



Business model innovation of international new ventures: An empirical study in a Swedish context

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Published online: 6 October 2018
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Abstract Business model innovation (BMI) is receiving increased academic attention as a tool for gaining new or retaining existing firms' competitive advantages. This paper investigates value delivery and value capture dimensions of BMI utilized by international new ventures (INVs) and shows how this category of firms differs from other internationalized firms in Sweden. Our findings indicate that INVs tend to innovate value delivery and value capture dimensions in the form of sales channels and logistical methods more frequently than other internationalized firms and reconfigure their external relationships more intensively as well. By utilizing longitudinal data, we show that these aspects continue to differentiate INVs and constitute a unique characteristic of INVs over time. Hence, this study enhances the academic debate on business models of INVs as well as on their long-term development past early internationalization efforts. From a managerial perspective, the study highlights where to focus BMI initiatives for sustained international presence and growth.

Resumen La Innovación del Modelo de Negocios (IMN o BMI por sus siglas en inglés) está llamando la atención entre los académicos, como una herramienta que permite a las compañías ganar nuevas ventajas competitivas o retener las existentes. Este artículo investiga las dimensiones de entrega y captura de valor de la IMN utilizada por nuevas empresas internacionales (NEIs o INVs por sus siglas en inglés) y muestra cómo éstas se diferencian de otras empresas internacionalizadas en Suecia. Nuestros resultados indican que las NEIs tienden a innovar las dimensiones de entrega y captura de valor, en forma de canales de venta y métodos logísticos, más frecuentemente que otras empresas internacionalizadas y que, además, reconfiguran sus relaciones externas de forma más intensa. A partir de datos longitudinales mostramos que estos aspectos diferencian a las NEIs y constituyen una de sus características únicas a través del tiempo. Por lo tanto, este estudio mejora el debate académico sobre los modelos de negocio de las NEIs, y su desarrollo a largo plazo como fruto de esfuerzos tempranos de internacionalización. Desde una perspectiva

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gerencial, este estudio muestra en dónde enfocar las iniciativas de IMN para lograr presencia internacional y crecimiento de forma sostenible.

Keywords International new ventures · Business model innovation · Sweden community innovation survey

Palabras clave nuevas empresas internacionales · innovación del modelo de negocio · encuesta sobre innovación en la comunidad de Suecia

JEL classification 3 Entrepreneurship · 4 International business

Summary highlights

Contributions: This study contributes with new, large-scale, empirical findings to the emerging debate on the importance of business models of INVs as well as on how INVs are developing beyond the stage of initial international market entry by applying the business model lens.

Purpose/research question: The purpose of this study is to examine the INV-specific value capture- and delivery-centered business model innovations. A particular focus is on innovations accompanied by changes in the relationships with firm's supply and demand side partners and the resulting external relationship handling processes in comparison with other internationalized firms.

Findings/results : The findings show that INVs are more likely to innovate their business models in the areas of external relationships, sales channels, and logistics compared to other types of internationalized firms in the sample.

Limitations : A number of limitations are present in this study. Firstly, the empirical context of a single, small, and open economy of Sweden. Studies in economies of different structure might yield different results. Additional elements of business model innovation could be included aside from the ones scrutinized in this study.

Theoretical implications and recommendations : This study displays that INVs innovate their business models more frequently than other internationalized firms and suggests that INVs can have different business model configurations that allow them to remain internationally competitive beyond early internationalization. Thus, the study highlights the business model lens as a theoretical frame for understanding the development of INVs over time.

Practical implications and recommendations : The study highlights the significance of managing external relationships dynamically for INVs as well as avoiding getting locked into certain sales channels or logistical modes of operation which may ultimately impede international development. New types of relationships, logistical methods, and sales channels are necessary as the once early-stage INV develops and grows on international markets.

Introduction

The notion of international new ventures, or INVs, has emerged in academia in the early to mid-1990s (Oviatt and McDougall 1994) and generally refers to entrepreneurial firms that tend to internationalize very early in their life cycle and whose expansion into foreign markets occurs much more quickly than predicted by earlier theories of the internationalization process (e.g., Johansson and Vahlne 1977). More recently, researchers have started to ponder whether INVs possess certain characteristics that make them better equipped than others to steer in international business environments characterized by a high pace of change in technological and regulatory environments, as well as by intense competition (Mudambi and Zahra 2007; Gabrielsson and Gabrielsson 2011; Spence et al. 2011; Almodóvar and Rugman 2013; Turcan and Juho 2014). In a conceptual paper, Hennart (2014) proposed an internationally viable business model as the key distinguishing feature of INVs that allows for an early and rapid entry into international markets. Business models can broadly be considered as conceptualizations of how firms do business (e.g., Zott and Amit 2007; Zott et al. 2011) and often include dimensions such as value creation, value delivery, and value capture as overarching building blocks (e.g., Teece 2010; Mezger 2014; Cortimiglia et al. 2015).

Nevertheless, while the original business model configuration serves as an initial driver for INV internationalization that same business model might not be sufficient over a longer time period, as INVs develop and mature. Thus, recent research calls have been made for scrutinizing business model change and evolution among INVs beyond their stage of early internationalization (Hagen and Zucchella 2014; Zander et al. 2015). Hennart's (2014) paper, while vital for theoretical development, takes a rather static approach to the business models of INVs and does not emphasize the inherent need of the business models to evolve and change over time.

Business models and business model innovation (BMI) are still very young and emerging topics in the context of young internationalized firms. As of date, studies that considered business models in this context have examined business model replication across international markets (Dunford et al. 2010), how continuous business model innovation can be used for international growth over time (Johansson and Abrahamsson 2014), co-creation of business models with other actors in the firm's network (Nummela et al. 2004), and re-configuration and innovation of business models through execution of the firm's dynamic capabilities (Turcan and Juho 2014). As noted by Teece (2010), the static "snapshot" business model of a firm is unlikely to yield any form of enduring competitive advantage to a firm, as its fit could be a function of context and timing and the possibility for its advantages to simply erode due to competitors replicating the business model, an observation, that is, also supported by, e.g., Amit (2012), Mezger (2014), and Cortimiglia et al. (2015). Rather, the potential for enduring competitive advantage resides in the firm's ability to reconfigure and innovate the business model.

Research on BMI has been dominated by qualitative studies (Rydehell and Isaksson 2016), partially due to a lack of established quantitative measurements for BMI, and more quantitative work in the area is called for (Clauss 2017). However, the business model element of value creation, i.e., bringing of an offering to customers willing to pay beyond the cost of production, has been discussed in general entrepreneurship literature since Schumpeter (1942). Value creation is broadly looked at as the process of

combining resources in a unique way to produce innovative output such as new products (Morris et al. 2005). This type of value creation process of INVs has been scrutinized by previous research (e.g., Knight and Cavusgil 2004; Fernhaber and McDougall-Covin 2014; Abrahamsson et al. 2015). In contrast to the emphasis on value creation of the earlier studies, this paper will zoom in on the business model elements of value delivery and value capture of INVs relative to other internationalized firms. Examining value delivery and value capture dimensions of business model innovation will further highlight INVs' utilization of external relationships with customers and suppliers—in line with Oviatt and McDougall's (1994) notion of “alternate governance mechanisms”—to create business models with a higher economic potential, and thus, ensure and enhance international growth and development.

Hence, the purpose of this study is to examine INVs' innovations within value capture and delivery dimensions of their business models in comparison with other internationalized firms with a global market presence. Particularly, on innovations accompanied by changes in the relationships with firm's supply and demand side partners and the resulting external relationship handling. The study builds on Swedish longitudinal microdata on firms' registrations and international sales merged with survey-based data from the community innovation survey (CIS), where the latter provides innovation focused constructs (OECD 2005) used for investigating the externally oriented elements of business models and BMI. Our study makes a twofold contribution to extant literature on INVs' business models. First, we identify INV-specific aspects of the business model innovation behavior within under-researched dimensions of value delivery and value capture. Second, we show how the business model innovation develops as INVs move beyond early internationalization phases and develop further on international markets.

The remainder of the paper reviews past research of INVs as well as on business models and BMI within INV context. Subsequently, we elaborate a set of hypotheses which we test against register-based data from years 1998–2009 and the fourth wave of Swedish CIS. The paper concludes by discussing our contributions to academic theory as well as management practice and finally highlights potential areas for future research.

International new ventures and business models

The concept of INVs, firms that reach a substantial degree of international activity early on, has been under academic scrutiny since the early to mid-1990s, frequently also under the labels of born global (e.g., Rennie 1993; Knight and Cavusgil 2004) or born internationals (e.g., Johanson and Martín 2014). The term INVs as such was coined by Oviatt and McDougall (1994) and is the one used in this study: “a business organization that, from inception, seeks to derive significant competitive advantage from the use of resources and the sale of output in multiple countries” (Oviatt and McDougall, 1994: 50).

As a more robust body of theory regarding drivers of rapid internationalization and of early internationalization patterns starts to emerge, research is more and more looking towards exploring INVs sustained international presence over a longer duration, beyond its early internationalization phases (Hagen and Zucchella 2014; Zander

et al. 2015). These calls have been leading to an increased focus on financial performance of INVs (Gerschewski and Xiao 2014; Trudgen and Freeman 2014), aspects of innovation (Hagen et al. 2014; Turcan and Juho 2014) and certain managerial configuration, or reconfigurations of resource bases of INVs in recent studies (Sepulveda and Gabrielsson 2013; Nummela et al. 2014).

One such managerial configuration regarding INVs was already noted by Oviatt and McDougall in their seminal 1994 paper. They introduced the term “alternative governance mechanisms” in reference to how INVs were coping with the numerous challenges that they are exposed to in the international marketplace as a new and rather small actor, often competing with larger and more established firms. Oviatt and McDougall suggested that INVs tend to rely heavily on external relationships with other actors, sourcing various parts of their value chain activities, such as sales operations in foreign markets, delivery, and logistics. INVs thus generally emphasize access to resources rather than ownership, which is a notion that concurs with more current streams of scholarly work on firms in fast-paced environments, as suggested by for instance McGrath (2013).

In the context of INVs, their arrangements in various external relationships or networks have been rather intensively studied in prior academic works. While a substantial amount of studies has shown positive effects of external relationships for different types of INV outcomes, such as early internationalization and growth or speed of internationalization (i.e., Oviatt and McDougall 2005; Coviello 2006; Freeman et al. 2006; Gabrielsson et al. 2008), others provided more mixed results, especially when considering more long-term characteristics of INV development. This stream of research identifies more negative aspects such as that external relationships in itself does not make an INV competitive (Mort and Weerawardena 2006), that relationships may entail negative aspects and impair later-stage growth for INVs (Mort and Weerawardena 2006; Sasi and Arenius 2008), and that INVs should be calculative while managing their external relationships in order to achieve net benefits from such engagements (Sepulveda and Gabrielsson 2013).

Nevertheless, alternative governance mechanisms provide a point of differentiation of INVs from the traditional, large multinational enterprises (MNEs), as the latter have been traditionally viewed as firms who attempt to derive competitive advantages from internalizing such activities and transactions (Tece 2004; Al-Aali and Teece 2013). The overarching assumption being that internal transactions should be more efficient, and thus cheaper, for the focal firm relatively in doing the same transactions on the open market or in business relationships with other firms and actors.

Arguably, the notion of “alternative governance mechanisms”, which is a term designed to describe how INVs do business differently compared to other internationalized firms, is well aligned with the concept of business models. Business models can broadly be looked at as “how” firms do business (Zott and Amit 2010, 2012; Teece 2010), enact on business opportunities and by the means of business model create markets. Frequently, opportunity enactment is accomplished in collaboration with other firms and partners in the network (Nummela et al. 2004; Alvarez and Barney 2007; Teece 2010; George and Bock 2011).

Business models can be looked at as an architecture, mechanism, or system of activities to the purpose of *creating*, *delivering*, and *capturing* value (e.g., Augier and Teece 2007; Teece 2010; Cortimigila et al. 2015; Spieth et al. 2014; Demil et al. 2015).

Value creation, with its roots in microeconomics, indicates that value created by a firm consists of the difference of the perceived benefit a firm provides to its targeted customers through an offering and the incurred cost of creating said value (Jelassi and Enders 2005). Furthermore, value creation can then be operationalized as introduction of new (innovative) offerings (Schumpeter 1942; Morris et al. 2005).

However, a commercially successful firm needs to configure the business model in a manner that allows a sustainable portion of the value created to be captured back to the focal firm. Consequently, *value capture*, as hinted at by for instance Teece (2010) and Spieth et al. (2014), is merely the other part of the formula, i.e., how much of the value created, with costs subtracted, that can be captured back to the focal firm by a certain business model configuration. Put differently, the value capture dimension thus defines the firm's ability to be profitable and ensures a sustainable business performance (Claus 2017). To elaborate, the dimension of value capture thus encompasses the focal firm's revenue models and cost structures (e.g., Osterwalder and Pigneur 2005; Cortimiglia et al. 2015; Claus 2017). Consequently, revenue models answer when revenue is generated (i.e., purchasing or leasing products), for which duration (i.e., subscription models or regular service contracts as opposed to one-off deals) and by whom (i.e., external sales and marketing partners) (Claus 2017). The cost structure side of the value capture formula entails issues such as costs for production, manufacturing and delivery, the proportion of fixed and variable costs, and overall margins (Claus 2017; Morris et al. 2005). A novel cost structure can clearly benefit the viability of a business model on international markets. One example is Airbnb, who does not own the real estate properties, its competitor hotel firms do. Another is Skype, who disrupted the market for calls by making them free due not having to pay fees for using landline phone networks (Strategyzer 2015).

Bearing in mind the research efforts of Magretta (2002), Onetti et al. (2010), and Cortimiglia et al. (2015), the element of *value delivery* incorporates issues and decisions regarding how an offering is delivered to the targeted customer as well as the organizational resources, capabilities, and value-chain configurations needed to execute on the delivery. As such, value delivery can for instance incorporate logistical setups up- and downstream in the value chain as well as sales channel decisions, e.g., bricks and mortar versus online channels (Sinkovics et al. 2013; Claus 2017). Put differently, value delivery encompasses all business activities conducted by the focal firm to reach customers and partners, including distribution mechanisms and choice of delivery channels (Cortimiglia et al. 2015). As such, modes of value delivery hence can impact the value capture potential, by for instance leveraging international sales licensing in line with "alternative governance mechanisms" (Oviatt and McDougall 1994), yielding a business model where the captured value becomes distributed across all the firms involved. At the other end of spectrum, direct sales channels can be initiated through an online presence for an INV (Gabrielsson and Gabrielsson 2011; Hennart 2014), bringing back all or virtually all the captured value to the focal INV.

Considering this description of business models, focusing most poignantly on value delivery and value capture, these elements of business models can affect key external relationships of INVs, with for instance suppliers, distribution partners, sales channel partners, and customers. This is largely because INVs, when applying the alternative governance mechanisms lens, are prone to extensively rely on external partnerships for activities such as international sales, distribution, delivery, and logistics. Hence, a

business model innovation targeting sales channel configuration is therefore likely to yield a change in the external relationships of an INV. Consequently, that very same innovation would then also impact value delivery and likely value capture dimensions of the INV business model.

In his investigation of INVs and business models, Hennart (2014) points out that the business model of an INV might be the most essential, but often neglected in the realm of international entrepreneurship, factor driving the internationalization, and growth of an INV. Considering empirical studies involving business models in international entrepreneurship and INV context, the business model concept is either only mentioned in passing (e.g., Karra et al. 2008; Hughes et al. 2007; Lutz and George 2012) or studies discuss concepts that could only be implicitly related to business models, e.g., (Sinkovics et al. 2013; Zucchella et al. 2007). A notable exception includes Dunford et al. (2010), who investigated how business model replication through learning contributes to market entry and growth for INVs.

The original business model of an INVs, even if it has proven useful for the firm's early international entry (Hennart 2014), may not be sufficient over time as the venture develops. For instance, Zander et al. (2015) argue that INV's business model can be difficult to transfer to new products or services, in line with Teece's (2010) assertion that a business model is a snapshot view of the firm rather than something to base competitiveness over time. Hence, understanding business model innovation becomes essential.

Business model innovation can be alterations in any of the previously discussed value dimensions: value creation, value delivery, and value capture (Björkdahl and Holmén 2013), with this study focusing on the latter two dimensions and not all three. Another aspect to consider is the relative magnitude of business model change, for example, incremental and more substantial types of business model innovation. Gerasymenko et al. (2015) suggest that substantial business model innovation should also reflect changes for instance resources, capabilities, and the firm's external relationships, as those factors are likely to have a substantial effect of how the firm's business are being done. An example of substantial business model innovation is taking an offline, "brick-and-mortar" business online, enabling internet-based business models, and internationalization (Abrahamsson and Vanyushyn 2017). Taken together, business model innovation clearly differs from previously well-researched domains such as product innovation and process innovation (e.g., Chandy and Tellis 1998; Pittaway et al. 2004; Rodríguez and Nieto 2015). Business model innovation thus includes, for instance, marketing and organizational business aspects (Clauss 2017) and allows for a bird's eye view of a firm's business.

For this study, we then consider three types of business model elements, each potentially impacting the focal dimensions of value delivery and capture, as well as simultaneously, the resources and the relationships of the firm (Gerasymenko et al. 2015), following the definition of substantial business model innovation. The three elements considered are (1) external relationships, (2) sales channels, and (3) logistics.

Taken together, the three business model elements of external relationships, sales channels, and logistics also tie into internalization and externalization of an internationally active firm's governance structures. As such, they make suitable business model elements to incorporate while comparing INVs to the other types of internationalized firms as INVs can expect to undergo business model innovation more

frequently than other types of internationalized firms. Manifestation of such innovation in value delivery and value capture would necessarily involve changes in the external relationships of INVs with its suppliers, customers, and distribution partners, which in turn can be translated into business model innovation elements such as new sales channels or new logistical methods—in line with the review by Clauss (2017) on business model innovation and measurement.

Even though business models and business model innovation can be more encompassing than just considering these three elements (e.g., Clauss 2017; Morris et al. 2005; Osterwalder and Pigneur 2005), these three chosen elements of business model innovation are substantial areas, given their potentially far-reaching effects of the core logic of how the firms do business. These three elements are also particularly vital in the context of INVs. The whole notion of INVs zeroes in firms which is effectively managing business models built on various external relationships (in arrangements such as licensing or outsourcing) to deliver and capture value across international markets. Salunke et al. (2011) also mention external relationship innovativeness as a key entrepreneurial behavior towards an innovation-based competitive advantage. Furthermore, Clauss (2017) finds that new partnerships, including activities such as managing external relationships in terms of alliances, partner networks, suppliers, and supply chain, is a vital component of business model innovation.

Innovative usage of sales channels has been empathized in numerous studies as an important avenue for INVs to gain international market shares (e.g., Sinkovics et al. 2013; Hennart 2014), and Li et al. (2015) see sales channels as the main form of externalization of governance among INV-type firms. As noted by for instance by Nummela et al. (2014), sales channel configuration also changes over time for INVs, as the firm may grow and demands from the market may change. Similarly, business model scholars such as Chesbrough and Rosenbloom (2002) underline the importance of sales channels setup when designing business models.

Logistics is broadly viewed as flows between the focal company, its suppliers and its customers and the task of optimizing such flows (Lummus et al. 2001), or in business model terms optimizing translate into capturing more value from these flows. In an INV context, Hagen and Zucchella (2014) show that logistics configurations, involving activities such as delivery and sourcing, affect internationalization of INVs. This is corroborated by further case-based evidence from Trudgen and Freeman (2014), who found that external logistics partnership aided INV growth on international markets. Logistics and related ICT systems have also been noted to have an overall central impact on business models, as exemplified by instance Wall-Mart (Magretta 2002; Brea-Solís et al. 2015) or Amazon's ability to simplify all aspects of delivery, data processing, and tracking of products for smaller firms using its online retailing platform (Ritala et al. 2014). George and Bock (2011), in a discourse analysis of business models, found that logistics is in fact a central construct for managers when discussing business models.

INVs and the rate of BMI

Oviatt and McDougall (1994), already at that early point of theoretical development, mainly exemplified INVs as firms operating in a high-technology or knowledge-intensive industries. Despite numerous exceptions that context has been the focus of

a substantial part of the empirical studies of INVs, including very highly cited research papers in the international entrepreneurship field, such as Coviello (2006) looking at early-stage INV network dynamics, Autio et al. (2000), which noted the “learning advantage of newness” among INVs, and Fernhaber and McDougall’s (2009) investigation into whether the resources of venture capital partners matter for INV internationalization of high-tech firms.

INVs are not found exclusively in high-tech industries; in fact, Hennart (2014) posits that business models matters more for INV emergence rather than high-tech intensity as such of the industry. Hennart (2014) further posits that the implicit expectation or definition of INVs as being in those sectors is a fallacy. An example of study that investigates INVs and their sectoral affiliations is Taylor and Jack’s (2012) comparison between high- and low-tech INVs. Furthermore, one can note Bhardwaj’s et al. (2011) case study of the fashion retailer Zara’s global expansion and of course a plethora of studies of firms which merely are using technology as a business model enabler to reach a global audience for relatively conventional retail products (e.g., Sinkovics et al. 2013; Hagen and Zucchella 2014) or conventional services such as retail banking (Dunford et al. 2010).

However, one can still assume that the rate of change is higher for firms operating in high-tech and knowledge-intensive industries, as the environmental dynamism is higher (Hagen and Zucchella 2014). Thus, in line with, e.g., Teece (2007) and Al-Aali and Teece (2013), INVs operating in such environment might be posed to innovate their business model even more frequently, as the industry conditions making the previous model relevant have faded into low growth or decreased profitability, which is congruent with the notion of riding on different waves of transient advantages in dynamic environments (McGrath 2013). As noted by Juntunen et al. (2018), the dynamic business environment also yields new business opportunities, which can prompt business model innovation.

Conversely, environments characterized by lower dynamism, such as low- or conventional technology industries or services, tend to reward exploitation of already existing modes of operations and resources (Teece 2007; Schilke 2013), hence potentially providing less frequent business model innovation behavior. This is also in line with empirical studies in an INV context by Taylor and Jack (2012) and Dunford et al. (2010), as the low- or conventional tech firms depicted in their studies tends to grow over time more by replicating existing business models in an international setting, rather than by business model innovation.

Nevertheless, while industry dynamism can aid in explaining in-group differences regarding the rate of business model innovation among INVs, it is not sufficient as an explanatory tool to explain why INVs would have a different business model innovation behavior than other, often larger and older, internationalized firms. Considering this study specifically, we posit that INVs, in line with Oviatt and McDougall (1994), are relying heavily on alternate governance mechanisms, which can be highly prevalent within business model aspects such as external relationships, sales channels, and logistics. This is echoed by Abrahamsson et al. (2018), who notes that INVs to a higher degree than other firms are dynamically capable in reconfiguring their external relationships. For INVs, who are looking to expand internationally and find new markets to vend their innovative output to, in line with Knight and Cavusgil (2004), these aspects of the business model likely need to change and be adapted, due to

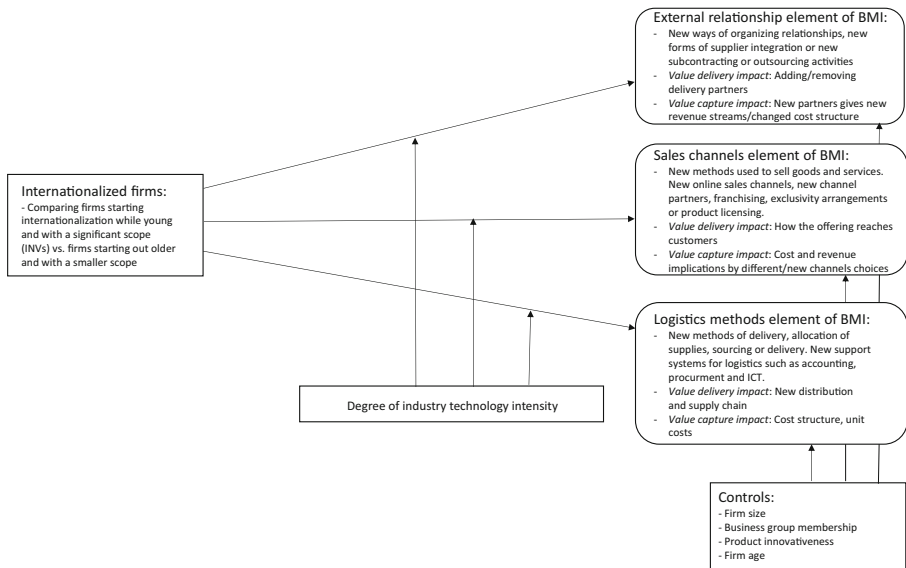


Fig. 1 Research model

instance incomplete globalization and thus heterogeneous market demands (Augier and Teece 2007). Furthermore, INVs' learning advantage and ability to unlearn (Autio et al. 2000) could likely lead to less embedded legacy routines and less organizational inhibition by top management (Chesbrough 2010) to execute business model innovation compared to older and larger internationalized firms.

Research model and hypotheses

Following the review above and utilizing the knowledge gained from extant theory, we visualize the overall research design of the paper in Fig. 1, which displays that how originating as an INV affects the business model innovation as well as plots the effects of control and moderating variables. Firstly, it can be seen in the figure that this paper is utilizing industry as a moderating variable, as it affects the relationship between INVs and the three business model innovation dimensions as discussed in the overview of the literature. We would thus expect to find a stronger or more pronounced effect of each of the business model elements investigated if the INV is operating in high-tech intensive sectors.

Provided the context of the previous theoretical discussion, it would seem apparent and perhaps even mundane to posit that INVs in general are likely to innovate their business model over time. More interesting, however, is to whether INVs differ in certain key aspects, considering the value dimensions of value capture and delivery from other internationalized firms. Given our focus on the business model elements of external relationships, sales channels and logistics, we proceed to develop the three hypotheses and explain in turn how business model innovation in the elements of

external relationships, sales channels, and logistics impacts the value delivery and value capture mechanisms of INVs.

First, “alternative governance mechanisms” refer to how the INV is organizing its external relationships with actors such as customers, suppliers, or competitors. For instance, Abrahamsson et al. (2015) show that INVs tend to have a broader set of collaboration partners for innovative purposes than other firms. Similarly, Löfgren (2014) notes that co-innovation with customers can lead to further international growth. This can then manifest itself in new ways of organizing relationships, new ways of integration with suppliers, new subcontracting, or outsourcing activities such as production, procuring, research, or distribution. This would also be in line with Onetti et al. (2010), who argue that high-technology-focused INVs faces crucial decisions regarding the relationships with other players and organizational boundaries in the context of its business model. Thus, BMI within external relationships would impact *value delivery* by potentially adding or subtracting partners from the delivery process or by changing the relationship content through for instance new contractual terms. *Value capture* is thus impacted by new partners bringing forward new revenue streams, through for instance licensing, or new cost structures through, i.e., outsourcing. We would predict that INVs within technology-intense sectors reorganize and change their external relationships to a larger extent than firms of other types, and formulate the following moderating hypothesis:

H1: INVs are more likely than other internationalized firms to innovate the business model element of organizing external relationships. This specific effect is more pronounced in firms operating within high-technology and knowledge-intense industries.

Second, sales channels as such have been a topic coming up from time to time in research of INVs (e.g., Laanti et al. 2007; Gabrielsson and Gabrielsson 2011). However, such channels are rarely discussed in a business model frame of INVs. Albeit, sales channel decisions are unmistakably linked to business models and its value dimensions. For instance, opening sales channels online in what used to be a previously brick-and-mortar only business is one example which is commonly referred to as a business model innovation (Teece 2010; Mezger 2014; Osiyevskyy and Dewald 2014). In the context of INVs, Sinkovics et al. (2013) are moreover claiming that INVs might need to complement online channels with physical presence to enhance growth. Furthermore, Gabrielsson and Gabrielsson (2011) note that INVs in the high-technology sector tend to utilize multiple forms of online sales channels. Moreover, Malmström et al. (2015) also identify sales channels as an important component in entrepreneurs’ cognitive construct of business models. Business model innovation in the element of sales channels can also for instance consist of implementations of franchising systems, direct selling, exclusivity arrangements, or personalization of offers (OECD 2005). Provided the above discussion, sales channel BMI impacts *value delivery* in terms of how offerings reach customers, e.g., online versus brick-and-mortar or external sales partners versus owned channels. *Value capture* is consequently impacted through the revenue and cost implications of the different channels choices, as external sales

partners would for instance cut into the focal firm's margins but also potentially increase revenue by extended reach. Thus, we argue that:

H2: INVs are more likely than other internationalized firms to innovate the business model element of sales channels. This specific effect is more pronounced in firms operating within high-technology and knowledge-intense industries.

Third, while sales channels can be viewed upon as a business model element geared towards increasing revenues, new logistical methods are geared towards decreasing unit costs (OECD 2005). Like sales channels, logistics methods and systems have been mentioned, mostly in passing, as an ingredient which can allow INVs to scale internationally (Knight and Cavusgil 2004; Altshuler 2012; Trudgen and Freeman 2014). Outside of the INV realm, Bhardwaj's et al. (2011) are specifically bringing up logistics and ICT systems supporting logistics as a key element of the business model evaluation of the retail giant Walmart over time. More concretely, business model innovation in the element of new logistical methods can for instance consist of new techniques to either source inputs, managing supply functions for the firm or deliver final products or offerings as well as incorporating support systems in areas such as accounting, procurement, or other ICT solutions aimed at increasing efficiency and decreasing costs (OECD 2005). Using digital platform retailing through platform services such as Amazon (Ritala et al. 2014) or Alibaba is an example of this from an alternative governance mechanism perspective. In summary, logistical methods impact *value capture* mainly through its effect on cost structure, by unit cost decrease. Additionally, the aspect of logistical methods effects *value delivery* by the effect on distribution and the overall supply chain (Sandberg et al. 2011). These arguments result in the final moderating hypotheses, which suggest that changes within logistics are more likely to happen within INVs in technology-intense sectors:

H3: INVs are more likely than other internationalized firms to innovate the business model element of logistical methods. This specific effect is more pronounced in firms operating within high-technology and knowledge-intense industries.

Control variables

We naturally utilize a set of control variables with the purpose of controlling the BMI variables for effects of factors and characteristics of the firm beyond having an INV status. Those control variables and the rationale for including them is as follows:

Product innovativeness

Firms, which frequently innovate their product line by for instance releasing products which are new not only to the firm itself but also to the market, could potentially innovate their business model elements frequently as well. This would be in line with

theoretical inputs by Teece (2010) that business model innovation should accompany product innovation for optimizing the capturing of value from the product innovation. This variable considers the innovation output, which is consistent with Rosenbusch et al. (2011), who finds that SMEs benefit more from creating innovation output for the market rather than dedicating more R&D resources into the process of innovation.

Firm size

According to Zott and Amit (2007), a larger firm has a larger potential of creating value than a smaller one, which also could imply more frequent business model innovation activities to realize that value creation potential. Furthermore, since BMI involves changes in resources to be seen as substantial (Gerasymenko et al. 2015), BMI may be less risky for larger firms due to their often-larger resource base to draw from. Hence, firm size could explain BMI frequency, given the higher risk and smaller resource base on INVs compared to other firms.

Business group membership

Being a member of a business group could likely affect the BMI elements considered in this study. Group membership could for instance provide the focal firm with new partnership opportunities, as other members of the group may provide the focal firm with new network contacts in other international markets, as well as different domestic contacts (Abrahamsson et al. 2015) and could in turn affect issues such as outsourcing, sales channels, or logistics.

Firm age

Newer firms, for instance firms still in their start-up, are likely to be searching for a viable business model and hence undergo numerous changes in their business model (Blank 2013). Older firms, conversely, can face internal organizational resistance and inertia (Chesbrough 2010) or have an established asset-based invested in an old business model (Kim and Min 2015), which all hinders business model innovation. Hence, the age of the firm should be included as a control.

Methodology

Identification of INVs

First, we needed to identify INVs using “time-to-internationalization” and “international sales percentage” as key variables for the years 2000–2009. This is to a large extent of a judgment call. In past research, a wide range of operationalizations regarding export ratio in relation to time elapsed since firm inception has been used to identify INVs. Metrics such as start of international sales within 2 years after inception (Knight and Cavusgil 1996) or having 75% international sales within 9 years after inception (Hashai and Almor 2004) have been used. A much more lenient classification was used by Zahra et al. (2000), going by an export ratio of 5% within 6 years after inception.

Some studies may however lack a specified export ratio altogether and instead looking solely at the time to internationalization for the firm, considering 3 years from inception (Servais et al. 2006; Zucchella et al. 2007) or even up to 6 years from inception (Fernhaber et al. 2008; Fernhaber et al. 2009).

The operationalization of INVs in a Swedish context was scrutinized in a doctoral thesis by Halldin (2012), who concluded that a stringent definition of 25% export ratio after 3 years since inception could be used, along with a modest definition of 10% export ratio in 5 years. Similarly, in a study of 188 Swedish internationalized firms, Löfgren (2014) also opted for 10% export ratio as a demarcation line to classify internationalized SMEs. However, given that more stringent as well as more modest operationalizations exist in previous research, we have chosen a “middle road” by operationalizing INVs as having an export ratio of at least 10% within 3 years after inception. Thus, we capture firms that have started their international sales rapidly, but also those that, maybe for industry-specific reasons (Gabrielsson et al. 2008) not yet have emerged strongly internationally in terms of export ratio. However, the fact that they have international sales early implies an interest and orientation towards internationalization.

Such operationalization is also in line with Zhou et al. (2010), who in their study of INV performance mediated by social networks, operationalized INVs as firms achieving at least 10% export ratio in 3 years of existence. The 10% export ratio was also envisioned by McDougall (1989) for categorizing young internationalizing firms.

For identifying INVs from the CIS survey, the survey was micromatched with the SCB database and the firms thus could be derived by operationalizing the firms based upon their inception year and foreign sales allocation. Examination of firm’s registrations and subsequent international sales showed that out of 1367 internationalized firms (firms with sales on the global scale) that partook in the CIS survey in 2009, 251 started as INVs.¹

¹ The figures regarding firms’ export ratio are derived from Statistics Sweden (SCB) that receives export information from every Swedish firm regarding their trade with EU and non-EU countries. Regarding sales data for other EU countries, only firms which have above 4,500,000 SEK in annual sales to EU countries are considered in this dataset (SCB 2013). The export data are gathered by SCB through two systems, Extrastat and Intrastat. The former is register-based statistical information provided by the Swedish customs authority and concerns export to non-EU countries. The reports from Extrastat are based on export declarations which all exporting firms must account for. The latter system, Intrastat, is designed by EU statistics body, Eurostat. As mentioned previously, this system comes with 4.5 million SEK cutoff point, to exclude the very small exporters from the dataset. Regarding the Intrastat numbers, export data from the small exporters below the cutoff points as well as missing data from firms reporting late are treated as missing values which thus leads to understated numbers for export to certain countries and/or for certain product categories (scb.se). The export data further contains both exports of services as well as exports of physical goods. However, only circa 50-service industry categories are included and are based on a sample of 6100 firms. The sample gets renewed once per year, when a third of the firms are being replaced (SCB 2013, p. 64). Consequently, the data for service exports are likely to be understated in this dataset.

For identifying firms’ start-up year and type, we similarly used data from SCB. The SCB dataset provides a dual-digit code which informs whether a firm started out as a totally new firm, a new firm through a merger, or as a new firm through a splinter from a parent. This system is made possible through tracking the identity of workplaces and its employees rather than organizational numbers of firms. For instance, if a clear majority of the employees moves from one organizational number to another from 1 year to another, it is effectively considered to be the same firm. By applying the same logic, data concerning mergers and spin-offs could thus be derived (SCB 2013, p. 70). In this study, we classified all firms that met “time-to-internationalization” and “international sales percentage” criteria INVs, irrespective of the firm’s origin.

All other dependent and control variables in the model are based on CIS questions. CIS data is collected from participating EU and ESS member states every 2 years in a cooperative exertion between OECD and Eurostat with the purpose of providing information on facets such innovation activities in firms, different innovation types and innovation costs for firms (Eurostat 2008). Fundamentally, the CIS survey since its fourth wave allows for studying business model aspects of INVs as the survey investigates aspects of marketing and organizational innovations. The variables denoting business model innovation in this study bear direct correspondence to CIS queries, with exception of *BMILG* (business model innovation within logistics), which assumes the value of 1 if a firm has introduced an innovation in either product delivery or support systems for logistics with the purpose of saving costs or increasing efficiency.

Finally, the industry classification in this study follows the OECD classification of knowledge-intensive sectors (OECD 2011), which has been incorporated in the revised version of Eurostat's NACE codes for industry classifications. For this study, the NACE codes (Eurostat 2016) were merged into seven new accumulated categories of *high technology*, *medium-high technology*, *medium-low technology*, *low technology*, *high technology services*, *knowledge-intensive services*, and *less knowledge-intensive services*. Firms are classified into categories following Eurostat's procedure which is based on R&D intensity of the firm's economic activities, i.e., the cost of R&D as a ratio of the economic value added yielded by the firm in addition to metrics such as for instance patents, education levels of employees, and venture capital investments (Eurostat 2016). The full classification list is provided in Table 5 in the Appendix.

Table 1 presents definitions, operationalizations, and empirical distributions of independent, dependent, and control variables included in the analysis among all firms in the sample as well as among INVs and non-INVs. Further below, Table 2 reports the correlations among the variables used in the model given the nature of the variables; the table reports tetrachoric correlations between binary variables. Overall, the pattern and magnitude of correlations does not give reasons to suspect multicollinearity to be a concern.

Model specification and results

To test the hypotheses, we specify the probability of a firm innovating a particular BM element as a following baseline logit model (Long 1997):

$$Prob(BMI_i = 1) = \Lambda \left(\alpha_0 + \alpha_1 INV + \sum_{f=2}^7 \alpha_f \times TI_f + \sum_{k=8}^{14} \alpha_k INV \times TI_k + \sum_{m=14}^{19} \alpha_m \times C_m + \varepsilon \right),$$

where Λ designates logistic distribution, BMI_i indicates whether a firm has introduced a particular BM innovation, α_i is model parameter, INV indicates whether a firm has an INV status or not, TI refers to technology intensity level (a total of 6 categories), $INV \times TI_k$ is an interaction term, and C_m is control variable (a total of 5). We estimate the model using the robust cluster variance estimator with errors clustered at two-digit industry code level.

Table 3 presents the estimation results for external relations, sales channels, and logistics. All models are highly significant overall, with p below 0.00. Having INV status has a positive effect on the likelihood of introducing business model innovations within external relations ($\alpha = 0.967$, $p < 0.05$), sales

Table 1 Variable descriptions

Variables	Description	Value	% all	% within INVs	% within non-INVs	Total
INV	1 if a firm is an INV (export sales of 10% or more within 3 years from inception), 0 otherwise	0	82	0	100	1116
BMIFR	1 if a firm introduced new methods of organizing external relations	1	18	100	0	251
BMISC	1 if a firm introduced new sales channels	0	80	75	81	1094
BMILG	1 if a firm introduced new logistical methods or systems of supporting logistics	1	20	25	19	273
Size	Number of employees in 2008	0	87	83	88	1189
Registration year	Average year of firm registration, INVs/non-INVs/overall	1	13	17	12	178
NewFirm	1 if a firm introduced a product new to the firm	0	68	67	68	930
NewMkt	1 if a firm introduced a product new to the market	1	32	33	32	437
Group	1 if a firm is a member of an enterprise group, 0 otherwise	0	37	37	51	47
Knowledge and technology level of the industry a firm operates in	High technology (HT)	0	62	2002	1992	1994
	Medium-high technology (M-HT)	1	38	65	61	847
	Medium-low technology (M-LT)	0	60	35	39	520
	Low technology (LT)	1	40	55	60	813
	High-technology services (HTS)	0	23	45	40	554
	Knowledge-intensive services (KIS)	1	77	22	23	1053
	Less knowledge-intensive services (LKIS)	0	7	78	77	314
		1	24	6	9	94
		0	18	24	27	333
		1	23	18	16	245
		0	6	23	22	312
		1	12	6	5	82
		0	10	13	8	169
		1	9	9	12	132

Table 2 Correlation matrix

	INV	BMIER	BMISC	BMILG	Group	NewMkt	NewFrm	Size	RegYear
INV	1.0000								
BMIER	0.1049	1.0000							
BMISC	0.1479*	0.4360*	1.0000						
BMILG	0.0183	0.4181*	0.3093*	1.0000					
Group	0.0193	0.1068	0.0793	0.1024*	1.0000				
NewMkt	0.0920	0.3718*	0.4661*	0.4343*	0.0393	1.0000			
NewFrm	-0.0532	0.3387*	0.2981*	0.4231*	0.0905	0.4880*	1.0000		
Size	0.0488	0.1147*	0.0532*	0.1471*	0.0964*	0.1477*	0.1398*	1.0000	
RegYear	0.4874*	0.0638*	0.0537*	-0.0051	-0.0299	0.0108	-0.0463	0.0058	1.0000

*Significant at $p < .05$

Tetrachoric correlations are reported for binary variables 1–7

channels ($\alpha = 0.887$, $p < 0.10$), and logistics ($\alpha = 0.743$, $p < 0.05$). INV-industry interaction terms are also significant in all models. Given that INVs within high-technology (HT) industries serve as a reference category, the results suggest that INVs in other industries exhibit either similar or strictly lower propensity to innovate business model elements as compared to high-tech INVs. The only positive coefficient is for HTS \times INV interaction in innovating sales channels ($\alpha = 0.887$); however, the coefficient is not significant ($p > 0.1$).

To ensure robustness of the results and given that the decision to innovate external relationships can be expected to accompany changes either within logistics or sales channels, we specified and estimated two bivariate probit models with dependent variables *BMIER-BMISC* and *BMIER-BMILG* that allows for correlation of cross-equation disturbances and estimated it by following the procedure outlined in Greene (2008). Bivariate probit regression reported in Table 4, yielded the same substantive results as the baseline model regression reported in Table 3, with INV status retaining its positive effect on the likelihood of BM innovation and INVs in other industries exhibiting either similar or lower propensity to innovate business model elements compared to high-tech INVs.

Discussion

This paper set out to examine the INV-specific value capture and value delivery business model innovations, a setting where BMI has been scarcely studied in the form of quantitative inquiries. More specifically, the focus of the study was on innovations accompanied by changes in the relationships with firm's supply and demand side partners and the resulting external relationship handling processes in comparison with other internationalized firms. For conducting this investigation, we developed three hypotheses and all three yielded significant results, showing that INVs do tend to exhibit a higher propensity than other internationalized firms to innovate all the three business model elements considered. As such, our results provide further evidence to INVs being a different breed among internationalized firms and that INVs

Table 3 Estimation results, three elements of the business model innovation

	(1) BMI-external relations	(2) BMI-sales channels	(3) BMI-logistics
Firm size	0.000105 (1.40)	0.0000167 (0.32)	0.000311* (1.97)
Business group membership	0.277* (1.68)	0.241 (1.30)	0.195 (1.24)
New to Mkt	0.832** (6.74)	1.371** (8.85)	0.920** (8.37)
New to Fm	0.686** (3.60)	0.546** (2.99)	0.855** (7.05)
RegYear	0.0232+ (1.86)	0.0177 (1.35)	-0.00374 (-0.28)
M-HT	0.0659 (0.15)	0.548 (1.10)	0.366 (1.56)
M-LT	-0.198 (-0.49)	0.445 (1.03)	-0.0291 (-0.14)
LT	-0.0887 (-0.22)	0.507 (1.12)	0.188 (0.82)
HTS	0.150 (0.34)	0.240 (0.40)	0.411 (1.23)
KIS	-0.340 (-0.78)	0.390 (0.71)	0.397+ (1.66)
LKIS	-0.162 (-0.40)	0.700 (1.22)	0.400+ (1.70)
INV = 1	0.967* (2.09)	0.887+ (1.90)	0.743* (2.02)
M-HT # INV = 1	-1.202* (-2.46)	-1.139+ (-1.88)	-1.169** (-3.23)
M-LT # INV = 1	-0.898 (-1.42)	-1.466* (-2.10)	-0.838 (-1.42)
LT # INV = 1	-1.573** (-3.08)	-0.178 (-0.31)	-0.204 (-0.59)
HTS # INV = 1	-0.895+ (-1.73)	0.206 (0.31)	-0.0109 (-0.02)
KIS # INV = 1	-1.083 (-1.46)	-0.324 (-0.44)	-1.761** (-3.95)
LKIS # INV = 1	-0.210 (-0.38)	-0.750 (-1.49)	-0.647+ (-1.65)
Constant	-48.52* (-1.96)	-38.97 (-1.48)	5.446 (0.20)
Observations	1367	1367	1367
Pseudo R2	0.0840	0.101	0.109
LogL	-624.8	-468.5	-764.8
chi2	578.8	241.7	951.7
df	18	18	18
p	<0.00	<0.00	<0.00

t statistics in parentheses

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$

can be considered more dynamic and innovative in certain aspects, which carries on also beyond their point of international market entry.

In regard to hypothesis H1 that addressed the BMI element of external relationships, the empirical findings supported the hypothesis and we also find that the results are more pronounced in the context of high-technology firms. Hence, INVs in such industries are more likely to utilize the BMI element of organizing external relationships in new ways more than other internationalized firms, which is broadly consistent with the argument by Onetti et al. (2010) on the business model “modus” focus on relationship with other actors for INVs in the high-tech realm. Furthermore, the usage of for instance supplier integration or outsourcing is in line with “alternative governance mechanisms” of Oviatt and McDougall (1994) and extends the evidence established in prior works (Mort and Weerawardena 2006; Sasi and Arenius 2008; Sepulveda and Gabrielsson 2013) that INVs benefit from avoiding staleness (such as depending on a single or a few actors) in their external relationships and take a calculative approach for finding net benefits from their relationships. Our empirical findings here show that surviving INVs tend to find new ways of organizing their relationships, which is in line with this argumentation of how INVs should proactively manage their external relationships. This finding has also been raised as a current issue in the practitioner community in regard to the importance of understanding and managing external relationships for building a viable business model (Strategyzer 2015). It is also broadly consistent with the findings of Abrahamsson et al. (2015) that show how Swedish INVs tend to have a broader range of collaboration partners for innovative, value creating, purposes than other firms.

Our second hypothesis H2, regarding the BMI element of arranging sales channels in new ways, was also supported and again is more pronounced in the context of high-technology firms. Hence, INVs in those industries are more likely to innovate in how they arrange their sales channels compared to other internationalized firms. Even though sales channels as such have been discussed previously in the INV literature, they were not necessarily looked at as a business model element (e.g., Laanti et al. 2007; Gabrielsson and Gabrielsson 2011). The BMI in literature states that business model innovation can for instance be to pivot from brick-and-mortar sales channels offline to online sales channels (Teece 2010; Mezger 2014; Osiyevskyy and Dewald 2014), while high-tech INVs often can start-up in the online realm for quickly establishing an international footprint (Sinkovics et al. 2013) and then may need to build in the other direction, towards offline channels to sustain their presence and grow on international markets. Again, new sales channels are also being congruent with Oviatt and McDougall’s (1994) alternative governance mechanisms of INVs, as sales channels also for instance involve selling through franchising or exclusive rights types of agreements, which is then conversely not consistent with the traditional view of vertically integrated MNEs, a group which of course can be found in the larger group of other internationalized firms in our CIS sample.

Finally, H3, where we hypothesized that INVs are more likely than other internationalized firms to innovate in the business model element of logistics, did produce a significant and positive result. Similar to hypotheses 1 and 2, the effect is more distinct in high-tech industries. It should however be noted that this business model element held a large negative significance regarding knowledge-intensive industries, such as professional services akin to accounting and management consultancy. This can largely be explained by an industry-context in which the importance of cost savings in terms of delivery and distribution and optimizing a supply chain are factors of less importance due to the often-intangible offerings provided in this industry. This

Table 4 Biprobit estimates for equation pairs BMIER-BMISC and BMIER-BMILG

	(1)		(2)	
	BMI-external relations	BMI-sales channels	BMI-external relations	BMI-logistics
Firm size	0.0000673 (1.62)	0.00000574 (0.17)	0.0000646 (1.64)	0.000155* (2.55)
Business group membership	0.164+ (1.80)	0.132 (1.31)	0.168+ (1.85)	0.131 (1.42)
New to Mkt	0.477** (7.09)	0.721** (9.14)	0.482** (7.06)	0.566** (8.73)
New to Frm	0.398** (3.67)	0.315** (3.19)	0.411** (3.82)	0.528** (7.15)
Reg Year	0.0130+ (1.93)	0.0104 (1.56)	0.0133+ (1.93)	-0.00207 (-0.26)
M-HT	0.0526 (0.21)	0.331 (1.18)	0.0386 (0.15)	0.229+ (1.68)
M-LT	-0.127 (-0.54)	0.252 (1.04)	-0.143 (-0.62)	-0.0137 (-0.12)
LT	-0.0273 (-0.12)	0.316 (1.24)	-0.0518 (-0.22)	0.120 (0.90)
HTS	0.113 (0.45)	0.165 (0.49)	0.0906 (0.37)	0.241 (1.21)
KIS	-0.175 (-0.70)	0.231 (0.76)	-0.195 (-0.78)	0.232+ (1.65)
LKIS	-0.104 (-0.43)	0.344 (1.06)	-0.107 (-0.45)	0.245+ (1.80)
INV = 1	0.596* (2.32)	0.480+ (1.79)	0.586* (2.25)	0.466* (2.13)
M-HT # INV = 1	-0.712** (-2.58)	-0.651+ (-1.86)	-0.703* (-2.56)	-0.724** (-3.37)
M-LT # INV = 1	-0.517 (-1.46)	-0.770* (-2.13)	-0.494 (-1.37)	-0.474 (-1.41)
LT # INV = 1	-0.976** (-3.39)	-0.139 (-0.42)	-0.954** (-3.38)	-0.155 (-0.74)
HTS # INV = 1	-0.533+ (-1.90)	0.164 (0.42)	-0.533+ (-1.83)	0.0123 (0.03)
KIS # INV = 1	-0.681+ (-1.66)	-0.165 (-0.39)	-0.667 (-1.64)	-1.059** (-4.08)
LKIS # INV = 1	-0.115 (-0.38)	-0.288 (-1.00)	-0.118 (-0.38)	-0.398+ (-1.68)
Constant	-27.30* (-2.04)	-22.77+ (-1.71)	-27.96* (-2.04)	2.889 (0.18)
Observations	1367		1367	
rho	0.349		0.312	
LogL	-1074.8		-1369.2	

t statistics in parentheses

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$

then in stark contrast to for instance online retailing and the need for “flow-oriented” business models in such industries, as highlighted by Sandberg et al. (2011).

Elements of logistics have been looked at previously in INV research as a factor which potentially drives the internationalization of a venture (Knight and Cavusgil 2004; Altshuler 2012; Trudgen and Freeman 2014). Considering broader business model research, elements and systems of logistics have been singled out in a quantitative study of the US-based retail giant Walmart, as a key element in their business model’s evolution over time (Brea-Solís et al. 2015). An argument can certainly be made the innovation in the business model element of logistics are inter-related with the other elements looked at in this study, where new sales channels might require new logistical models to function and new external relationships might entail reconfigurations of the supply chain, impacting logistics. Sandberg et al. (2011) also note that companies which scale up online retailing efforts are “flow-oriented” and uses logistics-based business models to enhance growth and profitability. Hence, it can be deduced that for instance e-commerce-focused INVs are able to enter and grow on international markets aided by logistics-based business model innovation. Furthermore, our results jointly suggest that both sales channels and logistics tend to have its most pronounced “INV effect” in high-tech industries overall, as previously noted and in line with firms operating in for instance e-commerce and sales of high-tech goods. However, it is important to note that the industry effects also show that INVs indeed can be found in all sectors, and that the need to pursue business model innovation is not exclusive to INVs only, but to all firms that compete on the global marketplace. Yet, due to INVs capacity for “unlearning” (Autio et al. 2000), the internal barriers for business model innovation might be lower compared to older and more established global actors.

Additionally, while looking at the correlation between the variables in the study as well as the robustness check (Table 4), one can see the connection between innovation in external relationships and innovation in sales channels and logistics respectively. As theorized in this study, one can then see results pointing towards that INVs are relying heavily on external actors and thus alternative governance mechanisms in regard to their sales channels and logistical methods.

To summarize, we found support that INVs, particularly in high-tech and knowledge-intensive industries, are being more likely to innovate BMI elements of new ways of organizing external relationship, logistics, and sales channels than other internationalized firms with global presence. We pinpoint three BMI elements that affect the overarching business model dimensions of value delivery and capture, which contrast INVs from other internationalized firms. These findings serve as a response to calls for research to explain INV behavior and sustainability on international markets beyond their early international entry (e.g., Hagen and Zucchella 2014; Hagen et al. 2014; Zander et al. 2015).

Conclusions and implications

This study has established that INVs do behave differently than other internationalized firms in regard to their BMI behavior in the dimensions of value capture and delivery, particularly in the high-technology intensive industries—although INVs are not exclusive to high-tech industries, which this study as well as others have shown (e.g., Spence et al. 2011).

The business model elements of reorganizing external relationships, new logistics methods, and arranging sales channels are arguably crucial for high-tech INVs looking for

new ways of delivering and capturing value based on their often (Knight and Cavusgil 2004) innovative product output in highly competitive international markets. Thus, competing by the usage of business model innovation is largely consistent with, updated to a contemporary business context, Oviatt and McDougall's (1994) notion of "alternative governance mechanisms" as a way for INVs to compete on international markets. Put differently, INVs are more likely to shake up their overall external relationships, seek out new sales channels for their output, venturing into new methods for logistics to cut costs, and increase efficiency. We also show that this is not only a trait of young INVs, but rather something the firms that start as INVs are able to sustain over time up to at least 8 years of international activity available in our data. As the question of how long an INV remains an INV has been brought in the research limelight (Coviello 2015), this study addresses the question by noting that INV-specific behavior, in this case BMI utilization compared to other internationalized firms, is significant for beyond inception and early internationalization.

Thus, this study contributes with new empirical findings to the emerging debate of the importance of business models of INVs (e.g., Dunford et al. 2010; Hennart 2014) as well as to how INVs develop beyond the stage of initial international market entry (e.g., Hagen and Zucchella 2014; Hagen et al. 2014; Zander et al. 2015). This study merges these perspectives in a sense and carries on the torch from Hennart's (2014) study, which argues that an internationally scalable business model allows INVs to emerge initially. We extend that important contribution to the literature by showing that INVs do engage in business model innovation over time, after their initial international emergence and thus utilize BMI elements to remain internationally competitive. Our study also shows that INVs are a distinct type of firms in behavioral terms, namely business model innovation behavior. Thus, this study contributes to the debate of INV development beyond early international market entry by bringing in the BMI perspective into a longitudinal quantitative research setting and identifies certain business model innovation elements that separate surviving INVs from other internationalized firms over time.

Furthermore, this study also highlights results pointing in the direction of "alternate governance mechanisms" being a central concept for INVs, as there is a strong correlation between innovation in external relationships and sales channels and logistics respectively. In line with theoretically purposed in this study, it seems that INVs are relying heavily on external actors in their business model, especially pronounced here in terms of INVs delivery and capturing of value.

From a managerial perspective, we highlight the importance of managing relationships dynamically for INVs as well as not getting locked into certain sales channels or logistical modes of operation which may ultimately impair international growth. As the once early-stage INV emerges and grows on international markets, new types of relationships, logistical methods, and sales channels might be necessary for facilitating the process, as the previous ones may not be conducive for further growth. As maturing INVs, through organizational learning (Pellegrino and McNaughton 2015), gain a better market understanding of how to create value and design its value proposition to solve customer pains across international markets, other business model challenges, regarding value delivery and capturing more of the created value back to the focal INV, becomes more prominent and prompt changes.

Such changes might entail outsourcing certain activities outside of core competencies, experimenting with moving from an online only to an offline presence as well or vice versa or licensing the product in different ways on new markets. Taken together, this means that the

business model of an INV needs to be innovated continuously, as the transferability of a business model of an INV into new products or services is considered limited (Zander et al. 2015).

Limitations and further research

As our study based on the so-called small and open economy of Sweden, it would of course be of interest to see the study transferred to a different context. For instance, one where the home market might play a bigger role, such as the USA or China. Cross-country comparisons would also be of interest. Other business model elements than the ones provided in this study could doubtlessly also be highly relevant for future quantitative studies on the topic.

Further research could pursue a more in-depth exploration of how INVs navigate through new external relationships, sales channels and logistics, and design of new business models in relation to external actors of importance to the firm. This can be accomplished through qualitative case studies. More specifically, qualitative studies can display in detail how collaborations between INVs and larger international actors evolve and how mutually beneficial business models might be created. Who is in control of the business model and how are the actors shaping the business ecosystems they are both part of?

Finally, additional variables and with better measurement properties can be considered in the further development of the research model. It could, for example, be of interest to examine how variables such as asset-based and size impact and moderate the business model innovativeness of INVs. An example of such effects is provided by Kim and Min (2015) who present the concept of conflicting assets, where an incumbent firm that has already made investments in an asset-based aligned with a certain business model and innovating that business model would put the existing assets in a potential conflict with the new business model.

Appendix

Table 5 Merged industry categories

Merged industry category in the study	Included industries at the 3-digit NACE level
High technology	<ul style="list-style-type: none"> “Manufacture of basic pharmaceutical products and pharmaceutical preparations,” “Manufacture of computer, electronic, and optical products” “Manufacture of air and spacecraft and related machinery.”
Medium-high technology	<ul style="list-style-type: none"> “Manufacture of chemicals and chemical products” “Manufacture of weapons and ammunition” “Manufacture of electrical equipment, machinery, motor vehicles, trailers, and semi-trailers” “Manufacture of other transport equipment” “Manufacture of medical and dental instruments and supplies”
Medium-low technology	<ul style="list-style-type: none"> “Reproduction of recorded media” “Manufacture of coke and refined petroleum products” “Manufacture of rubber and plastic products” “Manufacture of other non-metallic mineral products” “Manufacture of basic metals”

Table 5 (continued)

Merged industry category in the study	Included industries at the 3-digit NACE level
Low technology	<p>“Manufacture of fabricated metal products, except machinery and equipment”</p> <p>“Manufacture of food products, beverages, tobacco products, textiles, wearing apparel, leather and related products, wood and products of wood, paper and paper products, printing of recorded media”</p> <p>“Manufacture of furniture, other manufacturing”</p>
High technology services	<p>“Motion picture, video and television program production, sound recording, and music publishing activities”</p> <p>“Programming and broadcasting activities”</p> <p>“Telecommunications, computer programming, consultancy, and related activities”</p> <p>“Information service activities”</p> <p>“Scientific research and development”</p>
Knowledge-intensive services	<p>“Water transport, air transport”</p> <p>“Legal and accounting activities, activities of head office, management consultancy activities”</p> <p>“Architectural and engineering activities, technical testing, and analysis”</p> <p>“Advertising and market research, other professional, scientific, and technical activities”</p> <p>“Employment activities”</p> <p>“Security and investigation activities”</p>
Less knowledge-intensive services	<p>“Wholesale and retail trade”</p> <p>“Land transport and transport via pipelines”</p> <p>“Warehousing and support activities for transportation”</p> <p>“Accommodation and food service activities”</p> <p>“Real estate activities”</p> <p>“Rental and leasing activities”</p> <p>“Travel agency and related services”</p> <p>“Service to buildings and landscape activities”</p> <p>“Office administrative, office support, and other business support activities”</p> <p>“Repair of computers, personal, and household goods”</p>

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