Strategic Entrepreneurship and Intellectual Capital as Determinants of Organizational Performance: Empirical Evidence from Iran Steel Industry

Ali Rezaian[1]
Mohammad Javad Naeiji[2]

Abstract

The present paper is aimed to develop and validate a model for testing the relationships between Intellectual capital, strategic entrepreneurship and organizational performance. A researcher-designed questionnaire was used for collecting data from 322 managers in 129 small and medium firms. Structural modeling techniques were applied for data analysis. The results show that intellectual capital and strategic entrepreneurship have considerable effect on competitive advantages and organizational performance. This study can help to understand the factors which influence organizational performance especially in dynamic and turbulent environments.

Keywords: Intellectual Capital, SMEs, Strategic Entrepreneurship, Organizational Performance, Opportunity Exploration and Exploitation

Introduction

O ver the recent years, the process employed by the Iranian firms to promote performance and to gain competitive advantages across domestic and international markets have received special attention in researches (Tabassi & Bakar, 2009; Etemadi et al., 2009; Keramati et al., 2010). Despite the research activities in this field, lack of sufficient evidence prevents us from finding why some Iranian firms achieve a successful performance while others fail. As an example, there is limited information on employees' specific characteristics that can enhance the ability to recognize or exploit Iran

1. Professor, Shahid Beheshti University
2. PhD, Shahid Beheshti University; Corresponding Author's email: m_naeiji@sbu.ac.ir

market opportunities. How do HRM strategies increase the abilities of an organization toward better performance? Is there any specific process, leading to performance improvement?

Iran, as a developing country in the Middle East, is dealing with different business environments, industrial structures, and managerial attitudes compared to developed Western countries. There are several potential factors affecting organizational performance in Iran. Although some efforts have been made toward privatization, outsourcing and developing non-oil exports, the government is still dominating many key areas and Iran's economy is highly sensitive to oil price shocks. Over the last 30 years, Iran has faced intensive pressures and sanctions (Shafaei & Moradi, 2009; Naeiji & Abbasalizadeh, 2010). These constraints have two different impacts: on one hand, it has increased business risks, and on the other hand, it has fostered authoritative entrepreneurs even among public sector managers.

Owing to the existing differences in Iran's business context, this study addresses the role of two important concepts including strategic entrepreneurship and intellectual capital in shaping organizational performance within different firms, especially SMEs. By comparing and examining the theoretical assumptions that had previously been overlooked, this study is expected to contribute to the deeper understanding of the dynamic processes involved in recognition of intangible assets and opportunity exploitation.

The paper is organized as follows. First, a conceptual framework is developed. Second, according to our proposed research model, hypotheses are formulated on the effects of strategic entrepreneurship and intellectual capital on competitive advantages and organizational performance. Third, the research design and the empirical data are described. Fourth, the results of data analysis, discussion, and managerial implications are presented.

Literature Reviews

Strategic Entrepreneurship, competitive advantage and Organizational Performance

The importance of strategic entrepreneurship is emphasized in a dynamic business context, as it is intended to be a way of thinking and acting adopted by managers and organizations, and always oriented towards competitive advantage and wealth creation. Bruton & Rubanik (2002) in a study on Russian high-technology start-up ventures, argued that more innovative companies have more chance to use growth opportunities.

Consistent with prior researches (e.g., Ireland et al., 2003; Ireland & Webb, 2009), this study defines the strategic entrepreneurship as a three-factor concept: entrepreneurial mindset, balancing exploration and exploitation, and continuous innovation. The term "mindset" refers to "the cognitive frameworks through which fresh and existing knowledge is interpreted and used to inform decisions such as those regarding strategy and entrepreneurship" (Baron, 2007). The second dimension of strategic entrepreneurship is to find a balance between exploration and exploitation (Ireland et al., 2003). This dimension is the centerpiece of strategic entrepreneurship concept and researches have shown that this balancing will contribute to achieving superior performance (Huang, 2009). The third key element is continuous innovation that occurs when an enterprise continuously creates or transfers economic value. Therefore, continuous innovation directly and positively contributes to a firm in creating wealth. In sum, the strategic entrepreneurship discussed above offers new ideas to develop and exploit a firm's strategy in pursuing competitive advantages.

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Table 1 presents a summary of the literature (directly quoted) about the effects of strategic entrepreneurship on competitive advantages and a firm performance. The following hypotheses are developed on the basis of this theoretical support:

H$_1$. Strategic entrepreneurship has a positive effect on competitive advantage.
H$_2$. Strategic entrepreneurship has a positive effect on organizational performance.

Table1. A Summary of Some Research findings about the Effects of Strategic Entrepreneurship (SE) on Competitive Advantage and Organizational Performance

Author(s)	Objective(s) of the Paper	Results
Ireland et al. (2003)	Develop a model of SE that explains how this construct can create wealth	The strategic entrepreneurship can help competitive advantage and value creation in an organization through establishing a balance between exploration and exploitation of opportunities.
Antoncic & Scarlat (2005)	Describe the relationship between corporate entrepreneurship and performance elements and between alliance and corporate entrepreneurship	Corporate entrepreneurship activities and orientations are important antecedents of organizational performance.
Wang & Wang (2008)	Develop an assessment tool for strategic entrepreneurship and identify influences of career development and strategic entrepreneurship on performance management in Chinese context	Findings suggest that four dimensions of strategic entrepreneurship have varying effects on performance. In particular, proactive change and risk anticipation are found to be the strongest predictor for performance. While the results indicate that adaptive capability and resourceful innovation do not have any influence on performance indicators.
Kyrgidou & Hughes (2010)	Conduct a literature review in order to expand concept of SE and propose a non-linear model	They argue that strategic entrepreneurship involves six components: opportunity identification, growth, vision, flexibility, acceptance of risk, and innovation. Based on the initial model of Ireland et al. (2003), they argue that SE acts as a potential source of competitive advantage, but this relation is affected by the feedback and learning loops and internal environment.
Kraus et al. (2011)	Review varying concepts of strategic entrepreneurship in order to establish a theoretical framework as well as developing a model to the understanding of how firms can create value	They propose the interrelated six domains for a new conceptual model of SE: resources, capabilities, strategy, entrepreneur, environment, and organizational structure.
Hitt et al. (2011)	develop an input-process-output model of SE	Input variables of SE including environmental factors, organizational resources and individual resources can help to enhance orchestration resources processes and these processes lead to competitive advantage and a higher value for customers.

Intellectual Capital, Competitive Advantage and Organizational Performance

The Intellectual Capital (IC) conventionally refers to the difference between tangible and intangible assets' value. According to Gowthorpe (2009), the intangible assets are the main origin of intellectual capital which comes from workforce and firm's relationship with stakeholders. Researchers have shown that IC is positively associated with organizational outcomes and is especially recognized as one of the important resources of competitive advantages to firms (Nemec Rudez & Mihalic, 2007; Chen et al., 2005). There is also convincing evidence supporting a positive relationship between IC and business performance.

Ahangar (2011) indicated that IC affects profitability, employee productivity and sales growth. He also found that human capital is more effective than structural capital in raising profitability and employee productivity. Tan et al. (2007) argued that IC has a significant positive influence on a firm performance and even, future performance is predictable based on the quality of a firm's IC.

Table2. A summary of Some Research findings about Effects of Intellectual Capital on Competitive Advantage and Organizational Performance

Author (s)	Objective(s) of the Paper	Results
Bontis, et al. (2000)	Identify interrelationship between intellectual capital dimensions and investigate the effects of intellectual capital on performance in Malaysian industries	They find that all aspects of intellectual capital are associated to each other and IC can predict the firm's performance.
Pena (2002)	Explore the role that IC assets play in the new firm survival and growth	The human capital of the entrepreneur, organizational capital, and relational capital are crucial to improve venture performance.
Cabrita & Vaz (2006)	Describe the relation between intellectual capital, value creation and sustainable competitive advantages in banking industry	Social capital and relational capital have a direct effect on competitive advantages. An indirect effect of human capital is also confirmed.
Nemec Rudez & Mihalic (2007)	Develop a model of intellectual capital in the hotel industry and to examine the influence of each IC category on the financial performance	Although the total IC was found to influence financial performance, it was not supported that human capital, structural capital and non-end-customer-relationship would influence financial results.
Chen (2008)	Investigate the relation between three dimensions of green intellectual capital and competitive advantage	The results show that the although relation between all the three dimensions of green intellectual capital and competitive advantage is meaningful, green relational capital is the most important predictor of competitive advantage. In addition, green intellectual capital of large companies is more than those SMEs that are activating in the information and electronics industry in Taiwan.

Table 2 presents a summary of the literature (directly quoted) about the effects of intellectual capital on a firm's performance and moderating effect of competitive advantages. The following hypotheses are developed based on this theoretical support:

H$_3$. Intellectual capital has a positive effect on competitive advantage.
H$_4$. Intellectual capital has a positive effect on organizational performance.

**The mediating role of Competitive Advantage in Organizational Performance**

A review of strategic management literature shows that competitive advantage has mainly a mediating role in organizational performance. For example, Ma (2000) addressed the relation between competitive advantage and organizational performance and found that although achieving competitive advantage is not equal to superior performance, it provides predictive validity for performance. The same findings reported by Majeed (2011) who argued that the companies with more competitive advantages are able to gain higher levels of performance.

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The studies of intellectual capital and strategic entrepreneurship provide more convincing evidence about the mediating role of competitive advantage in organizational performance. Kamukama et al. (2011) identified competitive advantage as a significant mediator in the relation between intellectual capital and financial performance in Uganda. Ireland et al. (2003) argued that SE promotes wealth creation and performance through competitive advantage. In fact, intellectual capital and strategic entrepreneurship will facilitate to achieve competitive advantage from a firm's resources. Through achieving the competitiveness, companies can obtain the possible performance.

The following hypothesis is developed based on this theoretical support:

H$_5$. Competitive advantage has a positive effect on organizational performance.

Building on the literatures and research hypotheses, Figure 1 illustrates the proposed research model.
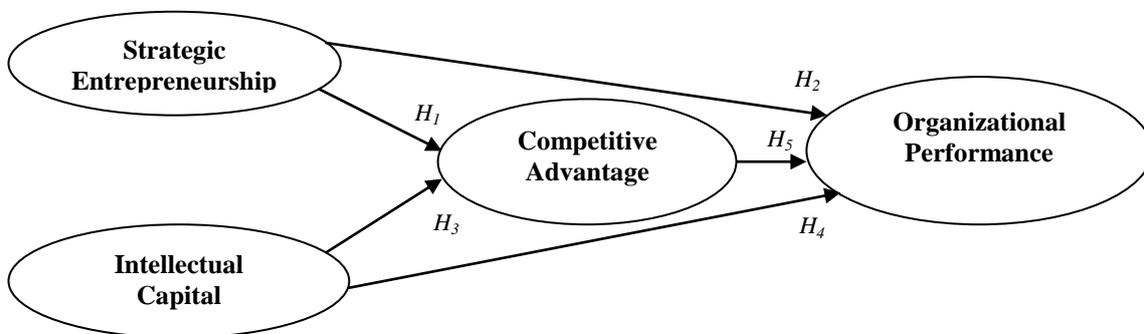
Fig 1. Proposed Model

Methodology

The Iran steel firms were randomly selected from databases listed with the Iranian Ministry of Industries, Mines and Trade (IMIMT). The sampling is limited to those SMEs which have 5 to 500 employees and we have selected 2 or 3 managers from the selected companies (from our basic samples).

A proper sample size for factor analysis differs from 10 to 15 subjects per variable (Nunnally, 1994). The questionnaire constitutes 31 items, which are expected to measure the respondents' viewpoints regarding research variables. Therefore, in accordance with theories, the items require at least a participant sample size of 310. The total of 371 questionnaires were handed over to managers in 129 SMEs, working in Iran steel industries; 322 were returned. Thus, according to the statistical requirements, the sample size is sufficient for factor analysis. Table 3 describes the composition of respondents based on demographics of samples.

Table 3. Demographic Characteristics

Variables	Values	Numbers	Percentage %
Gender	Male	237	73.6
	Female	85	26.4
Age	< 30 y	77	23.9
	30–44 y	148	46.0
	45–54 y	65	20.2
	≥ 55 y	32	9.9
Entrepreneurship Experience	< 5 y	81	25.2
	6–15 y	130	40.4
	16–25 y	87	27.0
	≥ 26 y	24	7.4
Educational Level	≤ Diploma	91	28.3
	BA/BC	149	46.2
	MA/MC	63	19.6
	Ph.D.	19	5.9

According to previous studies, an assessment tool has developed to evaluate the strategic entrepreneurship which includes three factors (Harrison and Enz, 2005; Kuratko et al., 1990; Hornsby et al., 2008). These factors are: entrepreneurial mindset, balancing exploration and exploitation, and continuous innovation. The first tool used to gather information was the IC derived from Nemec Rudez (2004). This 13-item scale provides a measure of self-report IC and its three subscales (human capital, structural capital and relational capital). We assessed the organizational performance with Wang and Satow (1994), a three-dimension scale. These dimensions include market share, profitability and competitiveness. A five-point Likert scale was used regarding the research questions.

We used a confirmatory factor analysis to test the goodness of measurement model. Goodness of measurement model has been identified by seven factors as: χ^2/df, Adjusted Goodness of Fit Index (AGFI), Normed Fit Index (NFI), Non-Normed Fit Index (NNFI), Comparative Fit Index (CFI), Relative Fit Index (RFI), Root Mean Square Error (RMSEA). Acceptable values based on Lin & Wang (2006) recommendations and exact values have been listed in table 4. The table shows all values for seven factors are acceptable and demonstrates a good fit of measurement model.

Table 4. Fit Indices for Measurement Models

Fit Indices	Recommended Value	Measurement Model
χ^2/df	≤3.00	2.06
AGFI	≥0.80	0.87
NFI	≥0.90	0.91
NNFI	≥0.90	0.92
CFI	≥0.90	0.95
RFI	≥0.90	0.90
RMSEA	≤0.08	0.048

Psychometric Properties of Measures

Means, standard deviations, reliabilities and convergent validities are reported in Table 5. Reliability and convergent validity of assessment tools are evaluated by five factors: Comparative Fix Analysis (CFA) loading, t_{Value}, Cronbach's α, composite reliability (CR) and average variance extracted (AVE). Values of factor loading and Cronbach's α should be higher than 0.70 which, as it is shown in the Table 5 of all values, are higher than 0.70 and at the

acceptable level. The acceptable value for extracted average variance is 0.50 which in our research is between 0.52 and 0.74. Finally, all values of composite reliability are higher than 0.80. In sum, all coefficients show the good reliability and convergent validity.

Table 5. The Results of Descriptive Statistics, Reliabilities and Validities

Factor/Item	Measurers	Means	Standard deviations	CFA loading	t_{-Value}	Cronbach's α	CR	AVE
Strategic Entrepreneurship (STE)		2.98	0.83			0.81	0.88	0.71
Entrepreneurial Mindset(EM)		2.96	0.87			0.79	0.94	0.62
EM1	Capturing the benefits of uncertainty as a business thinking	2.75	0.84	0.79	15.77			
EM2	Adopting a suitable posture in order to maximize the profitability	3.19	0.78	0.82	12.53			
EM3	Strong associations between registering opportunities and exploiting entrepreneurial opportunities	2.99	0.85	0.91	16.65			
EM4	Having organizational systems to realize potential opportunities	2.91	1.01	0.70	14.75			
Balancing Exploration (BE)		2.79	0.78			0.74	0.85	0.66
BE1	Balancing between risks and returns through allocating resources	2.73	0.81	0.81	13.48			
BE2	Balancing current and future needs as a factor in decision-making process	3.27	0.78	0.78	14.78			
BE3	Having proper mechanisms to balance between opportunity seeking and advantage seeking behavior	2.75	0.72	0.72	13.46			
BE4	Balancing cohesion and conflict in strategic decision-making processes	2.40	0.81	0.81	17.55			

Factor/Item	Measurers	Means	Standard deviations	CFA loading	t_{-Value}	Cronbach's α	CR	AVE
Continuous Innovation (CI)		3.19	0.83			0.65	0.83	0.52
CI1	Stress on R&D and innovations by the top managers of a company	2.96	0.73	0.74	12.59			
CI2	Making continuous and purposeful efforts to search for an idea to start new businesses	3.28	0.86	0.71	13.50			
CI3	Introducing a lot of new products/services over the past 5 years	3.71	0.79	0.78	12.73			
CI4	Dramatic changes in the product or service lines	2.83	0.94	0.82	15.31			
Intellectual Capital (INC)		3.49	0.86			0.85	0.89	0.63
Human Capital (HC)		3.19	0.95			0.81	0.86	0.69
HC1	Having good qualified employees	2.93	1.15	0.90	13.77			
HC2	Having at least 2 years experience of work	2.85	0.97	0.85	14.41			
HC3	Developing and sharing knowledge among employees	3.17	0.80	0.81	10.19			
HC4	Developing an appropriate reward system	4.03	0.89	0.86	13.48			
HC5	Having highly empowered employees	2.96	0.92			0.78	0.81	0.59
Structural Capital (SC)		3.41	0.74	0.77	14.51			
SC1	Developing co-operation across departments	3.54	0.64	0.71	17.69			
SC2	Increasing the knowledge across departments	4.01	0.76	0.74	15.91			
SC3	Guests' complaints are settled	2.78	0.81	0.84	12.53			
SC4	Connecting to environment through IT	3.32	0.75	0.82	10.17			
Relational Capital(RC)		3.41	0.89			0.80	0.84	0.64

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| Factor/Item	Measurers	Means	Standard deviations	CFA loading	t_{-Value}	Cronbach's α	CR	AVE
RC1	Improving customer satisfaction	3.05	0.93	0.74	11.76			
RC2	Improving the image of firm	2.62	1.07	0.79	19.99			
RC3	Having more valuable brand compared with competitors	3.19	0.86	0.81	16.45			
RC4	Relationship with commercial partners as a source of knowledge	3.74	0.69	0.87	13.78			
Competitive Advantage(COA)		3.86	0.84			0.91	0.94	0.74
CA1	Considering cost-benefit analysis for every important project	3.68	0.90	0.84	17.68			
CA2	Considering the relationship between business needs and innovation	4.12	0.97	0.79	17.78			
CA3	Continuous advancement of the innovation's advantages	3.79	0.65	0.74	18.39			
Organizational Performance (ORP)		2.88	0.89			0.88	0.82	0.65
OP1	Profitability compared with business unit objectives	2.75	0.81	0.89	15.71			
OP2	Profitability compared with industry average	2.98	0.64	0.75	17.78			
OP3	Market share compared with business unit objectives	3.40	0.83	0.71	16.70			
OP4	Market share compared with major competitors	2.28	0.99	0.93	19.53			
OP5	Having unique products and processes	2.59	1.17	0.82	14.69			
OP6	Playing an important role in the industry	3.28	0.92	0.77	15.36			

For examining a discriminant validity, according to Fornell and Larcker (1981), the square root of AVE for every construct should exceed the correlations between that construct and other constructs. Table 6 shows that the discriminant validity for all research's constructs is higher than most of the acceptable level.

Table 6. Discriminat Validity

	Intellectual Capital	Strategic Entrepreneurship	Competitive Advantage	Organizational Performance
Intellectual Capital	**0.79**			
Strategic Entrepreneurship	0.62	**0.84**		
Competitive Advantage	0.59	0.48	**0.86**	
Organizational Performance	0.40	0.53	0.77	**0.81**

Results

For examining the relations indicated in hypotheses, we used the Structural Equation Modeling (SEM). SEM is a statistical technique to assess the causal assumptions among multiple variables. Measurement model and path analysis are special cases of SEM that their results are shown in figure 2 and table 7. Based on the measurement model, χ^2/df is lower than 3, RMSEA is lower than 0.08 and finally, values of NFI, GFI, AGFI, CFI, RFI are 0.92, 0.92, 0.94, 93 and 0.90 which are higher than the acceptance level (0.90). These results show that validity and the goodness of structural model are confirmed at the 95% level.
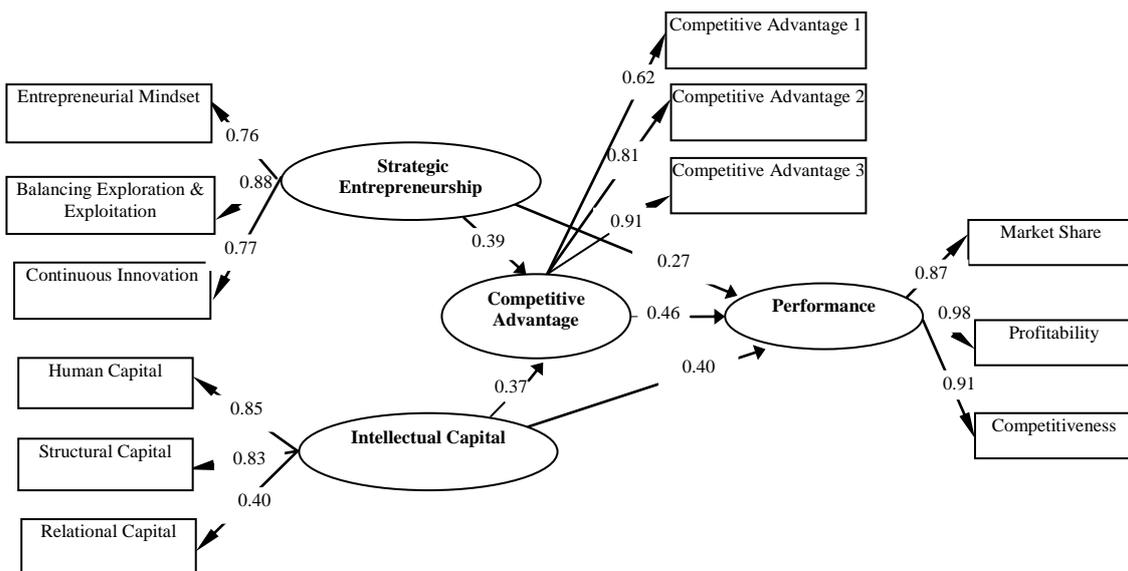
Fig 2. Coefficients for Path Model

Table 7 summarizes the relations between the model's independent variables (strategic entrepreneurship and intellectual capital) and competitive advantage, and organizational performance. H_1 posited that strategic entrepreneurship positively affected competitive advantage ($\beta = 0.39$, $p < 0.01$), and the results in table 6 support the hypothesis. The results also illustrate that the strategic entrepreneurship positively affected the organizational performance, providing strong support for H_2 ($\beta = 0.27$, $p < 0.01$). As predicted in H_3 and H_4, intellectual capital was positively related to competitive advantage ($\beta = 0.37$, $p < 0.01$) and the strategic entrepreneurship affected the organizational performance ($\beta = 0.40$, $p < 0.01$); therefore both hypotheses were supported. Finally, the competitive advantage significantly affected the organizational performance ($\beta = 0.46$, $p < 0.001$), providing support for H_5.

Table 7. The Results of the Structural Equation Modeling

Hypotheses	Independent variable	Dependent variable	Standardized Coefficients	$t_{\text{-value}}$	$P_{\text{-value}}$	Results
H_1	Strategic entrepreneurship	Competitive advantage	0.39	5.60	0.00	Supported
H_2	Strategic entrepreneurship	Organizational performance	0.27	5.04	0.00	Supported
H_3	Intellectual Capital	Competitive advantage	0.37	7.98	0.00	Supported
H_4	Intellectual Capital	Organizational performance	0.40	7.15	0.00	Supported
H_5	Competitive advantage	Organizational performance	0.46	7.76	0.00	Supported

Fit Index: $X^2/df = 2.59$ (p = 0.000), NFI = 0.92, GFI = 0.91, AGFI = 0.94, CFI = 0.93, RFI = 0.90, RMSEA= 0.06

Conclusions

Designing and testing a model for examining the relationships among strategic entrepreneurship and intellectual capital with organizational performance was studied in this work. The findings supported the hypotheses regarding SMEs limited to Iranian steel industries, so that most of the competencies under investigation were significant predictors for organizational performance. Especially strong relations were found between some aspects of strategic entrepreneurship, intellectual capital and organizational performance.

Consistent with prior research (Ketchen et al., 2007; Kyrgidou & Hughes, 2010), this study indicates that SE can improve Iranian SMEs' performance. In particular, the results disclosed three factors of strategic entrepreneurship which Ireland et al. (2003) have introduced previously: entrepreneurial mindset; balancing exploration and exploitation; continuous innovation. Among them, entrepreneurial mindset plays the most important role in organizational performance.

The positive effect of intellectual capital on the organizational performance in SMEs is consistent with the results obtained by other researches such as Leitner, et al. (2005) and Lu, et al. (2010). Most of the newly start-up firms are limited in growth due to minimal access to financial resources. Therefore, accessing to the intellectual capital as an intangible resource can be a substitute lever for growth and improvement of organizational performance. The main factor in intellectual capital for performance improvement is human capital; in this regard, if managers want to improve their organization's performance, they should focus on empowerment and development of employees' capabilities.

This study was also an endeavor to investigate the relationship between IC and competitive advantages in market. The results strongly confirmed the hypotheses about the effect of IC on competitive advantages. The positive relationship in Iran's business context supports the arguments by Bontis et al. (2000) that intangible assets and particularly human capital are more likely to emerge in a dynamic environment in transition economies in comparison to a stable context. Similarly, structural capital elements, such as increasing employees' knowledge, capacity of a firm to co-operate across departments and establishing connections with the environment are associated with a firm's market share and growth.

One of the most important conclusions of the current study for SMEs managers is that, while many firms focus on a firm' tangibles assets (i.e. the physical and financial resources), they should not neglect intangible assets such as talent and know-how of employees, relations of the company with suppliers and customers and cooperation and knowledge sharing culture among employees as ever increasing factors for determining short term and, especially, long term profits. Similarly, top managers and policy makers should decide on the mechanisms to encourage intangible-based entrepreneurial behaviors.

This study, being the first attempt to examine the impact of strategic entrepreneurship and intellectual capital on organizational performance, has some implications in practice. First, it helps clarify the potential role of strategic entrepreneurship in business environments. This implication is important to scholars and practitioners to understand how firms can achieve and sustain competitive advantages and organizational performance. Second, our study provides an empirical relation between strategic aspects of entrepreneurship and organization's success. This relation has been mentioned in the previous studies, but there were rare investigations which focused on quantitative data and an empirical model.

These findings offer some contributions. The major one is focus on the soft determinants of organizational performance which has received less attention in other studies. The second contribution is joint competitive advantages as a moderating variable which examines how competitive advantages affect the relationships between strategic entrepreneurship, intellectual capital and organizational performance in SMEs. Finally, the study combines several questionnaires and validates an assessment instrument of strategic entrepreneurship, intellectual capital and organizational performance in Iran's business context as a developing and state-dominated economy.

The findings from this study were limited in two main ways. First, the linkage between the strategic entrepreneurship, intellectual capital and organizational performance is a new issue. Consequently, there is limited research about it especially in Iran. Second, although the sample was chosen in Iran steel industries, the results may not apply to firms and managers in other industries. It is better to gather more data from other industries or other regions -probably abroad- which will help to generalize and develop the findings.

Exploring the dynamics of strategic entrepreneurship and intellectual capital, future studies are suggested to investigate the role of firm strategies, especially HRM. Studies can also examine other mediators in the relationship between strategic entrepreneurship, intellectual capital, and organizational performance, such as demographic variables of participants (e.g., gender, age and educational level).

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