Examining Nascent Entrepreneurs International Orientation as an Extension of their Innovation Activities

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Abstract

This study examines the effect of innovation on international orientation of nascent entrepreneurs. Four dimensions of innovation (patent, R&D spending, technology and expertise and new products or services) are explored. Personality variables of the nascent entrepreneurs are used to emphasize the role of the nascent entrepreneur (NE) as the unique player enabling these motivating variables. Preliminary results suggest that the combination of product innovation, process innovation and scientific expertise appear to predict the international orientation from an early stage of the business formation.

Method

Data are obtained from the National Panel Study of Entrepreneurial Dynamics (PSED I) database. The PSED provides an extensive database on nascent entrepreneurs. Focusing on global nascent entrepreneurs, we aim to offer some insights on the early process of internationalization decision-making.

Introduction

For decades, new-ventures started in the U.S. have not had a very strong reason to pursue internationalization because of the large size of the U.S. and North American markets and the absence of strong government support (Manolova. Brush, and Edelman. 2002; Bloodgood, Sapienza, and Almeida, 1996). Changes in the global political and economic conditions, however, as well as the recent evolution and affordability of international communications and transportation have encouraged U.S. based new-ventures to play more active role in the global market. Moreover, this interest may form at an early stage of their existence. Extant research suggests that new-ventures' pursuit of internationalization from or near inception of the business creation is becoming more and more common (Knight and Cavusgil, 2004, 1996; Oviatt and McDougall, 1994; Rennie, 1993). Indeed, this may challenge the conventional wisdom where firms are believed to internationalize gradually, first by gaining substantial experience in the domestic market, and then by exploring the physically closest foreign market (Isenberg, 2008; Johanson and Vahlne, 1977, 1990; Johanson and Wiedersheim-Paul, 1975).

The emergence in the last decade of international entrepreneurship (IE) as a distinctive field with a focus on studying entrepreneurship behavior cross national borders, offers some insight into a new conception of internationalization. To describe this phenomenon of early internationalization, IE literature uses different labels somewhat interchangeably: born globals (Madsen and Servais, 1997); international new ventures (Oviatt and McDougall, 1994), and knowledge-intensive firms (Jones, 1999; Bell, 1995).

Most research in the IE field has focused on established new-ventures to study the characteristics of early and accelerated internationalization (Knight and Cavusgil, 2004; McDougall, Shane, and Oviatt, 1994; Jolly et al., 1992). Innovation has been emphasized as a decisive factor in early internationalization (Knight and Cavusgil, 2004) and international new-ventures in particular have been identified in dynamic and technology-intensive sectors (Oviatt and McDougall, 1994; Zahra, Ireland, and Hitt, 2000). Although, Oviatt and McDougall (1997) argue that when internationalization occurs within the first six years, it happens during the creation phase, very little is known about the decision of internationalization during the gestation process and what ingredients of innovation drives this early internationalization.

In this paper, a particular attention is given to international nascent entrepreneurs (NE) and how their innovative capacity including their innovative decision style impacts the early internationalization decision. Examination of the process of internationalization has been more focused on small firm's demographic and managerial characteristics. Although, a number of research studies examining early or accelerated internationalization have been conducted in the context of high-technology firms, the impact of innovation on this process is still unclear.

This paper seeks to extend and inform the IE literature by exploring the phenomenon of early internationalization at the creation phase of the business. In particular, using data from the Panel Study of Entrepreneurial Dynamics (PSED), we examine how nascent entrepreneurs leverage different dimensions of innovation to drive early internationalization. We argue that international orientation of nascent entrepreneurs is stimulated by a set of four dimensions of innovation: patent registration, R&D spending, technology and expertise, and new products or services. Our primary research question focuses on whether or not these dimensions when combined with the overall innovative decision styles of nascent entrepreneurs enhance the international orientation.

After reviewing literature on internationalization entrepreneurship, hypotheses are presented and tested on a sample (N=141) of nascent entrepreneurs with international orientation. Method and results are discussed, and finally, suggestions for future research are provided.

Theoretical Background and Hypotheses Development

Early Internationalization

Jones and Coviello (2005) describe the early internationalization as "rapid process of international expansion from inception, using a range of market entry modes in multiple markets." Earlier studies suggest that internationalization can only be achieved through a gradual process based on market knowledge acquisition (Johanson and Vahlne, 1977). This learning process reduces the ambiguity associated with foreign involvement and allows firms to commit more resources to foreign markets.

As firms gain knowledge, they incrementally develop their internationalization, first, by serving psychologically closer countries, then, by targeting more distant markets.

Recently, however, the IE literature has challenged traditional theories to explain the early internationalization phenomenon observed among new-ventures (Rennie, 1993; Oviatt and McDougall, 1994; Moen and Servais, 2002). Isenberg (2008) suggests that companies are being born global as political and economic barriers fall and the ease of access to knowledge in the information age becomes more prevalent. Increasing attention has been dedicated to understanding what drives this early internationalization (e.g., Zucchella and Denicolai, 2007) and how new-ventures succeed in doing so (e.g., Bloodgood, et al., 1996; Knight and Cavusgil, 2004). Rialp-Criado, Galvan-Sanchez and. Suarez-Ortega. (2010) present a comprehensive literature review of early internationalization and circumstances of the rapid development of international new-ventures. The global vision of the entrepreneur, innovative product or service and a strong network are important resources enabling the early and rapid internationalization process (McDougall, Shane and Oviatt 1994). Other studies suggest that international and non-international new-ventures are different in terms of the entrepreneur's perception, demographic characteristics and international business skills (Manolova, et al., 2002). Overall, the literature on international entrepreneurship suggests that international new-ventures are formed by innovative, proactive and risk seeker entrepreneurs (Oviatt and McDougall, 2000). Yet, empirical research studying antecedents of the early internationalization is still limited and largely based on case studies. Little is known about the role of these factors in the critical early stage of business formation, especially with regard to how innovative entrepreneurs adopt an international orientation.

Innovation and International Orientation

Luecke and Katz (2003) define innovation as "the embodiment, combination, or synthesis of knowledge in original, relevant, valued new products, processes, or services," and insist on the value created by the new idea. Innovation is not always technological, it can also be non-technological. However, in both cases, it should create an economic value. Slappendel (1996) argues that the concept of newness is fundamental in the definition of innovation. This newness concept is especially important to understanding the link between innovation and entrepreneurship. (Johannessen, Olaisen, and Olsen, 2001)

In fact, innovation is frequently associated with entrepreneurship. Schumpeter (1942) described the entrepreneur as a radical innovator who transform his environment and drive sustainable economic growth. More recent research considers innovation as a fundamental component of entrepreneurship (Lumpkin and Dess, 1996; Covin and Miles, 1999). Shane and Venkataraman (2000) describe the field of entrepreneurship as a way to understand, "how opportunities to bring into existence future goods and services are discovered, evaluated and exploited, by whom and with what consequences." In this definition, entrepreneurship cannot subsist without innovation. However, evidence from other research indicates that nascent entrepreneurs or people who are most likely to establish a new business are not necessarily highly innovative (Diochon, Menzies and Gasse, 2005). These conflicting results about the role of innovation in stimulating business creation suggest the need for additional research to rethink the validity of the conventional wisdom in the context of nascent entrepreneurs. Further-

more, when combined with the fact that little is known about the impact of innovation in the international orientation of nascent entrepreneurs, we suggest that further exploration is needed.

A fundamental premise of our study is that the innovative decision style of the entrepreneurs combined with his or her capability to produce innovative outputs is an important determinant of early international orientation. While some studies report an insignificant impact of innovation on export success (Lefebvre et al., 1998), most research finds a positive relationship between innovation and export decision. De Toni and Nassimbeni (2001), for example, show that the export propensity is strictly linked to the ability to innovate products and not necessary to innovate processes. Studies in the field of international entrepreneurship seem to confirm a positive relationship between knowledge-intensity and international growth orientation (Yli-Renko, Autio, and Tontti, 2002; Nummela, Puumalainen, and Saarenketo, 2005). In the particular case of international nascent entrepreneurs, Rialp-Criado et al. (2010) argue that in this pre-start-up phase, the entrepreneur intuition, innovation capabilities and past experience are important to shape his international strategy.

Innovation Dimensions

O'Cass and Weerawardena (2009) examine the impact of technological and non-technological innovation on the achievement of higher market performance. They conclude that small ventures that enter international market undertake both technological and non technological innovation, which in turn enables them to gain positional advantages. Having superior innovative capacities allow firms to create value in the products or services (Kim and Mauborgne, 1997) they offer to different markets. In this study we focus specifically on the role of technological innovation and non-technological innovation determined by the innovative style of the entrepreneur.

Radical Innovation

Though international entrepreneurship literature affirms the undeniable role of innovation, very few empirical studies specify the impact of the degree of radicalness on the early internationalization or international orientation. The literature distinguishes between radical innovation, which is considered as new products or processes to those available in the market-place, and incremental innovation, which is an improvement of technology already existing in products or processes (Jones-Evans and Steward, 1991). Chandy and Tellis (1998) argue that firms that introduce radical innovations are small new entrants into the market. Nassimbeni, (2001) notes that within small businesses, product innovation most frequently takes the form of incremental adaptation or modification of product material, design, and functionality rather than a radical change. Chandy and Tellis (2000) report that, after the 1950s, U.S. innovations tend to come from large firms and incumbents and less from small firms. Generally, entrepreneurs do not have the commercial and financial resources needed to introduce a radical innovation into foreign market soon after the business foundation. Thus, we propose that radical innovation will not be a predicator of the international orientation.

H1: Nascent entrepreneurs who have major innovative product or service are less likely to have an international orientation.

Types of Innovation

While the body of research studying the role of innovation on the international orientation of nascent entrepreneurs is relatively small, recent results on the relationship between innovation and the export propensity of firms are inconsistent. For example Caldera (2009) concludes that product and process innovation both enhance the export propensity, even thought product innovation has a higher impact. In contrast, other researchers find that only product innovation drives the firms' internationalization (Cassiman and Martinez-Ros, 2007; Becker and Egger, 2007). Using the introduction of new products as a measure of innovation, Wakelin (1998) finds a positive impact of innovation on exports. Van-Beveren and Vandenbussche (2010) suggest that the decision to export is stimulated by a combination of product and process innovation. In this study, we believe that the international orientation of nascent entrepreneurs is affected by the combination of product and process innovation as well as the possession of technical or scientific expertise.

H2: Nascent entrepreneurs who rely on a combination of product innovation, process innovation and scientific expertise to face competition are more likely to have greater international orientation.

R&D and Patent

R&D expenditure and patents have been used somewhat interchangeably to measure innovative activity within firms. Examining the relation between the R&D expenditure and propensity to export, Hirsch and Bijaoui (1985) conclude that firms' investment in R&D is positively linked to their likelihood to export. Innovation activity and R&D intensity have been found to impact to a great extent the international competitiveness (Ozcelik and Taymaz, 2001) and to help overcoming barriers to internationalization (Harris and Li, 2006). Even though evidence for smaller firms is much more limited, some studies have shown that there are substantial numbers of micro-firms using patents (Helmers and Rogers, 2009) and that small firms produce more innovations per employee than large firms (Tether, 1998). According to Bloodgood, et al. (1996), new-ventures exploit new product or technology to build market share across the world that they attempt to safeguard by establishing patent rights across geographical markets. Entrepreneurs who effectively protect their technologies from competition are more likely to succeed in launching their new firms (Shane, 2001). Patents are an effective legal protection to prevent imitation allowing the new firm to compete on the basis of differentiation rather than on the basis of costs. Consequently, nascent entrepreneurs who are in the process of patenting and who expect to invest in R&D are more prepared to face the global competition. These arguments lead to the following hypotheses:

H3: Nascent entrepreneurs who apply for a patent, copyright or trademark are more likely to have greater international orientation.

H4: Nascent entrepreneurs who expect a major investment in R&D are more likely to have greater international orientation.

Entrepreneurs' Characteristics

Oviatt and McDougall, (2000) emphasized the entrepreneurs' characteristics as key factors in the early internationalization. In a review of 46 conceptual and empirical studies, Leonidou, Katsikeas, and Piercy (1998) conclude that entrepreneur or manager characteristics play a stronger role in initiating export sales where there is a need for risk-taking, and innovative and flexible management. While some research has taken into account the entrepreneur's knowledge and experience (Madsen and Servais, 1997; Bloodgood et al., 1996) as antecedents of early internationalization, other has considered a combination of background and personality characteristics (Khayat and Matthews, 2010). This study focuses on the innovative decision style of the nascent entrepreneur, as well as age and risk attitude.

Decision Making Style

Kirton (1976) suggests that there are two different styles of decision making, innovators versus adaptors. Adaptors tend to rely on exciting solution or technologies in their decision-making. They are characterized by their precision, reliability, prudence and by conforming to the method and discipline. Adaptors are concerned with resolving problems rather than finding them. By contrast, innovators break patterns of accepted modes of thought and action and use creative arrangement and procedures to make a decision. They are problem and solution finders; forward-looking; and tend to challenge traditional situations. LaMont, Danis and Dollinger (2008) found that innovators nascent entrepreneurs, in general, have greater growth expectations for their firms than adaptors. Moreover, several studies have supported the positive relationship between CEOs' openness to innovation and adoption of innovative practices (Daellenbach et al., 1999; Souitaris, 2001). Cavusgil (1980) argues that export behavior is an innovation adoption process since it involves a new process of decision making and information gathering. Thus, we expect global nascent entrepreneurs to have innovative decision-making style.

H5: Nascent entrepreneurs who have innovative decision-making style are more likely to have stronger international orientation.

Risk Attitude

Risk attitude of international entrepreneurs has been argued to be an important determinant of internationalization (Johanson and Vahlne, 1977). The influence of the positive attitude of entrepreneurs on the initiation of international operations has been strongly supported in the literature (Axinn, 1988; Gupta and Govindarajan, 1984). Halikias and Panayotopoulou (2003) found risk attitude to be a distinguishing feature between born global (INV) and traditional firms. However, other authors do not agree that risk propensity is driving factor to successful international ventures (Moini, 1995; Jaffe et al. 1988). Based on the fact that export activity involves a special risk, we support that the positive attitude of nascent entrepreneurs toward risk will influence their export intention.

H6: Nascent entrepreneurs who have greater risk taking attitude will have stronger international orientation.

High-Tech Industry

Though international entrepreneurship literature has identified international new-ventures in some traditional mature industries (McAuley, 1999), most ventures with early and accelerated internationalization are found to operate in high-tech industry (e.g., Madsen and Servais, 1997; Knight and Cavusgil, 1996). Preece, et al. (1999) explain that high-tech ventures have more incentives to internationalize rapidly because of their narrow niche market, specialization and high R&D costs. In order to support the expenses associated with the nature of their activity, they need to target simultaneously markets all around the globe. Bell, McNaughton, Young, and Crick (2003) argue that firms in the high-tech industry have more proactive approach and often target difficult markets. In consistence with these studies, we expect that new ventures in high-technology business will influence nascent entrepreneurs' choice to go global.

H7: Nascent entrepreneurs who expect to have a high-tech business will have strong international orientation.

Research Design

Sample Selection and Data Collection Procedure

This study uses data from the Entrepreneurship Research Consortium Panel Study of Entrepreneurial Dynamics I (ERC/PSED I), a national panel study of nascent business entrepreneurs. Data in the ERC/PSED were collected from 830 randomly selected nascent business entrepreneurs. Both telephone interview and mail surveys methods were used. The survey took place from 1998 to 2003. Reynolds (2000) provides a detailed description of this database's development and content. To identity nascent entrepreneurs, they were asked the following question during the initial telephone screening interview: "Are you, alone or with others, now trying to start a new business?" Respondents who answered "yes" were then asked if they were willing to participate in more extensive investigation. Over 780 nascent entrepreneurs went on to complete the phone and mail portions of the survey. Of 559 nascent entrepreneurs who completed the question on international orientation, 142 answered questions related to their personal characteristics and innovation activities.

Variables and Measure

Dependent variable: International orientation

To measure the international orientation of nascent entrepreneurs, we use the percentage of expected international customers. Nascent entrepreneurs were asked: "Within the first three to four years, what percentage of your customers do you expect to be international, that is, outside the United States?" We believe that using a quantitative variable to measure the international orientation will provide more information about nascent entrepreneurs' involvement in international activities. This measure also captures varieties of entry modes and does not only focus on export.

Explanatory variables

Table I describes the explanatory variables and items related to each variable. As shown in Table I, the following item is used to capture nascent entrepreneurs' risk attitude: "I enjoy the challenge of situations that many consider 'risky'." The response scale was anchored by completely true (5) to completely untrue (1). Items in the scale were coded again into dichotomous variables. Because of the high level of correlation between the five items, we chose the "Mostly untrue" item to estimate the impact of risk on the model. A negative coefficient is then expected, in that, high negative score will imply a greater degree of risk preference.

Nascent entrepreneurs' age as a control variable:

Research on nascent entrepreneurs has used age as a control variable (Honig, Davidsson and Karlsson, 2005). Moreover, studies found a negative association between the manager's age and export intention, propensity, and/or intensity (Suarez-Ortega and Alamo-Vera, 2005; Jaffe et al., 1988; Reid, 1981). Younger entrepreneurs tend to be more cosmopolitan and global minded than the older ones. We expect a negative relationship between nascent entrepreneurs' age and their international orientation.

Results and Discussion

Table II provides the descriptive statistics and correlation matrix for the explanatory variables used in the multiple regression. The table shows four correlations statistically significant at (p<0.05) and (p<0.01): a-correlation between technology and expertise variable and R&D expenditure (r=0.255); b-correlation between high-tech industry and technology and expertise variable (r=0.393); c- correlation between R&D expenditure and patent (r=0.220) and d-correlation between high-tech industry and R&D expenditure (r=0.197). Because of the high degree of correlation, four models were specified using each of these correlated variables at a time, in addition to one model with interaction term between the possession of new product, process or expertise and processing of patent.

Table III reports results of the regression analysis of nascent entrepreneurs' international orientation on the innovation, entrepreneur and high-tech industry variable as well as on the control variable (age). All five models are statistically significant with an R^2 ranging from 0.09-0.19.

As expected the control variable (age) has a negative impact on the international orientation of nascent entrepreneurs. Younger NEs are more likely to go global. Indeed, born-global entrepreneurs are young and active (Luostarinen and Gabrielsson, 2002).

The first hypothesis (H1) states that nascent entrepreneurs who have major innovative product or service are less likely to have an international orientation from the early stage of business formation. Models (3) and (4) show that the relationship between NEs' international orientation and product or service radicalness is statistically not significant. This finding suggests that radical innovation may not be considered in the determination of NE's international orientation. New-ventures with radical innovation may not stay small by the time they commercialize their innovation at the international level. Highly innovative pharmaceutical start-ups for example are continuously absorbed into larger multinationals (Acs, Morck, Shaver and Yeung, 1997).

TABLE I
Description of the Explanatory Variables

	Variables	Item	Description
Personality variables	Decision Style	Q327 (recoded)	If someone asked you which kind of person you are, would you say that you preferred "doing things better" or "doing things differently?" 1. Doing things better 2. Doing things differently 3. Both
	Risk 1	QL1Q	The following statements can be used to describe most people. How accurately would they describe you? I enjoy the challenge of situations that many consider "risky" 1- Completely untrue 2. Mostly untrue 3. It depends 4. Mostly true 5. Completely true
Technology variables	Patent	Q124	Has an application for a patent, copyright or trademark relevant to this new business been submitted?
	R&D spending	Q300	Will spending money on research and development be a major priority for this new business?
	Technology and expertise	mean(Q302e, Q302f, Q302g)	Please indicate if the following are insignificant, marginal, important, or critical for the new firm to be an effective competitor? 1-New or advanced product technology 2- New or advanced process technology 3- Technical or scientific expertise
	Products and services radicalness	Q299	Were the products and services to be provided by your new business available in the market place 5 years ago?
High-tech industry	High-tech	Q301 (recoded)	Would you consider this new business to be hi-tech?

TABLE II	Correlation of independent variables (N=142)								
	Mean	SD	1	2	3	4	5	6	7
1-Age of NE	40.49	10.65							
2-R&D spending	0.29	0.45	0.0157						
			0.8527						
3-Radical innovation	0.38	0.48	0.0426	0.0401					
			0.6144	0.6357					
4-Technology and expertise	2.48	0.9	0.07	0.2559*	0.1039				
			0.4078	0.0021	0.2183				
5-Hi-Tech business	0.33	0.47	-0.0966	0.1974*	0.0095	0.3930*			
			0.253	0.0185	0.9108	0.0001			
6-Patent	0.25	0.43	-0.0673	0.2205*	-0.0028	0.0311	0.0206		
			0.4262	0.0084	0.9737	0.7132	0.8074		
7-Adaptation/innovation	0.33	0.47	-0.1247	0.1198	0.0576	0.0986	0.0883	0.0914	
Decision style			0.1394	0.1555	0.4957	0.243	0.296	0.2791	
8-Risk attitude	0.13	0.34	-0.0171	-0.0442	-0.0284	-0.0397	-0.0442	-0.1533	
			0.8403	0.6017	0.7372	0.6394	0.6017	0.0686	

TABLE III
Multiple Regression Analysis of the International Orientation of Nascent Entrepreneurs (N=142)

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept term	5.145†	6.225*	9.160**	6.314*	6.288†
1-Age of NE	-0.136*	-0.150*	-0.191**	-0.160*	-0.192**
2-R&D spending			2.923*		
3-Major innovation			0.981	0.978	
4-Technology and expertise					1.934*
5-High-tech business	3.393**	3.724*		3.140*	
6-Patent	4.846**	5.427***			
7-Adaptation/Innovation Decision style	3.457*				
8-Risk attitude	-2.304		-2.960	-1.498	-2.993
Interaction term 4*6				2.280***	
R^2	0.19	0.15	0.09	0.19	0.09
F	6.54***	8.63***	3.40*	6.38***	4.85**
Mean VIF	1.03	1.02	1.01	1.04	1.00

*** Significant at 0.001 **Significant at 0.01 *Significant at 0.05 †Significant at 0.1

The second hypothesis (H2), regarding the impact of NEs' technology and expertise on their international orientation, is strongly supported. The combination of product innovation, process innovation and scientific expertise appear to predict the international orientation. While previous research focuses on the importance of product innovation as a determinant of internationalization (Cassiman and Martinez-Ros, 2007), the present study suggests that NEs who combine product and process innovations, and possess a scientific skills or expertise are more likely to have an international orientation. However, Table IV presenting the regression model of the international orientation on each of these categories separately shows that product innovation and scientific expertise have the highest impact.

Patent and R&D expenditure are used to measure the importance of innovation in the activities of new ventures. Hypothesis 3 suggests that nascent entrepreneurs who applied for a patent, copyright or

trademark are more likely to have greater international orientation. The same way, hypothesis 4 advocates the importance of R&D expenditure in stimulating the international orientation of NEs. Both hypotheses are strongly supported. Substantial involvement of new ventures in protected innovative activity is a strong predictor of NEs' international orientation.

Considering the influence of NEs characteristics on the international orientation, model 1 (Table 1) confirms a positive relationship between the innovative decision style of NEs and their international orientation. It shows a strong significant effect ($p<0.05$) with a positive coefficient (3.45). NEs with innovative decision styles break with the traditional way of doing business local to include the global market in their first business plan.

Hypothesis 6, suggesting that nascent entrepreneurs who have greater risk taking attitude will have stronger international orientation is not confirmed throughout all models (Table II). Risk taking attitude seems to be less significant when NE possesses high innovative skills. According to Liao and Welsch (2008) technology-based nascent entrepreneurs rely greatly on their technically advanced products and believe that they would "sell themselves."

With regard to NEs positioning in a high-tech industry and its impact on the international orientation (hypothesis 7), models (1, 2 and 4) show a strong positive relationship ($p<0.001$). This confirms research in international entrepreneurship claiming high-tech industry as a driver of early internationalization (Madsen and Servais, 1997; Knight and Cavusgil, 1996; Bell, 1995). As shown in Table III, the impact of the interaction term on NEs' international orientation is tested. The joint effect of possessing a combination of product, process technology and expertise and protecting them with a patent is strongly significant ($p<0.001$). Thus, NEs with innovative product, process and scientific expertise who are in the process of patenting their innovations, are more likely to go global than those who possess technology and expertise but are not trying to protect them. This confirms the importance of protecting technologies from competition as a determinant of successful entrepreneurs (Shane, 2001).

TABLE IV

Multiple Regression Analysis of Technology and Expertise (N=126)

Variables	**Model 6**	**Model 7**
Intercept term	10.54***	11.084***
Age of NE	-0.228**	-0.232**
Product innovation	4.713*	
Processes innovation		1.173
Expertise	3.697†	4.290*
R^2	0.12	0.09
F	5.76***	4.28**

In post-hoc analysis, we examined the impact of innovation on the local nascent entrepreneurs to reinforce our hypotheses on the role of innovation in the international orientation of NE (see Table IV). Model 9 (Table IV) shows that R&D expenditure impact negatively NEs who intend to do business locally. This means that innovation is not a predictor of local market orientation. Moreover, model 8 (Table IV) suggests that innovative decision style is not a characteristic of local NEs since it is negatively correlated with local market orientation. Local NEs possess adaptive decision style.

TABLE V
Multiple Regression Analysis of Local Nascent Entrepreneurs (N=212)

Variables	**Model 8**	**Model 9**
Intercept term	72.760***	67.262***
1-Age of NE	-0.178	-0.117
2-R&D spending		-14.89**
3-Major innovation		2.280
4-Technology and expertise		
5-High-tech business	-2.190	
6-Patent	-6.901	
7-Adaptation/Innovation Decision style	-10.34*	
8-Risk attitude	16.336*	17.186**
R^2	0.06	0.07
F	3.00*	4.35**
Mean VIF	1.03	1.01

Conclusion

In this study we focused specifically on the role of technological innovation and innovative style of the entrepreneur in determining the international orientation of new-ventures. Using a broad sample (N=142) of nascent entrepreneurs, we sought to understand what components of innovation determine NEs international orientation. The impact of innovative style and risk attitude of NEs as well as high-tech industry on the international orientation were tested. Few empirical studies in the field of international entrepreneurship have examined the role of innovation in the explanation of early internationa-

lization decision of NEs. Thus, this paper contributes to advance our knowledge of the early internationalization decision by selecting different dimensions to assess the role of innovation. An explanation is provided of why some entrepreneurs are oriented toward the international market at an early stage of the business formation.

A majority of the studies have used R&D expenditure as a proxy of innovation and as a basis to distinguish between innovator and non-innovators (e.g., Bloodgood, et al., 1996). In this study, four measures are chosen as proxies of innovation: Patent, R&D expenditure, technology and expertise, and new products or services. Each of these variables captures a different dimension of innovation and provides additional information about the importance of innovation in explaining the international orientation of NEs. Results show that NEs who expect to invest in R&D and are in the process of patenting an innovation are more likely to be oriented toward the international market. Moreover, the possession of innovative products, scientific expertise or a combination predicts the international orientation of NEs. However, process innovation as well as radical innovation does not appear to impact the early internationalization decision. This finding is consistent with Becker and Egger's (2007) study that confirms the importance of product innovation more than process innovation as a determinant of the exporting behavior.

Nascent entrepreneur's characteristics are used to emphasize his or her role as unique player and catalyst in transforming innovation into action and making decisions. We used age, risk attitude and decision style as three variables that would impact on the internationalization orientation taking into account the technological context of NEs. As we expected, results shows that younger NEs with innovative decision styles are more likely to choose the internationalization from an early stage of their business creation. However, positive attitude toward risk appears to be non-significant when tested with innovation variables. This suggests that ambiguity and uncertainty related to the internationalization that usually increase the necessity of risk-taking attitude may become less important when NEs possess a technology or scientific expertise. Technology based NEs may feel more confident and may relay completely on their innovations without questioning the risk related to the internationalization.

Overall, these results support that NEs' international orientation is a combination of their innovative activities and decision styles. Investment in R&D is no more the domain of larger firms; rather it is becoming a determinant of NEs' internationalization - namely, NEs who have predisposition to make novel decisions.

This study provides some potential insight for government organizations to encourage innovation activities from an early stage of business creation and to promote new-ventures internationalization. It is apparent in this study that stimulation of the international orientation depends on entrepreneurs who are more open to new decision and have innovative products and scientific expertise. Thus, providing support to innovative NEs may be necessary to help them select international market and cope with the global competition. Results presented in this study support the notion that young entrepreneurs are thinking across borders (often from the very start), and that to support nascent entrepreneurial development, governments need to create an ecosystem that supports and sustains entrepreneurs (Isenberg, 2008 and 2010).

The paper has a number of potential limitations that may be addressed by future research. First, while we employed different measures of innovation, these measures were highly correlated and could not be aggregated in a single full model. Research may extend our finding by considering additional con-

tributing variables to the model and selecting a unique measure of innovation to avoid redundancy. Second, although the PSED database provides a longitudinal survey, we based this study on a cross-sectional analysis taking into account the first wave of survey only. Future research may further the analysis by including the other waves to compare how NEs' innovative activities evolve over time and when through this evolution, NEs adopt the international orientation. This paper confirms Rialp-Criado's et al. (2010) conceptual study on the role of innovation capacities in stimulating the early decision of internationalization. Further studies are needed to explore innovative international NEs after business creation to understand the trajectory of international new-ventures from the gestation phase.

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