ENTREPRENEURS' CONFIDENCE IN INNOVATION AND THEIR INNOVATIVENESS

Nastooh Nochian *, Thomas Schott **

ABSTRACT

This article tests the hypothesis that entrepreneurs' confidence in innovation has a positive effect on their innovativeness. The sample is 550 owner managers sampled from the population of owner managers in Iran in 2010, surveyed in the Global Entrepreneurship Monitor, GEM. An organizational innovation confidence index is constructed from three questions asking whether the organization that they work in is likely to buy products or services that are new, use new technologies in their daily work, and use new products and services that will improve their working life. Innovation is measured by two questions asking if customers consider the product or service new and unfamiliar, if the technologies or procedures required for the product or service are new. Using structural equations modeling, we conclude that there is a positive effect of organizational innovation confidence on innovation. Therefore, the Iranian owner managers who have more confidence in innovation act more innovatively.

Keywords: Innovation, Organizational Innovation Confidence, Global Entrepreneurship Monitor (GEM)

JEL classification: L26, O31

1. INTRODUCTION

At one time, innovation was thought of as merely a product of a firm's autonomous R&D Department (Mowery 1983 p. 358; Nelson 1959, p. 301). However, in today's fast-paced economy, the innovative capability of an entrepreneur cannot be studied without considering the characteristics and skills that entrepreneurs have. There is a need for understanding further linkage between innovation and innovation confidence. Innovations cannot succeed without demand. And, a successful innovation requires both the willingness and ability to purchase innovative products – in other words, a culture that is open to new things and has sufficient funds. Amar Bhidé has pointed out that innovative entrepreneurs are unlikely to succeed if they cannot get anyone to buy their innovative products or services (Bhidé 2008, p.18). In this research, we investigate the effect of innovation confidence on established businesses' innovation by using the Adult Population Survey from the Global Entrepreneurship Monitor in Iran in 2010. Thus the main objective of this research is to identify the effect of innovation confidence on business innovation.

2. LITERATURE REVIEW

2.1 Innovation

Innovation is a phenomenon studied in many disciplinary contexts, leading to a multiplicity of definitions, including psychological, sociological, and economic ones (Brown & Ulijn 2004, p. 2). The multiplicity of meanings of innovation is partly attributable to the disciplinary biases of innovation researchers.

* *University of Tehran, Faculty of Entrepreneurship, n.nochia@ent.ut.ac.ir*
** *University of Southern Denmark, Department of Entrepreneurship and Relationship Management, tsc@sam.sdu.dk*

A popular consensus is that innovation is associated with novelty—that which is new. Brown and Ulijn (2004) give a minimum definition of innovation as "creating something new and implementing it successfully at a market," and the novel creation could be "processes, products and services and technology" (Van de Ven 1986, p. 592). Porter and Stern define innovation as "the transformation of knowledge into new products, processes, and services" (Porter & Stern 1999, p.12). These are just three of the many definitions of innovation. Rickard astutely notes that "we need hardly be surprised that innovation, a word forced to stand for activities across such a rich set of categories, resists a unified yet coherent treatment" (Rickard 2003, p. 1094).

The early work of Schumpeter established conceptually the ''entrepreneur as innovator'' as a key figure in driving economic development (Schumpeter 1934, p. 78). The innovative activity of entrepreneurs feeds a creative ''destruction process'' by causing constant disturbances to an economic system in equilibrium, creating opportunities for economic rent (Schumpeter 1942, P. 95).

2.2 Innovation Confidence

There is a real lack of data sources collecting information on the relationship between innovation and demand (especially in terms of users' demands and preferences for affordable new products and services). This is also reflected in the literature on innovation, where indicators for exploring the nature of demand are rarely mentioned. However, Jonathan Levie's pioneering work on innovation confidence is an important exception (Ashby and Mahdon 2009, p. 65).

Prior to Levie's work, Eurobarometer was the only source of systematic data on the value that innovation generated for customers (IBM 2004). By surveying almost 25,000 people across 12 nations to capture confidence in innovation, Levie (2008) provided a new measure of consumer demand for innovation applied globally. He defines innovation confidence as "the degree to which individuals are willing to engage with and perceive benefit from new products or services, or products or services that embody new technology." (Levie 2008, p. 4). His measure is composed of three consumer survey items assessment:

- willingness to buy new products or services;
- willingness to try new products and services that involve new technology; and
- beliefs about how/whether innovations will improve their lives.

So far, this discussion of innovation confidence has focused on consumers' willingness to buy or try new products and services, as all the indicators available relate to the general population's receptiveness to business innovation. More broadly, innovation confidence encompasses,

- Organizational Innovation Confidence
- Consumers Innovation Confidence
- Government's Innovation Confidence.

2.3 Organizational Innovation Confidence

Do organizations differ from individual consumers in their receptiveness to innovation? Levie (2008) is beginning to address this question with a new organizational innovation confidence index. This new measure was piloted in the UK sample of the second wave of data collection and Levie finds that "it appears to work well." He believes it could represent an important development in understanding receptiveness (and demand), as "it may be that in some nations, organizations tend to be more confident in innovation than individuals." The wording of the items measuring organizational confidence in innovation is

similar to that for the consumer innovation confidence items:

- "In the next 6 months the organization that you work in is likely to buy products or services that are new to the organization."
- "In the next 6 months you are likely to try products or services that use new technologies in your daily work for the first time."
- "In the next 6 months, new products and services will improve your working life."

Business leaders are asked to judge the extent to which companies in their country are (i) aggressive in absorbing new technology or (ii) not able to absorb new technology. This proxy measure therefore has some overlaps with Levie's new index, where he asks how likely employed persons are in the next six months to try products or services that use new technologies in their daily work for the first time.

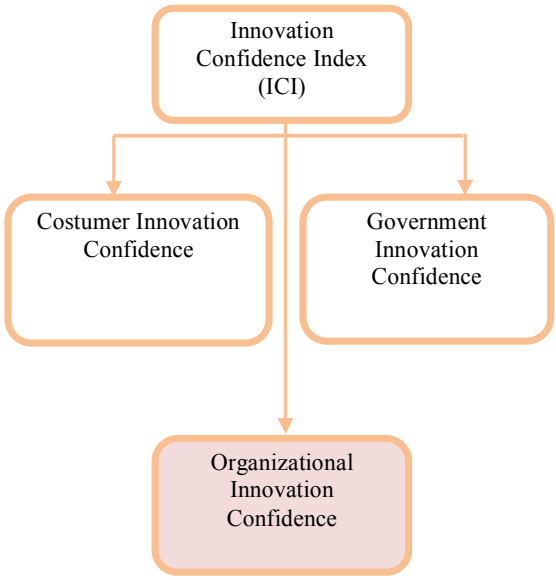


Figure 2.1. Three specific innovation confidence indexes

However, while Levie's proposed index also includes measures of willingness to try or buy other new products and services, and respondents' faith in the benefits these will bring, the measure asks exclusively about new technology. Yet, evidence suggests that there are many ways businesses can buy or try innovation other than through technology – yet many measures of innovation miss these less traditional types of innovation (also referred to as hidden innovation) (Ashby and Mahdon 2009, p. 33).

Since organizational customers are so important in innovation adoption, a measure of Organizational Innovation Confidence (OIC) was developed and tested with the sample in United Kingdom in GEM in 2008. Following this successful pilot, the OIC items were also included in 20 more countries in 2009. The national-level OIC Index was calculated in the same way as the CIC index. Factor analysis was conducted on the total sample and within each country (Levie 2009, p. 16).

3. HYPOTHESIS

As mentioned above a successful innovation requires both the willingness and ability to purchase innovative products – in other words, a culture that is open to new things and has sufficient funds. Hence the following hypothesis is proposed:

Hypothesis: Innovation confidence has a positive effect on innovation in established businesses.

4. RESEARCH MODEL

We test the hypothesis that organizational confidence in innovation promotes innovation. Organizational confidence in innovation is indicated by the three questions discussed above. Innovation is indicated by two measurements, newness to customers and newness of the technology used in production. In testing, we shall control for the

entrepreneurs' background in terms of gender, age and education.

adult population survey each year. The results in this article are mainly based on the data of the APS survey.

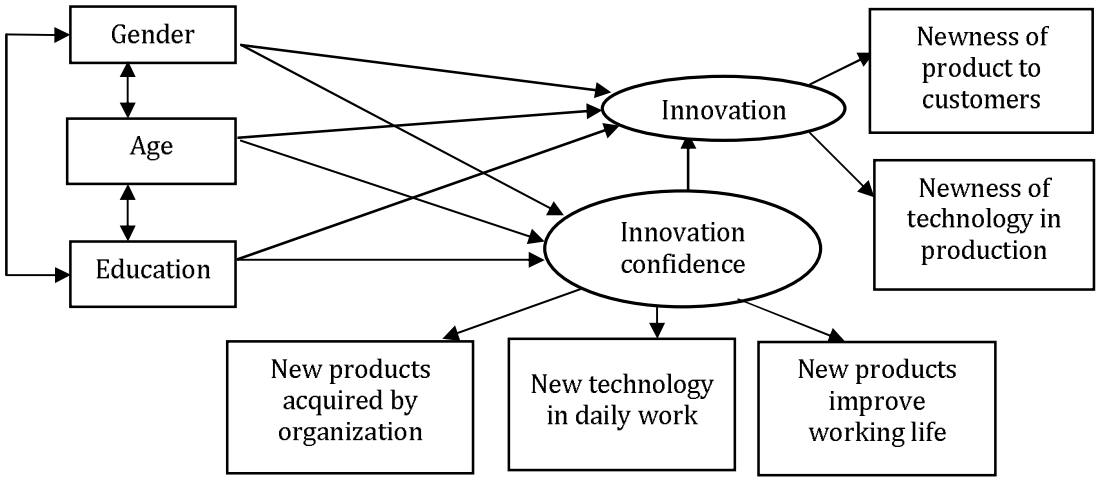


Figure 4.1. Research Model

5. METHODS

We use data collected in Global Entrepreneurship Monitor, GEM (www.gemconsortium.org). GEM is a not-for-profit academic research consortium that has as its goal making high quality international research data on entrepreneurial activity readily available to as wide an audience as possible. The research program is based on a harmonized assessment of the level of national entrepreneurial activity for all participating countries and involves exploration of the role of entrepreneurship in national economic growth. (Acs et al. 2008, p. 14).

GEM data collection is based on the Adult Population Survey, APS, as the primary research tool. To ensure consistency and cross-country comparability, each country conducts the same survey. In 2010, at least 2000 adults are questioned in each of the 60 countries. The individual surveys are harmonized into one master dataset. The GEM Annual Report is based on the results of the

In this research we have used GEM APS in Iran in 2010. Our sample consisted of interviewed owner managers in Iran for the year 2010 whose number is 550, a sample of the owner managers of Iran in this year, which is the population of the research. We use structural equation modeling to assess the fit of the proposed models and test the hypothesis. SPSS was used to obtain descriptive statistics and correlations of all variables.

5.1 Variables

In this research there are two variables of primary interest, namely a dependent variable (innovation) and an independent variable which is innovation confidence, and three control variables as demographic characteristics of owner managers, namely their age, gender and education. These variables are measured as follows.

5.2 Measures

Independent variable: There is one independent variable, innovation confidence:

Organizational Innovation Confidence (OIC): The respondents are asked about their agreement to the three statements, "In the next 6 months the organization that you work in is likely to buy products or services that are new to the organization." "In the next 6 months you are likely to try products or services that use new technologies in your daily work for the first time." "In the next 6 months, new products and services will improve your working life." The extent of agreement is coded 1 for *strongly disagree*, 2 for *somewhat disagree*, 3 for *neither agree nor disagree*, 4 for *somewhat agree* and 5 for *strongly agree*. With this coding the three variables are considered numerical.

Cronbach's Alpha for the three indicators of Organizational Innovation Confidence is 0.88, meaning that the three questions are highly inter-reliable.

Dependent variable: Innovation is the dependent variable in this research:

Innovation: The owner managers were asked, "Will all, some, or none of your potential customers consider this product or service new and unfamiliar?" here coded 1 for 'none, 2 for 'some' and 3 for 'all'. The owner managers were also asked "How long have the technologies or procedures required for this product or service been available?" here coded as 1 for 'longer than 5 years', 2 for 'between 1 and 5 years' and 3 for 'less than 1 year'. These variables are also considered numerical.

Gender. The survey notes the respondent's gender, here coded as 0 for female and 1 for male.

Age. The survey asks for the respondent's current age in years.

Education. The survey asks for the respondent's education, "What is the highest level of education you have completed?" In Iran this is coded 1 for *illiterate*, 2 for *not educated*, 3 for *fifth grade of primary school*, 4 for *third grade of middle school*, 5 for *high school*, 6 for *pre-university education*, 7 for *associate diploma*, 8 for *Bachelor degree*, 9 for *Master degree*, 10 for *Ph.D. or more*. This variable is also considered numerical.

5.3 Descriptive Statistics and Correlations

Table 1 shows the univariate statistics for the numerical variables. The variable gender has 88% males and 12% females. The numerical variables have a good spread, while gender has little spread.

Table 5.1. Descriptive Statistics

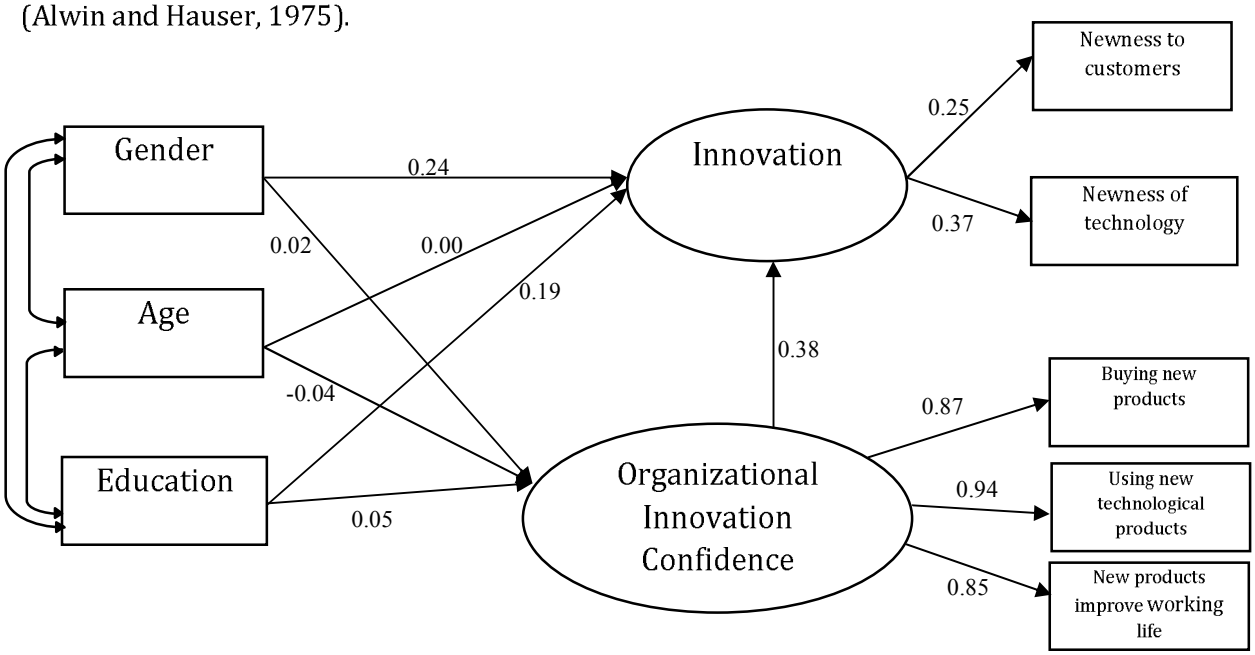
		Mean	Standard Deviation
Innovation Confidence	Buying new products or services	2.12	1.23
	Using new technological products	2.18	1.20
	Improving working life by new products	2.02	1.13
Innovation	Newness to costumers	2.67	0.69
	Newness of technology	2.37	0.83
Age		38.2	11.0
Education		4.8	1.8

Correlations. Organizational innovation confidence had a positive correlation with innovation (r = 0.17) and this provides a first small corroboration of our hypothesis. A positive relationship was also found of organizational innovation confidence with age (r = 0.08) and with gender (r = 0.02). Innovation had a correlation with gender (r =

0.12) and with age (r = 0.07). These correlations with the control variables are thus weak, weaker than the correlation between the two variables of interest.

6. FINDINGS

Using the statistical technique of LISREL, covariance structural analyses were conducted to estimate the research model. LISREL produces both a statistical measure of goodness-of-fit and explained variance (R-square) of the model. Moreover, as the coefficients can be interpreted like standardized regression coefficients, a path analysis (decomposed into direct, indirect, and total effects) can also be undertaken (Alwin and Hauser, 1975).



Chi-square= 40.3 df= 21 P-value= 0.007
RMSEA=0.04

Figure 6.1. Structural Equation Modeling

The measurement model had a Chi-square = 40.3 (d.f = 21, p = 0.00), the goodness-of-fit-index GFI = 0.98, adjusted goodness-of-fit index AGFI = 0.96, root mean square residual RMR = 0.20, Non-Normed Fit Index NNFI = 0.96, Normed Fit Index NFI = 0.96, Comparative Fit Index CFI = 0.98, Incremental Fit Index IFI = 0.98, and root mean square error of approximation RMSEA = 0.04.

A good model fit is shown when RMSEA is below 0.07; and NNFI, IFI and CFI score are above 0.90. Therefore, we found support for fit of our hypothesized model. The main result in this research is that the standardized regression weight obtained by the LISREL for the relationship between organizational innovation confidence and innovativeness is 0.38 and the one-tailed p-value is 0.005, which shows that the relationship between organizational innovation confidence and innovation in this research is statistically significant and is rather strong as its standardized coefficient is above 0.3.

So we found strong support for positive relationships between innovation confidence and innovativeness.

The obtained regression weights are standardized so we can compare them with each other and say that the effect of organizational innovation confidence is twice as strong as effect of education, 0.14 much

stronger than the effect of gender and much stronger than the effect of age on innovation.

7. DISCUSSION AND CONCLUSION

The new established index of Innovation Confidence by Jonathon Levie raised a hypothesis in our mind whether this factor could be considered as an effective one for innovativity of entrepreneurs and if there is any positive relationship between them. The study shows the confirmation of our hypothesis.

Findings support the idea that innovation confidence affects the innovation of entrepreneurs. To empirically analyze the relationships of all variables, we constructed a structural equation model. The data obtained by the GEM APS on innovation across the country, provides us with a strong result concerning the characteristics and effectiveness of organizational innovation confidence on Entrepreneurs' innovativeness in Iran.

It was revealed that organizational confidence in innovation had a significant effect on owner managers' innovativeness. This means that owning and promoting the characteristic of demanding new products, services and technologies and believing in their positive effect on the organization of daily life will change the view of entrepreneurs about innovation. That leads their ability toward higher innovativity.

This study contributes to entrepreneurship literature by identifying an ability that entrepreneurs need when they want to be more innovative. Previous researches and works related to innovation and innovation confidence such as Levie's reports and working paper did not consider this relationship and effect of innovation confidence index on entrepreneurs' innovation. However, our research measured this effect on Iranian owner managers' innovativeness for the first time.

To make proper conclusions from this research, more detailed research should be conducted about innovation and confidence in innovation. These results, in turn, could be used to enhance effective entrepreneurial innovation in Iran. What one can now take for granted, as a tendency, is that innovativeness is positively related to innovation confidence in the country.

As a matter for further discussion we suggest that, in order to make future entrepreneurs benefit from the impact of innovation confidence in their job creation, innovation and improvements in the economic landscape universities, institutions and schools pay attention to this effect and bring it in teaching entrepreneurship at all levels.

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