UDC: 005.961:005.914.3(55)
005.21:334.72.021(55)
JEL: L21, L26
COBISS.SR-ID: 240672524

ORIGINAL SCIENTIFIC PAPER

Corporate Entrepreneurship and Innovation Performance of Established Ventures: Case of Iranian Vanguard Companies

Zahra Minafam[1], Faculty of Entrepreneurship, University of Tehran, Tehran, Iran

ABSTRACT *– Corporate entrepreneurship is increasingly drawing the attention of different scholars of organizational innovation. More than three decades of studies are available in this domain; however, the relationship is rarely scrutinized. This manuscript attempts to contribute to the literature through investigating the role of corporate entrepreneurship on innovation performance of the firms. A quantitative research design is used to study the relationship between corporate entrepreneurship and innovation performance of the firms. To do so, 178 firms, in three main cities of Iran, were studied through a survey. Results show that corporate entrepreneurship affects the rates of process innovation and product innovation, as well as the technology indicators of the established firms. Some contradictory evidence is also mentioned in the findings, which are elaborated future researchers. The originality of the manuscript goes back to studying the concept in an emerging market, i.e. Iran. Also, technology indicators are rarely discussed in the literature, which are studied in this research. It is advised, based on the findings, to improve process innovation as well as product innovation, along with technology indicators through improving corporate entrepreneurial activities. The main limitation of the research was to encourage managers to complete the questionnaire. To handle this limitation, the researcher held face to face meetings, in order to increase the response rate.*

KEY WORDS*: corporate entrepreneurship, Innovation performance, Established ventures, Iran*

Introduction

Entrepreneurship, at both individual and corporate levels, is becoming an integral part of any innovative atmosphere (Bharadwaj and Menon, 2000). Today's companies vigorously striving to become more and more entrepreneurial (Morris et al., 2010). Since they understood that there are many benefits associated with corporate entrepreneurship (CE), in the last three decades a considerable wave is shaped (Dunlap-Hinkler et al., 2010). Moreover, as mentioned in this manuscript, to some scholars, innovation performance is highly dependent on entrepreneurial activities. However, this argument is not supported in the extant literature (Otache and Mahmood, 2015).

There are several approaches in investigating CE which led to a variety of definitions. However, the present study is developed based on three main models of CE. The story is the

[1] Email: zahra.minafam@mail.com

same for innovation performance. The relationship between these two is also controversial. To some scholars, corporate entrepreneurial activity is a function of different types of innovation performance in an entrepreneur firm- in which corporate entrepreneurship is realized (Chen et al., 2014). However, to others there are moderating variables which affect such relationships (Sykes and Block, 1989). Innovation-based corporate entrepreneurship is a trend which focuses on this area of research to clarify the potential relationships and their specifications (Dunlap-Hinkler et al., 2010; Salamzadeh and Kirby, 2017). This research also stands in the same stream, which tries to investigate such relationship in a less studied context, i.e. Iran. Moreover, most of the few research conducted in this context had dealt with individual level variables such as entrepreneurial orientation (e.g. Madhoushi et al., 2011; Khalili et al., 2013).

Thus, for CE, a questionnaire was designed based on Morris and Kuratko (2002), Miller (1983), and Ireland, Kuratko and Morris's (2006) questionnaires; and for IP, Wong and Chin's (2007) conceptualization of the phenomenon is used. In a nutshell, this manuscript attempts to contribute to the existing literature through investigating the role of corporate entrepreneurship on innovation performance of the firms. To do so, first the existing literature is studied. Then, conceptual model and indicators are defined. Findings are presented afterwards, and the paper concludes with some remarks and suggestions for future research.

Literature review

Corporate entrepreneurship (CE)

Over the past decade, CE has been extensively followed by senior managers and scholars as an effective means for stimulating firms and increasing their productivity (Zahra and Covin, 1995). It refers to cases where firms, rather than individuals or strategic business units, act in entrepreneurial ways (Covin and Miles, 1999). In fact, this could be of paramount importance for surviving and renovating the existing firms and making them more profitable (Zahra, 1996; Kuratko et al., 2014). CE, which entails a multifaceted process due to the challenges regarding the pre-existing structures and processes of the firms, is a behavioral phenomenon. Thus, all firms are situated in a continuum that ranges from *highly conservative firms* to *highly entrepreneurial firms* (Barringer and Bluedorn, 1999; Morris et al., 2010). This is the case, even, for those firms which rarely attempt to reveal an entrepreneurial image, but are innovative in nature (Radovic Markovic and Salamzadeh, 2012).

Through its evolution, CE underwent many changes, both in its nature and definition. In a recent definition, CE is defined as a process through which employees of organizations undertake new activities, follow innovative patterns, or show interest in departing from routine processes in order to explore, create, or pursue profitable opportunities (García-Morales et al., 2014). It is entrepreneurship which involves fostering entrepreneurial behaviors within an established organization (Mason, 2011). However, according to some old definitions, CE is defined as the ability of a firm to explore and exploit opportunities without being inhibited by limitations of resources, rules and regulations, as well as managerial decisions (Otache and Mahmood, 2015). As Verma (2013) argues, it encompasses three types

of process, i.e. innovation process, venturing process, and strategic renewal process (Salamzadeh et al., 2016). Furthermore, some authors suggest that due to the existing interactions between different characteristics of individuals, organizations, and according to the contextual factors, the nature of corporate entrepreneurial activities might alter over the lifecycle of any typical firm (Fini et al., 2012).s

In sum, since the beginning of the 1980s, many academics and experts have shown interest in the corporate entrepreneurial activities owing to its valuable effect on the revival and productivity of firms (Urbano and Turró, 2013). However, some scholars contended that corporate entrepreneurial activities could not appear in large firms, still there are a growing number of advocates for corporate entrepreneurship. Therefore, as we could see, in the last decade of the 20th century the "corporate entrepreneurship" was emerged as a scientific field of study (Paunović, 2012). While western scholars' work provides a foundation for explaining and predicting how CE goes on in western countries, the author finds it necessary to pay attention to this concept in developing economies (e.g. see Analoui et al., 2009; Maatoofi and Tajeddini, 2011).

The present study is developed based on three main models of corporate entrepreneurship: (i) Miller (1983): According to his view, the process through which firms renovate their entity as well as their markets by pioneering, innovation, and risk taking, shows the corporate entrepreneurial behavior of the firm; (ii) Morris and Kuratko (2002): In their book, they tried to explore the concept of CE in established firms. They highlighted different aspects of corporate entrepreneurial activities and corporate entrepreneur firms; and (iii) Ireland et al. (2006): In this distinguished works, the authors described CE and its significance for corporate innovation activities. Moreover, they identified the categories which must be considered while designing a CE strategy for a firm. Finally, they enumerated the reasons behind CE and depicted a supportive environment (see Table 1).

Innovation performance (IP)

According to the literature, the consequences and effects of corporate entrepreneurship are mirrored in two types of activities, i.e. (i) strategic renewal of the firms, and (ii) the performance/new venture creation activities (Gómez-Haro et al., 2011). Despite the fact that a firm's approach toward corporate entrepreneurial activities directly affects its performance, one could develop a more inclusive explanation, based on the fact that this approach might develop and extend the firm's status (Simsek and Heavey, 2011). Scholars of CE research have conventionally put more stress on ways in which individuals could create constructive changes within their firms (Dunlap-Hinkler et al., 2010). Innovation performance is variously defined by several authors. For instance, it is defined as the degree to which new products-goods and services- meet their expected goals in the market (Wang and Lin, 2012), or as the extent to which new products have attained their share in the market, promoted sales, and increased the rates of asset return, investment return, and respectively met profit goals (Chen et al., 2014).

In fact, innovation performance, the output of a firm's innovation efforts and innovative inputs, has been permanently a crucial concern for state-of-the-art firms (Wang and Lin, 2012). Moreover, improving innovation performance is critical to an overall understanding of

the concepts of learning, creativity, as well as innovation within firms (Bharadwaj and Menon, 2000). But, one should note that IP varies widely across industry segments and organizations (Lee et al., 2015). Hopefully, there are several measures to gauge IP and the economic consequences of innovative products/services (Guan et al., 2009). In other words, in the extant literature, numerous managerial factors have been linked with the performance of innovation in innovative firms (Wong and Chin, 2007).

In the present study, Wong and Chin's (2007) conceptualization of the phenomenon is used, which includes three main groups, i.e. (i) Product innovation rate (including: number of changed product/total products, change in sales/total sales; and change in profit/total profit); (ii) Process innovation rate (including: number of process changes/total processes; and change in overall productivity due to product change); (iii) Technology indicators (including: percentage of expenditure on R&D/total sales; number of externally adopted technologies; and number of internally developed patents).

Corporate entrepreneurship and innovation performance

In order to elaborate the relationship, according to the extant literature, the following hypotheses are proposed. Indeed, product innovation is a crucial topic for any firm which tries to compete in this competitive world. As the pace of technologies and science becomes faster than before, product innovation turns to a more critical issue to be considered by firms that are striving to succeed (Chen et al., 2015). Moreover, today, within firms with corporate entrepreneurial approach, the extent to which new product development is considered vital and followed by its members is higher than others (Kuratko et al., 2015). Thus, it is important to measure the rate of product development in order to succeed in this rivalry. On the other hand, the existing literature suggests that it is a part of the most of corporate entrepreneurial movements (Kuratko and Audretsch, 2013). According to Jennings and Young (1990), there are distinctions between objective and subjective measures of the product innovation domain of CE. They even tried to highlight these measures. Zahra (1996) elaborated this issue, but still there were some cases in which there was not a necessary relationship between CE and product innovation. More recently, some scholars confirmed this relationship in a series of cases (Chen et al., 2014). However, the topic is not studied in developing/emerging economies (Kuratko et al., 2015). Thus, the first hypothesis is proposed as follows:

H1. There is a significant relationship between corporate entrepreneurship and the rate of product innovation of the established firms.

Another factor to be studied is process innovation, which is extensively used among corporate entrepreneurial firms (Kuratko et al., 2014). There are many benefits associated with process innovation. It is about making radical, substantial, or even gradual changes in the existing process in a way the process becomes more productive or beneficial (Alegre and Chiva, 2013). Therefore, the process innovation is another issue to be taken into account while studying corporate entrepreneurial activities. In fact, innovation is generally measured by process innovation and product innovation (Hsu et al., 2014). It is argued that the more innovative processes one firm has, the more it would be a candidate to become a corporate entrepreneur. Despite this argument, one could not mention that any corporate

entrepreneurial firm has process innovation (Jayaram et al., 2014). Then, the relationship remains controversial. Therefore, the following hypothesis is proposed:

H2. There is a significant relationship between corporate entrepreneurship and the rate of process innovation of the established firms.

While, some scholars believe that innovation performance could be measured by process innovation and product innovation (Hsu et al., 2014), others such as Wong and Chin (2007) and García-Morales et al. (2014) add technology indicators for being more precise in this measurement. Technology indicators include a wide range of factors, however, in order to be more specific, in this study, we bounded our definition to the mentioned above indicators (Wong and Chin, 2007). Technology indicators are rarely investigated in the relevant literature (González-Benito et al., 2015). Thus, the third hypothesis is proposed as follows:

H3. There is a significant relationship between corporate entrepreneurship and the technology indicators of the established firms.

Methodology

Research design and hypotheses

A quantitative research design is applied to conduct this research. Thus, in order to scrutinize the relationship between CE and IP of the established firms, a survey was designed and employed by collecting data from the research population of 178 firms in three main cities of Iran, i.e. Tehran, Isfahan, and Shiraz. The conceptual model is developed based on four main models. For CE, a five-point Likert scale of 15 items was adapted from Morris and Kuratko (2002), Miller (1983), and Ireland, Kuratko and Morris (2006); and for IP, Wong and Chin's (2007) conceptualization of the phenomenon is used through a five-point Likert scale of 8 items. Table 1 shows the indicators. SPSS 21.0 was used to analyze the data.

Table 1. Indicators of CE and IP

	Code	Indicators	Reference(s)
Corporate Entrepreneurship	CE1	High rate of new product/ service introduction, compared to competitors	Miller (1983); Ireland et al. (2006)
	CE2	Emphasis on continuous improvement in methods of production and/or service delivery	Morris and Kuratko (2002); Ireland et al. (2006)
	CE3	Risk-taking by key executives in seizing and exploring growth opportunities	Miller (1983); Morris and Kuratko (2002); Ireland et al. (2006)
	CE4	A very competitive 'undo-the-competitor' posture	Miller; Ireland et al. (2006)
	CE5	Seeking of unusual, novel solutions by senior executives to problems, via the use of 'idea people'	Morris and Kuratko (2002); Ireland et al. (2006)
	CE6	A strong emphasis on R&D, technological leadership, and innovation	Ireland et al. (2006)
	CE7	A bold, aggressive posture, in order to	Morris and Kuratko

	Code	Indicators	Reference(s)
		maximize the probability of exploiting potential when faced with uncertainty	(2002); Ireland et al. (2006)
	CE8	Active search for big opportunities	Ireland et al. (2006)
	CE9	Rapid growth as the dominant goal	Ireland et al. (2006)
	CE10	Large, bold decisions, despite uncertainties of the outcome	Ireland et al. (2006)
	CE11	Steady growth and stability as primary concerns	Morris and Kuratko (2002)
	CE12	Number of new products introduced during the past five years	Morris and Kuratko (2002)
	CE13	Number of product improvement or revisions introduced during the past five years	Morris and Kuratko (2002)
	CE14	Comparison of new product introductions with those of major competitors	Miller (1983); Ireland et al. (2006)
	CE15	Level of significance of new methods or operational processes implemented during the past five years	Ireland et al. (2006)
Innovation Performance	IP1	number of product changed to total product	Wong and Chin (2007)
	IP2	change in sales (due to product change) to total sales	
	IP3	change in profit (due to product change) to total profit	
	IP4	number of process changes to total processes	
	IP5	change in overall productivity due to product change	
	IP6	percentage of expenditure on R&D to total sales	
	IP7	number of technologies adopted externally	
	IP8	number of patents developed internally	

Source: Morris and Kuratko (2002), Miller (1983), and Ireland, Kuratko and Morris (2006), Wong and Chin (2007)

Harman's one-factor test is used to test for the presence of common method variance bias (Harman 1976; Chang et al., 2010). All variables were entered into an exploratory factor analysis, and the results identified factors with Eigen values of greater than one. No general factor accounted for the majority of the variance. Therefore, common method bias did not have a substantial impact on the present study.

Sampling

A random sampling technique was used to select the firms from 300 top firms in three main cities of Iran- based on the listing of the presidential office. According to Cochran's formula, at the confidence level of 95%, and accuracy of 5%, 169 questionnaires were required. Thus, a total of 200 questionnaires were distributed, and 178 completely filled out questionnaires were returned (response rate: 89%). Firms were the unit of analysis in this

study. The questionnaires were answered by top managers or chief executives of the firms. Questionnaires were printed and distributed by the researcher among the respondents.

Validity and reliability

The research instrument applied in this research was adapted from Morris and Kuratko (2002), Miller (1983), and Ireland, Kuratko and Morris (2006), Wong and Chin's (2007). Following a pilot test- among thirty five firms, the instrument was modified and refined by three experts[2] before it was used. In order to examine the reliability of the instrument, Cronbach's alpha coefficient was computed. Reliability analysis showed the value of Cronbach's alpha of .723, which lies in an acceptable range. Hence, the administered questionnaire had enough reliability to proceed for further analysis. Variables in model (descriptive statistics, measurement model, reliability) are shown in the following tables

Table 2. Specifications of the data

	Variable	Code	Cronbach's Alpha	Cronbach's Alpha	Mean	No of Items
Corporate Entrepreneurship	Corporate Entrepreneurship	CE1	.712	.746	3.47	15
		CE2	.823			
		CE3	.679			
		CE4	.756			
		CE5	.749			
		CE6	.895			
		CE7	.698			
		CE8	.784			
		CE9	.781			
		CE10	.792			
		CE11	.834			
		CE12	.721			
		CE13	.657			
		CE14	.781			
		CE15	.721			
Innovation Performance	Product innovation	IP1	.711	.743	3.78	3
		IP2	.706			
		IP3	.803			
	Process innovation	IP4	.678	.698	3.52	3
		IP5	.701			
		IP6	.708			
	Technology indicators	IP7	.659	.702	3.23	2
		IP8	.721			

[2] Expert validity/ Face validity

Findings

Based on the statistics, most of the respondents were male (79.21%). Moreover, about one third of the respondents had more than ten years of experience, and most of them had a bachelor's degree (64.61%). Table 3 illustrates the information of the firms. As shown in the table, most of the firms had less than a hundred employees and might considered as small businesses. In terms of the experience of the firms, those that have 5-10 years of experience constitute the highest (42.13%). Nearly half of the firms were in manufacturing field (52.25%), and the rest were service providers (47.75%). Moreover, the firms were located in three main cities of Iran, i.e. Tehran, Isfahan, and Shiraz. Most of the firms had less than ten new products/services (76.97%).

Table 3. Demographic information of firms

		Frequency	Percent
Industry type	Manufacturing	93	52.25
	Service provider	85	47.75
Location	Tehran	88	49.44
	Isfahan	23	12.92
	Shiraz	67	37.64
Establishment (years)	Less than 5	10	5.62
	5-10	75	42.13
	10-15	42	23.60
	Over 15	51	28.65
Number of new services/ products	Less than 5	73	41.01
	5-10	64	35.96
	More than 10	41	23.03
Number of employees	Less than 50	52	29.21
	50-100	62	34.83
	100-500	31	17.42
	More than 500	33	18.54

Table 4 shows the mean index of the phenomena in question, i.e. CE and IP. Means of means shows that firms are somehow conservative and corporate entrepreneurship is moderately done in these companies. Innovation performance index also shows a moderate level of innovation performance in the firms.

Table 4. Mean index of CE and IP

	Code	Frequency	Mean
Corporate Entrepreneurship Indicators	CE1	178	3.48
	CE2	178	2.78
	CE3	178	3.14
	CE4	178	3.59
	CE5	178	2.98
	CE6	178	4.01
	CE7	178	3.48

	Code	Frequency	Mean
	CE8	178	3.26
	CE9	178	3.78
	CE10	178	3.12
	CE11	178	3.94
	CE12	178	3.48
	CE13	178	3.67
	CE14	178	3.25
	CE15	178	4.17
Mean of means (CE)			**3.47**
Innovation Performance Indicators	IP1	178	4.12
	IP2	178	3.58
	IP3	178	3.64
	IP4	178	3.45
	IP5	178	3.86
	IP6	178	3.25
	IP7	178	3.19
	IP8	178	3.28
Mean of means (IP)			**3.54**

Hypotheses are tested and the results are discussed below. Regression analysis generated an equation to describe the statistical relationship between predictor variables and the response variable. After defining the regression model in SPSS, the fit was verified by checking the residual plots, and the results were interpreted.

H1. There is a significant relationship between corporate entrepreneurship and the rate of product innovation of the established firms.

A linear regression was performed. As can be seen, corporate entrepreneurship was a significant predictor of rate of product innovation. The regression equation was as follows:

*Rate of product innovation = 60.654 + 0.057 * corporate entrepreneurship*, $R^2 = .132$, $F\ (1, 177) = 7.770$, $p < .007$.

According to table 5, product innovation rate is significantly dependent on corporate entrepreneurship in the studied firms. Thus, the more innovative products are produced by the firms, the more they would be considered corporate entrepreneurial firms (Kuratko et al., 2015). As Artz et al. (2010) previously, during their longitudinal study, mentioned, rate of product innovation could significantly affect corporate entrepreneurial performance of the firms, while Sezen and Çankaya (2013) or Zhang (2011) believed that product innovation was not found to be significantly effective on corporate entrepreneurship performance. Our finding is in line with the first group of scholars; however, one might propose different hypotheses to examine the probable differences in these findings.

H2. There is a significant relationship between corporate entrepreneurship and the rate of process innovation of the established firms.

A linear regression was performed. As can be seen, corporate entrepreneurship was a significant predictor of rate of process innovation. The regression equation was as follows:

*Rate of process innovation = 61.235 + 0.051 * corporate entrepreneurship*, $R^2 = .127$, $F\ (1, 177) = 6.432$, $p < .000$.

Based on table 5, rat of process innovation is also significantly affected by corporate entrepreneurial activities. This finding is in line with some scholars such as Kuratko et al. (2015), however, to some scholars, process innovation is not significantly affected by corporate entrepreneurial activities (e.g. see Bigliardi et al., 2011). It might be due to the differences in range of studies, which is highly affected by firm size and industry type (Damanpour, 2010). In this study, most of the firms had less than a hundred employees and might considered as small businesses.

H3. There is a significant relationship between corporate entrepreneurship and the technology indicators of the established firms.

Table 5. Model summary and parameter estimates

Dependent Variable	Equation	Model Summary					Parameter Estimates	
		R Square	F	df1	df2	Sig.	Constant	b1
Technology indicators	Linear	.110	7.753	1	177	.001	60.125	.052
Process innovation	Linear	.127	6.432	1	177	.000	61.235	.051
Product innovation	Linear	.132	7.770	1	177	.007	60.654	.057

The independent variable is corporate entrepreneurship.

A linear regression was performed. As can be seen, corporate entrepreneurship was a significant predictor of technology indicators. The regression equation was as follows:

*Technology indicators = 60.125 + 0.052 * corporate entrepreneurship*, R^2 = .110, F (1, 177) = 7.753, p < .001.

Table 5 shows a significant relationship between technology indicators and corporate entrepreneurship. As it is shown in the table, technology indicators could be affected by corporate entrepreneurial firms. It means that if these firms become more entrepreneurial, technology indicators might change significantly (Alarcón and Sánchez, 2013). This element is rarely discussed in the literature, and the findings of this research approve such relationship. In sum, all the hypotheses were accepted according to the results. It shows that corporate entrepreneurship affects innovation performance of the firms. The interesting point is that, although a considerable number of the firms were risk averse in nature, still the relationship exists.

Conclusion

In today's VUCA world, corporate entrepreneurship is considered as an integral part of any innovative firm; since it affects the innovative nature and innovation performance of the firms (Otache and Mahmood, 2015). In this study, the relationship between corporate entrepreneurship and innovation performance in 178 firms is studied and the three hypotheses are accepted. That is to say that there is a significant relationship between corporate entrepreneurship and the rate of product innovation, rate of process innovation and the technology indicators of the established firms. These findings are in line with those

of Barringer and Bluedorn (1999), Bharadwaj and Menon (2000), Chen et al. (2014), García-Morales et al. (2014), and in contrast to the findings of Zhao (2005), Goodale et al. (2011).

Thus, the issues and controversies regarding the role of corporate entrepreneurship in innovation performance are studied based on three main propositions. Despite the present discussions regarding the propositions in the extant literature (Kirca et al., 2005), most of the relations were not studied, in detail, in a developing country, such as Iran (Madhoushi et al., 2011). Thus, the relationships between corporate entrepreneurship and the rate of product innovation, rate of process innovation and the technology indicators of the established firms are scrutinized in this research. However, Khalili et al. (2013) highlighted the importance of this topic, only a single case study was conducted by them to investigate the influence of entrepreneurial orientation on innovative performance in a public company. There are other similar studies such as Govender (2010), Karimi et al. (2012), Moshtaghi et al. (2012), and Mohammadi (2012).

Another part of the body of the literature deals with the factors affecting innovation performance. For instance, Maatoofi and Tajeddini (2011) investigated the effect of market orientation and entrepreneurial orientation on innovation. This category fails to study the effect of product/process innovation on CE (e.g. see Jalali et al., 2013; Kakapour et al., 2016). This shows that previously authors did not study the relationship itself. Then, the contribution of the paper is to scrutinize this relationship in quite a large number of companies. However, there are some points to be considered by future researchers. Future researchers might focus on industry level innovation performance to see if regions with higher rate of corporate entrepreneurship enjoy higher innovation performance or not. Moreover, contextual elements are not considered in this research, but as Sakhdari et al. (2014) argue, taking institutional context might add some fruitful evidence in this regard. Also, corporate entrepreneurship might be operationalized variously (e.g. see Zahra, 1996; Kuratko et al., 2014; García-Morales et al., 2014). Thus, it is suggested for future researchers to use other operational definitions as well.

In addition to this, there is an emphasis on CE as a means of development and strategic replenishment for existing firms (Lumpkin and Dess, 1996). Then, policy makers might improve corporate entrepreneurship atmosphere in order to enhance innovation performance of the firms. Besides, it is assumed that considering entrepreneurial initiatives for firms might improve their level of innovativeness, and therefore, it could lead to higher performance and success of corporate entrepreneur firms (Schuler, 1986). Managers could also concentrate on corporate entrepreneurship to make their organization more innovative. This research could pave the way for researchers in developing countries to investigate the challenging aspects of this domain.

References

Alarcón, S., & Sánchez, M. 2013. "Business strategies, profitability and efficiency of production." *Spanish journal of* agricultural *research*, *1*(1): 19-31.

Alegre, J., & Chiva, R. 2013. "Linking entrepreneurial orientation and firm performance: The role of organizational learning capability and innovation performance." *Journal of Small Business Management*, *51*(4): 491-507.

Analoui, F., Mohmmad Moghimi, S., & Khanifar, H. 2009. "Public sector managers and entrepreneurship in Islamic Republic of Iran." *Journal of management development*, *28*(6): 522-532.

Artz, K. W., Norman, P. M., Hatfield, D. E., & Cardinal, L. B. 2010. "A longitudinal study of the impact of R&D, patents, and product innovation on firm performance." *Journal of Product Innovation Management*, *27*(5): 725-740.

Barringer, B. R., & Bluedorn, A. C. 1999. "The relationship between corporate entrepreneurship and strategic management." *Strategic Management Journal*, *20*(5): 421-444.

Bharadwaj, S., & Menon, A. 2000. "Making innovation happen in organizations: individual creativity mechanisms, organizational creativity mechanisms or both?" *Journal of product innovation management*, *17*(6): 424-434.

Bigliardi, B., Colacino, P., & Dormio, A. I. 2011. "Innovative characteristics of small and medium enterprises." *Journal of Technology Management & Innovation*, *6*(2): 83-93.

Chang, S. J., Van Witteloostuijn, A., & Eden, L. 2010. "From the editors: Common method variance in international business research." *Journal of International Business Studies*, *41*(2): 178-184.

Chen, Y., Tang, G., Jin, J., Xie, Q., & Li, J. 2014. "CEOs' transformational leadership and product innovation performance: The roles of corporate entrepreneurship and technology orientation." *Journal of Product Innovation Management*, *31*(S1): 2-17.

Chen, Y., Wang, Y., Nevo, S., Benitez-Amado, J & ,.**Kou, G.** 2015. "IT capabilities and product innovation performance: The roles of corporate entrepreneurship and competitive intensity". *Information & Management*, *52*(6): 643-657.

Covin, J. G., & Miles, M. P. 1999. "Corporate entrepreneurship and the pursuit of competitive advantage." *Entrepreneurship: Theory and practice*, *23*(3): 47-47.

Damanpour, F. 2010. "An integration of research findings of effects of firm size and market competition on product and process innovations." *British Journal of Management*, *21*(4): 996-1010.

Dunlap-Hinkler, D., Kotabe, M., & Mudambi, R. 2010. "A story of breakthrough versus incremental innovation: Corporate entrepreneurship in the global pharmaceutical industry." *Strategic Entrepreneurship Journal*, *4*(2): 106-127.

Fini, R., Grimaldi, R., Marzocchi, G. L., & Sobrero, M. 2012. "The determinants of corporate entrepreneurial intention within small and newly established firms." *Entrepreneurship Theory and Practice*, *36*(2): 387-414.

García-Morales, V. J., Bolívar-Ramos, M. T., & Martín-Rojas, R. 2014. "Technological variables and absorptive capacity's influence on performance through corporate entrepreneurship." *Journal of Business Research*, *67*(7): 1468-1477.

Gómez-Haro, S., Aragón-Correa, J. A., & Cordón-Pozo, E. 2011. "Differentiating the effects of the institutional environment on corporate entrepreneurship." *Management Decision*, *49*(10): 1677-1693.

González-Benito, Ó., Muñoz-Gallego, P. A., & García-Zamora, E. 2015. "Entrepreneurship and market orientation as determinants of innovation: the role of business size." *International Journal of Innovation Management*, *19*(4): 135-155.

Goodale, J. C., Kuratko, D. F., Hornsby, J. S., & Covin, J. G. 2011. "Operations management and corporate entrepreneurship: The moderating effect of operations control on the antecedents of corporate entrepreneurial activity in relation to innovation performance." *Journal of Operations Management*, *29*(1): 116-127.

Govender, D. 2010. *An assessment of corporate entrepreneurship in a petrochemical company* (Doctoral dissertation, North-West University).

Guan, J. C., Richard, C. M., Tang, E. P., & Lau, A. K. 2009. "Innovation strategy and performance during economic transition: Evidences in Beijing, China." *Research Policy*, *38*(5): 802-812.

Harman, H. H. 1976. *Modern factor analysis*. University of Chicago Press.

Hsu, C. C., Tan, K. C., Jayaram, J., & Laosirihongthong, T. 2014. "Corporate entrepreneurship, operations core competency and innovation in emerging economies." *International Journal of Production Research*, 52(18): 5467-5483.

Ireland, R.D., Kuratko, D.F. and Morris, M.H. 2006. "A health audit for corporate entrepreneurship: innovation at all levels – part 1." *Journal of Business Strategy*, *27*(1): 10–17.

Jalali, A., Jaafar, M., & Thurasamy, R. 2013." Influence of entrepreneurial orientation on the financial performance: evidence from SMEs in Iran." *Middle East Journal of Management*, *1*(2): 168-185.

Jayaram, J., Oke, A., & Prajogo, D. 2014. "The antecedents and consequences of product and process innovation strategy implementation in Australian manufacturing firms." *International Journal of Production Research*, *52*(15): 4424-4439.

Jennings, D. F., & Young, D. M. 1990. "An empirical comparison between objective and subjective measures of the product innovation domain of corporate entrepreneurship." *Entrepreneurship Theory and Practice*, *15*(1): 53-66.

Kakapour, S., Morgan, T., Parsinejad, S., & Wieland, A. 2016. "Antecedents of corporate entrepreneurship in Iran: the role of strategic orientation and opportunity recognition." *Journal of Small Business & Entrepreneurship*, *28*(3): 251-266.

Karimi, A., Sofiyabadi, J., Mobaraki, M. H., & Madanipour, K. 2012. "Corporate Entrepreneurship in Training Institutions." *International Research Journal of Applied and Basic Sciences*, *3*(11): 2273-2280.

Khalili, H., Nejadhussein, S., & Fazel, A. 2013. "The influence of entrepreneurial orientation on innovative performance: Study of a petrochemical company in Iran." *Journal of Knowledge-based Innovation in China*, *5*(3): 262-278.

Kirca, A. H., Jayachandran, S., & Bearden, W. O. 2005. "Market orientation: A meta-analytic review and assessment of its antecedents and impact on performance." *Journal of marketing*, *69*(2): 24-41.

Kuratko, D. F., & Audretsch, D. B. 2013. "Clarifying the domains of corporate entrepreneurship." *International Entrepreneurship and Management Journal*, *9*(3): 323-335.

Kuratko, D. F., Hornsby, J. S., & Covin, J. G. 2014. Diagnosing a firm's internal environment for corporate entrepreneurship. *Business Horizons*, *57*(1): 37-47.

Kuratko, D. F., Hornsby, J. S., & Hayton, J. 2015. "Corporate entrepreneurship: the innovative challenge for a new global economic reality." *Small Business Economics*, *45*(2): 245-253.

Lee, H. H., Zhou, J., & Hsu, P. H. 2015. "The role of innovation in inventory turnover performance." *Decision Support Systems*, *76*, 35-44.

Lumpkin, G. T., & Dess, G. G. 1996. "Clarifying the entrepreneurial orientation construct and linking it to performance." *Academy of management Review*, *21*(1): 135-172.

Maatoofi, A. R., & Tajeddini, K. 2011. "Effect of market orientation and entrepreneurial orientation on innovation: evidence from auto parts manufacturing in Iran." *Journal of Management Research*, *11*(1): 1-20.

Madhoushi, M., Sadati, A., Delavari, H., Mehdivand, M., & Mihandost, R. 2011. "Entrepreneurial orientation and innovation performance: The mediating role of knowledge management." *Asian Journal of Business Management*, *3*(4): 310-316.

Mason, C. 2011. "Entrepreneurship education and research: emerging trends and concerns." *Journal of Global Entrepreneurship*, *1*(1): 13-25.

Miller, D. (1983). The correlates of entrepreneurship in three types of firms, *Management Science*, *29*(3), 770–791.

Mohammadi, M. 2012. "The exploration of organization factors that inspire intrapreneurship in Iranian Agricultural Research Organization (IARO)." *African Journal of Agricultural Research*, *7*(3): 378-384.

Morris, M. H. and Kuratko, D. F. 2002. *Corporate Entrepreneurship*, South-Western College Publishers, Mason, Ohio.

Morris, M. H., Kuratko, D. F., & Covin, J. G. 2010. *Corporate entrepreneurship & innovation*. Cengage Learning.

Moshtaghi, S., Moridi, A., Farokhi, A., Konani, M., & Rotafi, A. 2012. "The amount of corporate entrepreneurship and its relationship with performance improvement of organizations." *Journal of Basic and Applied Scientific Research*, *2*(5): 4361-4367.

Otache, I., & Mahmood, R. 2015. "Corporate Entrepreneurship and Business Performance: The Role of External Environment and Organizational Culture: A Proposed Framework." *Mediterranean Journal of Social Sciences*, *6*(4): 524.

Paunović, B. 2012. "The role of corporate entrepreneurship in solving the competitiveness crisis of large companies." *Ekonomika preduzeća*, *60*(7-8): 343-354.

Radovic Markovic, M., & Salamzadeh, A. 2012. *The Nature of Entrepreneurship: Entre-preneurs and Entrepreneurial Activities*. LAP LAMBERT Academic Publishing: Germany.

Sakhdari, K., Burgers, H., & Davidsson, P. 2014. "Capable but not able: the effect of institutional context and search breadth on the absorptive capacity-corporate entrepreneurship relationship." In *Australian Centre for Entrepreneurship research exchange conference 2014 proceedings*, 954-974. Queensland University of Technology.

Salamzadeh, A., & Kirby, D. A. 2017. "New venture creation: How start-ups grow?." *AD-minister*, 30: 9-29.

Salamzadeh, Y., YousefNia, M. Radovic Markovic, M. & Salamzadeh, A. 2016. "Strategic management development: the role of learning school on promotion of managers' competence." *Economía y Sociedad*, *21*(50): 1-25.

Schuler, R. S. 1986. "Fostering and facilitating entrepreneurship in organizations: Implications for organization structure and human resource management practices." *Human resource management*, *25*(4): 607-629.

Sezen, B., & Çankaya, S. Y. 2013. "Effects of green manufacturing and eco-innovation on sustainability performance." *Procedia-Social and Behavioral Sciences*, *99:* 154-163.

Simsek, Z., & Heavey, C. 2011. "The mediating role of knowledge-based capital for corporate entrepreneurship effects on performance: A study of small-to medium-sized firms." *Strategic Entrepreneurship Journal*, *5*(1): 81-100.

Sykes, H. B., & Block, Z. 1989. "Corporate venturing obstacles: Sources and solutions." *Journal of Business Venturing*, *4*(3): 159-167.

Urbano, D., & Turró, A. 2013. "Conditioning factors for corporate entrepreneurship: an in (ex) ternal approach." *International entrepreneurship and management journal*, *9*(3): 379-396.

Varma, S. 2013." International entrepreneurial capability as a driver of the born global firm–a case study from India." *International Journal of Technological Learning, Innovation and Development*, *6*(1-2): 42-61.

Wang, R. T., & Lin, C. P. 2012. "Understanding innovation performance and its antecedents: A socio-cognitive model." *Journal of Engineering and Technology Management*, *29*(2): 210-225.

Wong, S. Y., & Chin, K. S. 2007. "Organizational innovation management: An organization-wide perspective." *Industrial Management & Data Systems*, *107*(9): 1290-1315.

Zahra, S. A. 1996. "Goverance, ownership, and corporate entrepreneurship: The moderating impact of industry technological opportunities." *Academy of management journal*, *39*(6): 1713-1735.

Zahra, S. A., & Covin, J. G. 1995. "Contextual influences on the corporate entrepreneurship-performance relationship: A longitudinal analysis." *Journal of Business Venturing*, *10*(1): 43-58.

Zhang, M. J. 2011. "Firm-level performance impact of IS support for product innovation." *European Journal of Innovation Management*, 14(1): 118-132.

Zhao, F. 2005. "Exploring the synergy between entrepreneurship and innovation." *International Journal of Entrepreneurial Behavior & Research*, *11*(1): 25-41.

Article history: Received: 15 January, 2017
Accepted: 7 June, 2017