

Identifying application barriers of electronic commerce regarding agricultural products in Iran using the Delphi method

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Abstract: The aim of this study is to identify application barriers of electronic commerce regarding agricultural products using the opinion of the experts in this field. This study was designed using Delphi method to reach a group consensus. The results show experts consensus is on 10 barriers factors of electronic commerce regarding agricultural products in Iran. These barriers include: lack of awareness of e-commerce, no access to high speed broadband, no risk taking to changes of e-commerce, the lack of serious support and investment in e-commerce by government, illiterate personnel in the field, lack of trust towards internet shopping by consumers, lack of support from senior and middle managers of implementing e-commerce, The lack of secure and reliable online environment in order to prevent unauthorized access to information, lack of confidence and positive attitude of authorities towards e-commerce and high cost systems required for e-commerce.

Key words: *Electronic commerce; Agricultural products; Delphi method*

1. Introduction

Due to Iran economic structure, agriculture has a special place in the economic, social and political process. The Iran economy reliance on oil revenues and getting influence from the political, economic and international matters follows vulnerability and fragility of the economy. Agricultural products have important roles in domestic economy meanwhile they can have a substantial influence on non-oil exports (Moshabakiet al., 2010). However, today the decision of the commerce conducted electronically has most welcomed. This way has a considerable impact on domestic and international export (Sajjadi Amiri et al., 2012). Electronic Commerce (EC) means electronic processes that are carried out with the aim of exchanging money, goods, services and information (Jafarnejad et al., 2009).

(YazdaniZangane and Khosravipour 2010) knows that the benefits of e-commerce in agriculture include: connecting buyers and sellers with specialized counseling centers, optimizing strategies, technology, financing, improvement in agricultural business research, providing technical assistance and infrastructure for international agricultural development of agencies, creating an information technology firm and market research for the development of agriculture crops and establishing expertise in the food and agriculture business and technology programs.

Ranking status of the availability of e-commerce in 2008 suggest that Iran among the 70 countries is in the last position (Hosseini, 2010). This confirms that the use of electronic commerce in Iran has been

faced with different challenges and obstacles. Below are the results of a number of researchers have pointed out the obstacles and factors affecting the adoption of e-commerce:

(Irefin et al., 2012) suggest that the cost, size of business, access to ICT infrastructure, government and the managers' support are the effective factors in adoption of ICT in small and medium sized businesses in Nigeria. (Shariff, 2011) cited that effective factors on e-commerce growth in India include: factors related to IT security, technological factors, general factor, internet factors, infrastructure and internal factors, political and legal factors, factors related to perceptions of users and consumers. (Alsmadi et al., 2009) know that necessity of e-commerce establishing is existence of laws and regulations and software and hardware. (Shaharudin et al., 2012) believe that there are significant positive correlations between organizational readiness, external pressure, the understanding about the easy use and benefits of the e-commerce and its adoption rate.

(Chong 2006) says that perceived relative advantage, taking test, visibility, and diversity of information sources, communication amount, competitive pressure and non-institutional influences are effective factors in the development of e-commerce in Australia. (Zaied 2012) introduces barriers to adopt electronic commerce in small and medium sized businesses as technical barriers, legal barriers and lack of internet security. (Al Ghamdi et al., 2011) in a qualitative analysis counts factors facilitating the adoption of e-commerce as follows:

Access to training programs, creating awareness about e-commerce, government support, creating a secure and reliable environment for online

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payments, development of ICT infrastructure and e-commerce software design

(Jafarnejad *et al.*, 2009) count barriers to adopt electronic commerce to buy hand-carpet as follows: 1-information barriers 2- legal and security barriers 3- humanitarian, educational, cultural, and behavioral barriers 4-customs, trade and tax barriers 5- technical, hardware and internet barriers and 6-financial and software barriers. (Ghiasabadi Farahani, 2005) in his study concluded that there is no technical, cultural, financial and legal infrastructure for e-commerce systems. (Sajjadi Amiri *et al.*, 2012) using the technique of fuzzy hierarchical analysis showed that the technical and organizational, environmental, economic and financial infrastructures (prioritizing first to fourth) form launching e-commerce in export firms of Mazandaran province. (Moshabaki *et al.*, 2010) in an analysis of the barriers to the adoption of electronic commerce in the food industry in Yazd province know that the economic, socio-political and cognitive barriers in both consumer and business level are the main barriers. (Azizi 2003) considers lack of legal infrastructure, lack of preparedness and willingness of customers, lack of preparation and the required functionality of partners, behavioral and cultural barriers, technical difficulties and lack of sufficient competitive environment are as barriers to adoption of e-commerce in Iran Khodro Company. (Alamdar Meybodi *et al.*, 2010) have noted that barriers to the adoption of e-commerce in distribution cooperatives in Tehran province include financial, technical, behavioral and cultural barriers, lack of customers' preparedness and willingness. (Hormozi 2009) knows that socio-cultural factors influencing the lack of e-commerce development in Iran include lack of sufficient familiarity with the e-commerce application, lack of confidence in the security of e-commerce systems, social patterns and cultural beliefs. (Ismail Khoo 2011) believes that the lack of adequate skills and knowledge, intransigence of e-commerce with company structures and processes, cultural factors (lack of e-commerce customers and suppliers) and the absence of rules required in the field of e-commerce are among the barriers to the adoption and development of e-commerce for small businesses in Iran.

(Ghahreman 2009) in an investigation about the factors influencing the adoption of e-commerce in small and medium sized businesses concluded that managers' understanding of e-commerce benefits, senior management support, the relationship with foreign companies, adoption of electronic commerce by partners and competitors are effective in implementing e-commerce. (Yazdani Zangane and Khosravipour, 2010) suggest that factors affecting the adoption of electronic commerce by small and medium enterprises in the agricultural sector are compatibility, relative advantage, understanding the profits increase, number of employees, top managers' knowledge of

IT, senior management involvement, cost, competitive pressure and government support

(Mahdavi Adeli and Rezaye Haghdooost, 2007) expressed that lack of awareness of the capabilities and limitations of e-commerce, the lack of useful information in the commercial intelligence network, lack of cooperation of relevant institutions in e-commerce and the lack of hardware, software and telecommunications infrastructure are existing problems in the implementation of electronic commerce in Iran. (Roshandel Arbatani *et al.*, 2009) believe that small and medium business enterprises to enter the field of electronic commerce require technical and telecommunications infrastructures, environmental communications, cultural and human resources, information technology security and legal environment. The results (Haji Karim *et al.*, 2009) showed that e-commerce features including the benefits, risks, complexity, consistency, test-taking and visibility are effective in e-commerce adoption in small and medium companies. So the main objective of this study is to identify the electronic commerce barriers of agricultural products using the Delphi method.

2. Methods and materials

In this study descriptive method using the Delphi method to identify the challenges and barriers to electronic commerce of agricultural products was used. While the majority of studies have attempted to answer the question, what is? But Delphi answers the question what could/should be (Ahmadi *et al.*, 2008)? The above method is now used in many educational researches to collect individuals' opinions and setting priority. In this method, a group of experts in their professional fields to develop consensus answer on a particular question or set of questions (Boyd, 2003; Carrie *et al.*, 2005) define one of the goals of the method to collect data to improve programs. The goal of the Delphi method is to obtain the most reliable consensus of opinion expressed by expert group. (Witkin and Altschuld 1995) believe that this method is useable when the main purpose is discovering, identifying and acquiring new information in the case. Thus, they believe that the theoretical framework based on the theoretical structure used in the research of this method is meaningless. Delphi method is the research approach for agreement and consensus through the use of questionnaires and provides feedback to participants who are specialist in key areas (Keeney *et al.*, 2001).

The population of the study consisted of experts in the field of e-commerce. In this study, the expert is someone who is active in e-commerce department at the Ministry of Industry, Mine and Trade on projects and initiatives in this area. (Keeney *et al.*, 2001) believe that the Delphi method does not use a random sample representative of the target population but the experts and professionals. Considering the characteristics which make a person knowledgeable in the field of electronic commerce in

this time must be specified as responsibility and good work history and experience, which often leads to a limited number, using targeted sampling or judgment method, 27 experts who were having the desired characteristics were conducted by questionnaire survey. It is worth noting that targeted or judgment sampling is a non-probable method based on the assumption that the researcher or researchers' knowledge about society can be used to select panel members. In this method, regarding the sample size should be noted that there is no exact mechanism for identifying the number of participants (sample size) in each study. The sample size may be different based on the covered topic, the nature of offered different perspectives, time and financial resources (Van Zolingen and Klaassen, 2003; Turoff, 1975) believes that at least 10 people and maximum of 50 members must be present in each panel. Delphi method involves a series of steps or questionnaire that with the initial questionnaire next phase questionnaires are shaped (Ahmadi *et al.*, 2008). In this method, researchers usually use from two to four steps and two to four types of questionnaires that the first and second stages are common between them. In this study, two-stages and two types of questionnaires were used to collect data. The questionnaire of first phase of this study included an open question as follows: In your opinion, what strategies can be used to overcome the problems of e-commerce regarding agricultural products in Iran?

In the second questionnaire, the researcher summarizes the responses from the first questionnaire and deleted similar comments, finally, 34 items within the Likert 6 parts format (0 = no, 1 = very little, 2 = little, 3 = average, 4 = much, 5 = very

much) were returned to the members of the target population. At this stage, experts before each item (ideas) determined their significance according to the scale provided. At this point, items with less than one standard deviation ($SD < 1$) were considered by the investigator as consensus items. At this stage, the 27 questionnaires were sent to respondents who had participated in the first phase and all of them answered the questionnaires and put it back.

Face validity of the questionnaire by a number of scholars in the fields of agriculture was confirmed. Dalkey (1969) suggests about the reliability of the questionnaires in this method that when Delphi group size becomes more than 13 experts, the reliability is higher than 0.80 ($\alpha \geq 0.80$).

3. Conclusions and Discussions

3.1. Personal and professional characteristics of the respondents

The results show that more than half of respondents (15 or 55.55%) are men. The mean age of respondents was 40 years with a standard deviation of 4 years and the majority of them (15 or 55.60%) are in the age group of 39 to 41 years. The average work experience of the respondents was 17 years with a standard deviation of 5 years and the majority of them (15 or 55.60%) are in annual group of 17 to 20 years. The education level of the majority of respondents is B.A (12 or 44.40%) and the level of M.S studies (9 or 33.30%) and Ph.D. (6 or 22.20%) is in the later stages.

Table 1: Description of the Personal and Professional Characteristics of the Respondents (n=27)

Variable	Variable Levels	Frequency	Frequency Percent	Mean	Standard Deviation	Minimum	Maximum
Gender	Male	15	55.55	----	----	----	----
	Female	12	44.44				
Age	36-38	3	11.10	40.55	3.98	36	44
	39-41	15	55.60				
	42-44	9	33.30				
Work Experience	12-14	3	11.10	17.22	4.62	12	20
	15-17	9	33.30				
	18-20	15	55.60				
Education	B.A	12	44.40	----	----	----	----
	M.S	9	33.30				
	Ph.D.	6	22.20				
Major	Governmental Management	3	11.1	----	----	----	----
	Computer	10	37				
	Electronic	4	14.8				
	Executive Management	2	7.4				
	Custom Affairs	2	7.4				
	International Trade Law	2	7.4				
Technological Management	4	14.8					

3.2. The first stage of the Delphi method: identifying the challenges of e-commerce for agricultural products

Respondents stated 42restraining challenges of e-commerce for agricultural products and by combination of some of them based on verbal and semantic similarities, 34 challenges were identified. E-commerce challenges for agricultural products and the number of respondents who cited them is expressed in Table (2). The results in Table 2 show that the most frequent challenges in e-commerce for agricultural products is the lack of public awareness

to e-commerce (25 cases), lack of risk taking to changes out of e-commerce (24 cases) and the lack of high speed internet and a lack of serious support of government in electronic commerce investment (each one 20 cases). This situation shows that the lowest prevalence of electronic commerce challenges is related to the lack of security standards for electronic banking systems and inefficiency of the banking system to perform e-commerce(each 2 cases) and lack of staff English knowledge (each 1 case).

Table 2: Identifying the E-Commerce Challenges for Agricultural Products (n =27)

Row	Item	Number
1	Lack of public awareness to e-commerce	25
2	Lack of risk taking toward changes out of e-commerce	24
3	Lack of high speed broadband	20
4	Lack of government serious support and investment in e-commerce	20
5	Lack of senior and middle managers' support of implementing e-commerce	19
6	Lack of customer trust to online product purchase	16
7	Lack of making culture through mass media	15
8	Lack of understanding relative advantage, e-commerce benefits and advantages toward traditional ways	14
9	Lack of government support from private section in the field of e-commerce	14
10	Lack of personnel training in this field	14
11	Lack of secure and reliable internet space in order to prevent illegal access to information	12
12	Lack of officials' positive attitude and trust toward e-commerce	11
13	Lack of state judiciary familiarity with e-commerce and its related affairs	10
14	Lack of e-commerce software	10
15	Lack of representative awareness and cabinet to confirm regulation related to e-commerce	10
16	Procrastination in fixing and maintaining present hardware and software	10
17	Lack of fair competitive space in e-commerce	9
18	Lack of introducing successful people (legal and personal) in e-commerce	9
19	Lack of e-commerce implementation in trial with low cost	9
20	Lack of comprehensive websites	9
21	Lack of proper telecommunication devices in the field of e-commerce	9
22	Lack of rules and regulation existence regarding customer law support	8
23	Lack of hardware and software updates	8
24	Lack of Iran membership in world trade organization	7
25	Shortage of required hardware	6
26	E-commerce complexities	5
27	Lack of using skillful experts in the field of information technology	5
28	Lack of regulating law and documentary regulations for e-commerce	4
29	High cost of e-commerce required systems	3
30	Lack of rules supporting sellers' right	3
31	Lack of rules related to e-signature and document	3
32	Lack of security standards in electronic banking systems	2
33	Lack of efficiency in state banking system for e-commerce transactions	2
34	Lack of personnel familiarity with English language	1

3.3. The second stage of the Delphi method: Agreed challenges before e-commerce on agricultural products:

At this stage we identified three challenges that participants had consensus in level of much and very much about their inhibition (SD <1). Researchers who have confirmed the posed challenges in their study by are as follows:

- Lack of public awareness of electronic commerce (AlGhamdi *et al.*, 2011; Jafarnejad *et al.*, 2009; Moshabaki *et al.*, 2010; Hormozi, 2009; Ismail

Khoo, 2011; Mahdavi Adeli and Rezaye Haghdoost' 2007).

- Lack of high-speed internet (Irefin *et al.*, 2012; Shariff, 2011; Alsmadi *et al.*, 2009; Zaied, 2012; Al Ghamdi *et al.*, 2011; Jafarnejad *et al.*, 2009; Ghiasabadi Farahani, 2005; Alamdar Meybodi *et al.*, 2010; Mahdavi Adeli and Rezaye Haghdoost, 2007; Roshandel Arbatani *et al.*, 2009).
- No risk to changes in e-commerce (Chong, 2006).

Respondents obtained consensus about the five deterrence challenges in e-commerce for agricultural

products in average to high level (SD <1), the researchers who put forth the results are as follows:

- Lack of government serious support and investment in electronic commerce (AlGhamdi *et al.*, 2011; Khosravipour, 2010).
- Lack of trained personnel in this field (AlGhamdi *et al.*, 2011; Jafarnejad *et al.*, 2009).
- Lack of trust towards internet shopping by consumer (Azizi, 2003; Alamdar Meybodi *et al.*, 2010; Hormozi, 2009; Ismail Khoo, 2011).
- Lack of support from senior and middle managers of implementing electronic commerce (Irefin *et al.*, 2012; Ghahreman, 2009).
- Lack of secure and reliable online environment in order to prevent unauthorized access to information (Shariff, 2011; Zaid, 2012).

Finally, respondents about the deterrence challenge of “lack of authorities confidence and positive attitude towards e-commerce” (Shariff, 2011; Azizi, 2003; Alamdar Meybodi *et al.*, 2010; Hormozi, 2009) and “the high cost of e-commerce required systems (Jafarnejad *et al.*, 2009; Ghiasabadi Farahani, 2005; Sajjadi Amiri *et al.*, 2012; Moshabaki *et al.*, 2010; Alamdar Meybodi *et al.*, 2010) agreed and achieved consensus at low to average level. While this situation is in a way that 25 respondents about the deterrence identified challenges in e-commerce achieved consensus (Table 3).

Table 3: Agreed Challenges of E-Commerce on Agricultural Products (n=27)

Item	Mean*	SD	PS**
Lack of public awareness toward e-commerce	4.22	0.64	**
Lack of high speed internet	4.11	0.89	**
Lack of risk taking toward changes out of e-commerce	4.00	0.83	**
Lack of making culture through mass media	4.00	1.59	*
Lack of government support from private section in the field of e-commerce	3.88	1.12	*
Lack of government serious support and investment in e-commerce	3.77	0.93	**
Lack of personnel training in this field	3.66	0.83	**
Lack of state judiciary familiarity with e-commerce and its related affairs	3.66	1.27	*
Lack of customer trust to online product purchase	3.55	0.98	**
Lack of fair competitive space in e-commerce	3.55	1.08	*
Lack of understanding relative advantage, e-commerce benefits and advantages toward traditional ways	3.55	1.10	*
Lack of senior and middle managers' support of implementing e-commerce	3.44	0.84	**
Lack of secure and reliable internet space in order to prevent illegal access to information	3.33	0.96	**
Lack of e-commerce implementation in trial with low cost	3.33	1.27	*
Lack of comprehensive websites	3.11	1.31	*
Lack of proper telecommunication devices in the field of e-commerce	3.11	1.33	*
Lack of software and hardware updates	3.11	1.39	*
Lack of Iran membership in world trade organization	3.11	1.82	*
Procrastination in fixing and maintaining present hardware and software	3.00	1.47	*
Lack of representative awareness and cabinet to confirm regulation related to e-commerce	3.00	1.51	*
Lack of e-commerce software	3.00	1.59	*
Lack of officials' positive attitude and trust toward e-commerce	2.88	0.80	**
Shortage of required hardware	2.88	1.08	*
Lack of introducing successful people (legal and personal) in e-commerce	2.88	1.21	*
Lack of rules and regulation existence regarding customer law support	2.88	1.47	*
Lack of using skillful experts in the field of information technology	2.88	1.47	*
E-commerce complexities	2.66	1.17	*
Lack of regulating law and documentary regulations for e-commerce	2.66	1.51	*
Lack of rules supporting sellers' right	2.66	1.59	*
Lack of rules related to e-signature and document	2.55	1.73	*
High cost of e-commerce required systems	2.44	0.97	**
Lack of efficiency in state banking system for e-commerce transactions	2.44	1.36	*
Lack of personnel familiarity with English language	2.44	1.67	*
Lack of security standards in electronic banking systems	2.00	1.07	*

*0 = no, 1 = very little, 2 = little, 3 = average, 4 = much, 5 = very much

** Public consensus with Standard Deviation Less than one

The results in Table 4 show that the challenges of agricultural products are classified in the cognitive, hardware and software, organizational, government and security categories. Organizational challenges (the highest number of challenges) are the most important inhibitor of e-commerce.

4. Conclusion and Discussions

This study shows experts consensus on 10 factors inhibiting e-commerce application of agricultural products in Iran. These barriers include: lack of

public awareness of e-commerce, lack of high speed broadband, lack of risk taking to changes of e-commerce, lack of government serious support and investment in e-commerce, lack of personnel training in this field, lack of customer trust to online product purchase, lack of senior and middle managers of implementing e-commerce, lack of secure and reliable internet space in order to prevent illegal access to information, lack of officials' positive attitude and trust toward e-commerce and high cost of e-commerce required systems. Accordingly the following suggestions are worth noting;

- Raising awareness about the benefits of e-commerce for agriculture through educational and information programs, seminars, workshops and training promotional courses
- Supporting agricultural e-commerce network by government and improving relationships with

various constituencies working in similar products dealings

- Providing infrastructures, funding, facilities to access information on agriculture section
- Developing effective programs to familiarize and use e-commerce services through advanced training courses, in such training programs in addition to technical and specialized aspects, cultural studies and educational planning and extending professionals in the field of implementation and maintenance of computer networks should be paid special attention
- Taking action to improve the culture and familiarize beneficiaries with the basic concepts of agriculture e-commerce in order to promote the successful implementation of e-commerce applications.

Table 4: Classification Agreed to the Challenges of E-Commerce for Agricultural Products (n=27)

Classification	Challenges
Cognitive Challenges	Lack of public awareness toward e-commerce Lack of officials' positive attitude and trust toward e-commerce
Hardware and Software Challenges	Lack of high speed internet High cost of e-commerce required systems
Organizational Challenges	Lack of risk taking toward changes out of e-commerce Lack of personnel training in this field Lack of senior and middle managers of implementing e-commerce
Government Challenges	Lack of government serious support and investment in e-commerce Lack of customer trust to online product purchase
Security Challenges	Lack of secure and reliable internet space in order to prevent illegal access to information

References

Ahmadi.F., Nasiriani.KH.and Abazari. P. (2008). Delphi method: A research tool. Iranian Journal of Medical Sciences, 8 (1): 175-185.

Alamdar Meybodi, M. M., Mirabi, H. R. and Mohammad Qolinia, J. (2010). Barriers to adoption of e-commerce in distribution cooperatives in Tehran province. Cooperation, 21 (4): 119-149.

AlGhamdi, R., Drew, S. and AlGhaith, W. (2011). Factors influencing e-commerce adoption by retailers in Saudi-Arabia: A qualitative analysis. The Electronic Journal of Information Systems in Developing Countries, 47 (7): 1-23.

Alsmadi, I, Alhami, I. and Alsmadi, H. (2009). The requirements for building an e-commerce infrastructure. International Journal of Recent Trends in Engineering, 2 (2): 7-9.

Ayaz Ahmed Shariff, K. (2011). Factors affecting growth of e-business in India and its impact on SMEs. International Conference of Technology and Business Management, Dubai, 15 April 2011. Available at:

<http://www.scribd.com/doc/53074158/Factors-Affecting-Growth-of-E-Business-in-India-SZABIST-ICTBM2011>

Azizi, N. (2003). Identifying barriers to the adoption of e-commerce at Iran Khodro Company and providing solutions to overcome them. Master's thesis, Business Management, Faculty of Humanities, Tarbiat Modarres University.

Boyd, B. (2003). Identifying Competencies for Volunteer Administrators for the Coming Decade: A National Delphi Study. Journal of Agricultural Education, 44 (4): 47-56

Carrie, A., Fritz, A. C. and Mantooh, J. L. (2005). Challenges Expressed by Cooperating Teachers When Working With Student Teachers in Agricultural Education: A Delphi Study. Proceedings of 21 American Associations for Agricultural Education Southern Region Conference. Louisiana: 195-204.

Chong, S. (2006). An empirical study of factors that influence the extent of deployment of electronic commerce for small and medium sized enterprises in Australia. Journal of Theoretical and Applied Electronic Commerce Research, 1 (2): 45-47.

- Dalkey, N. C. (1969). The Delphi Method: An Experimental Study of Group Opinion. Santa Monica, CA: The Rand Corporation.
- Ghareman, A. (2009). Factors affecting the adoption of electronic commerce in the context of TOE in SME industry of Medical Equipment- Tehran Province. Master's thesis, Entrepreneurial Management, Faculty of Management, Tehran University.
- GhasabadiFarahani, S. (2005). Feasibility of the e-commerce system in Tehran custom. Master's thesis, State Management, Islamic Azad University, Science and Research Branch of Tehran.
- Haj Karimi, A., Azizi, SH. and AkhavanKharazian, M. (2009). Designing factors affecting adoption of electronic commerce in small and medium SMEs enterprises. Journal of Science and Development, No (27): 51-78.
- Hormuzi, A. (2009). Explaining the underlying socio-cultural factors influencing the lack of e-commerce development in Iran. Master's thesis, Business Management, Faculty of Management, Tehran University.
- Hosseini, F. (2010). The role of electronic commerce in increasing productivity in South and RazaviKhorasan saffron exports. Master's thesis, Agricultural Extension and Education, TarbiatModarres University.
- Irefin, I. A. Abdul-Azeez, I. A. Tijani, A. A. (2012). An investigative study of the factors affecting the adoption of information and communication technology in small and medium scale enterprise in Nigeria. Australian Journal of Business and Management Research, 2 (2): 1-9.
- Ismail Khoo, H. (2011). Identifying barriers to the adoption and development of e-commerce in small businesses in the country (Case study; small firms under contract with Saman Electronic Payment Company of the Year 2007-2009). Master's thesis, Entrepreneurial Management, Entrepreneurship Faculty, Tehran University.
- Jafarnejad, A., SajjadiPanah, A., SafaviMirmahaleh, S. R. and AjaliQashlajvoqi, M. (2009). Evaluation of electronic commerce adoption barriers and solutions in the context of Iran's hand carpet export development. Commercial Bulletin, No (52): 1-34.
- Keeney, S., Hasson, F. and McKenna, P. H. (2001). A critical review of the Delphi technique as a research methodology for nursing. International Journal of Nursing Studies, 38: 195-200.
- Moshabaki, A., Sarafraz, A. H., Zareh, H. and Shahrin, M. A. (2010). Analysis of barriers to adoption of electronic commerce in Iran food industry (Case study, food industry, Yazd province). Journal of Exploring Business Management, 2 (4): 74-91.
- MahdaviAdeli, M. H. And RezayeHaghdost, SH. (2007). Necessity of e-commerce in the leading countries due to the efficiency of enterprises. Journal of Knowledge and Development, No (21): 97-120.
- RoshandelArbatani, T., Salarzehi, H., Kord, B. and Paresht.R. (2009). E-readiness assessment of small and medium enterprises to enter the field of electronic commerce in the large industrial city of Shiraz. Journal of Economics and New Business, No (17, 18): 173-192.
- SajjadiAmiri, S. M., Soraya, A. and SajjadiAmiri, S. A. (2012). Feasibility of setting up e-commerce at exporting firms of Mazandaran province with (AHP-FUZZY) method. Journal of Management, No (26): 43-56.
- Shaharudin, M. R., Omar, M. W., Elias, S. J., Ismail, M., Ali, S. M. and Fadzi, M. I. (2012). Determinants of electronic commerce adoption in Malaysian SMEs' furniture industry. African Journal of Business Management, 6 (10): 3648-3661.
- Turoff, M. (1975). The policy Delphi, In, H. A. Linstone and M. Turoff (Eds.). The Delphi method: Techniques and applications. London: Addison-Wesley.
- Van Zolingen, S. J. and Klaassen, C. A. (2003). Selection processes in a Delphi study about key qualifications in Senior Secondary Vocational Education. Technological Forecasting and Social Change, 70: 317-340.
- Witkin, B. R., and Altschuld, J. W. (1995). Planning and conducting needs assessment: A practical guide. Thousand Oaks, CA: Sage Publications, Inc.
- YazdaniZangane, M. Khosravipoor., B. (2010). Factors affecting the adoption of electronic commerce by small and medium enterprises in the agricultural sector. Journal of Parks and Development Centers, 7 (25): 59-64.
- Zaied, A. N. H. (2012). Barriers to e-commerce adoption in Egyptian SMEs. I. J. Information Engineering and Electronic Business, 3: 9-18.