making process on entrepreneurial marketing

Our results indicate that the marketing decision-making process selected by entrepreneurs can lead to different forms of entrepreneurial marketing. Our cross-case analysis (see Table 4) showed that the marketing mix of product, promotion, and distribution are represented by different dimensions of entrepreneurial marketing. The WE Tech case study revealed all seven dimensions of entrepreneurial marketing. When making marketing decisions, the effectual process not only led to innovative and proactive product offerings but also managed the risks of product development by leveraging resources from suppliers. Because the firm maintained a constant dialog and interaction with its customers, product decisions were made on the basis of the co-creation of value for customers. "We want to make customers more competitive...we are like an advisor to them," entrepreneur no.2 said. "Our vision statement says, we bring the next level in energy-efficient shipping. We are creating a new market," added entrepreneur no.1. At The Switch, the risk management, customer intensity, and resource leveraging dimensions of entrepreneurial marketing are evident. Thus, market creation, innovativeness, proactiveness, and the value co-

creation dimensions of entrepreneurial marketing are not evident in a causal decision-making process; they appear only in an effectual process.

We investigated the results in Arcteq, and found that the above four dimensions did not appear in the marketing of its products, because the product decision was made causally. However, the entrepreneur made effectual marketing decisions in seeking partners to undertake promotion and distribution: “We started discussions with these people early [in 2010]...so we have been setting the background from day one,” entrepreneur no.3 said. The firm managed risk by having committed local partners in international markets to co-create value. Moreover, market creation, proactiveness, innovativeness, and value co-creation still exist in Vacon’s marketing, because the entrepreneurs have retained the key effectuation principles—leveraging contingencies of internal and external crises and co-creating the future. “Our product has led to changes in the market,” entrepreneur no.6 said. The Vacon entrepreneurs emphasized the importance of market creation led by innovative technology.

4.4. The impact of entrepreneurial marketing

Our results imply that entrepreneurial marketing has an impact on the uncertainty perceived by entrepreneurs. WE Tech was threatened by the market turbulence in the shipping industry when ship owners were hit by a lack of funds to invest in the firm’s solutions. However, market creation, as a key feature of entrepreneurial marketing, reduced the uncertainty perceived by the entrepreneur. “There is no uncertainty, you never see it, it’s only about opportunities...I don’t see any risk as an entrepreneur, I just see opportunities,” entrepreneur no.2 said. Similar evidence can be found in the Vacon case when the firm was hit by the financial crisis in 2009. Innovative product and value co-creation reduced the perceived uncertainty of the entrepreneurs, “I perceive this in a fairly positive way, it always gives you opportunities...you always need to turn this turbulent environment into possible business opportunities...the changes in the market offer new opportunities, at least in our business, energy saving and industrial efficiency,” entrepreneur no.9 explained. Moreover, Arcteq entrepreneurs established diverse promotion and distribution networks by proactively leveraging resources from partners to support value co-creation. This has resulted

in a positive attitude in perceiving uncertainty in international markets: “We have lost lots of business in the Middle East region [because of the political unrest]. This is normal and you can’t think negatively, but we have compensated [for] that in Asia and South America. That’s why we want to be very diverse in our market,” entrepreneur no.3 said.

5. A dynamic model of marketing decision-making process to achieve entrepreneurial marketing in high-tech business-to-business INVs

Based on the empirical results, we developed a dynamic model of the decision-making process adopted in high-tech business-to-business INVs to achieve entrepreneurial marketing (see Fig. 2). This model consists of several main elements: uncertainty, the ambidexterity of entrepreneurs, effectual and causal decision-making processes, and entrepreneurial marketing by INVs. The dynamism of the model relates to the alternating use of effectual and causal processes prompted by variations in uncertainty, the ambidexterity of entrepreneurs, and the feedback loop that reflects the effect on uncertainty of the entrepreneurial marketing undertaken by INVs.

The initial input into the model is the level of uncertainty faced by the firms. Although Read et al. (2009) highlight the logic of an effectual approach to marketing under uncertainty; it is not clear what types of uncertainty are particularly relevant for which specific types of firm. Our results have clarified the uncertainty faced by high-tech business-to-business INVs, whose accelerated internationalization brings with it the liabilities of foreignness, newness, and smallness, which increase internal or technological uncertainty in a turbulent market environment (Hilmersson & Jansson, 2012; Zahra, 2005). Internal uncertainty is caused by growth crises (Gabrielsson & Gabrielsson, 2013; Greiner, 1972) and organizational turmoil (Levie & Lichtenstein, 2010). This is evident from our empirical study of two small young INVs and the initial growth stages of another now larger INV. Our results indicate that when an international high-tech business-to-business new venture faced greater internal uncertainty, the entrepreneurs resorted to a marketing decision-making process that was more effectual than causal. The case studies also explain why the processes are more effectual during the early growth phases of an INV and more causal during later phases (Gabrielsson & Gabrielsson, 2013; Nummela, Saarenketo, Jokela, &

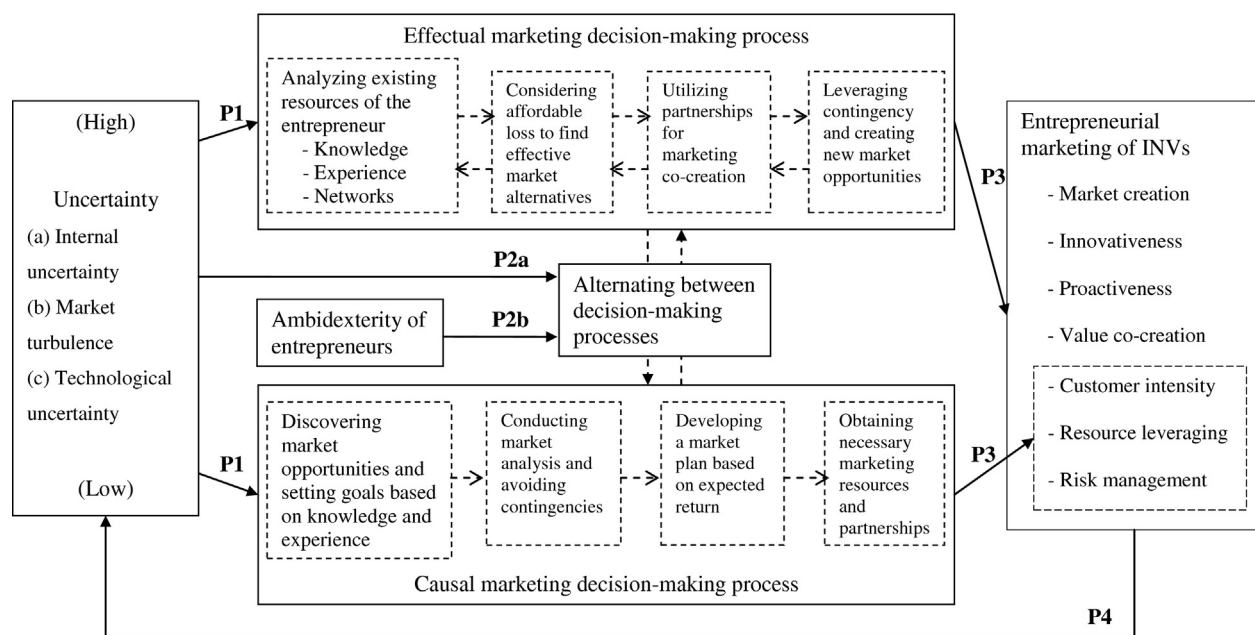


Fig. 2. A dynamic model of a marketing decision-making process to achieve entrepreneurial marketing by high-tech business-to-business INVs.

Loane, 2014). During the growth of an INV, internal uncertainty is stronger at the beginning, but weakens later.

Moreover, technological uncertainty is a relatively strong factor for high-tech industrial INVs pursuing radical innovation (Chandy & Tellis, 2000). Such firms' product offerings are based on new technology, and involve redefining existing markets and creating new markets. Thus, existing market data are often not helpful in developing a specific marketing plan (Read et al., 2009), meaning marketing decision making requires a novel approach that embraces an unpredictable market. Our empirical study suggests that effectual decision making can transform such uncertainty into opportunities. An effectual process highlights creative thinking about a new technology and the creation of market opportunities for its specific product applications (Nijssen, 2014). Furthermore, our results imply that market turbulence is another form of uncertainty (Morris & Lewis, 1995). Political and economic crises, for example, can cause turbulence in international markets (Hadjikhani & Johanson, 1996). High-technology markets have been described as particularly turbulent owing to the rapid environmental changes affecting them (Hughes & Morgan, 2007). The empirical study demonstrated that a financial crisis or political unrest in international markets prompted entrepreneurs to adopt a positive attitude and to leverage contingencies (Apergis, Fafaliou, & Polemis, 2016). Our results suggest that entrepreneurs use a decision-making process that is more effectual than causal in times of greater market turbulence. Hence, they are alert to surprises and try to leverage contingency to deliver new opportunities (Dew, Read, Sarasvathy, & Wiltbank, 2008). We present the following proposition which defines the context of choosing an effectual over a causal process.

Proposition 1. When (a) internal uncertainty, (b) technological uncertainty, and (c) market turbulence are higher in high-tech business-to-business INVs, the entrepreneurs' marketing decision making is more effectual than causal.

Another novel finding is that the entrepreneurs in the study employed both effectual and causal processes when making marketing decisions. We extend the preliminary research framework based on mapping both the effectual and causal processes in our empirical results (see Fig. 2). The effectual process in an INV starts with the entrepreneurs concerned analyzing their existing resources, in the form of their knowledge, experience, and networks. The resources available determine the choice of marketing strategy, which should not risk more resources than the firm can afford to lose (Sarasvathy, Kumar, York, & Bhagavatula, 2014). The decision-making process then moves on to identifying potential partners and obtaining the commitment of one or more of those partners. Once a partnership is established, both sides contribute to the co-creation of marketing (Hallbäck & Gabrielsson, 2013). The process continues by leveraging contingencies and ideally the partnership will be strong enough for the parties to maintain a positive attitude toward unexpected events. Finally, entrepreneurs transform the contingencies into new market opportunities (Dew et al., 2008). In addition, the model presents a cycle operating between the marketing resources and leveraging contingencies of INV entrepreneurs. New market opportunities may reveal more partnering opportunities for marketing co-creation. As more market alternatives emerge, more marketing resources are accumulated. This cycle enables enterprises to constantly expand their marketing resources and identify market alternatives.

The causal process is illustrated in Fig. 1 and begins with discovering market opportunities and setting goals based on knowledge and experience (Baron, 2006; Shane, 2000). Then entrepreneurs conduct market analysis to avoid surprises because when uncertainty is low, the market situation can be predicted and monitored.

Entrepreneurs then develop a marketing plan based on a calculation of expected return. Finally, they obtain the marketing resources and foster the partnerships necessary to implement the plan. Hence, entrepreneurs who engage in causal decision making use networks only for the implementation of their plan. In contrast, in the effectual process, networks are largely utilized from the outset to acquire partners for co-creation.

We further developed our model based on two factors that prompt entrepreneurs to alternate between effectual and causal forms of marketing decision making. *Variation in uncertainty* is the first factor. The level of uncertainty in the marketing mix of an INV varies, which might cause an INV entrepreneur to engaged in causal decision making for product decisions during periods of low technological uncertainty but effectual decision making for decisions on promotion and distribution during periods of great internal uncertainty and market turbulence. That precise situation was reported in our case study, and confirms the view of Nummela et al. (2014) that the two processes can co-exist in the presence of varying levels of uncertainty. The uncertainty level can also change over time, for instance, internal uncertainty may change from strong to weak in the course of the firm's development. Hence, our finding also explains the results of Gabrielsson and Gabrielsson (2013) that effectual decision making is used in the early phases of an INV's existence and causal decision making adopted in the later phases; the rationale being that uncertainty is greater in the early stages of existence, and then reduces over time as the venture becomes established. Therefore, we propose:

Proposition 2a. The greater the variation in uncertainty, the more the entrepreneurs in high-tech business-to-business INVs alternate between effectual and causal decision-making processes when making marketing decisions.

Ambidexterity of entrepreneurs is the second factor leading to changes in the decision-making approaches. Duncan (1976) asserts ambidexterity indicates that organizations should be able to switch to opposing operational modes to promote innovation. Organizational ambidexterity therefore includes the ability to simultaneously explore and exploit opportunity (Simsek, 2009). However, ambidextrous behavior on the part of individual managers has also been studied (Mom, van den Bosch, & Volberda, 2007). In our study, ambidexterity refers to an entrepreneur's ability to use exploration and exploitation with equal ease (Volery et al., 2015). Our results indicate that ambidexterity allows entrepreneurs to explore new market opportunities based on effectual decision making, while also exploiting existing market opportunities with causal decision making. This enables them to switch between effectual and causal processes, depending on which is likely to yield the best outcome. Entrepreneurs resort to an effectual process when creating new markets and to a causal process when developing it. Accordingly, we propose:

Proposition 2b. The greater the ambidexterity of entrepreneurs in high-tech business-to-business INVs, the more likely they are to alternate between effectual and causal decision-making processes when making marketing decisions.

Our results show that the effectuation route is not the only one available to deliver entrepreneurial marketing in high-tech business-to-business INVs; however, it can support all the dimensions of entrepreneurial marketing in INVs, whereas the causation option can only support limited entrepreneurial marketing dimensions: Market creation, proactiveness, innovativeness, and value co-creation are only evident when an effectual process is employed. There are a number of reasons for this: First, effectual decision making is an iterative and incremental process, which includes a recycling circle (see Fig. 2). Marketing and strategic management literature has also suggested decision making is an incremental and adaptive process; however, the process always begins with goal setting (Bauer, Schmitt, Morwitz, & Winer, 2013;

Brown & Eisenhardt, 1997). In contrast, the iterative and incremental process of effectuation begins with the resources available rather than with goals (Sarasvathy, 2001, 2008). Entrepreneurs first use their knowledge, experience, and networks to seek out effective and affordable market alternatives and then establish partnerships to facilitate marketing co-creation. By leveraging contingencies and creating new market opportunities, entrepreneurs can form more partnerships to instigate co-created marketing that can, in turn, provide better market options. The circulation allows them to continually accumulate greater knowledge, experience, and better networks. This experimental learning process supports innovation activities and new market creation. Causation begins from a discovered market and proceeds in a single direction, which hinders new opportunity creation.

Moreover, innovative and proactive marketing occurs when entrepreneurs drive the market (Jaworski et al., 2000; Tuominen et al., 2004). As effectuation leads to market creation, a firm can drive the market with innovative and proactive offerings. Because a causation approach encourages entrepreneurs to predict forthcoming events in the market discovered, entrepreneurs then make reactive decisions that are driven by the market. Furthermore, effectual decision making emphasizes the use of entrepreneurial networks and co-creation in network partnerships from the outset. The co-creation process is reinforced by social interaction with other actors (Edvardsson, Tronvoll, & Gruber, 2011; Grönroos & Voima, 2013). However, our results show that at the beginning of a causal process, entrepreneurs only exploit their knowledge and experience, without using networks for co-creation. Network partnerships are established reactively to implement a plan after the discovery of a market. Hence, value co-creation and proactiveness are achieved with an effectuation approach rather than the causation option. Based on the above discussion, we argue that effectual marketing decision making may prompt a greater degree of entrepreneurial marketing by high-tech business-to-business INVs. Therefore, we propose the following:

Proposition 3. Due to the iterative, incremental, and co-creative nature of the decision-making process, when entrepreneurs in high-tech business-to-business INVs making marketing decisions make greater use of the effectual approach than the causal approach more entrepreneurial marketing results.

Although market changes caused by technological, political, and institutional environments make international high-tech markets very unpredictable (Laufs & Schwens, 2014), effectual decision making uses a transformative approach to control an unpredictable future, tackling uncertain marketing elements and co-creating new markets with committed stakeholders (Read et al., 2009). We discussed how both effectual and causal processes can trigger entrepreneurial marketing, but a more intensive form of entrepreneurial marketing flows from the effectual approach. Our results show that when high-tech business-to-business INVs attain a high level of entrepreneurial marketing, they create a new market with innovative offerings that shape the external environment. As a result, in the face of either internal or external uncertainty, the entrepreneurs maintained a positive attitude and were confident they could co-create a future market with partners, and thereby reduce their perceived uncertainty. However, the lesser form of entrepreneurial marketing stemming from causal decision making does not have such an effect, as it does not involve creating a new market. Consequently, we propose:

Proposition 4. A higher proportion of entrepreneurial marketing being guided by effectual rather than causal decision making leads to a pronounced reduction of the uncertainty perceived by entrepreneurs in high-tech business-to-business INVs.

6. Discussion

6.1. Theoretical contributions

The dynamic model developed in this study is suited to resolving the issues raised in previous marketing decision-making literature, which is largely based on the assumption of planning and goal setting. Our model offers a better understanding of how marketing decisions are made in high-tech business-to-business INVs to deliver entrepreneurial marketing. This study makes theoretical contributions to various research streams (see Table 5). To begin with, the study contributes to entrepreneurial marketing research by mapping the marketing decision-making process leading to entrepreneurial marketing and developing a dynamic model (see Fig. 2).

The majority of past studies have reported a causal planning approach, especially in large firms (Curren et al., 1992; Davies, 1994; Mowen & Gaeth, 1992) and the high-tech sector (Hughes & Morgan, 2007). Our model shows that both effectual and causal marketing processes can trigger entrepreneurial marketing. However, we found that in high-tech business-to-business INVs, more entrepreneurial marketing is achieved through entrepreneurs using effectuation. Marketing decisions following the adoption of the causation approach can prompt only a limited degree of entrepreneurial marketing that lacks the market creation, innovativeness, proactiveness, and value co-creation elements. Furthermore, we explained why the effectual process leads to a greater degree of entrepreneurial marketing: It is due to the fact that effectuation tends to create the future through an iterative, incremental, and co-creative process; this process does not exist in causation as it is an approach that predicts the future. Moreover, in the very first stages of an effectual process, networks are leveraged for co-creation. In a causal process, network relationships are established on the basis of necessity and a desire to maximize the share of opportunities (Sarasvathy & Dew, 2005b).

Our study also contributes to industrial marketing research. First, we developed the entrepreneurial marketing dimensions applicable to rapidly internationalizing firms in international high-tech business-to-business markets. These dimensions include market creation, value co-creation, proactiveness, innovativeness, risk management, resource leveraging, and customer intensity. Our results suggest that entrepreneurial marketing is a multi-dimensional construct, although not all of the dimensions are prerequisites for its existence. It is a matter of degree: There are different combinations of dimensions depending on the marketing decision-making process applied. Second, our study identified industrial market factors that influence the marketing

Table 5
Contributions of the study to different research streams.

Research stream	Main contribution
Entrepreneurial marketing	<ul style="list-style-type: none"> – Mapped the marketing decision-making process leading to entrepreneurial marketing. – Explained why an effectuation decision-making process leads to a greater degree of entrepreneurial marketing.
Industrial marketing	<ul style="list-style-type: none"> – Developed the entrepreneurial marketing dimensions for rapidly internationalizing firms in the international high-tech business-to-business markets. – Identified industrial market factors that influence the marketing decision-making process of business-to-business markets. – Found that entrepreneurial marketing reduces the uncertainty faced by high-tech business-to-business firms operating in industrial markets.
International entrepreneurship	<ul style="list-style-type: none"> – Investigated entrepreneurs' marketing decision-making in INVs. – Explored the alternation between effectuation and causation in entrepreneurs' decision-making and identified factors causing that alternation.

decision-making process. Those factors are the internal uncertainty within the firm, technological uncertainty, and market turbulence. When each type of uncertainty is greater, the decision-making process is more effectual than causal. While the effects of environmental uncertainty have been studied in industrial markets, for example in relationships (Fink et al., 2008) and marketing channels (Jia et al., 2014), the influence of these factors on marketing decision-making has been overlooked. Third, we found that entrepreneurial marketing reduces the uncertainty faced by high-tech business-to-business firms operating in industrial markets. Previous research has identified uncertainty as a major concern for firms operating in the business-to-business environment (Aarikka-Stenroos & Lehtimäki, 2014). We suggest that when a firm achieves entrepreneurial marketing, a new market is often created with innovative offerings, thus shaping the external environment. Consequently, entrepreneurs are likely to hold a positive view of creating a future market with their partners, and reducing the uncertainty faced by the firm.

Furthermore, our research contributes to international entrepreneurship. INVs are early and rapidly internationalizing firms that operate under conditions of uncertainty and therefore offer an excellent context in which to investigate marketing decision making in turbulent high-tech markets (Zahra, 2005). Scholars have called for more research investigating individual entrepreneurs in INVs (Gabrielsson & Gabrielsson, 2013). We investigated entrepreneurs' marketing decision making, which was not previously studied intensively in the INV literature. Moreover, we explored the ways in which entrepreneurs alternate between effectuation and causation approaches and identified the factors causing them to do so. The extent to which INV entrepreneurs alternate between the two approaches depends on variations in internal uncertainty, technological uncertainty, market turbulence, as well as the ambidexterity of entrepreneurs. This new knowledge advances our understanding of how effectual and causal processes can be combined in marketing undertaken by INVs.

In addition, we advance methodology by utilizing results derived from thought experiments to support data triangulation (Sarasvathy, 2008; Sarasvathy & Dew, 2005a). Asking entrepreneurs how they would make marketing decisions for a next-generation product allowed us to capture and validate their decision-making process. We found that some entrepreneurs preferred to adopt a causal reasoning when relating their accounts in the interviews, but they employed an effectual decision-making process in the thought experiments, or vice versa. This suggests that in addition to semi-structured interviews, researchers need to apply novel data collection strategies in case-study research to increase the credibility, versatility, and richness of the data.

6.2. Practical implications

Our research offers implications for practitioners on how to deliver entrepreneurial marketing in high-tech business-to-business firms. First, we recommend that entrepreneurs or managers utilize an effectuation approach when developing products, particularly when uncertainty is high. For instance, when firms are dealing with radical innovation, existing market data are not hugely relevant. We suggest the starting point should be their knowledge, experience, and networks, and that those elements should be used to identify initial market alternatives, rather than beginning with goal setting based on competitive analysis. These alternatives should be continuously searched for in order to experiment with new technology or product offerings. We would advise marketing decision makers to use experimentation to identify a customer group whose needs best fit the features of the new innovation. It is important to value co-creation that products are co-developed with this first customer group so that buyers are already secured before the product hits the market.

Second, we suggest that practitioners seek the optimal combination of effectuation and causation in their proposed marketing mix when introducing new technology or product offerings. We recommend that

managers develop channels such as brand-label customers, OEMs, and system integrators through an effectual process. Managers can develop innovative forms of cooperation with such channel partners for value co-creation. Other channels can be built from goal setting and competitive analysis in a causal process, for example, distributors, wholesalers, and other agents. We also advise managers to leverage the resources of network partners and to focus strongly on customer intensity in the promotion process. An effectual approach to promotion can facilitate cooperation, help manage risks, and create public awareness, especially for firms with limited resources. Decision makers can also use the causal process in routine activities such as advertising. Additionally, our research could also spur progress in MNCs seeking to promote corporate entrepreneurship and intrapreneurship. Despite the fact that the corporate marketing strategy and goals often compel managers to follow the causation approach, they could utilize effectuation to develop innovative marketing tactics.

6.3. Limitations and future research directions

There are limitations to the study that provide avenues for future research. First, our research purpose was to develop the theory, not to test it. The results are theoretical generalizations in which interpretive inferences are drawn from four types of INVs based on theoretical sampling (Eisenhardt & Graebner, 2007). Our results provide opportunities for "natural generalization" through a thorough description of the cases and their context (Blatter, 2008, p. 69). Although readers should be careful not to generalize beyond the cases studied in the paper, they could make generalizations based on their own contexts (Stake, 2000). Future studies could examine cases from other research settings, as in other industries and countries. Furthermore, the cases in our study are high-tech business-to-business INVs from the energy industry; hence, there is a stronger focus on products than on promotion of the marketing mix (McCarthy, 1964). The results may not be wholly applicable to high-tech business-to-business firms in other industries. Future research could investigate the same type of firms in other industries, or other types of firms such as business-to-consumer INVs and low-tech INVs, to generate broader theoretical insights. Additionally, Finland is representative of small and open economies that foster the emergence of entrepreneurial firms. Future studies could be conducted in other countries, and perhaps in emerging economies. Moreover, our theoretical model and propositions could be tested with quantitative research in the future. Furthermore, it would be interesting to examine whether entrepreneurial marketing is implemented in large MNCs, and if so how it might be developed to deliver competitive advantage. Accordingly, future research might consider the strategy formation processes driving the entrepreneurial marketing in MNCs.

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Appendix

Interview Guide:

Part 1: Talking about the interviewee.

- (1) What is your role in the company?
- (2) What previous experience do you have?
- (3) What kind of knowledge do you have?
- (4) What kind of networks do you have?

Part 2: Talking about international marketing activities of the company.

What kind of important international marketing activities have you undertaken in the company?

Asking about each marketing mix: product, price, promotion, distribution.

Probing the seven dimensions of entrepreneurial marketing:

(1) Market creation (2) Innovativeness (3) Proactiveness (4) Value co-creation.

(5) Customer intensity (6) Risk management (7) Resource leveraging.

Part 3: Talking about the marketing decision-making process.

If there is any international marketing activity (product, price, promotion, distribution) which have any of the dimensions of entrepreneurial marketing? Ask how the decision was made.

- (1) Was there any specific goal set before reaching this decision? Or was the goal set later? Or if not, what was the situation and how did it come about?
- (2) To what extent was the process related to your own experience, knowledge, and networks? Please provide examples.
- (3) To what extent was there an influence from partnerships?
- (4) What other factors were considered when making the decision? (probing affordable loss vs. expected return)
- (5) How did you react to unexpected situations?
- (6) To what extent can you control the future of your market?

Part 4: Talking about the business environment of the company.

- (1) What is the business environment of the company? (Probing different types of uncertainty.)
- (2) To what extent are marketing decisions impacted by the business environment? Why?
- (3) To what extent can the marketing behavior of the company affect the business environment? Why?

Important notes:

1. Note any interesting issues arising in each interview.
2. Always ask how, why, and for examples.
3. Use the past tense when interviewing founders (e.g., Vacon) to elicit retrospective data.

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