Impact of Organizational Innovation, Learning Orientation and Entrepreneurship on SME Performance: The Moderating Role of Market Turbulence and ICT

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Abstract The purpose of this study was to determine the effect of organizational innovation (OI), learning orientation (LO) and entrepreneurship on small and medium-sized enterprise (SME) performance considering the moderating role of market turbulence and ICT. The statistical population was all active SMEs in Rasht industrial park (193 companies). SPSS Sample Power software was used to calculate the optimum sample size and the lowest optimum sample size was 85. Simple random sampling was carried out using SPSS 22. Field data was collected by questionnaire. A five-point Likert scale was used for the responses to the questionnaire. The reliability and validity was confirmed. Before testing the hypotheses, outlier data and FIMIX were analyzed to ensure the homogeneity of community-level variance. To assess the measurement and structural models and test the hypothesis, PLS-SEM in SmartPLS3 was used. The results show that both OI and LO have a positive effect on entrepreneurship, but have no effect on SME performance considering the mediating role of entrepreneurship. The findings illustrate that an increase in market turbulence decreased the impact of innovation, LO and entrepreneurship on SME performance. On the other hand, an increase in ICT was found to increase the effect of innovation, LO and entrepreneurship on SME performance.

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1   Introduction

Recent research on the essential role of small and medium-sized enterprises (SMEs) in industry and their impact on the overall function of the economy has shown measurable growth (Rodriguez-Gutierrez et al. 2015). Nowadays, SME is considered as a major factor in the growth of industrial structure of many countries, especially developing countries. Competitiveness is also a key issue, which is considered as a tool for achieving desirable economic growth and sustainable development (Sami Sultan 2014). In the current economic situation of the world in which one of the concerns of developing countries such as Iran is joining the World Trade Organization, competitiveness is the ability to achieve a suitable position and stability in world markets without the turbulences. Nowadays, with the expansion of markets and the importance of competitiveness in international trade, countries need to have an accurate understanding of their relative position in comparison with other countries, through which they can adopt their economic and, in particular, industrial policies according to their relative position and based on new approaches of the global economy. Understanding this will help them promote their abilities to improve their performance. The rapid development of the global economy and the industrial sector of countries increase the need to identify the new situations of countries in international competitiveness (Guzman et al. 2012).

Government policy in Iran is concentrated on SMEs because these units promote innovation, flexibility and entrepreneurship (Talebi and Tajeddin 2011; Jalali et al. 2014; Salamzadeh and Kawamorita Kesim 2017). This subject is the motive for the current experimental case study in the Rasht industrial park. Currently, the problem of SME in Iran is the shortage of production, not the non-competitive production. When the market is saved from recession and enterprises achieve to normal stage in terms of production, policies can be considered for them leading to their increased competitiveness. Evidence also shows that one of the major reasons for the failure of Iranian manufacturing and service companies in international markets is their lack of competitiveness in global target markets (Valaei 2017). Some previous studies have shown that countries that pursue competitive policies at SME level seriously gain higher competitiveness compared to competitors (Cerrato and Depperu 2011; Ille and Chailan 2011; Khajeheian 2014; Parnell et al. 2015). Previous studies have also shown increased economic stability in uncertainty and turbulence conditions under light of competitiveness (El-Gohary et al. 2013; Todd et al. 2014).

Studies have investigated innovation by SMEs (Xie et al. 2010; Mazzarol et al. 2014; Antonioli and Della Torre 2015; Roach et al. 2016; Pacheco et al. 2017). Some emphasized the significance of innovation and competitive structure of SMEs (Emami and Dimov 2016; Salavou et al. 2004). In the international business

environment, entrepreneurship can be effective for the growth of stable business and economic growth (O'Connor 2013). Much research has been carried out on the influence of entrepreneurship on SME performance (Avlonitis and Salavou 2007; Keh et al. 2007; Hashi and Krasniqi 2011; Ndubisi and Iftikhar 2012; Sulistyo and Siyamtinah 2016). Companies that have a higher level of entrepreneurship are always looking for new chances to create competitive advantages (Covin and Miles 1999). The current study examines this effect on SMEs in an experimental study framework. It investigates whether entrepreneurship has been influential on SME performance and whether SMEs have achieved their functional purposes by creating innovation and entrepreneurship. A competitive advantage for companies can be enhanced through learning orientation (LO) (McGill and Slocum 1993). Although the relationship between LO and innovation with SME performance has been determined and research has shown that LO as an important factor in the business function of SMEs (Aziz and Omar 2013), little experimental evidence exists to support this relationship (Gomes and Wojahn 2016). Some experimental findings have shown the positive influence of LO on creation of entrepreneurial opportunities and SME growth (Wolff et al. 2015). The current study examined the role of LO in SMEs and its impact on function.

This paper also studied the moderating role of information and communication technologies (ICT) and market turbulence in SMEs. Research has shown that SMEs play a key role in the acceptance of new technologies (Gudmundson et al. 2003). In fact, ICT can affect company functioning (Arendt 2008; Tan et al. 2009; Bayo-Moriones et al. 2013; Azam 2015). An important aspect of ICT is that it brings about great changes in consumer needs, daily increase in competition, quick changes in service and SME product innovation (Madrid-Guijarro et al. 2009) and in market conditions (Teece et al. 2007). Lack of experimental evidence to enhance competitiveness can be felt in the role of ICT in small companies (Boothy et al. 2010; Parida et al. 2016). Another factor affecting the lack of SME support of entrepreneurship is market turbulence. Despite research about the impact of market turbulence on SMEs (Bakar et al. 2012), few have examined the effect of market turbulence on managerial support of entrepreneurship in SMEs. Studies have shown that market turbulence and technology-related turbulence influence SME performance (Arora et al. 2016).

The current study presents a comprehensive assessment of the effects of innovation, learning and entrepreneurship in the face of market turbulence and the effect of ICT on SME performance. Structural equation modeling using the PLS-SEM approach was used to determine the relationship between variables. The study basically investigates the level of influence of OI, LO and entrepreneurship on SME performance considering the moderating role of market turbulence and ICT.

1.1 The Position of SME in the World and Iran

More than ninety percent of the world's economic enterprises are SMEs. SMEs account for between 55 and 90% of the country's gross domestic product (GDP) around the world. Over 50% of the workforce in the world has been recruited by the SME. In Europe, there are more than 16 million companies, which less than 1% of them are large companies, and the rest are SMEs. In addition, two thirds of all employees in this region belong to SME. SME is the backbone of the Asia-Pacific region economy and in 90% of the companies, 32–48% of employment and 60–80% of the GDP of countries in this region belong to SEM. The performance of the US economy in recent years is largely owed to the creation of SME, which accounts for 43% of the employment index (Bala Subrahmanya 2014).

Iranian Ministry of Industry, Mining and Trade calculated the number of workshops in 2014 having less than 50 employees with an industrial operating licenses as 82.8 thousand, which comprised 91.5% of all units. Their share in the capital and full-time employment of industrial units were 24.4% and 41.2%, respectively. By contrast, workshops with 50 or more employees, despite their relatively low share of operating licenses comprise 75.6% of capital and 58.8% of full-time employment of industrial units. This is greater than for workshops with fewer 50 employees (Ebrahimi and Mirbargkar 2017). Based on the newest definitions of the organization of small industry and industrial towns in Iran, SMEs are industries with 5–50 employees and large industries those with more than 50 employees (ISIPO 2014).

2 Literature Review and Research Hypothesis

2.1 OI, Entrepreneurship and SME Performance

Innovation determines the level of success in companies and industries and their longevity (Emami and Dimov 2016; Zahra and Covin 1994). Organizational innovations are effective changes in business proceedings, location and external relations (Merono-Cerdan and Lopez-Nicolas 2013). Some studies have examined the impact of OI on function (Augusto et al. 2014; Cozzarin et al. 2016). Rosenbusch et al. (2011) found a positive effect for innovation on SME performance. Xie et al. (2010) studied 188 SMEs in China and showed that innovation was key to sustainable competitive advantage in SMEs. Most studies highlighted service innovation, administrative innovation and process innovation (Zahra 1996; Hurley and Hult 1998; Song and Xie 2000; Ndubisi and Iftikhar 2012). Service innovation consists of introducing new products for current services and searching for new services. Administrative innovation concentrates on new business management practices and process innovation focuses on job techniques and operational systems to increase efficiency and operation (Ndubisi and Iftikhar 2012). Positive innovation can

enhance SME business circumstances and improve business function (Emami and Dimov 2016). The negative consequences of innovation for SMEs relate to management and operational issues, financial risks, loss of company image and recognition in the eyes of consumers and employees and negative environmental effects (Laforet 2011). Among the most important innovation performance barriers in SMEs are loss of technical information, financial capital and efficiency, a lack of technical experts, high risks, high expense of innovation, loss of adequate business strategies, external innovation, marketing channels and an efficient management system, weak awareness ratio and government limits (Xie et al. 2010).

There appears to be a close relationship between innovation and entrepreneurship and studies have examined this relationship (Avlonitis and Salavou 2007; Crumpton 2012; Ndubisi and Iftikhar 2012; Galindo and Mendez-Picazo 2013; Lee et al. 2016). Innovation plays a major role in economic growth and entrepreneurs enhance company activities and increase profits by introducing new technologies (Galindo and Mendez-Picazo 2013). Innovation mainly involves entrepreneurship (Hebert and Link 2006) and entrepreneurship can directly affect strategy and business functioning (Hallak et al. 2011), especially in SMEs (Wu 2013; Wu and Huarng 2015).

There is no general consensus about the features of entrepreneurship (Lumpkin and Dess 1996). Researchers tend to use risk-taking, innovativeness and proactiveness to measure entrepreneurial behavior (Lumpkin and Dess 1996; Lumpkin et al. 2009; Li et al. 2008; Casillas et al. 2010; Soininen et al. 2012; Wales et al. 2013; Khajeheian 2017; Chavez et al. 2017). Risk-taking means investment in unpredictable circumstances where there a possibility of failure (Rauch et al. 2009). Innovation relates to creative, experimental and supportive aspects of new ideas (Emami et al. 2011; Kyrgidou and Spyropoulou 2013). Proactiveness is the ability to participate and benefit from opportunities. A company supervises market changes continuously and increases its ability to analyze and identify future market processes (Dess and Lumpkin 2005). Capel (2014) proved that innovation affects entrepreneurship in a study concentrating on indigenous knowledge.

Entrepreneurship and innovation can influence qualitative functioning of SMEs (Khajeheian 2013; Khajeheian and Tadayoni 2016; Ndubisi and Agarwal 2014). Schumpeter (1934) found that entrepreneurs continuously try to enhance economic circumstances and innovative behavior (Bouncken et al. 2014). Despite the growing importance of SMEs in all transition state economies, they encounter barriers to entrepreneurship (Hashi and Krasniqi 2011). The most important organizational barriers are formal barriers (e.g. high taxes, changes in financial policies, ambiguity in financial policies and business principles), informal barriers (e.g. implementation of business principles, government corruption, wasting time in offices), environmental barriers (e.g. low purchasing power, loss of capital for investment, competition from illegal businesses, loss of adequate information) and skill barriers (e.g. prevention of growth in new markets and management problems) (Aidis 2005). The results of the studies have produced the following hypotheses:

Hypothesis 1 OI affects entrepreneurship.

Hypothesis 2 OI affects SME performance.

Hypothesis 3 OI affects SME performance considering the mediating role of entrepreneurship.

Hypothesis 4 Entrepreneurship affects SME performance.

2.2   LO, Entrepreneurship and SME Performance

LO directly increases production and information publication (Sinkula et al. 1997). LO is reflective of a series values relating to knowledge that has a direct impact on increasing learning (Nasution et al. 2011). LO is a process of information acquisition and dissemination and shared interpretation which increases both individual and organizational efficiency through a direct influence on results (Kaya and Patton 2011). Most LO studies have examined commitment to learning, shared vision, open-mindedness and intra-organizational knowledge sharing (Hurley and Hult 1998; Calantone et al. 2002; Jyoti and Dev 2015). Despite the importance of learning to microeconomics and macroeconomics, most studies about learning processes analyze large companies (Franco and Haase 2009). It appears that entrepreneurship is a crevice in studies of organizational learning (Rae and Carswell 2001).

Studies have determined the effect of LO on entrepreneurship. Kakapour et al. (2016) in Iran studied 130 SMEs and presented a model that predicted that LO and market orientation have positive effects on identifying opportunities and entrepreneurship of a company. Some studies have also determined the effect of LO on SME performance (Keskin 2006; Aziz and Omar 2013; Hooi and Ngui 2014; Wolff et al. 2015; Gomes and Wojahn 2016). Wolff et al. (2015) have shown that there is no significant relationship between LO and SME growth, while there was a positive relationship between entrepreneurship and SME growth. They have also shown that entrepreneurship plays the role of complete mediation in the relationship between LO and SME growth performance, while the role of partial mediation was rejected. The disparity of research results about the impact of LO on function can be seen. Goh (2001) found that there was no relationship between LO and financial operation, while other researches have reported an effect for LO on financial and non-financial learning. This impact was found to be stronger for non-financial operations (Yang et al. 2004; Goh et al. 2012; Hooi and Ngui 2014). The results of the studies have produced the following hypotheses:

Hypothesis 5 LO affects entrepreneurship.

Hypothesis 6 LO affects SME performance.

Hypothesis 7 LO affects SME performance considering the mediating role of entrepreneurship.

2.3 Moderating Role of Market Turbulence

Market turbulence is indicative of a degree of change in consumer preferences for products and services (Jaworski and Kohli 1993; Arora et al. 2016). Market turbulence indicates the amount of change in a market or technology. Because companies should benefit from consumer preferences to create a competitive advantage, they should have a clear understanding of their consumers by monitoring and analysis of surrounding industries (Grant 2010). When a high degree of market turbulence is encountered, companies require more innovative activities and correct performance of innovative strategies (Hult et al. 2004). Some research has examined the impact of market turbulence on SMEs (Bakar et al. 2012; Sainidis and Robson 2016). Bakar et al. (2012) evaluated the impact of market turbulence on SMEs in biotechnology in Malaysia. A sample of 103 companies was evaluated and the results showed that under market turbulence, factors like a strategic relationship with other private companies, enforcement of innovations and mergers can be effective. When market turbulence is more than usual, such innovations can be effective (Tsai and Yang 2013). Entrepreneurship also can be effective for adapting companies to consumer preferences (Devezer et al. 2014). On the other hand, environmental disturbance may have a negative impact on company operation, especially for SMEs. Pratono and Mahmood (2014) evaluated the moderating role of market turbulence on SME performance. The results showed that an increase in environmental turbulence increases SME performance. During severe environmental turbulence, companies assign more resources and adopt new strategies (Li et al. 2008).

Research has evaluated the moderating role of market turbulence in the relationship between LO variables and function. Hanvanich et al. (2006) studied 200 managers and collected data by survey. They showed to what extent learning and function are related to environmental turbulence. It appears that under low environmental turbulence, LO and organizational memory relates to function and innovation, while under high environmental turbulence, only LO is a useful predictor. Cambra-Fierro et al. (2012) in a longitudinal study evaluated the relationship between market orientation and LO under market turbulence. Their results found that dynamic companies are more prepared in times of turbulence. The results of the studies have produced the following hypotheses:

Hypothesis 8 Market turbulence moderates the effect intensity of OI on SME performance.

Hypothesis 9 Market turbulence moderates the effect intensity of entrepreneurship on SME performance.

Hypothesis 10 Market turbulence moderates the effect intensity of LO on SME performance.

2.4 Moderating Role of ICT

ICT provides opportunities for individuals, businesses and the community and ICT function is equally important to economic and non-economic activities (Azam 2015). ICT provides effective communications for consumers at low expense (Tan et al. 2009). Researchers have concentrated on acceptance and use of ICT on SMEs (Salamzadeh et al. 2017). Research has shown the advantages of ICT acceptance on OI (Higon 2011; Bayo-Moriones et al. 2013; Gerguri-Rashiti et al. 2015) and SME performance (Shiels et al. 2003; Eze et al. 2014). Although some research has found a negative or neutral effect of ICT on business function (Warner 1987; Venkatraman and Zaheer 1990), others have confirmed the positive effect of ICT on business function (Powell and Dent-Micallef 1997; Tippins and Sohi 2003). Wainwright et al. (2005) showed that ICT merit and ability is an adequate way to evaluate the operation of small companies. Consoli (2012) proved that performance, efficiency, competitiveness, innovative function and impalpable advantages are effects of ICT on SME performance. In general, ICT and innovation are strategic resources of a company and ICT ability, innovation and entrepreneurial behavior can make a difference in organizational function (Yunis et al. 2017). Higon (2011) proved that ICT can give a competitive advantage through production innovation. Little research has been done on the relationship between ICT and learning. Gijbels et al. (2012) studied the effect of learning-related work between employees of the ICT section. A sample of men and women aged 20–51 years was evaluated. Regression analysis showed that job desires and control in employees of the ICT section are positive and have a considerable moderating effect on learning-related jobs. The LO of employees has a strong effect on learning related jobs. Figure 1 shows the proposed model. The results of the studies have produced the following hypotheses:
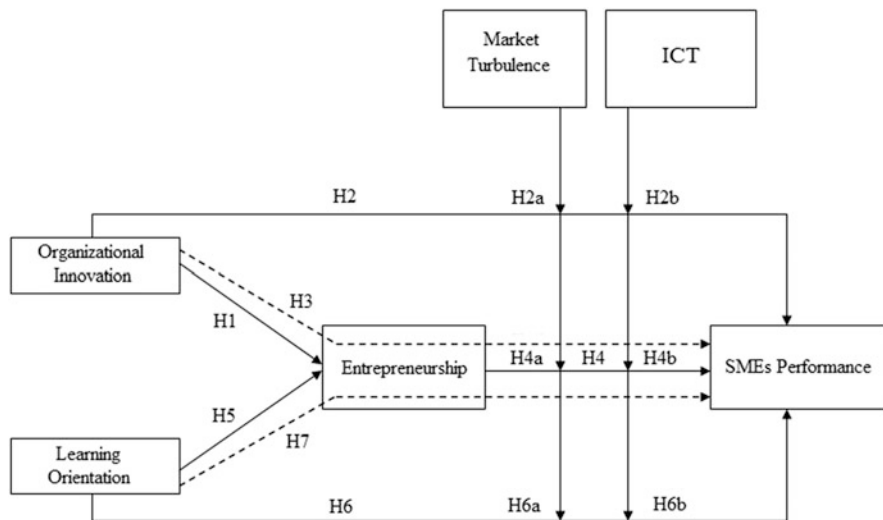

Fig. 1 Conceptual model

Hypothesis 11 ICT moderates the effect intensity of OI on SME performance.

Hypothesis 12 ICT moderates the effect intensity of entrepreneurship on SME performance.

Hypothesis 13 ICT moderates the effect intensity of LO on SME performance.

3 Methodology

The present study was applied research. Data collection was descriptive-survey research. The method of collecting data was empirical. Because this research evaluated the data within a specific period of time, it was a cross-sectional study.

3.1 Sample Size and Data Collection

The statistical population consisted of all active SMEs in Rasht industrial park. Based on the data provided by the industrial park organization of Gilan province, the population size was 193 samples. SPSS Sample Power 3 software was used to calculate the optimum sample size. Multivariate regression having the highest number of independent variables was selected to determine how many variables can be analyzed simultaneously Entrepreneurship, with four variables, was the largest. The maximum number of predictor variables in the entrepreneurship multiple regression model was 3. At a confidence level of 0.95, test power of 90% and R^2 of 0.15, the minimum optimal sample size was 85 and was the number used in the calculations. Simple random sampling was done with SPSS 22. Questionnaires were distributed to managers of active companies in Rasht industrial park. The theoretical foundations were obtained using library procedure and to the field method was used to collect data with questionnaires.

3.2 Variables Measurement, Reliability and Validity

The questionnaire contained general information such as demographics and 41 closed questions scored with a five-point Likert scale (1: very high, 2: high, 3: no idea, 4: low, 5: very low) to assess the variables of the research model. The OI variables comprised 15 items used in previous research (Hurley and Hult 1998; Ndubisi and Iftikhar 2012; Song and Xie 2000; Zahra 1996). It assessed service innovation, administrative innovation and process innovation (five items apiece). Entrepreneurship variables comprised 13 items used in previous research, (Nasution and Mavondo 2008; Nasution et al. 2011; Ndubisi and Iftikhar 2012). It assessed risk-taking and proactiveness (five items apiece) and autonomy (three items apiece).

SME performance variables comprised three items used in previous research (Morgan et al. 2009; Sok et al. 2013). LO variables comprised four items used in previous research (Denison 2000; Hult and Ferrell 1997; Sinkula et al. 1997; Jyoti and Dev 2015). To evaluate the moderating role of market turbulence, three items were included (Jaworski and Kohli 1993; Wang et al. 2015). Three items were included on the moderating role of ICT (Crema et al. 2014).

The items were gathered after consulting with experts in the field. The validity of the items were affirmed in terms of content and expert opinion and the value of the ICC coefficient was confirmed for consistency and absolute agreement. To ascertain the sufficiency of the questionnaire, the indicators were evaluated using Kaiser's rule (Kaiser 1960) and scree plots. The results showed the number of factors was desirable (Appendix 1). The measurement models were assessed using SmartPLS version 3 (Hair et al. 2016). The convergent validity for measurement of the models was based on average variance extracted (AVE) and at the item level assessed outer loadings (Henseler et al. 2015).

The discriminant validity on the factor and indicator levels was meticulously assessed. To evaluate the convergent validity according to the reflective measurement model, AVE was evaluated and values greater than 0.5 (Hulland 1999) were indicative of convergent validity of the measurement models (Table 1). The reflectiveness of the measurement models was confirmed by confirmatory tetrad analysis (CTA) ($p > 0.05$). The convergent validity on the item level (outer loadings) was higher than 0.4 (Hair et al. 2006), suggesting convergent validity at this level (Table 1). According to Stevens' table (Stevens 2002), the outer loadings of this research were confirmed as well. The Fornell and Larcker criterion was used to assess discriminant validity at the factor level (Fornell and Larcker 1981). The square root of the AVE hidden variables in the main diagonal of the matrix was greater than the convergence with those underneath and to the left of the main diagonal (Table 2). This indicates appropriate fitting of the measurement models in terms of discriminant validity at the factor level. To assess the discriminant validity on the indicator level, two methods were used. The cross-loadings were first assessed. The values from the software output determine the discriminant validity at the indicator level. The HTMT indicator was also assessed to determine the discriminant validity at the indicator level. Values of <0.9 were determined as evidence for this indicator (Henseler et al. 2015). This ratio was determined to be <0.09 for the current research and the convergent factors of similar characteristics were higher than the convergent factors for different characteristics (Table 3). Convergent validity at the indicator level was confirmed. The validity of the questionnaire was assessed by CR and Cronbach's alpha (Table 1). Research has shown that 0.8 is the cut point for CR and 0.7 is the cut point for Cronbach's alpha (Hulland 1999). Because these values for all variables were higher than 0.7, the research tools were determined to be of adequate stability (Cronbach's alpha was also confirmed). All 85 distributed questionnaires were completed and analysis was based on them. For the evaluation segment of the measurement models, VIF and tolerance between independent variables were used to assess multicolinearity (Table 1).

Table 1 Convergent validity, reliability, linearity indicators

Variables, dimensions and indicators	Outer loadings	Model type
OI (AVE = 0.54, Alpha = 0.75, CR = 0.80, VIF = 1.83, Tolerance = 0.55)		Reflective
Service innovation (AVE = 0.56, Alpha = 71, CR = 0.81)	0.78	Reflective
Introducing new services to market	0.79	
Reform of present services	0.77	
Searching to find new services	0.66	
Introducing new services compared to competitors	0.86	
Changes in industries according to our new services	0.65	
Administrative innovation (AVE = 0.50, Alpha = 0.72, CR = 0.79)	0.72	Reflective
Introducing new procedures in business	0.78	
Investment in updating administrative procedures	0.68	
New procedures aligned with enhancement of administrative systems	0.69	
Give authority to employees in order to nurture creativity	0.63	
Observation and assessment of testing administrative procedures by competitors	0.74	
Process Innovation (AVE = 0.55, Alpha = 0.75, CR = 0.80)	0.71	Reflective
Testing operational systems based on international standards	0.69	
Updating job techniques aligned with efficiency increase	0.78	
Increase technology service quality	0.66	
High investment in operational systems development	0.80	
Innovative instruction of human resources aligned with emerging industry	0.79	
Entrepreneurship (AVE = 0.52, Alpha = 0.81, CR = 0.85, VIF = 1.58, Tolerance = 0.63)		Reflective
Risk-taking (AVE = 0.53, Alpha = 0.78, CR = 0.83)	0.74	Reflective
Considering uncertainty as a challenge	0.65	
Encouraging employees to be active in new areas (with risk)	0.61	
Acceptance of failure risk of new plan by management	0.84	
More emphasis on opportunities with higher chances of success	0.83	
Considering failure as a learning experience	0.68	
Proactiveness (AVE = 0.52, Alpha = 0.76 , CR = 0.81)	0.71	Reflective
Searching for new opportunities related to daily needs	0.69	
Pioneering new services	0.72	
Precise look at adventitious business	0.61	
Searching for enhancement of business performance	0.89	
Overtaking competitors to respond to market challenges	0.67	
Autonomy (AVE = 0.53, Alpha = 0.73, CR = 0.77)	0.71	Reflective
Encouraging employees to take responsibility	0.76	
Minimal surveillance of employee work	0.73	
Encouraging employees to prioritize jobs	0.69	

Table 1 (continued)

Variables, dimensions and indicators	Outer loadings	Model type
LO (AVE = 0.59, Alpha = 0.75, CR = 0.84, VIF = 1.21, Tolerance = 0.82)		Reflective
Ability to participate in learning, the key to competitive advantage	0.81	
Instructing employees is investment, not expense	0.86	
Learning is a key to improvement	0.55	
Management emphasis on sharing knowledge	0.81	
SME performance (AVE = 0.58, Alpha = 0.73, CR = 0.80)		Reflective
Adequate profitability level of company	0.83	
Desirability of investment return	0.86	
Desirability of realization of financial purpose of company	0.56	
Market turbulence (AVE = 0.56, Alpha = 0.70, CR = 0.79)		Reflective
Unpredictable change in taste and preferences of consumers	0.81	
Continuously compete in product market	0.80	
Fast change of technology in industry	0.61	
ICT (AVE = 0.62, Alpha = 0.81, CR = 0.88)		Reflective
Facilitating cooperation through Internet systems	0.80	
Facilitating finding business partners through Internet systems	0.82	
Desirability of virtual techniques to cooperate in production of new products	0.75	

CR composite reliability, *AVE* average variance extracted, *Alpha* Cronbach's alpha, *VIF* variance inflation factor

Table 2 Assessment of discriminant validity at factor level (Fornell & Larcker criterion)

Factors	ICT	SME performance	Market turbulence	OI	Entrepreneurship	LO
ICT	0.787					
SME performance	0.598	0.762				
Market turbulence	0.498	0.487	0.748			
OI	0.481	0.462	0.464	0.735		
Entrepreneurship	0.437	0.357	0.427	0.631	0.762	
LO	0.350	0.326	0.432	0.515	0.664	0.768

Table 3 Assessment of discriminant validity (HTMT criterion)

Factors	ICT	SME performance	Market turbulence	OI	Entrepreneurship	LO
ICT	–					
SME performance	0.774	–				
Market turbulence	0.698	0.723	–			
OI	0.625	0.711	0.689	–		
Entrepreneurship	0.547	0.589	0.641	0.830	–	
LO	0.486	0.512	0.709	0.681	0.806	–

Note 1: The indicators level requires a 40*40 table containing only factors mentioned in the table
Note 2: The table is 5*5 and calculates the whole HTMT criterion based on division of the ninth root of the middle square on the sixth root of the upper and lower triangles (which is less than 1) and determines discriminant validity

Values for the VIF indicator in Table 1 of <2.5 were adequate for this indicator (Hair et al. 2016). There was no accumulation of variance in Table 1. The cut point of the tolerance indicator was 0.4 and there was no multicolinearity detected between the independent variables. This means that at the data analysis level and for hypothesis testing the regression factors and R^2 are reliable.

4 Data Analysis and Findings

Table 4 lists the demographics of the respondents. This table indicates that a large majority of respondents had bachelor degrees (49.4%). The population pyramid (Appendix 2) indicated that about 43.5% of respondents were male and had at least 16 years of management experience. This means that they were familiar with the policies, implication and practical procedures of the SMEs. Descriptive analysis of the convergence between research variables (Spearman convergent) is presented in Table 5. This matrix can be used to assess multicolinearity between variables. Because one hypothesis of causal relations was used, there was a lack of multicolinearity between variables. Convergence between variables was determined before causal analysis to assess the lack of linearity. It showed that all convergence values were <0.8, so the presence of multicolinearity between variables was rejected (Tabachnick and Fidell 1996). While convergence of independent variables should be random to confirm the calculation of variance inflation and tolerance factors. The average OI components, entrepreneurship, LO, SME performance, market turbulence and ICT was above average ($p < 0.05$; average => 3.0). Appendix 3 shows the convergence of research variables in a scatter plot overlay.

In the second step, structural equation modeling was used based on the partial least squares in SmartPLS 3 to evaluate structural model and test the hypotheses.

Table 4 Demographics of respondents

Features	Levels	Frequency	Percentage	Mean	SD
Sex	Male	66	77.6	1.22	0.62
	Female	19	22.4		
Education	No high school diploma	1	1.2	4.09	0.78
	High school diploma	5	5.9		
	Associate degree	8	9.4		
	Bachelor's degree	42	49.4		
	Masters or PhD	29	34.1		
Management history	1–5 years	5	5.9	3.12	0.73
	6–10 years	17	20.0		
	11–15 years	26	30.6		
	16 years or more	37	43.5		

This software was used because the focus was on predicting the relationship between independent variables and the dependent variable and because the model was created by studying previous research (researcher and exploration orientation). The low data size and non-parametric nature of the study and the use of bootstrapping instead of normalization are the most important reasons for the use of the PLS-SEM. To achieve better and more precise results before hypothesis testing, outlier data was assessed and the data was eliminated from analysis (Fig. 2). FIMIX was used to evaluate the hypothesis of statistical population homogeneity, the normed entropy statistic showed that EN = 0.85. The least acceptable amount for this indicator is 0.7 (Ramaswami et al. 1993); thus, the hypothesis of population homogeneity was confirmed and the results of hypothesis testing was confirmed with greater certainty. The accuracy of the scatter plot in Fig. 2 is demonstrated as a rectangular pattern of homoscedasticity.

The software output was calculated after testing the conceptual model for possible factors and for *t*-statistics (Appendix 4). Criteria relating to the structural equation modeling were evaluated. R^2 shows what percentage of variance of the dependent variable is caused by the independent variable. R^2 adjusted relates to the percentage of the statistical population (Table 6). The Cohen size effect (f^2) values of 0.02, 0.15 and 0.35 denote small, average and big effects, respectively (Cohen 1988). This indicator is used to assess the model (Table 7). The learning-entrepreneurship effect was large at 0.776 and the entrepreneurship effect and LO on SME performance were smallest at 0.004. The Stone-Geisser index was used (Q^2) to predict the power of the model and consists of the construct of cross-validated redundancy (CC-Red) and cross-validated communality (CC-Com). A value that approaches 1 denotes the most favorable response (Stone 1974; Geisser 1974). The Stone- Geisser values (0–1) and the relevance of the predictive model for the reflective dependent variables are presented in Table 6.

The SRMR indicator is used to evaluate the structural inner model and measurement outer models as a whole and a value of <0.08 is considered favorable (Hair et al. 2016). The value for SRMR in output was 0.076, which is indicative of

Table 5 Spearman correlation matrix of original variables under study

Variable	Mean	SD	OI	Entrepreneurship	LO	SME performance	Market turbulence	ICT
OI	3.08	0.382	1					
Entrepreneurship	3.71	0.426	0.554**	1				
LO	3.28	0.722	0.356*	0.558**	1			
SME performance	3.80	0.573	0.339**	0.308**	0.238*	1		
Market turbulence	3.88	0.509	0.218*	0.337**	0.410*	0.353**	1	
ICT	3.08	0.447	0.257*	0.273*	0.288*	0.501**	0.392**	1

Note: $^{*}\,p < 0.05$; $^{**}\,p < 0.01$; two-tailed test
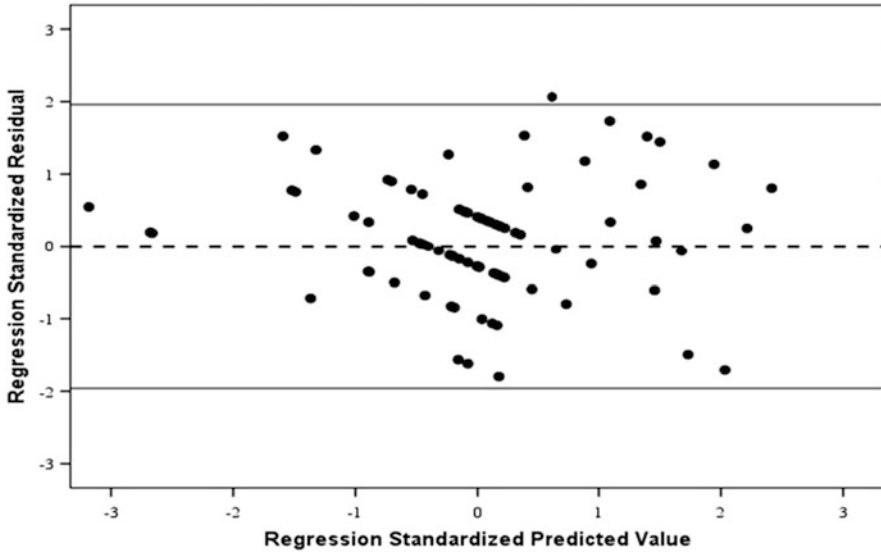
Fig. 2 Scatter plot of outlier data and homoscedasticity

Table 6 Assessment of structural model indicators

Variable	R^2	R^2 adjusted	CC-Red	CC-Com
OI				
Entrepreneurship	66.1%	65.2%	0.387	0.401
LO				
SME performance	56.5%	50%	0.352	0.409
Market turbulence				
ICT				

Table 7 Cohen indicator effect size (f^2)

Variable	OI	Entrepreneurship	LO	SME performance	Market turbulence	ICT
OI		0.225		0.057		
Entrepreneurship				0.004		
LO		0.776		0.004		
SME performance						
Market turbulence				0.025		
ICT				0.060		

Table 8 Results of research hypotheses

Hypotheses	β	SD	t-statistics	p-value	Decision	Mediation	Moderation
H1	0.322	0.096	3.341**	0.000	Supported		
H2	0.241	0.154	1.560	0.151	Not supported		
H3	0.024	0.017	1.413	0.682	Not supported	No	
H4	0.073	0.173	0.423	0.703	Not supported		
H5	0.598	0.093	6.418**	0.000	Supported		
H6	0.076	0.165	0.461	0.672	Not supported		
H7	0.043	0.116	0.373	0.709	Not supported	No	
H8	−0.305	0.082	3.738*	0.030	Supported		Yes
H9	−0.319	0.090	3.529**	0.004	Supported		Yes
H10	−0.323	0.086	3.755*	0.012	Supported		Yes
H11	0.262	0.115	2.283*	0.028	Supported		Yes
H12	0.340	0.097	3.522**	0.006	Supported		Yes
H13	0.355	0.096	3.708	0.019	Supported		Yes

Note: $^{*}p < 0.05$; $^{**}p < 0.01$; two-tailed test, for the indirect of H3, H7 mentioned in this table

coordination of the experimental model with the theoretical model. Table 6 shows that 66.1% of the variance in SME performance can be explained by entrepreneurship variables, OI, LO, market turbulence and ICT and 56.5% is from variance of entrepreneurship, OI and LO variables.

The path coefficients, t-statistics and level of significance (p-value) were used to test the hypotheses. The direct effects of hypotheses 1 and 5 were assessed. Table 8 shows that the results of H1 ($\beta = 0.322$, $t = 3.341$, $p = 0.000$) and H5 ($\beta = 0.598$, $t = 6.418$, $p = 0.000$) showed that at a confidence level of 95%, the confidence interval was significant at 0.00 and these two proportions were confirmed by the t proportions. For hypotheses 2 ($\beta = 0.241$, $t = 1.560$, $p = 0.151$), H4 ($\beta = 0.073$, $t = 0.423$, $p = 0.703$) and H6 ($\beta = 0.076$, $t = 0.461$, $p = 0.672$), the results showed lack of support for the hypotheses. At a confidence level of 95%, the p-value shows a lack of significance at 0.00. This lack of significance in confidence intervals can also be observed. For hypothesis 4 ($p = 0.703$), which was rejected, the confidence interval was −0.446 and 0.288 which is not significant.

For hypotheses 3 and 7, the mediating effect of the entrepreneurship variable was assessed. For hypothesis 3, the direct effect of OI on entrepreneurship was significant, but the direct effect of entrepreneurship on SME performance was not significant. The indirect effect of OI on SME performance ($\beta = 0.024$, $t = 1.413$, $p = 0.682$) was not significant. The direct effect of OI on SME performance ($\beta = 0.241$, $t = 1.560$, $p = 0.151$) is not significant. So this hypothesis is not

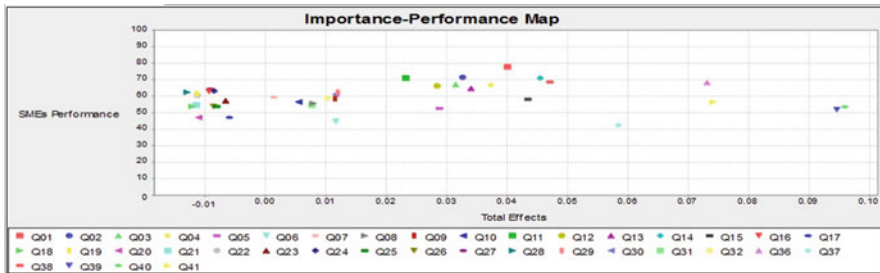**Fig. 3** IPMA matrix histogram of research variables setting SME performance as purpose

Fig. 4 IPMA matrix histogram of research questions setting SMEs performance as purpose

supported and should be rejected. For hypothesis 7, the indirect effect of LO on SME performance ($\beta = 0.043$, $t = 0.373$, $p = 0.709$) was not significant; thus, this hypothesis is not supported and should be rejected as well.

Hypotheses 8 and 11 evaluate the moderating role of market turbulence and ICT. The product indicator approach in SmartPLS3 was used to assess these effects. If this effect or proportion is significantly different from zero, it will confirm the moderating effect. The results for hypothesis 8 ($\beta = -0.305$, SD $= 0.082$, $t = 3.738$, $p = 0.030$) for the interactive effect was significant for the moderating role of OI on SME performance. The negative value for β indicates that an increase in market turbulence decreased the effect intensity of innovation on SME performance. The results for hypothesis 11 ($\beta = 0.262$, SD $= 0.115$, $t = 2.283$, $p = 0.028$) for the interactive effect was significant, indicating that ICT was a moderator of the effect of OI on SME performance. The positive value for β indicates that an increase in ICT with increased the effect intensity of OI on SME performance. Hypotheses 9, 10, 12 and 13 were assessed and Table 8 shows the rejection of these hypotheses.

The IPMA matrix is shown in Fig. 3 and indicates that ICT had the highest importance, but the lowest performance. This analysis was done with a concentration on research questions (Fig. 4). Questions relating to ICT about simplification indicators of cooperation through the Internet and in finding business partners through the Internet were more favorable and of great importance.

5 Discussion and Conclusion

A research model was developed to assess the effect of the research variables. The results of hypotheses H1 and H5 showed that innovation and LO affect entrepreneurship. The effect of innovation on entrepreneurship has been confirmed by previous studies and this hypothesis aligns with previous research (Avlonitis and Salavou 2007; Crumpton 2012; Ndubisi and Iftikhar 2012; Galindo and Mendez-Picazo 2013; Capel 2014; Lee et al. 2016). Innovation is a key to entrepreneurial ideas and is necessary to the business world (Kim and Huarng 2011). Innovation and entrepreneurship together produce efficiency (Emami et al. 2011; Laforet 2008).

The effect of LO on entrepreneurship was shown by Kakapour et al. (2016) to align with hypothesis H5. Sinkula et al. (1997) found LO can increase information about the market and effect entrepreneurship of SMEs. The results of the current research highlight the considerable importance of learning and innovation in SME entrepreneurship. SME managers should seriously undertake innovation in service, executive innovation and innovation processes to benefit from its advantages. LO for structures such as employee instruction, knowledge sharing and consideration of learning as a competitive advantage is of significance aligned with entrepreneurship. The results of this research indicate a lack of and effect of OI and LO on SME performance in the statistical population in line with H2 and H6.

The reason for the lack of an effect for innovation on SMEs included factors such as operational issues and financial risks as mentioned by Laforet (2011) and considering innovation barriers such as loss of technical information and financial capital as mentioned by Xie et al. (2010). The current study showed that SME managers considered inefficient structures and state policies to decrease efficiency in innovation and LO. The important point about structural interviews was the amount of financial effect and high turbulence in the Iranian economic market and lack of continuous support for SMEs under crisis conditions. This is one of the most important barriers to innovation and learning on SMEs in the region observed. Lack of the effect of LO on performance and growth of SMEs by Wolff et al. (2015) aligned with the H6 hypothesis.

The results of study also showed s lack of significant influence of entrepreneurship on active SME performance ($\beta = 0.073, t = 0.423, p = 0.703$) in Rasht industrial park. Some reasons for this lack of influence relate to the findings of Aidis (2005) said legal, informal, environmental and skill barriers are the most important. The lack of effect of entrepreneurship on the mediating role of SME performance in H3 and H7 was also not confirmed. The results of this study showed that market turbulence and ICT were moderators of the effects intensity of OI, LO and entrepreneurship on SME performance. An increase in market turbulence will decrease this effect on SME performance. The results of this study align with research about market turbulence by Pratono and Mahmood (2014). An increase in ICT will increase this effect on SME performance, which aligns with previous research on the effect of ICT on business performance (Powell and Dent-Micallef 1997; Tippins and Sohi 2003).

5.1 Managerial Implications

The managerial implications of this study are the importance of the effects of OI, LO and entrepreneurship on performance and growth of SMEs. SME managers do not consider these factors as much effecting SME performance in the presence of market and economic turbulence. Lack of necessary technical and scientific efficiency suitable for the current turbulent environment is a weakness of some SMEs. Lack of strategic and structural plans to confront environmental turbulence considering daily technologies, lack of attention to new ideas and common cooperation, lack of continuous scientific assessment of the market and state barriers to entrepreneurial ideas are the most important reasons for the lack of efficiency. SME managers should step forward to solve these problems. Serious attention should be devoted to state regulations and the general policy of the country for logical and continuous support of private investors so that SMEs can flourish. It seems that SMEs need serious attention by government officials to encourage investors and provide suitable conditions for investment and reconstruction. Barriers to innovation and entrepreneurship should be removed.

5.2 Limitations and Suggestions

The results of this study suggest some limitations should be considered. This study concentrated on active SMEs in Rasht industrial park in Gilan province in Iran, so the results may differ from other areas because it is a distinct and rather small sample of SMEs. Another limitation is the data collection over a period of time, which indicates that research findings may not be extendable. It is recommended that future research undertake a longitudinal study instead of a cross-sectional approach because longitudinal research can better determine the dynamic and interactive nature of many of these variables and describe their causal relationship. Despite of presenting rich literature about entrepreneurship, innovation, LO and SME performance, the data can be assessed with new models and by the addition of influential variables, which is recommended to future researchers of this subject.
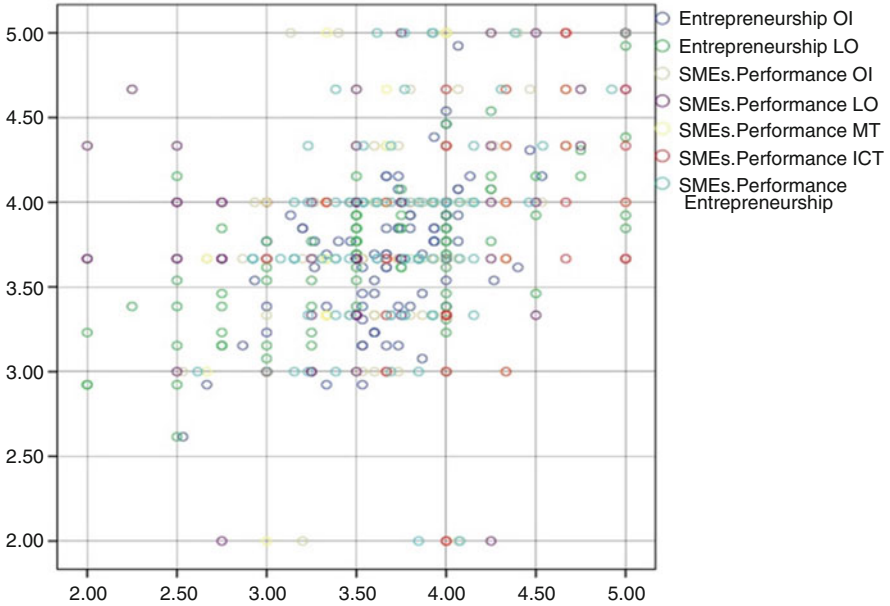
Appendix 1. Scree Plot
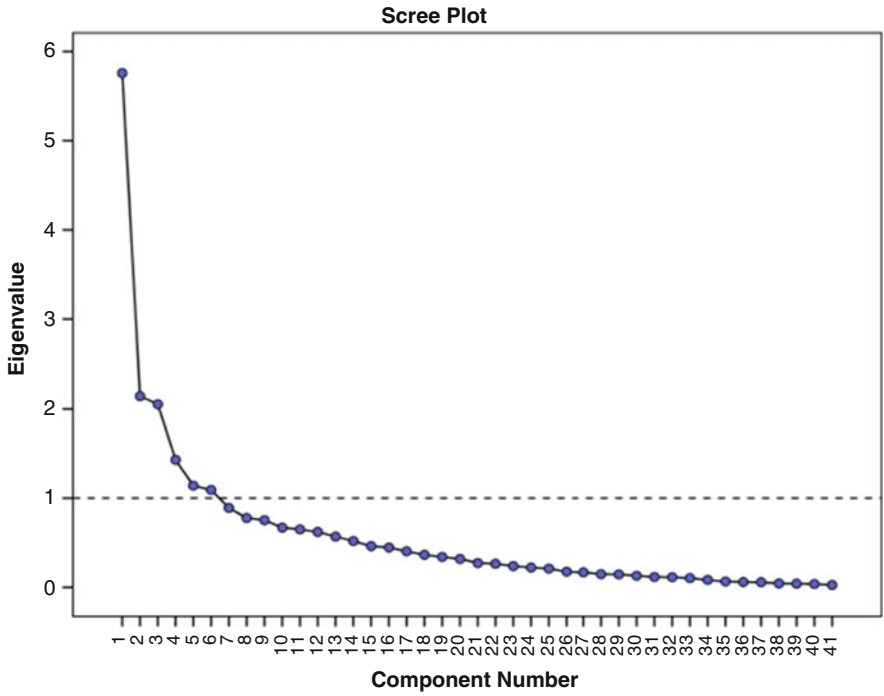
Appendix 2. Age-Sex Pyramid of Respondents (Value 4 in Work.Experience = 16 Years or More)
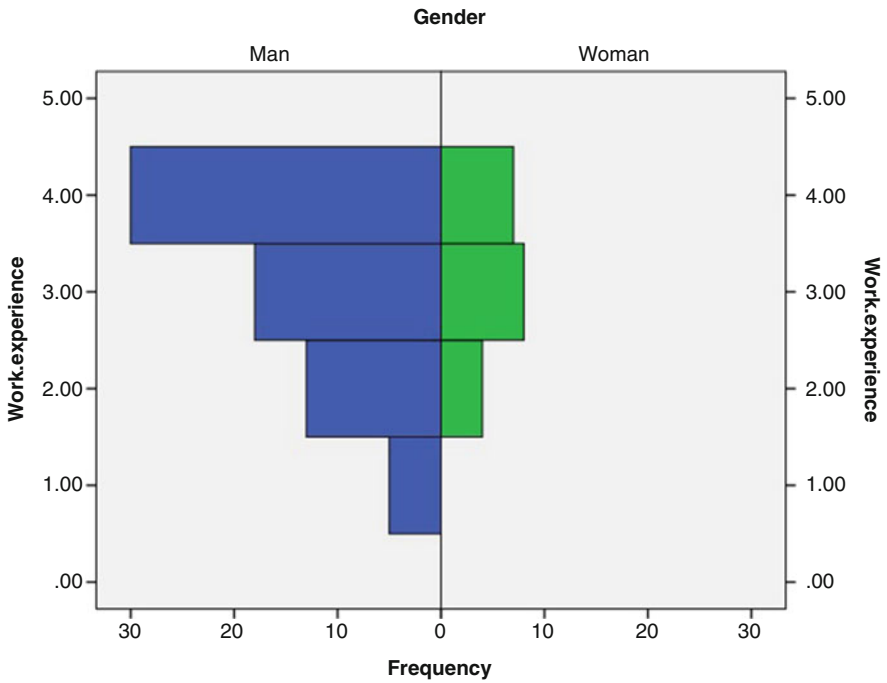
Appendix 3. Scatter Plot for Evaluating Correlation Between Research Variables Which Shows Good Correlation in Some Variables (Independent Versus Dependent Variables)

Appendix 4. Output of SmartPLS 3 for Model of Path Coefficient and *t*-statistics of Model
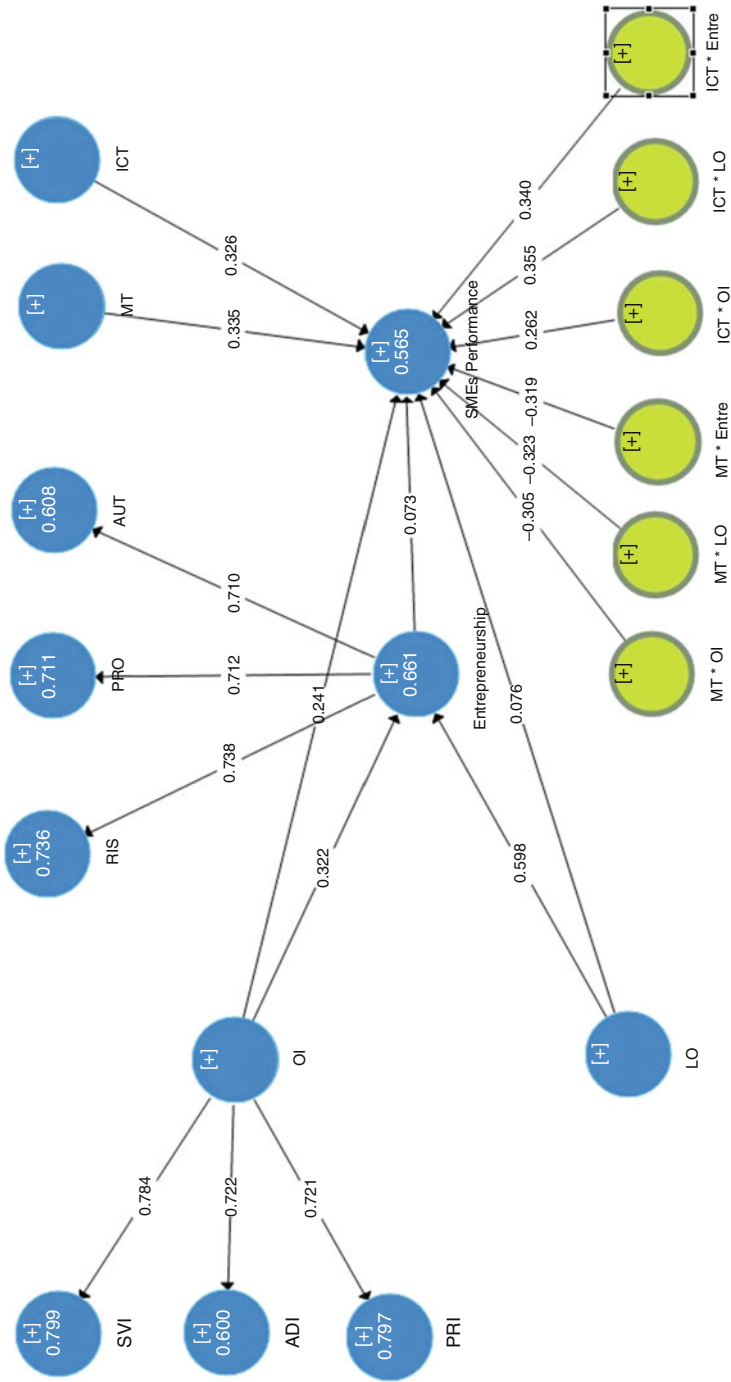
Fig. 5 Path coefficients of structural model. Note: The SMEs performance and entrepreneurship are endogenous variables and LO, OI, market turbulence and ICT are exogenous
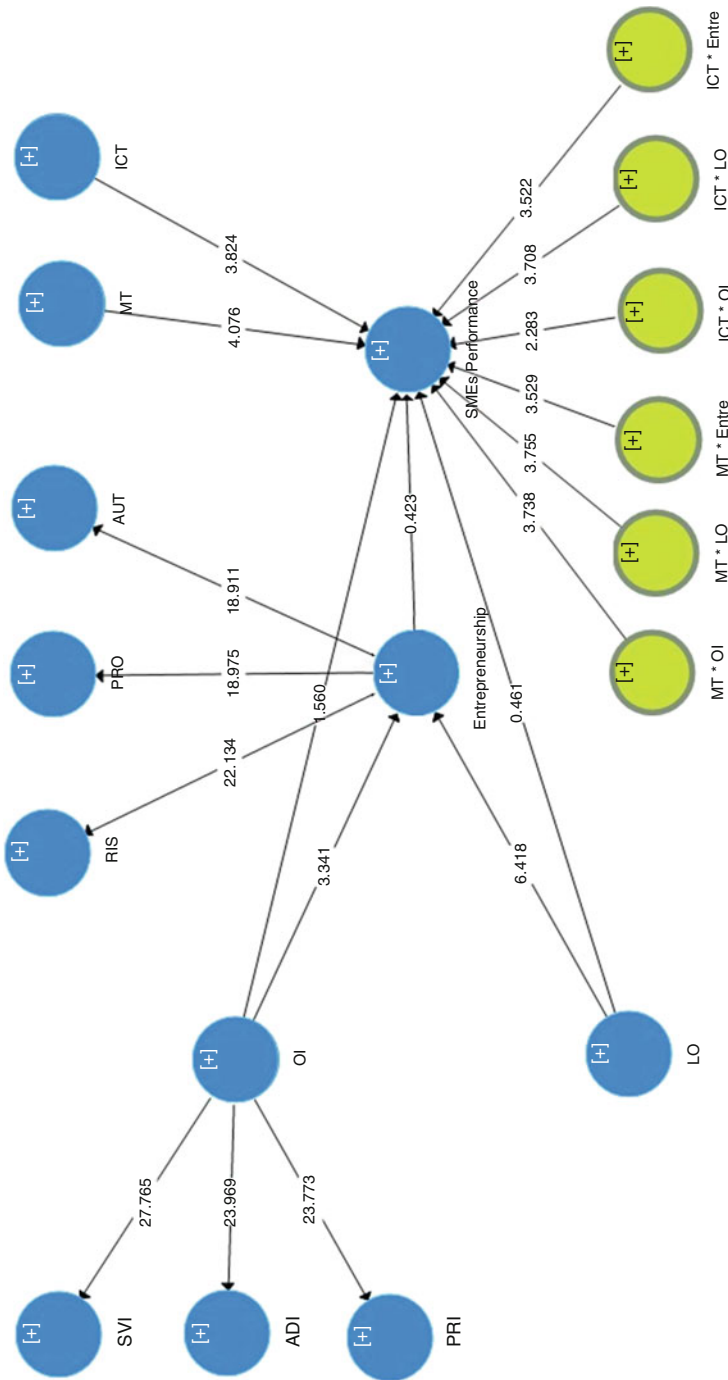
Fig. 6 *t*-statistics of structural model

References

Aidis, R. (2005). Institutional barriers to small- and medium-sized enterprise operations in transition countries. *Small Business Economics, 25*, 305–318. https://doi.org/10.1007/s11187-003-6463-7

Antonioli, D., & Della Torre, E. (2015). Innovation adoption and training activities in SMEs. *The International Journal of Human Resource Management, 27*(3), 311–337. https://doi.org/10.1080/09585192.2015.1042901

Arendt, L. (2008). Barriers to ICT adoption in SMEs: How to bridge the digital divide? *Journal of Systems and Information Technology, 10*(2), 93–108. https://doi.org/10.1108/13287260810897738

Arora, A., Arora, A. S., & Sivakumar, K. (2016). Relationship among supply chain strategies, organizational performance, and technological and market turbulence. *The International Journal of Logistics Management, 27*(1), 206–232. https://doi.org/10.1108/IJLM-09-2013-0103

Augusto, M. G., Lisboa, J. V., & Yasin, M. M. (2014). Organizational performance and innovation in the context of a total quality management philosophy: An empirical investigation. *Total Quality Management & Business Excellence, 25*(9/10), 1141–1155. https://doi.org/10.1080/14783363.2014.886372

Avlonitis, G. J., & Salavou, H. E. (2007). Entrepreneurial orientation of SMEs, product innovativeness, and performance. *Journal of Business Research, 60*(5), 566–575. https://doi.org/10.1016/j.jbusres.2007.01.001

Azam, M. S. (2015). Diffusion of ICT and SME performance. In M. Quaddus & A. G. Woodside (Eds.), *E-services adoption: Processes by firms in developing nations*, *Advances in business marketing and purchasing* (Vol. 23A, pp. 7–290). Bingley: Emerald Group Publishing Limited. https://doi.org/10.1108/S1069-096420150000023005

Aziz, N. A., & Omar, N. A. (2013). Exploring the effect of internet marketing orientation, learning orientation and market orientation on innovativeness and performance: SME (exporters) perspectives. *Journal of Business Economics and Management, 14*(1), S257–S278. https://doi.org/10.3846/16111699.2011.645865

Bakar, S., Sulaiman, M., & Osman, I. (2012). Surviving market turbulence: Evidence from Malaysian biotechnology SMEs. *Asian Business & Management, 11*(5), 563–589. https://doi.org/10.1057/abm.2012.18

Bala Subrahmanya, M. H. (2014). Degree of internationalization and economic performance of SMEs in Bangalore: Influential factors and outcomes. In C. Pattnaik & V. Kumar (Eds.), *Emerging market firms in the global economy*, *International finance review* (Vol. 15, pp. 35–71). Bingley: Emerald Group Publishing Limited.

Bayo-Moriones, A., Billon, M., & Lera-Lopez, F. (2013). Perceived performance effects of ICT in manufacturing SMEs. *Industrial Management & Data Systems, 113*(1), 117–135. https://doi.org/10.1108/02635571311289700

Boothy, D., Dufour, A., & Tang, J. (2010). Technology adoption, training and productivity performance. *Research Policy, 39*(5), 650–661. https://doi.org/10.1016/j.respol.2010.02.011.

Bouncken, R. B., Pluschke, B. D., Pesch, R., & Kraus, S. (2014). Entrepreneurial orientation in vertical alliances: Joint product innovation and learning from allies. *Review of Managerial Science, 10*(2), 381–409.

Calantone, R. J., Cavusgil, S. T., & Zhao, Y. (2002). Learning orientation, firm innovation capability, and firm performance. *Industrial Marketing Management, 31*(6), 515–524. https://doi.org/10.1016/S0019-8501(01)00203-6

Cambra-Fierro, J. J., Hart, S., Polo-Redondo, Y., & Fuster-Mur, A. (2012). Market and learning orientation in times of turbulence: Relevance questioned? An analysis using a multi-case study. *Quality & Quantity, 46*(3), 855–871. https://doi.org/10.1007/s11135-011-9429-x

Capel, C. (2014). Mindfulness, indigenous knowledge, indigenous innovations and entrepreneurship. *Journal of Research in Marketing and Entrepreneurship, 16*(1), 63–83. https://doi.org/10.1108/JRME-10-2013-0031

Casillas, J. C., Moreno, A. M., & Barbero, J. L. (2010). A configurational approach of the relationship between entrepreneurial orientation and growth of family firms. *Family Business Review, 23*(1), 27–44. https://doi.org/10.1177/0894486509345159

Cerrato, D., & Depperu, D. (2011). Unbundling the construct of firm-level international competitiveness. *Multinational Business Review, 19*(4), 311–331. https://doi.org/10.1108/15253831111190162

Chavez, R., Yu, W., Jacobs, M. A., & Feng, M. (2017). Manufacturing capability and organizational performance: The role of entrepreneurial orientation. *International Journal of Production Economics, 184*, 33–46. https://doi.org/10.1016/j.ijpe.2016.10.028

Cohen, J. (1988). *Statistical power analysis for the behavioural sciences* (2nd ed.). New York: Psychology Press.

Consoli, D. (2012). Literature analysis on determinant factors and the impact of ICT in SMEs. *Procedia – Social and Behavioral Sciences, 62*(24), 93–97. https://doi.org/10.1016/j.sbspro.2012.09.016

Covin, J. G., & Miles, M. P. (1999). Corporate entrepreneurship and the pursuit of competitive advantage. *Entrepreneurship Theory and Practice, 23*, 47–63.

Cozzarin, B. P., Kim, W., & Koo, B. (2016). Does organizational innovation moderate technical innovation directly or indirectly? *Economics of Innovation and New Technology*. https://doi.org/10.1080/10438599.2016.1203084

Crema, M., Verbano, C., & Venturini, K. (2014). Linking strategy with open innovation and performance in SMEs. *Measuring Business Excellence, 18*(2), 14–27.

Crumpton, M. A. (2012). Innovation and entrepreneurship. *The Bottom Line, 25*(3), 98–101. https://doi.org/10.1108/08880451211276539

Denison, D. R. (2000). Organizational culture: Can it be a key lever for driving organizational change. In S. Cartwright & C. Cooper (Eds.), *The handbook of organizational culture* (pp. 1–26). London: Wiley.

Dess, G., & Lumpkin, G. (2005). Research edge: The role of entrepreneurial orientation in stimulating effective corporate entrepreneurship. *The Academy of Management Executive (1993–2005), 19*(1), 147–156. Retrieved from http://www.jstor.org/stable/4166159

Devezer, B., Sprott, D., Spangenberg, E., & Szellar, S. (2014). Consumer well-being: Effect of subgoal failures and goal importance. *Journal of Marketing, 78*(2), 118–134. https://doi.org/10.1509/jm.11.0599

Ebrahimi, P., & Mirbargkar, S. M. (2017). Green entrepreneurship and green innovation for SME development in market turbulence. *Eurasian Business Review*. https://doi.org/10.1007/s40821-017-0073-9

El-Gohary, H., Edwards, D., Eid, R., & Huang, J. (2013). Choice of export entry mode by developing economies SMEs: An empirical investigation of Egyptian SMEs. *Journal of Economic and Administrative Sciences, 29*(2), 113–133. https://doi.org/10.1108/JEAS-09-2013-0030

Emami, A., & Dimov, D. (2016, December). Degree of innovation and the entrepreneurs' intention to create value: A comparative study of experienced and novice entrepreneurs. *Eurasian Business Review*. https://doi.org/10.1007/s40821-016-0068-y

Emami, A., Saghafi, F., Zarei, B., Ebrahimzadeh, M., & Davari, A. (2011). Managerial application of framing effects and mental accounting in network participation. *Advances in Production Engineering and Management, 6*(1), 57–69.

Eze, S. C., Duan, Y., & Chen, H. (2014). Examining emerging ICT's adoption in SMEs from a dynamic process approach. *Information Technology & People, 27*(1), 63–82. https://doi.org/10.1108/ITP-03-2013-0044

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(1), 39–50. https://doi.org/10.2307/3151312

Franco, M., & Haase, H. (2009). Entrepreneurship: An organizational learning approach. *Journal of Small Business and Enterprise Development, 16*(4), 628–641. https://doi.org/10.1108/14626000911000965

Galindo, M. A., & Mendez-Picazo, M. T. (2013). Innovation, entrepreneurship and economic growth. *Management Decision, 51*(3), 501–514. https://doi.org/10.1108/00251741311309625

Geisser, S. (1974). A predictive approach to the random effect model. *Biometrika, 61*(1), 101–107. https://doi.org/10.1093/biomet/61.1.101

Gerguri-Rashiti, S., Ramadani, V., Abazi-Alili, H., Dana, L. P., & Ratten, V. (2015). ICT, innovation and firm performance: The transition economies context. *Thunderbird International Business Review, 59*(1), 93–102. https://doi.org/10.1002/tie.21772

Gijbels, D., Raemdonck, I., Vervecken, D., & Van Herck, J. (2012). Understanding work-related learning: The case of ICT workers. *Journal of Workplace Learning, 24*(6), 416–429. https://doi.org/10.1108/13665621211250315

Goh, S. (2001). The learning organization: An empirical test of a normative perspective. *International Journal of Organization Theory and Behavior, 4*(3/4), 329–355. https://doi.org/10.1081/OTB-100105408

Goh, S. C., Elliott, C., & Quon, T. K. (2012). The relationship between learning capability and organizational performance: A meta-analytic examination. *The Learning Organization, 19*(2), 92–108. https://doi.org/10.1108/09696471211201461

Gomes, G., & Wojahn, R. M. (2016). Organizational learning capability, innovation and performance: Study in small and medium-sized enterprises (SMES). *Revista de Administracao*. https://doi.org/10.1016/j.rausp.2016.12.003

Grant, R. M. (2010). *Contemporary strategy analysis* (7th ed.). West Sussex, UK: Wiley.

Gudmundson, D., Tower, C., & Hartman, E. (2003). Innovation in small businesses: Culture and ownership structure do matter. *Journal of Developmental Entrepreneurship, 8*, 1–18.

Guzman, G. M., Serna, M. D. M., Torres, G. C. L., & Ramirez, R. G. (2012). Competitiveness in manufacturing SMEs: A perspective of Mexico. *International Journal of Arts and Commerce, 1*(4), 60–75.

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). *Multivariate data analysis* (6th ed.). Upper Saddle River, NJ: Pearson/Prentice Hall.

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2016). *A primer on partial least squares structural equation modelling (PLS-SEM)* (2nd ed.). Thousand Oaks, CA: Sage.

Hallak, R., Lindsay, N. J., & Brown, G. (2011). Examining the role of entrepreneurial experience and entrepreneurial self-efficacy on SMTE performance. *Tourism Analysis, 16*(5), 583–599. https://doi.org/10.3727/108354211X13202764960744

Hanvanich, S., Sivakumar, K., & Hult, G. T. M. (2006). The relationship of learning and memory with organizational performance: The moderating role of turbulence. *Journal of the Academy of Marketing Science, 34*(4), 600–612. https://doi.org/10.1177/0092070306287327

Hashi, I., & Krasniqi, B. A. (2011). Entrepreneurship and SME growth: Evidence from advanced and Iaggard transition economies. *International Journal of Entrepreneurial Behavior & Research, 17*(5), 456–487. https://doi.org/10.1108/13552551111158817

Hebert, R., & Link, A. (2006). The entrepreneur as innovator. *The Journal of Technology Transfer, 31*(5), 589–597. https://doi.org/10.1007/s10961-006-9060-5

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modelling. *Journal of the Academy of Marketing Science, 43*(1), 115–135. https://doi.org/10.1007/s11747-014-0403-8

Higon, D. A. (2011). The impact of ICT on innovations activities: Evidence for UK SMEs. *International Small Business Journal, 30*(6), 684–699. https://doi.org/10.1177/0266242610374484.

Hooi, L. W., & Ngui, K. S. (2014). Enhancing organizational performance of Malaysian SMEs. *International Journal of Manpower, 35*(7), 973–995. https://doi.org/10.1108/IJM-04-2012-0059.

Hulland, J. S. (1999). Use of partial least squares (PLS) in strategic management research: A review of four recent studies. *Strategic Management Journal, 20*(4), 195–204. https://doi.org/10.1002/(SICI)1097-0266(199902)20:2<195::AID-SMJ13>3.0.CO;2-7.

Hult, G. T. M., & Ferrell, O. C. (1997). Global learning capacity in purchasing: Construct and measurement. *Journal of Business Research, 40*(2), 97–111. https://doi.org/10.1016/S0148-2963(96)00232-9

Hult, G. T. M., Hurley, R. F., & Knight, G. A. (2004). Innovativeness: Its antecedents and impact on business performance. *Industrial Marketing Management, 33*(5), 429–438. https://doi.org/10.1016/j.indmarman.2003.08.015

Hurley, R., & Hult, G. T. (1998). Innovation, market orientation, and organizational learning: An integration and empirical examination. *Journal of Marketing, 62*(3), 42–54.

Ille, F. R., & Chailan, C. (2011). Improving global competitiveness with branding strategy cases of Chinese and emerging countries' firms. *Journal of Technology Management in China, 6*(1), 84–96. https://doi.org/10.1108/17468771111105677

ISIPO. (2014). *Small and medium-sized enterprises definition*. Retrieved October 12, 2014, from Iran Small Industries and Industrial Parks Organization Information website http://isipo.ir/

Jalali, A., Jaafar, M., & Ramayah, T. (2014). Entrepreneurial orientation and performance: The interaction effect of customer capital. *World Journal of Entrepreneurship, Management and Sustainable Development, 10*(1), 48–68.

Jaworski, B. J., & Kohli, A. K. (1993). Market orientation: Antecedents and consequences. *Journal of Marketing, 57*(3), 53–70. https://doi.org/10.2307/1251854.

Jyoti, J., & Dev, M. (2015). The impact of transformational leadership on employee creativity: The role of learning orientation. *Journal of Asia Business Studies, 9*(1), 78–98. https://doi.org/10.1108/JABS-03-2014-0022

Kaiser, H. F. (1960). The application of electronic computers to factor analysis. *Educational and Psychological Measurement, 20*, 141–151.

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). https://doi.org/10.1080/08276331.2016.1168676

Kaya, N., & Patton, J. (2011). The effects of knowledge-based resources, market orientation and learning orientation on innovation performance: An empirical study of Turkish firms. *Journal of International Development, 23*(2), 204–219. https://doi.org/10.1002/jid.1662

Keh, H. T., Naguyen, T. T. M., & Ng, H. P. (2007). The effect of entrepreneurial orientation and marketing information on the performance of SMEs. *Journal of Business Venturing, 22*(4), 592–611. https://doi.org/10.1016/j.jbusvent.2006.05.003

Keskin, H. (2006). Market orientation, learning orientation, and innovation capabilities in SMEs. *European Journal of Innovation Management, 9*(4), 396–417. https://doi.org/10.1108/14601060610707849

Khajeheian, D. (2013). New venture creation in social media plat-form; towards a framework for media entrepreneurship. In M. Friedrichsen & W. Mühl-Benninghaus (Eds.), *Handbook of social media management: Value chain and business models in changing media market*. Berlin: Springer.

Khajeheian, D. (2014). A perspective on media entrepreneurship policy: Globalization of knowledge and the opportunities for developing economies. *Journal of Globalization Studies, 5*(2), 153–174.

Khajeheian, D. (2017). Media entrepreneurship: A consensual definition. *AD-minister, 30*, 91–113.

Khajeheian, D., & Tadayoni, D. (2016). User innovation in public service broadcasts: Creating public value by media entrepreneurship. *International Journal of Technology Transfer and Commercialisation, 14*(2), 117–131.

Kim, S. H., & Huarng, K. H. (2011). Winning strategies for innovation and high technology products management. *Journal of Business Research, 64*(11), 1147–1150. https://doi.org/10.1016/j.jbusres.2011.06.013

Kyrgidou, L. P., & Spyropoulou, S. (2013). Drivers and performance outcomes of innovativeness: An empirical study. *British Journal of Management, 24*(3), 281–298. https://doi.org/10.1111/j.1467-8551.2011.00803.x

Laforet, S. (2008). Size, strategic, and market orientation affects on innovation. *Journal of Business Research, 61*(7), 753–764. https://doi.org/10.1016/j.jbusres.2007.08.002

Laforet, S. (2011). A framework of organizational innovation and outcomes in SMEs. *International Journal of Entrepreneurial Behavior & Research, 17*(4), 380–408. https://doi.org/10.1108/13552551111139638

Lee, C., Hallak, R., & Sardeshmukh, S. R. (2016). Innovation, entrepreneurship, and restaurant performance: A higher-order structural model. *Tourism Management, 53*, 215–228. https://doi.org/10.1016/j.tourman.2015.09.017

Li, Y., Guo, H., Liu, Y., & Li, M. (2008). Incentive mechanism, entrepreneurial orientation, and technology commercialization: Evidence from China's transitional economy. *The Journal of Product Innovation Management, 25*(1), 63–75. https://doi.org/10.1111/j.1540-5885.2007.00283.x

Lumpkin, G., & Dess, G. (1996). Clarifying the entrepreneurial orientation construct and linking it to performance. *The Academy of Management Review, 21*(1), 135–172. Retrieved from http://www.jstor.org/stable/258632

Lumpkin, G. T., Cogliser, C. C., & Schneider, D. R. (2009). Understanding and measuring autonomy: An entrepreneurial orientation perspective. *Entrepreneurship Theory and Practice, 33*(1), 47–69. https://doi.org/10.1111/j.1540-6520.2008.00280.x

Madrid-Guijarro, A., Garcia, D., & Van Auken, H. (2009). Barriers to innovation among Spanish manufacturing SMEs. *Journal of Small Business Management, 47*(4), 465–488. https://doi.org/10.1111/j.1540-627X.2009.00279.x

Mazzarol, T., Clark, D. N., & Reboud, S. (2014). Strategy in action: Case studies of strategy, planning and innovation in Australian SMEs. *Small Enterprise Research, 21*(1), 54–71. https://doi.org/10.1080/13215906.2014.11082076

McGill, M. E., & Slocum, J. W. (1993). Unlearning the organization. *Organizational Dynamics, 22*(2), 67–79.

Merono-Cerdan, A. L., & Lopez-Nicolas, C. (2013). Understanding the drivers of organizational innovation. *The Service Industries Journal, 33*(13/14), 1312–1325. https://doi.org/10.1080/02642069.2013.815736

Morgan, N. A., Vorhies, D. W., & Mason, C. H. (2009). Market orientation, marketing capabilities, and firm performance. *Strategic Management Journal, 30*(8), 909–920.

Nasution, H. N., & Mavondo, F. T. (2008). Organisational capabilities: Antecedents and implications for customer value. *European Journal of Marketing, 42*(3/4), 477–501.

Nasution, H. N., Mavondo, F. T., Matanda, M. J., & Ndubisi, N. O. (2011). Entrepreneurship: Its relationship with market orientation and learning orientation and as antecedents to innovation and customer value. *Industrial Marketing Management, 40*(3), 336–345.

Ndubisi, N. O., & Agarwal, J. (2014). Quality performance of SMEs in a developing economy: Direct and indirect effects of service innovation and entrepreneurial orientation. *Journal of Business & Industrial Marketing, 29*(6), 454–468. https://doi.org/10.1108/JBIM-07-2013-0146

Ndubisi, N. O., & Iftikhar, K. (2012). Relationship between entrepreneurship, innovation and performance: Comparing small and medium-size enterprises. *Journal of Research in Marketing and Entrepreneurship, 14*(2), 214–236.

O'Connor, A. (2013). A conceptual framework for entrepreneurship education policy: Meeting government and economic purpose. *Journal of Business Venturing, 28*(4), 546–563. https://doi.org/10.1016/j.jbusvent.2012.07.003

Pacheco, D. A., Caten, C. S., Jung, C. F., Ribeiro, J. L., Navas, H. V., & Cruz-Machado, V. A. (2017). Eco-innovation determinants in manufacturing SMEs: Systematic review and research directions. *Journal of Cleaner Production, 142*(4), 2277–2287. https://doi.org/10.1016/j.jclepro.2016.11.049

Parida, V., Oghazi, P., & Cedergren, S. (2016). A study of how ICT capabilities can influence dynamic capabilities. *Journal of Enterprise Information Management, 29*(2), 179–201. https://doi.org/10.1108/JEIM-07-2012-0039

Parnell, J. A., Long, Z., & Lester, D. (2015). Competitive strategy, capabilities and uncertainty in small and medium sized enterprises (SMEs) in China and the United States. *Management Decision, 53*(2), 402–431. https://doi.org/10.1108/MD-04-2014-0222

Powell, T. C., & Dent-Micallef, A. (1997). Information technology as competitive advantage: The role of human, business, and technology resources. *Strategic Management Journal, 18*(5), 375–405. https://doi.org/10.1002/(SICI)1097-0266(199705)18:5<375::AID-SMJ876>3.0.CO;2-7

Pratono, A. H., & Mahmood, R. (2014). Social capital and firm performance: Moderating effect of environmental turbulence. *Asian Social Science, 10*(19), 59–68. https://doi.org/10.5539/ass.v10n19p59

Rae, R., & Carswell, M. (2001). Towards a conceptual understanding of entrepreneurial learning. *Journal of Small Business and Enterprise Development, 8*(2), 150–158. https://doi.org/10.1108/EUM0000000006816

Ramaswami, M., Rao, S., van der Bliek, A. M., Kelly, R. B., & Krishnan, K. S. (1993). Genetic studies on dynamin function in Drosophila. *Journal of Neurogenetics, 9*(2), 73–87. https://doi.org/10.3109/01677069309083451

Rauch, A., Wiklund, J., Lumpkin, G. T., & Frese, M. (2009). Entrepreneurial orientation and business performance: An assessment of past research and suggestions for the future. *Entrepreneurship Theory and Practice, 33*(3), 761–787. https://doi.org/10.1111/j.1540-6520.2009.00308.x

Roach, D. C., Ryman, J. A., & Makani, J. (2016). Effectuation, innovation and performance in SMEs: An empirical study. *European Journal of Innovation Management, 19*(2), 214–238. https://doi.org/10.1108/EJIM-12-2014-0119

Rodriguez-Gutierrez, M. J., Moreno, P., & Tejada, P. (2015). Entrepreneurial orientation and performance of SMEs in the services industry. *Journal of Organizational Change Management, 28*(2), 194–212.

Rosenbusch, N., Brinckmann, J., & Bausch, A. (2011). Is innovation always beneficial? A meta-analysis of the relationship between innovation and performance in SMEs. *Journal of Business Venturing, 26*(4), 441–457. https://doi.org/10.1016/j.jbusvent.2009.12.002

Sainidis, E., & Robson, A. (2016). Environmental turbulence: Impact on UK SMEs' manufacturing priorities. *Management Research Review, 39*(10), 1239–1264. https://doi.org/10.1108/MRR-06-2015-0140

Salamzadeh, A., & Kawamorita Kesim, H. (2017). The enterprising communities and startup ecosystem in Iran. *Journal of Enterprising Communities: People and Places in the Global Economy.* https://doi.org/10.1108/JEC-07-2015-0036

Salamzadeh, A., Arasti, Z., & Elyasi, G. M. (2017). Creation of ICT-based social start-ups in Iran: A multiple case study. *Journal of Enterprising Culture, 25*(01), 97–122. https://doi.org/10.1142/S0218495817500042

Salavou, H., Baltas, G., & Lioukas, S. (2004). Organizational innovation in SMEs. *European Journal of Marketing, 38*(9/10), 1091–1112. https://doi.org/10.1108/03090560410548889

Sami Sultan, S. (2014). Enhancing the competitiveness of Palestinian SMEs through clustering. *EuroMed Journal of Business, 9*(2), 164–174. https://doi.org/10.1108/EMJB-03-2012-0004

Schumpeter, J. A. (1934). *The theory of economic development: An inquiry into profits, capital, credit, interest and the business cycle.* Cambridge: Cambridge University Press.

Shiels, H., Mclvor, R., & O'Reilly, D. (2003). Understanding the implications of ICT adoption: Insights from SMEs. *Logistics Information Management, 16*(5), 312–326. https://doi.org/10.1108/09576050310499318

Sinkula, J. M., Baker, W. E., & Noordewier, T. A. (1997). Framework for market-based organizational learning: Linking values, knowledge, and behaviour. *Academy of Marketing Science, 25*(4), 305–318.

Soininen, J., Marikainen, M., Puumalainen, K., & Kylaheiko, K. (2012). Entrepreneurial orientation: Growth and profitability of Finnish small- and medium-sized enterprises. *International Journal of Production Economics, 140*(2), 614–621. https://doi.org/10.1016/j.ijpe.2011.05.029

Sok, P., O'Cass, A., & Sok, K. M. (2013). Achieving superior SME performance: Overarching role of marketing, innovation, and learning capabilities. *Australasian Marketing Journal, 21*(3), 161–167.

Song, M., & Xie, J. (2000). Does innovativeness moderate the relationship between cross-functional integration and product performance? *Journal of International Marketing, 8*(4), 61–89.

Stevens, J. (2002). *Applied multivariate statistics for the social sciences* (4th ed.). Mahwah, NJ: Lawrence Erlbaum Associates.

Stone, M. (1974). Cross-validatory choice and assessment of statistical predictions. *Journal of the Royal Statistical Society Series B, 36*, 111–147. https://doi.org/10.2307/2984809

Sulistyo, H., & Siyamtinah. (2016). Innovation capability of SMEs through entrepreneurship, marketing capability, relational capital and empowerment. *Asia Pacific Management Review, 21*(4), 196–203. https://doi.org/10.1016/j.apmrv.2016.02.002

Tabachnick, B., & Fidell, L. S. (1996). *Using multivariate statistics*. New York: Happer Collins College.

Talebi, K., & Tajeddin, M. (2011). The adoption of new and innovative knowledge by small and medium enterprises of Iran: Opportunities and constraints for growth. *African Journal of Business Management, 5*(1), 39–49.

Tan, K. S., Chong, S. C., Lin, B., & Eze, U. C. (2009). Internet-based ICT adoption: Evidence from Malaysian SMEs. *Industrial Management & Data Systems, 109*(2), 224–244. https://doi.org/10.1108/02635570910930118

Teece, D. J., Pisano, G., & Shuen, A. (2007). Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal, 28*(11), 1319–1350. https://doi.org/10.1002/smj.640

Tippins, M. J., & Sohi, R. S. (2003). IT competency and firm performance: Is organizational learning a missing link? *Strategic Management Journal, 24*(8), 745–761. https://doi.org/10.1002/smj.337

Todd, P. R., Javalgi, R. G., & Grossman, D. (2014). Understanding the characteristics of the growth of SMEs in B-to-B markets in emerging economies: An organizational ecology approach. *Journal of Business & Industrial Marketing, 29*(4), 295–303. https://doi.org/10.1108/JBIM-08-2013-0189

Tsai, K. H., & Yang, S. Y. (2013). Firm innovativeness and business performance: The joint moderating effects of market turbulence and competition. *Industrial Marketing Management, 42*(8), 1279–1294. https://doi.org/10.1016/j.indmarman.2013.06.001

Valaei, N. (2017). Organizational structure, sense making activities and SMEs' competitiveness: An application of confirmatory tetrad analysis-partial least squares (CTA-PLS). *VINE Journal of Information and Knowledge Management Systems, 47*(1), 16–41. https://doi.org/10.1108/VJIKMS-04-2016-0015

Venkatraman, N., & Zaheer, A. (1990). Electronic integration and strategic advantage: A quasi-experimental study in the insurance industry. *Information Systems Research, 1*(4), 377–393.

Wainwright, D., Green, G., Mitchell, E., & Yarrow, D. (2005). Towards a framework for benchmarking ICT practice, competence and performance in small firms. *Performance Measurement and Metrics, 6*(1), 39–52. https://doi.org/10.1108/14678040510588580

Wales, W. J., Gupta, V. K., & Mousa, F.-T. (2013). Empirical research on entrepreneurial orientation: An assessment and suggestions for future research. *International Small Business Journal, 31*(4), 357–383. https://doi.org/10.1177/0266242611418261

Wang, G., Dou, W., Zhu, W., & Zhou, N. (2015). The effects of firm capabilities on external collaboration and performance: The moderating role of market turbulence. *Journal of Business Research, 68*(9), 1–9.

Warner, T. N. (1987). Information technology as a competitive burden. *Sloan Management Review, 29*(1), 55–61.

Wolff, J. A., Pett, T. L., & Ring, J. K. (2015). Small firm growth as a function of both learning orientation and entrepreneurial orientation. *International Journal of Entrepreneurial Behavior & Research, 21*(5), 709–730. https://doi.org/10.1108/IJEBR-12-2014-0221

Wu, C.-W. (2013). Global-innovation strategy modeling of biotechnology industry. *Journal of Business Research, 66*(10), 1994–1999. https://doi.org/10.1016/j.jbusres.2013.02.024

Wu, C.-W., & Huarng, K.-H. (2015). Global entrepreneurship and innovation in management. *Journal of Business Research, 68*, 743–747. https://doi.org/10.1016/j.jbusres.2014.11.022

Xie, X. M., Zeng, S. X., & Tam, C. M. (2010). Overcoming barriers to innovation in SMEs in China: A perspective based cooperation network. *Innovation: Management Policy & Practice, 12*(3), 298–310. https://doi.org/10.5172/impp.12.3.298

Yang, B., Watkins, K., & Marsick, V. (2004). The construct of the learning organization: Dimensions, measurement, and validation. *Human Resource Development Quarterly, 15*(1), 31–55. https://doi.org/10.1002/hrdq.1086

Yunis, M., El-Kassar, A., & Tarhini, A. (2017). Impact of ICT-based innovations on organizational performance: The role of corporate entrepreneurship. *Journal of Enterprise Information Management, 30*(1), 122–141. https://doi.org/10.1108/JEIM-01-2016-0040

Zahra, S. A. (1996). Governance, 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. (1994). The financial implications of fit between competitive strategy and innovation types and sources. *The Journal of High Technology Management Research, 5*(2), 183–211. https://doi.org/10.1016/1047-8310(94)90002-7

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