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RESEARCH

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The deployment and internationalization speed of e-business in the digital entrepreneurship era

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Abstract

Digital Entrepreneurship has revolutionized worldwide businesses. Worked by the fast development of computer knowledge, Electronic Businesses (here in after acronym as EBSs) are experiencing the increasing growth in the global economy. The purpose of this paper is to investigate the effect of entrepreneurs' international experience, innovation capability, and market capability on the internationalization speed of EBSs. The current study is considered as an empirical research and the research methodology is descriptive-correlative type. The data collected from Small and Medium-Sized Enterprises (here after acronym as SMEs) whose activities are partially internet-based and have involved in the international business processes. A total of 135 SMEs in the textile cluster were classified as the internet-based businesses. To test the research hypotheses, the study used Structure Equation Modeling (SEM) and the collected data were subjected to correlational analysis and path analysis. The results revealed that the speed of foreign market entry by EBSs is positively affected by entrepreneurs' international experience, business innovation capability, and marketing capability. Finally, this study proposes insights for future studies that could consider the implications of speedy entry into foreign markets by EBSs.

Keywords: Entrepreneurs' international experience; Business innovation capability; Marketing capability, internationalization speed; Digital entrepreneurship

Background

Nowadays, the digital economy has encouraged businesses to develop their activities beyond their internal markets (Kempster and Cope, 2010). Internationalization of a business be concerned with foreign markets and how to enter them (Carroll and Shabana, 2010). The massive empirical studies (e.g., Brouthers and Hennart, 2007; Oviatt and McDougall, 2005; Yamin and Sinkovics, 2006; Werner, 2002) show the significance of selecting the precise international market entry mode. Today, undoubtedly, one of the most important drivers of internationalization is the rapid growth of digital entrepreneurship, in particular of information and communication technology (hereafter acronym as ICT) (Clacher and Hagendorff, 2012). The digital entrepreneurship has facilitated traditional business interactions and has also offered new ways of doing business in the form of EBSs (Schwens and Kabst, 2009). The development of EBSs raises the question how EBSs overcome international entry barriers, to diminish market uncertainties (Zekos, 2005). Recently, the speed of internationalization among SMEs is the issue that has attracted most attention in international digital entrepreneurship (Edmans, 2011). International entrepreneurial orientation, such as innovativeness, risk-taking, proactiveness, and aggressiveness suggest

that a particular cognition may play an important role in internationalization and its speed (Santos and Ruffin, 2010). However, so far, few studies have been conducted on various aspects of internationalization in the electronic markets space and despite the vital role of foreign entry modes, only a handful studies have examined what modes EBSs use internationally.

The aim of this paper is to investigate the effect of entrepreneurs' international experience, innovation capability, and market capability on the internationalization speed of EBSs. Trendy, contribution of EBSs in the foreign market proceeds indicates an increasing experience accretion to digital entrepreneurship (Kempster and Cope, 2010). The businesses now are moving from an industrial economy, in which Iranian SMEs have competed for the last century, towards a different, "knowledge-intensive economy". In this line, ICT highways make up the EBSs as one of the most obvious waves visualizing of this "new paradigm" Marlow et al. (2010).

Literature review

Internationalization is defined as "the process of increasing involvement in international operations" (Welch and Luostarinen, 1988, p.36). The field of international entrepreneurship so far has received much attention placed on the process of internationalization, principally the early stages of a business internationalization process. International entrepreneurial orientation and the deployment of internationalization among SMEs are also variously referred to rapid internationalization movers (Kempster and Cope, 2010). From the view of business internalization theory, the internalization of the firms "is the process of increasing involvement of enterprises in international markets" that interfaces between its internal design and the external environment (Edmans, 2011). So far, most applicants of the business internalization theory have been concentrated on the traditional interactions of knowledge flow in the international markets and much work in the digital entrepreneurship sphere has not so far taken. The digital entrepreneurship symbolizes largely unrealized renovation of entrepreneurship by the EBSs (Carroll and Shabana, 2010). In fact, EBSs internalize the international market in the knowledge within their structure Luo et al. (2005).

These days, there is a scarcity of empirical work to examine the relationship between the EBSs' speed of internationalization and the EBSs cognition of features involved in the international processes. For example, Edmans (2011) in his empirical study showed that the Danish EBSs do not completely form Electronic or online marketing and usually relies on the sales agents as a unique channel to enter in foreign markets. Similarly, Mahnke and Venzin (2003) examined the internationalization process of E-Bay to enhance the importance of integrating theories of internationalization. Their study revealed that E-Bay arrives to foreign markets via outward foreign direct investment to test the internationalization speed of its activities. Somewhere else, Sinkovics et al. (2008) investigated businesses with international entrepreneurial features tended to EBSs approach in their trade scene. Their findings depicted that SMEs attempt to promote the speed of internationalization in the form joint ventures with other businesses in their Electronic Supply Chain Management (E-SCM) process.

In another salient study, Julien and Ramanujam (2003) showed that internationalization speed is determined by leveraging of innovation capability and entrepreneurs' prior experiences with foreign markets. They proposed that it is vital to SMEs to understand how

ICT innovative behavior has changed conditions of their business internationalization speed. Finally, Halikias and Panayotopoulou (2003) in their study examined the relationship between innovation capability, prior founders' international experiences and the speed of international among internet-based businesses in the U.S. The findings showed that the speed of internationalization is positively influenced by innovative capability and founders' international experiences.

Antecedents of internationalization speed

Subsequent the business internalization theory, the speed of internationalization in the digital entrepreneurship era is considered as a vital concept which to date is not well understood. According to Edmans (2011), there is not enough agreement or exact meaning of internationalizationspeed along digital entrepreneurship. Consistently, the concept of speed has been formed by other shaping factors in definitions of rapidly internationalizing businesses (Kempster and Cope, 2010). According to Cox and Wicks (2011) internationalization speed focuses on the market entry with international entrepreneurial behavior. Businesses that pursue innovative strategies and find market unknown niches are generally interested to promote their internationalization speed (Rask and Petersenm, 2004). In the knowledge-intensive economy, speed of internationalization, not only seize environmental conditions, but may also rely on the capability and enthusiasm of entrepreneurs to spread their business activities beyond nationwide borders in the digital form.

Luo et al. (2005) raised the question of what is the driving force for the speed of internationalization, leading businesses to widespread international markets. Firms are said to concentrate on their enterprises internationalization speed for various reasons (Carroll and Shabana, 2010). Some businesses perceive the fact that their competitors or customers have been globalized, while others attempt to enhance the speed of internationalization of their business because the entry speed is considered as a symbol of success and profitability (Cox and Wicks, 2011). The above discussions of EBSs suggest that the existing internationalization speed model may not be sufficient to explain the phenomenon of speedy entry into foreign markets by EBSs. This study argues that internationalization speed of EBSs is a variable, affected by institutional variables that can foster EBSs' speed of internationalization. To this end, we develop a model including the predictor factors to explain the internationalization speed of EBS.

Entrepreneurs' international experience

To succeed, each business relies on the experiences of its entrepreneurs and founders (Chaganti and Sambharya, 1987). Entrepreneurs could be considered as the knowledge core within a business and their foreign experience is likely to be associated with enhancing international moves (Edmans, 2011). Several recent studies (e.g., Halikias & Panayotopoulou, 2003; Cox and Wicks, 2011) showed that international speed of SMEs was influenced by their entrepreneurs' international experience. The entrepreneurs with more international experience may lead their businesses into global markets confidentially (Carroll and Shabana, 2010). According to Santos and Ruffin (2010), international experience of entrepreneurs is linked to the way they use global information and analyze the international environment for opportunities in order to exploit and seize changes. Recent studies have found that entrepreneurs' international experience effects on the internationalization speed

of their businesses. The current study argues that EBSs' internationalization speed is influenced by its entrepreneurs' international foreign experience. We hence expect:

H1: Entrepreneurs' international experience is positively related to the internationalization speed of EBSs.

Innovation capability

Innovation capability is considered as an intangible resource and main core of competitive advantage that is crucial for EBSs' speed of internationalization Kutzhanova et al. (2009). It helps the businesses to overcome the solidity of entrepreneurs (Edmans, 2011). In the other word, the development of innovation capability is triggered by commitment of entrepreneurs to international entrepreneurial behavior such as entering to potentially global trade niches, international monitoring, screening and scanning (Lopez-Duarte and Vidal-Suarez, 2010). Furthermore, innovation capability is especially valuable to EBSs, since they can quickly introduce new products or new services to the foreign markets to speed up their business internationalization (Luo et al. 2005). We thus postulate:

H2: Innovation capability is positively related to the internationalization speed of EBSs.

Marketing capability

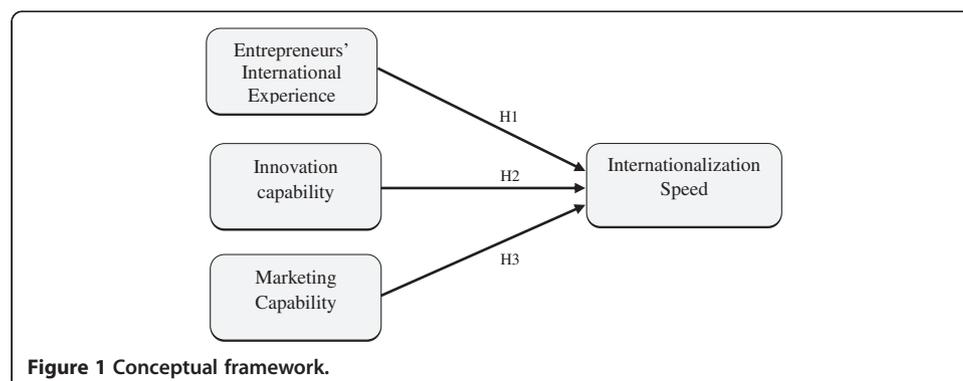
Marketing capability can serve for developing and renewing international speed of EBSs (Schwens and Kabst, 2009). According to Cox and Wicks (2011), marketing capability is crucial for EBSs in thebuilding well-known international branding, better supply chain management, encouraging customers' involvementin the new product development processes, and rising speed of entry to foreign markets. We therefore hypothesize:

H3: Marketing capability is positively related to the internationalization speed in EBSs.

Considering the above-mentioned hypotheses, the conceptual model of the study could be expressed as follows (Figure 1).

Research method and material

The current study is considered as an empirical research and the research methodology is descriptive-correlative type. The selection of EBSs sample was limited to the internet-based businesses whose actions are involved in the international business processes. Iranian



Textile EBSs are characterized by a rapidly evolving landscape of new players. Therefore, various databases from industrial towns and EBSs have been reviewed. A total of 135 SMEs in the textile cluster classified as EBSs who have international activity. In this study, the speed of Internationalization is dependent variable. It is generally associated with international entrepreneurial behavior and measured by the difference between the year of a firm's beginning and the year it starts the first international development motion. The measurements of independent variables are also discussed below. Entrepreneurs' international experience was measured by a ratio of the number of entrepreneurs with prior international business experience to the total number of founders. Data for this variable were gathered from the biographic information filed. Furthermore, following previous studies, innovation capability in EBSs was measured according to Crant and Bateman (2000) 17-item questionnaire. Finally, development of the marketing capability scale incorporated the work of Vorhies and Morgan (2003). Respondents indicated the extent to which their firms possess the capabilities considered compared to their direct competitors.

Results and discussion

A total of 135 individuals responded to the survey. The mean age of the respondents was 35.

89% of the respondents were male and 11% were female. Regarding education, 59% of the respondents had a Bachelor, 30% had a Master, and 11% had a PhD degree. It is also clear that most of the participants were medium-sized enterprises (70%). The profile of the SMEs in the textile cluster participating in this study is presented in Table 1.

Analysis and results

In this paper, the Structural Equation Modeling (SEM) approach by PLS methodology with Smart PLS 2.0 software were used. PLS was selected to assess the relationships between the endogenous and exogenous variables and to determine the predictive

Table 1 Sample profile of the respondents

	Characteristics	Number	Percent
Gender	Male	121	89
	Female	14	11
Age	30 and below	20	15
	31-40	30	22
	41-50	50	37
	50 and above	35	26
Educational level	Bachelor degree	80	59
	Master degree	40	30
	PhD	15	11
Years in present designation	Less than three years	14	11
	Three to ten years	86	63
	Over ten years	35	26
SMEs	Small enterprises	65	49
	Medium-sized enterprises	70	51

power of the research model for the EBSs. The analysis and interpretation of a PLS model is a two-stage process: first, the reliability and validity of the measurement model are evaluated and next, the assessment of the structural model itself.

Overall validity of measures and path analysis model

The measurement model in PLS is assessed in terms of individual item reliability, convergent and discriminant validity. Prior to the data analysis, the measures were evaluated. To do this, we conducted confirmatory factor analysis (CFA) for overall measurement model. To have satisfactory fitness to data, normed Chi-square (χ^2_{df}) of the model should be less than 3, normed fit index (NFI), comparative fit index (CFI), and goodness-of-fit index (GFI) more than (0.90), root mean squared residual (RMR) less than (0.09), and root mean squared error of approximation (RMSEA) less than (0.05) Hair et al. (1999). In the current study, for the CFA model, (χ^2_{df}) was (2.78), NFI, CFI, and GFI were (0.91), (0.92), and (0.94) respectively. Furthermore, RMR and RMSEA were (0.05) and (0.07) respectively. Table 2 shows the common fit indices, recommended values and analytical results for total measurement model. As can be seen, all the model-fit indices are qualified with the recommended values, indicating that the overall model fit is acceptable.

In the current study, CFA was used to measure the reliability, convergent validity, and discrimination validity. As depicted in Tables 3 and 4, the composite reliability (CR) of the latent variables is higher than (0.6) and most of the squared multiple correlations (SMC) of the measured variables are larger than (0.50) representing that all measures have good reliability (Hair et al. 1998). In addition, for the assessment of convergent validity, the study applied Fornell and Larcker's (1981) criterion. The Average Variance Extracted (AVE) value of at least 0.5 shows satisfactory convergent validity, meaning that a latent variable is able to explain more than half of the variance of its indicators on average. In this study, all the latent variables have AVE larger than the threshold of (0.50) (shown in Table 4) and CR larger than (0.60) (depicted in Table 3) meaning that good convergent validity has been fulfilled (Fornell and Larcker, 1981). In addition, the AVE of each latent variable is larger than SMC between each pair of the latent variables. Thus, the discriminant validity is also confirmed (Fornell and Larcker, 1981).

The mean, standard deviations and correlations of the variables are reported in the Table 4. As shown, the internationalization speed has the highest mean (3.22) and innovation capably has the lowest mean (2.64). Correlation results depict that there is positive relationship between entrepreneurs' international experience and internationalization

Table 2 The fit indices and analysis results of the measurement model

Fit indices	Recommended value	Result
χ^2_{df}	< 3.00	2.78
GFI (goodness of fit index)	> 0.90	0.94
RMSEA (root mean square error of approximation)	< 0.08	0.07
RMR (root mean square residual)	< 0.08	0.05
NFI (normed fit index)	> 0.90	0.91
NNFI(non-normed fit index)	> 0.90	0.98
CFI (comparative fit index)	> 0.90	0.92

Table 3 Standardized factor loading, SMC,and CR of the measurement model

Construct	Item	Factor loading	t-value	SMC ¹	CR ²
EIE	EIE1	0.74	16.65*	0.61	0.85
	EIE2	0.81	16.13*	0.63	
	EIE3	0.71	17.35*	0.55	
	EIE4	0.78	16.23*	0.56	
	EIE5	0.79	16.65*	0.50	
	EIE6	0.76	18.65*	0.78	
	EIE7	0.73	14.27*	0.66	
	EIE8	0.83	15.79*	0.69	
IC	IC1	0.77	19.03*	0.62	0.96
	IC2	0.71	18.34*	0.59	
	IC3	0.76	19.56*	0.49	
	IC4	0.79	17.73*	0.68	
	IC5	0.72	16.11*	0.55	
	IC6	0.83	16.83*	0.61	
MC	MC1	0.72	18.65*	0.48	0.91
	MC2	0.69	20.05*	0.62	
	MC3	0.76	15.79*	0.57	
	MC4	0.70	19.21*	0.64	
	MC5	0.73	15.65*	0.63	
IS	IS1	0.87	13.27*	0.46	0.94
	IS2	0.88	18.70*	0.51	
	IS3	0.84	19.08*	0.60	
	IS4	0.85	18.68*	0.52	
	IS5	0.83	14.24*	0.67	

*P < .001.

¹SMC-squared multiple correlations.

²CR-composite reliability.

speed ($r = 0.55, p < 0.001$), innovation capability and internationalization speed ($r = 0.41, p < 0.001$), and marketing capability and internationalization speed ($r = 0.48, p < 0.001$).

Hypothesis testing

In the current study it is postulated that entrepreneurs' international experience has direct positive effect on the international speed in EBSs. According to the relationships among variables in the final fitted model, the path from entrepreneurs' international experience to international speed has a significant coefficient that reveals positive effect of entrepreneurs'

Table 4 The mean, standard deviation, and inter-variable correlations matrix

Latent Variable	Mean	SD	EIE	IC	MC	IS
Entrepreneurs' International Experience (EIE)	3.15	0.72	0.72			
Innovation Capably (IC)	2.64	0.8	0.41***	0.67		
Marketing Capability (MC)	3.12	0.76	-0.12	0.27**	0.64	
Internationalization Speed (IS)	3.22	0.83	0.55*	0.41*	0.48*	0.69

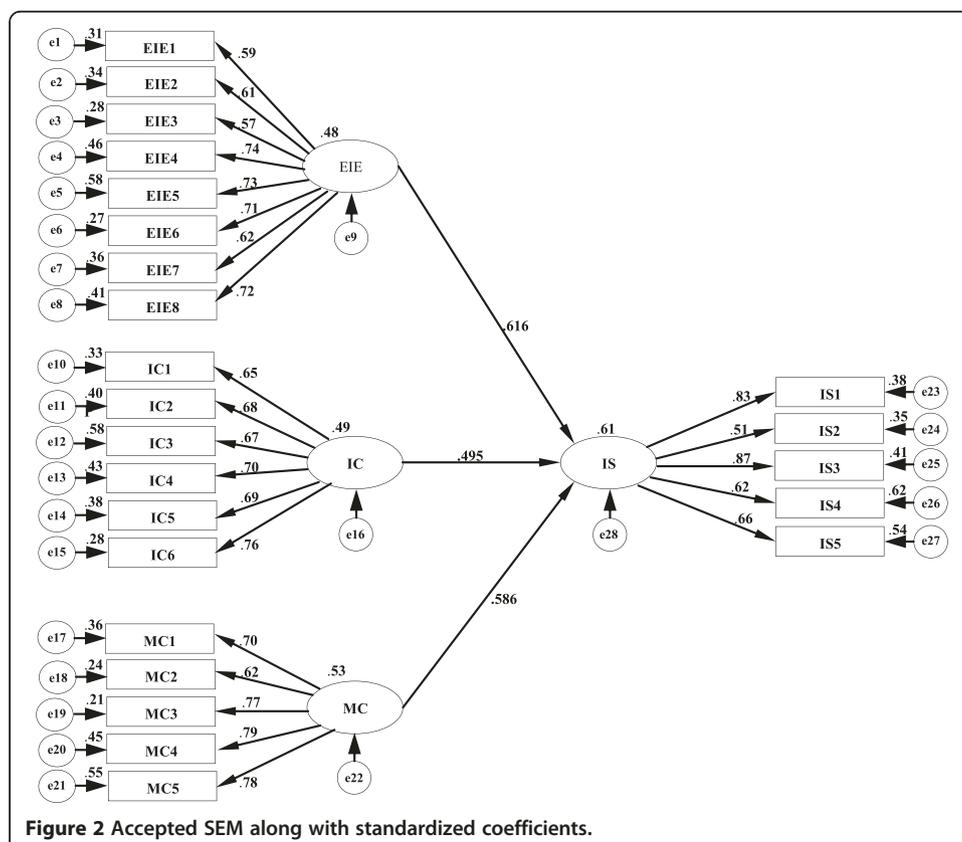
Note: Diagonal elements (bold) show the average variance extracted (AVE).

*p < 0.001, **p < 0.01, ***p < 0.05.

international experience on international speed ($\beta = 0.616, P = 0.002$). Thus, the first hypothesis (H1) is supported. This result is in line with the studies of Luo et al. (2005) and Cox and Wicks (2011) where the founders' international experience is shown to have positive impact on the internationalization speed.

Furthermore, the effect of innovation capability on the international speed in EBSs as expected is significant and positive ($\beta = 0.495, P = 0.000$). Then, the second hypothesis (H2) is supported. With regard to the significant coefficient, it is accepted that when EBSs have high innovative capability toward foreign markets, the speed of internationalization will be high. This finding is in line with the finding of Lopez-Duarte and Vidal-Suarez (2010) where the development of innovation capability is triggered by commitment of entrepreneurs to international entrepreneurial behavior such as entering to potentially global trade niches and international market monitoring.

Finally, the third hypothesis predicts the positive effect of marketing capability on the internationalization speed. As can be seen in Figure 2, the estimated structural path between marketing capability and internationalization speed is significant and positive ($\beta = 0.586; P = 0.005$), Thus, the third Hypothesis (H3) is supported too. Therefore, we conclude that EBSs with more marketing capability have more willingness to speedy their businesses in the international markets. This result is consistent with the previous studies on the internationalization speed (e.g., Schwens and Kabst, 2009; Cox and Wicks, 2011) that indicated marketing capability is crucial for EBSs in building well-known international branding, better supply chain management, encouraging customers' involvement in the new product development processes, and



rising speed of entry to the foreign markets. Figure 2 shows the fitted path model along with standardized theoretical path coefficients.

Using the standardized path coefficients between exogenous and endogenous variables, the direct effect and the indirect effect of each construct on the internationalization speed is depicted in the Table 5.

Assessing the structural model

To validate the relationships between variables and to investigate the overall fitness of the proposed model, multi-variable analysis and particularly path analysis were used. Table 6 shows the common model-fit indices, recommended values and results of the test of structural model fitness. In this study, all of the indices are better than recommended value and represent the goodness-of-fit for the proposed model.

Discussion

This study used the business internalization theory to investigate the determinants of internationalization speed of EBSs. It was discussed that businesses desire to seize the international markets using the international entrepreneurial behavior. The findings of this study which are consistent with the previous efforts in the international entrepreneurship literature (e.g., Carroll and Shabana, 2010; Cox and Wicks, 2011; Santos and Ruffin, 2010) indicate that the internationalization speed is a substantial tool for effective international entrepreneurship. The results of the current study show that there is a positive and significant relationship between entrepreneurs' international experience, innovation capability, and marketing capability as exogenous variables and the speed of internationalization as the endogenous variable. In the other words, a business can improve its internationalization speed than the competitors by strengthening various antecedents (i.e., entrepreneurs' international experience, innovation capability, and marketing capability).

It can be seen that the EBSs in the digital entrepreneurship era depends on the resource-based theory in the notion that the internationalization speed of EBSs is more proactive if the EBSs intangible resources such as innovation capability and marketing capability are superior. The findings of the current study also depict that the soft-side determinants are important in affecting the internationalization speed of EBSs. The results also confirm that EBSs exhibit high level of international entrepreneurial orientation in the form of digital entrepreneurship. Therefore, it can be said that where the most businesses emphasize only on the entrepreneurs' international experience in the international markets, intangible resources such as innovation capability and market capability can improve the internationalization speed of EBSs. Innovation capability and marketing capability are

Table 5 The direct effect, indirect effect, and total effect of each construct on internationalization speed

	Direct effect	Indirect effect	Total effect
	SI	SI	SI
EIE	0.616	0.387	0.616
IC	0.495	0.218	0.495
MC	0.586	0.421	0.586

Table 6 The fit indices and analysis results of the structural model of the overall model

Fit indices	Recommended value	result
χ^2/df	< 3.00	2.44
GFI (goodness of fit index)	> 0.90	0.92
RMSEA (root mean square error of approximation)	< 0.08	0.06
RMR (root mean square residual)	< 0.08	0.04
NFI (normed fit index)	> 0.90	0.93
NNFI (non-normed fit index)	> 0.90	0.96
CFI (comparative fit index)	> 0.90	0.97

crucial for EBSs in building well-known foreign customer loyalty, international branding, better supply chain management, and encouraging customers' involvement in the new product development processes in the international markets.

Conclusions

Overall, the results of this study provide worthwhile insights for understanding the business internalization theory by investigating the effects of entrepreneurs' international experience, innovation capability, and market capability on the speed of internationalization of EBSs. It was found that entrepreneurs' international experience and EBSs strengths in innovation capability and market capability are significantly and positively associated with the EBSs speed of foreign market entry. The internationalization speed of EBSs will be more promoted if the businesses intangible-resources such as innovation capability and market capability are superior. The effect of antecedents of internationalization speed (i.e., entrepreneurs' international experience, innovation capability, and market capability) indicates Iranian EBSs in the textile cluster should concentrate on the international market niches by leveraging the innovative marketing strategies E-SCM, and other promotional activities. This is further reinforced by the Electronic Government (E-Government) supportive actions which are the crucial factors in explaining the speed of EBSs internationalization. High degree of E-Government supportive activities symbolizes a protected business environment for EBSs and can expedite the internationalization process for Iranian SMEs who have tendency toward international markets. The current study also provides more valuable insights for the future studies which should examine the performance outcomes of internationalization speed of EBSs and the variables that can moderate the relationship between the antecedents and internationalization speed of EBSs. It is also recommended that future research may need to make efforts on the comparative studies to identify and test systematically variables that could effect on the internationalization speed of EBSs.

Competing interests

The authors declare they have no competing interests.

Authors' contributions

All the authors contributed equally in the whole research process. All authors read and approved the final manuscript

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