



Investigating the factors affecting e-commerce in Iranian small and medium-sized enterprises (SMEs) in the world trade environment

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Abstract

In the era of the global economy, many markets have increasingly turned into international and competitive markets. Technological advances in logistics and distribution enable almost every business to buy, sell, and collaborate globally; and even smaller and local businesses are also forced to be present in the global arena in order to survive in this new and challenging business environment. The present study aimed to identify the factors affecting the e-commerce boom in small and medium-sized enterprises (SMEs) in the world trade environment. The statistical population of the study consists of companies and specialists active in e-commerce which are 100 ones. The present study is applied in terms of purpose and is descriptive in terms of nature. A researcher-made questionnaire was used for data collection. The validity of the questionnaire questions was confirmed by experts in the field. Cronbach's alpha technique was used to determine the reliability of the questionnaire which was confirmed with a coefficient of 0.82. Exploratory factor analysis and Friedman test were used to analyze the data. The study results showed that all the 25 factors affecting e-commerce can be classified into 8 groups, and Friedman test showed their order which includes effective economic, cultural, educational, personal, political, and infrastructural, security, and marketing factors, respectively. Therefore, it should be noted that factors such as costs of using the Internet, growth rate of people's access to computers, software and hardware systems, economic factors associated with existence of e-commerce insurance, and unfamiliarity with economic benefits such as cost savings due to using e-commerce are the main factors affecting development of commerce.

Keywords: E-Commerce, Effective factors, Exploratory Analysis, Globalization, SMEs.

Introduction

E-commerce has become a vital tool in doing business. It provides opportunities that seem to have no turning back to traditional forms of business (Javadini & Saghatchi, 2006). Thus, given what has been said about e-business, it must be acknowledged that to use all this e-business potential there is a need to identify the factors that can greatly improve business success. Therefore, there is a need to conduct research to identify

these factors, and this study is a step toward achieving these goals. The advent of new information and communication technologies such as telecommunication technologies enables companies, individuals, and organizations to conduct electronic business and commerce. These organizations, through resources outside the organization, provide opportunities to access resources and skills that are not individually accessible by people in the organization; and by definition, it is doing e-business that

offers many opportunities and benefits to companies, governments, and also consumers (Azarbayjani et al, 2004). It should be noted that executives and managers who still regard e-business as a transient wave or just a vision of the future are taking a big risk because e-business now exists in today's world and it will remain (Hamzeh, 2007). But to reach this point, and given Iran's widespread use of information technology, in order to exploit all the potential of e-commerce, the barriers affecting their success must be identified and sought to be overcome. It has often been argued that like expansion and connectivity of production, communications, and technologies around the world, globalization also enters processes related to the intermingling of economic and cultural activities. In recent times, the impact of globalization on business, and in particular small businesses, has been the subject of debate in academic settings (Bajaj, 1997). Globalization produces new structures and relationships by concluding the notion that business decisions and actions in one part of the world have significant consequences in other parts. It has been argued that companies operating in a global market can obtain benefits by enhancing their international competitiveness through economies of scale, use of cheaper inputs, risk neutralization, and optimal market segmentation. However, it is a fact that not all companies can benefit equally from globalization, and this puts some pressure on SMEs that cannot easily find an organizational solution to take advantage of global business opportunities without suffering from limited resources (Sanayei, 2007).

The impact of globalization on SMEs has attracted a great deal of attention in international circles because, although they are small, in both developing and developed

countries they have a significant share in the economy. Instead of competing with multinational great corporations, SMEs can take advantage of the opportunities provided by e-commerce in order to access new and often distant markets or global value chains. The present study shows how the new business environments created by globalization affect companies, and how SMEs can solve the problems of the new environment if they can use the potential of e-commerce (Dejpasand, 2005).

The study results show that SMEs are already using e-commerce to create value-added and provide new services and business models by expanding their competitiveness and business in global markets. However, despite the benefits of this, there are a number of technical and non-technical restrictions regarding that type of e-commerce that restricts SMEs or prevents them from engaging in activities to use IT and e-commerce. As many of these SMEs cannot deal with these constraints, including effective technical, economic, and legal factors alone, they need public or private support (Zaed Abdul Nasser, 2012).

Theoretical foundations

The term e-business was first introduced in 1997 by IBM. E-business encompasses a more general concept than e-commerce. E-commerce relies on external relations of the enterprise or individual while e-business, in addition to external relations, also refers to the strategy within the organization and includes e-commerce, business intelligence, and customer relationship management. In short, e-business is the integration of the systems and processes and supply chains and the whole market using the principles and technologies related to the Internet, which are presented and used in eight parts:



company with the employees; person with person; company with consumer; consumer with company; company with company; consumer with consumer; company with the government; government with consumer (Javadini & Saghatchi, 2006).

. **E-business:** Simply put, e-business combines a company's ability to connect electronically, in many ways, to many organizations, both domestic and foreign, for very different purposes. E-business allows an organization to conduct electronic transactions with any individual entity along the value chain, i.e. suppliers, logistics suppliers, wholesalers, distributors, service providers, and end customers. Increasingly, e-business allows an organization to create real-time links simultaneously among multiple entities for specific purposes such as optimizing the flow of physical items (raw materials, components, manufactured goods) through the supply chain.

E-business includes applications of information and communication technologies in all business processes such as administrative automation, financial transactions, manufacturing processes, coordination with other factories, customer relationship management, supply chain management, and distribution network management (Abdel Nasser, 2010).

An incredible increase in production, technological advances, increased speed of transportation, and ease of communication has helped the capital, labor, information, and technology movement to be provided to a large extent across countries, in addition to the goods and services provided following the Industrial Revolution. As a result, national economies are connected to each other through movements that are gradually becoming more complex and dense (Asiedu Elizabeth James, 2007).

Globalization is the tendency of investment funds and businesses to move beyond the domestic and national markets to other existing markets around the world by licensing funds and businesses to integrate through different markets. Accordingly, globalization creates organizations with a superior competitive position, through lower operating costs, in order to gain more products, services, and consumers. This approach to competition has been achieved by diversifying resources, creating and expanding new investment opportunities by opening more markets, and accessing new raw materials and resources (Ekodiyalog, 2012).

Economic activities are certainly being done toward globalization, and production and distribution systems all over the world are evolving. In this period, the role that international trade plays in linking countries around the world is obvious. Globalization creates new structures and new relationships by concluding the point that business-related decisions and actions in one part of the world have significant consequences in other parts. Strengthening and reinforcing these globalization trends means that the technological environment, especially in information and telecommunications processing, is changing rapidly. The changes created in telecommunications and information processing capabilities may allow for coordination of efforts related to research, marketing, and production around the world. Relatively, real-time communications make it possible for the exchanging of financial instruments 24 hours a day and, as a result, more renewable resources are considered a basis for resources belonging to companies, industries, and countries (Eduard Hauser, 2000).

A common definition of globalization is the global integration of economies through

trade and investment flows, as well as the production of goods and services in order to enhance international competitiveness. The economic characteristics of globalization include development of global companies and networks; widespread internationalization of all forms of economic activities in production, marketing, consumption, capital, and standards; widespread strengthening and development of inefficient production methods and massive decompression of production; excessive labor force migration; standard technology-based production for low-wage economies; excessive migration of educated and skilled labor force to countries with advanced information technology; successful integration of multinational and multicultural labor force to strategically expand the economic and political benefits of diversification; reorientation of large-scale production in high-wage economies from economies of scale toward economies of territory; shortening production cycles; integration of external financial services and other services within the production cycle; and rapid growth and expansion of service and knowledge-based activities especially in advanced industrial economies (Nemani, 2012).

Other definitions include the process of accelerating international integration of markets that emerge in a unified world market without any boundaries belonging to a national economy. An enterprise operating in a global market can benefit from four major sources of profitability over competitors operating in only a single local format (Incekara & Mesut, 2012) which are:

- Economies of scale;
- Benefiting from cheaper inputs;
- Risk neutralization;
- Optimized market segmentation.

Business economists today agree that the new feature of globalization is the explosion of world trade in intermediate goods and in direct foreign investment while revealing the richness of trade has not increased over the past 100 years. The growth of intermediary goods trade and direct foreign investment are signs of the way in which new companies organize their activities. The value chain has become global. A global company carries out one stage of production in one country and exports the input to another country to be refined. The modified input in the third country is further refined. During this refining process, intermediate goods are exchanged from one place to another. As such, the international organization of production leads to a significant increase in intermediate goods trade and direct foreign investment. Parallel to such changes in the world economy, the corporate sector existing in wealthy economies has been destroyed due to a great volume of reorganization (Marin and Verdier, 2003: 337).

In the age of globalization of economies, many markets have become increasingly international and competitive; however, the story of SMEs differs from that of great multinational corporations (MNCs) (Hussain, 2013).

Globalization is a source of opportunities as well as threats. The specific benefits of operating in a global market seem to be exploitable only by large organizations unless SMEs can find an organizational solution to allow them to enjoy global business opportunities without suffering from limited resources and without exposing themselves to the risk of direct investment (Almaty Kazakhstan, 2013).

The increase in the number of exporters or multinational companies means an intensification of competition. However, the overall impact of competition on the



performance of SMEs is unclear. On the one hand, increased competition in the product market may cause SMEs to reduce their commodity prices. On the other hand, agreement on the issue of “learning through competition” suggests that pushing toward survival may accelerate the adoption of new technologies and thus, increase the efficiency of SMEs. Given the labor market, higher wages paid by multinationals and exporters, following an increase in production costs of SMEs, may eliminate all the impacts belonging to other industries (Jentzsch & Audi, 1999).

SMEs’ business environment

Private SMEs often constitute more than 95% of all companies outside the primary agricultural sector, as the sector constituting a major source of employment and generator of significant revenues from domestic and export sectors in OECD, including transitional countries and developing countries. Improved competitiveness of SMEs can clearly contribute to economic and political development and poverty reduction (OECD, 2004).

In both developed and developing countries, SMEs constitute the majority of the business sector and have the majority of the labor force in both the manufacturing and service sectors. SMEs mainly supply the domestic market and their share of GDP, although usually to a small extent, this share can vary greatly depending on the price of goods or services they produce. While less than 6% of the official workforce in SMEs owned by the Republic of Azerbaijan, Belarus, and Ukraine are working in the manufacturing sector, this share is more than 50% in other developing countries such as Ghana, Turkey, and Ecuador. Studies have also shown that countries with large SME sectors tend to

benefit from the significant share that SMEs have in GDP (Kaynak et al., 2005).

However, the business environment of SMEs has been changing effectively due to the phenomenon of globalization. Technological advances in logistics and distribution enable almost every business to buy, sell, and collaborate on a global scale. Customers also have a chance to access global markets to find the best offer. As a result, even smaller and indigenous businesses have to consider themselves in a global context. Accordingly, the globalization of economic activities has a two-sided impact on SMEs. For some of these companies, this provides new opportunities for growth and development by taking advantage of the potential of the international market. However, for the majority of them, the growth of globalization of the economy increases competition through foreign companies and it is an internal process that brings about competitive challenges and threats. For these SMEs, globalization entails risks that due to these risks it is unlikely that the companies will remain in their current form without any improvement in quality, cost competitiveness, and management practices (Marin & Thierry, 2003).

Implementation of competitive business operational strategies and practices is considered a step forward for SMEs. However, the options available to SMEs are also closely related to the characteristics of the institutions, markets, and organizations forming the business environment. This is regarded as the performance and effectiveness of institutions, markets, and organizations that encourage or weaken SMEs to receive guidance on learning new ways of doing business, compare their own competitive characteristics with the ones of their competitors, and decide to invest, that this decision includes introducing their

innovations into their own business strategies (Mundim Ana Paula et al., 2019). In the context of globalization, the chances for SMEs to succeed are in the implementation of competitive business operational practices and strategies. However, the options available to SMEs are also closely related to the characteristics of

the institutions, markets, and organizations forming the business environment. Also, the distinctive characteristic of SMEs limits their options to accept the new business environment. The Australian Statistics Center describes the organizational characteristics of SMEs as follows (Nejadirani et al, 2018).

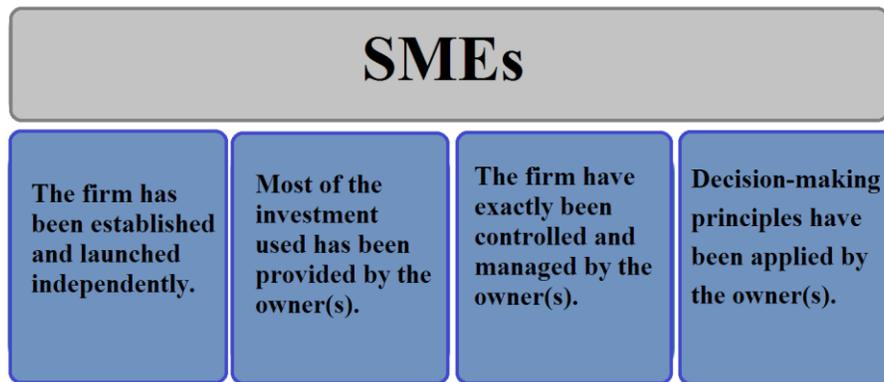


Figure 1: Basic characteristics of SMEs

(Figure 1) clearly shows that SMEs are mainly established by owners and decisions at different levels are made by the same people. Although this makes the performance of SMEs agile and fast and keeps them away from cumbersome organizational structures, the success of

SMEs is tied to the mindset of their owners. The main characteristics of SMEs are shaped not only by the type of owner but also by the size of the organization that this organizational size can lead to advantages and disadvantages in the globalization process (Table 1).



Table 1. Advantages and disadvantages of SMEs compared to large enterprises (Recklies, 2014)

Characteristic	Advantages	Disadvantages
Dependence upon a limited number of people	<ul style="list-style-type: none"> - Long term thinking, consistency of views - Lack of pressure to succeed in the short term - Determination of exact identity by the business - Sustainable culture - High commitment 	<ul style="list-style-type: none"> - Static thinking, being limited to the owner(s)' experiences and knowledge - Problems in adapting organizational culture to new situations and challenges - Potential conflicts between corporate and personal goals
Close relationships with customers and business partners	<ul style="list-style-type: none"> - Existence of a solid basis for more business - Ability to successfully collaborate for obtaining mutual benefits - Ability and tendency to enter into partnerships 	<ul style="list-style-type: none"> - Risk of over-focusing on a current business basis
Simple structures	<ul style="list-style-type: none"> - High flexibility and adaptability - Short reaction times - Functional cross relationships and the existence of cooperation within the organization 	<ul style="list-style-type: none"> - Inadequate for complex planning and implementation of international actions - Low tendency to introduce more complex structures
Small size	<ul style="list-style-type: none"> - Existence of a foundation for specialization, often successful through Nietzsche's strategies 	<ul style="list-style-type: none"> - limited resources - Limited funding for investment financing and the existence of initial operational losses for new activities - Spending costs on market research and a much higher proportion of costs of SMEs' entering the market of larger businesses in their total costs - A limited number of employees to perform more tasks - Lack of staff with international experience

Although globalization brings about challenges such as entry of foreign competitors into domestic markets and reduction of costs related to domestic competitors through global sourcing, and replacement of offshore production or gaining economies of scale through expanding new markets for SMEs, but the new environment can allow for access to new markets and participation in global manufacturing networks for SMEs. The innovative and dynamic aspects of globalization include increasing access to the market, increasing access to capital, and increasing access to technology and information, which have led to greater

revenue and job opportunities. Also, SMEs may gain an advantage because of their small size by supplying specialized and customized goods and services. However, many SMEs cannot enjoy the cost benefits of mass production, and some types of costs do not vary in accordance with the size of the company (Auckland Dhaka, 2019).

In this regard, SMEs instead of competing with large MNCs have tended to use e-commerce technologies to expand their market size and access global markets.

The potential of e-commerce for SMEs in the globalizing business environment

E-commerce technologies have a potential which leads to obtaining significant productive benefits at the corporate level. Especially when they are applied in business-to-business relationships, electronic technologies can lead to a rationalization of business processes and cost savings. As an immediate effect, these technologies allow for the automated activity of common processes such as distribution, sales, after-sale services, and inventory management (Porter & Lalers, 1968). There are a variety of methods by which the use of the Internet and e-commerce can be useful for SMEs (Aij & Teunissen, 2017), including:

- Facilitating the access of industry practitioners and SMEs to global markets.

- Facilitating promotion and development of tourism of developing countries on a global scale.
- Facilitating the marketing of agricultural and tropical products in the world market.
- Providing routes for companies in poorer countries in order to enter B2B and B2G supply chains.
- Helping service provider companies in developing countries through licensing them to operate more efficiently and providing specific services directly to customers globally.

Numerous studies have presented their findings on the usefulness and effectiveness of e-commerce. Those findings can be categorized as follows (Passaris Constantine, 2006) (Figure 2).

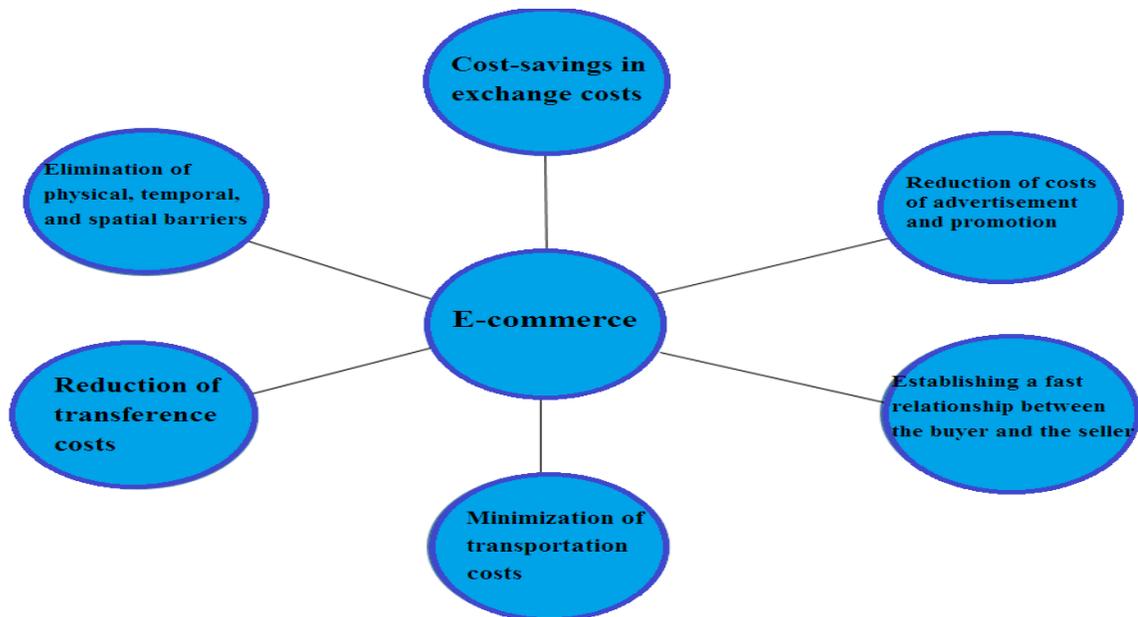


Figure 2. Potential benefits of e-commerce



Evidences from case studies show that SMEs have different ways of doing e-commerce. Internet startups invent new ways of creating value-added, new services, and business models, while established small companies use the Internet to develop e-commerce strategies that they have often used internationally in order to expand their business, and also use it in order to increase their effectiveness. In addition, a group of small companies are entering international partnerships through large corporations owned by their customers or suppliers or through broad industrial unions (Recklies, 2014).

(Figure 3) which represents the number of purchases and sales tells a different story. Although those companies are not at the top of purchases and sales lists, their conducted business on the Internet presents more financial turnover for the smallest companies than other firm sizes. When the tables are evaluated overall, it can be concluded that small companies, though not as much as the large ones, but tend so much to e-commerce and can benefit more by using it.

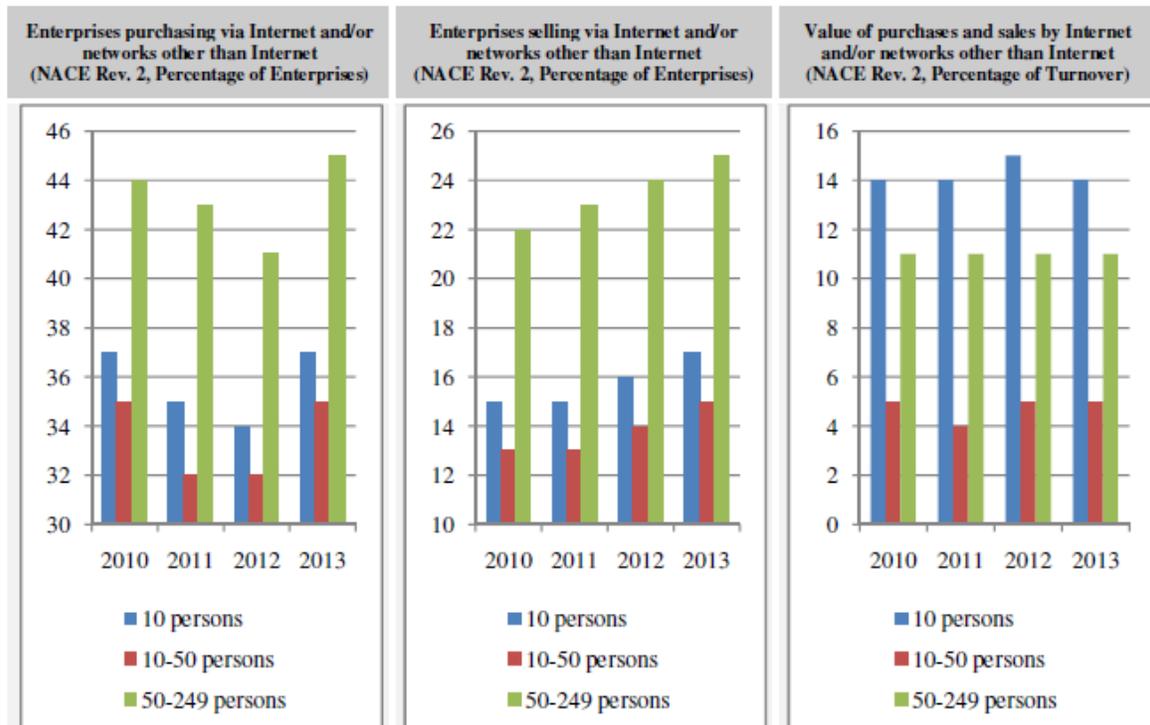


Figure 3. Amount of purchases and sales

Despite its benefits, there are a number of technical and non-technical limitations related to Internet-based e-commerce. Two major technical constraints are related to security concerns and infrastructures. The major problems that prevent SMEs from

using information technology and e-commerce in their activities can be illustrated as follows (Figure 4):

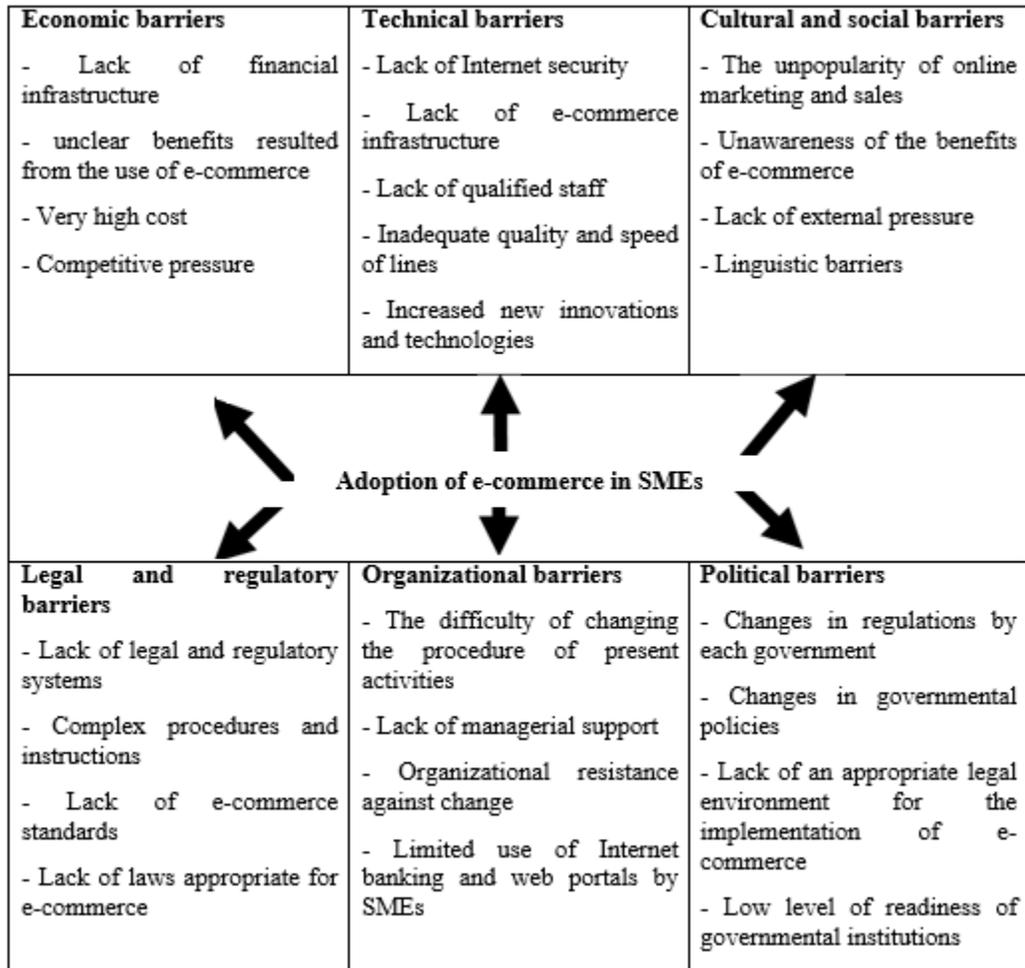


Figure 4. Conceptual framework of the factors affecting the adoption of e-commerce in SMEs

Especially in developing countries, most SMEs start businesses other than e-commerce or use limited information technology because they do not understand how e-commerce can strengthen their business. Another issue is that technology literacy is still very limited in many developing countries leading to a shortage of skilled workers in SMEs and forcing them to move forward through the use of information technology in business. In some cases, even if SMEs are more inclined to use information technology, the physical infrastructures of many developing countries, described by television programs

as low-volume, act as a major factor for e-commerce. Internet connection costs, costs of appropriate hardware or software, and startup and maintenance costs may be a deterrent for some SMEs because the initial investment for adopting new technology is proportionally heavier for small companies than for large companies. Uncertainty is another factor in using the Internet to conduct online transactions; namely, consumers, due to the uncertainty arising from the change of policy and use of data from SMEs, are not willing to use the Internet to conduct transactions with those



companies (Totonchi & Kakamanshadi, 2011).

In the European Union area, effective factors preventing SMEs from entering e-commerce are listed under five headings (Mir Hosseini, 2017) as below:

- Unfavorable goods or services owned by the company
- Problems related to logistics
- Problems related to payment
- Problems related to information and communication technology security or data protection
- Problems related to legal frameworks (Hosseinian et al., 2017).

Methodology and statistical population of research

The present study is applied in terms of purpose. It is a field survey (non-experimental) in terms of field data collection. A survey is a type of research that, through surveying opinions, collects information about discovering the relationships between variables and examines the existing facts. The questionnaire tool is used in this research in order to do this. This study is descriptive-correlational in terms of data analysis, and quantitative methods are used in it. At the beginning of the study, a comprehensive review of the literature, as well as the existing researches inside and outside the country, was carried out and based on which the questionnaire which is the main research tool was developed.

The statistical population is a set of individuals or units with at least one common trait. Usually in any research, the population under study is a statistical population that the researcher would like to study the variable trait(s) of its units. The statistical population of the present study

consists of the companies and specialists active in the field of e-commerce. In the present study, in order to select the research sample, Cochran's formula was used and after the calculation of variance through the pre-test, a total of 100 subjects were selected as the sample. Therefore, completely random sampling was a good method to achieve the goal. The preliminary sampling method was used to determine the variance of the studied trait.

Data collection method

In this study, all three methods of library, electronic and field research were used to collect the data such that the previous studies were used for theoretical foundations and research literature, and in order to collect the main information, a questionnaire was used which was a field survey of the statistical population including companies and specialists active in e-commerce. Companies and specialists active in e-commerce completed the questionnaire, which included a number of items designed as a five-point Likert scale.

The reliability of the research tool was also assessed by Cronbach's alpha method (to calculate the internal consistency of the research tool). This method is used to calculate the internal consistency of the measurement tool that measures different properties. To calculate Cronbach's alpha coefficient, first, the variance of scores of each subset of the questionnaire questions and the total variance must be calculated. Using the following formula, the amount of alpha multiplication for 30 completed questionnaires as a pre-test was calculated, that the reliability of the whole questionnaire was obtained as equal to 0.82.

Analysis method

Two methods were used in this study for analysis:

Exploratory factor analysis: In this method, the researcher seeks to discover the underlying structure of a relatively large set of variables without any prior theory. Any variable may be related to any factor; data reduction or structure detection. Exploratory factor analysis is used to identify the variables affecting the factors affecting the use of e-commerce. Friedman ranking test is also used to rank the factors affecting e-commerce.

Results of research

Before doing the factor analysis one needs to make sure of sampling adequacy meaning that whether the available data can be used

for factor analysis or no. KMO and Bartlett tests are used for this purpose and they determine whether the variance of the research variables is influenced by the shared variance of some basic latent variables or no? This index is between zero and one. If the value is close to one, that is, greater than 0.6, the data are suitable for factor analysis, but if it is less than 0.6, factor analysis is not appropriate for the data.

According to (Table 1), the obtained statistic is equal to 0.69 which is greater than 0.6. So, the data are suitable for factor analysis, and the value of the Bartlett test result is also significant and equal to 0.037 which is less than 5%. So, the null hypothesis is not confirmed and there is a significant correlation between the variables.

Table 2. KMO and Bartlett test results for factors affecting e-commerce

	KMO index	0.829
Bartlett test	Chi-2 value	821.592
	Degree of freedom	861
	Significance level (Sig)	0.0342

The data in (Table 2) shows the value of the KMO index, Bartlett test statistic, degree of freedom, and significance level. Since the value of the KMO index is calculated to be 0.829 (greater than 0.5), the sample number is sufficient for factor analysis. Also, the significance level (sig) of the Bartlett test is less than 5%, indicating that factor analysis was appropriate to identify the structure of the factor model.

In the following, based on the results in (Table 2), the initial intersection and extraction intersection of the variables are

shown. The intersection of a variable is equal to multiple correlations squared (R^2) for the related variables using the factors (as predictors). The larger the extraction intersection values, the better the extracted factors represent the variables. Therefore, variables (questions) whose intersection value is less than 0.5 should be omitted and factor analysis should be performed from the beginning. In this output, based on the obtained results, none of the variables have an intersection of less than 0.5 that should be



eliminated. The output of the intersections is shown in (Table 3).

Table 3. Initial output and extracted output for the factors affecting e-commerce

Index	Initial intersection	Extracted intersection	Index	Initial intersection	Extracted intersection
q1	1.000	0.732	q14	1.000	0.737
q2	1.000	0.604	q15	1.000	0.709
q3	1.000	0.600	q16	1.000	0.635
q4	1.000	0.748	q17	1.000	0.729
q5	1.000	0.637	q8	1.000	0.637
q6	1.000	0.566	q19	1.000	0.700
q7	1.000	0.684	q20	1.000	0.799
q8	1.000	0.706	q21	1.000	0.556
q9	1.000	0.564	q22	1.000	0.706
q10	1.000	0.828	q23	1.000	0.674
q11	1.000	0.661	q24	1.000	0.702
q12	1.000	0.691	q25	1.000	0.734
q13	1.000	0.720			

Given the large value of extracted intersections in (Table 3) that are all greater than 0.5, all 25 questions each of which representing a unique factor remain in the

analysis and there is no longer a need for extraction of another factor. Also, the amount of extracted values by rotation is given in (Table 4):

Table 4. Extracted factors, special values, and percentage of their explanation of variances from the set of indexes

Index	Initial special values			Special values of the factors confirmed without rotation		
	Percentage of variance	Cumulative percentage	Total	Percentage of variance	Cumulative percentage	Total
1	18.660	18.660	2.377	18.660	18.660	2.377
2	15.203	33.863	2.85	15.203	33.863	2.85
3	10.130	43.993	2.155	10.130	43.993	2.155
4	10.029	53.022	2.112	10.029	53.022	2.112
5	9.580	62.602	1.924	9.580	62.602	1.924
6	9.434	71.037	1.862	9.434	71.037	1.862
7	4.110	75.147	1.726	4.110	75.147	1.726
8	3.883	78.029	1.631	3.883	78.029	1.631

(Table 4) contains three parts. The first part is initial special values; the second part is special values of the extracted factors without rotation, and the third part is special values of the extracted factors with rotation. According to the results of factor analysis based on (Table 3), the variables related to the remaining questions were divided into 8 main factors. The relationship between the factors and variables is determined by the rotated matrix of a component such that this matrix contains factor loads of each variable in the remaining factors after rotation. The greater the absolute value of these coefficients, the more is the role of the relevant factor in the overall changes (variance). According to (Table 4), 8 factors have special values greater than one and remain in the analysis. These 8 factors can explain approximately 78.02% of the variance of variables. All of these eight factors have special values greater than one, but the importance of all of them is not equal. The most important factor in this

analysis is factor number one which alone accounts for 18.6% of the variance. The second factor also accounts for 15.2% of the variance and has been taken up to the eighth factor because the special values of the later components are less than 1 and not significant and cannot be used in later analyses.

(Table 3) shows that a total of eight factors affecting e-commerce use in the region have been identified and extracted that these eight factors explain a total of 78% of the variance of factors affecting e-commerce.

Naming the factors

According to the analysis, then, in order to better categorize the factors that had a single component, they were categorized into those factors that were highly correlated; and finally, eight factors were identified. (Table 5) shows the results of the new categorization as well as their naming.



Table 5. The new categorized factors and components of each of them

Factors	Factor name	Components
Factor 1	Effective marketing factors	Lack of knowledge of marketing techniques
		Lack of proper website design
		Creation of inappropriate economic infrastructure
		Less advertising programs
Factor 2	Educational	Lack of familiarity with the benefits of e-commerce
		Low level of specialized education
		Lack of familiarity with economic benefits such as cost savings resulting from the use of e-commerce
Factor 3	Cultural	Non-adaptation of business systems with electronic execution
		People's being suspicious about a higher possibility of abuse in e-commerce
		Existence of misconceptions about e-commerce in people
Factor 4	Political	Creation of appropriate cultural context for communicating with the outside world
		Lack of familiarity with international trade
		Existence of good political relations between countries
Factor 5	Personal	Relatively low level of literacy and general knowledge of the use of modern technology
		Resistance to any change and evolution, including electronicization of the country's trading systems
Factor 6	Economic	Problems with the language used on the Internet
		Costs of using the Internet
		The low growth rate of people's access to computers
		Expensive software and hardware systems
		Economic problems related to lack of e-commerce insurance
Factor 7	Security	Unfamiliarity with economic benefits such as cost savings resulting from the use of e-commerce
		Self-censorship (unwillingness) to disclose one's economic information in order for tax evasion
		Lack of a legal framework to support the problems encountered in electronic transactions
Factor 8	Infrastructural	Customer's distrust in e-commerce
		Inaccessibility of the Internet to the general public and low per capita of it in the country
		Lack of necessary conditions of commerce in current managers

Ranking of factors

After the determination of the factors and indicators related to each of the factors, the Friedman test was used to determine the factors affecting the use of e-commerce in the region. According to the results of the

Friedman test (Table 6), the significance level of the test is 0.025 and less than 0.05. So, the factors affecting the use of e-commerce are not existent in the region. The factors affecting the use of e-commerce in the region in order of priority are listed in (Table 7).

Table 6. Friedman test results

Number	100
Chi-2 statistic value	21.51
Degree of freedom	14
Significance level	0.025

Table 7. Prioritization of effective factors

Rank	Mean rank	Factor name
1	8.69	Economic
2	8.60	Cultural
3	8.54	Educational
4	8.26	Personal
5	8.24	Political
6	8.06	Infrastructural and security
7	7.93	Marketing

The results in the (Table 7) show that the first factor is economic which includes the following components:

Problems with the language used on the Internet

Costs of using the Internet

The low growth rate of people’s access to computers

Expensive software and hardware systems

Economic problems related to lack of e-commerce insurance

Being unfamiliar with economic benefits such as cost savings resulting from the use of e-commerce; and other factors include cultural, educational, personal, political, infrastructure and security, and ultimately marketing factors.

Conclusion

E-commerce is the purchase and sale of goods and services between institutions, individuals, governments, as well as the public and private sectors in a way that this operation (sale and purchase) is directed by computer networks. So, e-commerce, which until recently was limited to a certain number of companies, is entering a new era

in which there are many consumers on the network. In addition, its content has gone beyond the exchange of data related to ordering or accepting orders and it includes major business activities such as advertising, promotion, negotiations, contracts, and settlement of accounts. In the present study, the main question was: What are the factors affecting the development of e-commerce? In terms of job creation and economic development, SMEs play a prominent role given the effects of globalization on them, and success in the new business environment created by globalization is of particular importance for both developed and developing economies. In this context, the present study shows how globalization affects companies and how SMEs can exploit the potential of e-commerce to solve the problems related to the new business environment. This study also contributes to the development of an appropriate understanding of the Internet as a medium for commercial use.

The study results showed that effective economic, cultural, educational, personal, political, infrastructure and security, and marketing factors are among the main



effective factors, that this is consistent with recent studies. Effective economic factors include things such as problems with the language used on the Internet, costs of using the Internet, low growth rate of people's access to computers, expensive software and hardware systems, economic problems related to lack of e-commerce insurance, and being unfamiliar with economic benefits such as cost savings resulting from use of e-commerce. In the case of effective cultural factors also issues that must be addressed in order to resolve cultural factors include lack of compliance of commerce systems with electronic implementation, people's being suspicious of higher possibility of abuse in e-commerce, and the existence of people's misconceptions about e-commerce. Case studies show that SMEs often use e-commerce in order to invent new methods for creation of value-added, new business services and models, to develop strategies used to expand their e-commerce often internationally, as well as to enhance their effectiveness and to enter into electronic partnerships with large companies as their customers or suppliers or with broad industrial unions. In addition, assessments based on firm size show that secondary problems for companies of all sizes are logistics and payment problems. Problems related to security and legal frameworks are among the most recent problems that prevent companies from entering e-commerce.

Other problems that prevent SMEs from entering e-commerce have been reported to be a lack of awareness of e-commerce and its related business models, lack of awareness of the problems resulting from trust in e-commerce, legal frameworks, and limited access to information infrastructures, security issues, and high costs. Although SMEs can resolve some of the effective factors automatically through the changing

business environment, effective factors such as legal frameworks, limited access to information infrastructures and high costs cannot be resolved through SMEs' efforts. To deal with the mentioned problems, the development of the government and the private sector is essential. Along with training aids, facilitation of technological infrastructures and legal frameworks creates an environment that will nurture program developers in order to deliver product features supporting a wide range of technologies related to e-commerce to a wider range of commercial companies that will help SMEs to succeed.

Recommendations

Based on the study results, the following recommendations are offered:

1. Effective economic factors are one of the main effective factors. So, companies should try to reduce costs and use electronic systems to promote e-commerce in line with this type of commerce.
2. Effective cultural and security factors should be taken into account because these factors are also closely related to effective political factors, and this type of commerce should be developed through the necessary training.

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