

Nascent Entrepreneurs' Global Orientation: The Role of Innovation

**Charles H. Matthews, PhD,
University of Cincinnati
Imane Khayat, PhD,
Wittenberg Univ.**

**Global Entrepreneurship: The Latest Research
on Business Creation
Washington, DC
14-17 October 2010**

Introduction and Overview

- In the U.S, micro-firms represent 69% of all U.S. exporting firms
- Some of these exporting micro-firms have a global vision and reach the global market much sooner after their establishment. They are called International new ventures (INV)
- Export intentionality is the future international behavior of new ventures
- Extant research suggests that new-ventures' pursuit of internationalization from or near inception of the business creation is becoming more and more common
- Despite the recent progress in the field of international entrepreneurship, factors that drive entrepreneurs export intentionality are still not fully understood

Introduction and Overview

Focus: International nascent entrepreneurs (NE) and how their innovative capacity including their innovative decision style impacts the early internationalization decision

Our study examines:

- (1) How nascent entrepreneurs **leverage different dimensions of innovation to drive early internationalization.**
- (2) 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.**
- (3) 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.**

Literature Review and Hypotheses

Early internationalization

- **Innovation**
 - Jones and Coviello, 2005
 - Johanson and Vahlne, 1977
 - Oviatt and McDougall, 1994

Hypothesis 1: Nascent entrepreneurs who have major innovative product or service are less likely to have an international orientation.

Literature Review and Hypotheses

- **Types of innovation**
 - Caldera, 2009
 - Van-Beveren and Vandenbussche, 2010
 - Wakelin, 1998

Hypothesis 2: 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 .

Literature Review and Hypotheses

- **R&D and patent**
 - Hirsch and Bijaoui, 1985
 - Helmers and Rogers, 2009
 - Bloodgood, et al., 1996

***Hypothesis 3:* Nascent entrepreneurs who apply for a patent, copyright or trademark are more likely to have greater international orientation.**

Literature Review and Hypotheses

***Hypothesis 4:* Nascent entrepreneurs who expect a major investment in R&D are more likely to have greater international orientation.**

Literature Review and Hypotheses

- **Entrepreneurs' characteristics**
- **Decision making style**
 - LaMont, Danis and Dollinger, 2008
 - Daellenbach et al., 1999
 - Souitaris, 2001\

Hypothesis 5: Nascent entrepreneurs who have innovative decision-making style are more likely to have stronger international orientation.

Literature Review and Hypotheses

- **Risk Attitude**

- Johanson and Vahlne, 1977
- Axinn, 1988; Gupta and Govindarajan, 1984
- Moini, 1995

Hypothesis 6: Nascent entrepreneurs who have greater risk taking attitude will have stronger international orientation .

Literature Review and Hypotheses

- **High-Tech Industry**
 - McAuley, 1999
 - Madsen and Servais, 1997
 - Preece, et al., 1999

Hypothesis 7: Nascent entrepreneurs who expect to have a high-tech business will have strong international orientation .

Methods

- Data for this study are from the National Panel Study of Entrepreneurial Dynamics (PSED I). These data include telephone interview and mail surveys from 830 randomly selected U.S. nascent entrepreneurs.
- Of 559 NEs who completed the question on export intentionality, 142 answered as well questions related to their personal characteristics and innovation activities.

Measures: 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?”

Measures: 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

Measures: explanatory variables

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?

Measures: explanatory variables

High-tech industry	High-tech	Q301 (recoded)	Would you consider this new business to be hi-tech?
---------------------------	-----------	-------------------	--

Means, Standard Deviations and Correlations (n = 142)

	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 0.6144	0.0401 0.6357					
4-Technology and expertise	2.48	0.9	0.07 0.4078	0.2559* 0.0021	0.1039 0.2183				
5-Hi-Tech business	0.33	0.47	-0.0966 0.253	0.1974* 0.0185	0.0095 0.9108	0.3930* 0.0001			
6-Patent	0.25	0.43	-0.0673 0.4262	0.2205* 0.0084	-0.0028 0.9737	0.0311 0.7132	0.0206 0.8074		
7-Adaptation/innovation Decision style	0.33	0.47	-0.1247 0.1394	0.1198 0.1555	0.0576 0.4957	0.0986 0.243	0.0883 0.296	0.0914 0.2791	
8-Risk attitude	0.13	0.34	-0.0171 0.8403	-0.0442 0.6017	-0.0284 0.7372	-0.0397 0.6394	-0.0442 0.6017	-0.1533 0.0686	

Estimation results

Multiple Regression Analysis of NE International Orientation

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

Summary of Key Results

- The F-statistic indicates that regression models are highly significant ($p < .001$), F range from 3.40 to 6.54.
- Relationship between radical innovation and NE international orientation is not significant.
 - That is, 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).

Summary of Key Results

- The regression results offer strong support for hypothesis 2 ($\beta = 1.93$, $p < 0.05$). Technology and expertise are positively linked to NE international orientation.
 - That is, the combination of product innovation, process innovation and scientific expertise appear to predict the international orientation.
 - Results 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.

Estimation results

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**

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

Summary of Key Results

- Hypothesis 3 and 4 are confirmed in models 3 ($\beta = 2.92, p < 0.05$) and 2 ($\beta = 5.427, p < 0.001$).
- ➔ Nascent entrepreneurs who applied for a patent, copyright or trademark are more likely to have greater international orientation.
- ➔ NEs who expect a major investment in R&D have international orientation.

Substantial involvement of new ventures in protected innovative activity is a strong predictor of NEs' international orientation.

Summary of Key Results

- Hypothesis 5, predicting that NEs with innovative decision style will have greater international orientation is confirmed in model 1 ($\beta = 3.457$ $p < 0.05$).
- ➔ NEs with innovative decision styles break with the traditional way of doing business local to include the global market in their first business plan.

Summary of Key Results

- The regression results offer no support for hypothesis 6, suggesting that risk taking attitude is not a determinant of NEs' international orientation.
- ➔ 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.”

Summary of Key Results

- 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).

Summary of Key Results: Post-Hoc

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).

Estimation results

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

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

Summary of Key Results: Post-Hoc

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.

- ➔ R&D expenditure impact negatively NEs who intend to do business locally.
- ➔ Innovation is not a predictor of local market orientation
- ➔ 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.

Discussion

- 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.
- 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.
- Our primary focus is on why some entrepreneurs are oriented toward the international market at an early stage of the business formation.

Discussion

- 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.
- Process innovation as well as radical innovation, however, do 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.

Discussion

- **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 expected, results suggest 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 rely completely on their innovations without questioning the risk related to the internationalization.**

Discussion

- 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.

Discussion

- Limitations: 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 contributing 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.**

Discussion

- **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.**

- Questions and Answers
- Suggestions, Ideas, Future Research?

