

Application of Information Technology in Increasing Exports (Case study: Iranian official customs)

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ABSTRACT

Discussion of information and communication technology is a relatively new issue that in recent decades it has been special attention and its effect on macroeconomic variables in the process of developing countries seems necessary. Also, importance of good exports and services has led to a number of priority countries and to identify factors and based on it do a strategic plan in order to expand their exports. In this article has been examines the application of information technology in increasing the export in the field of Iranian official customs. Research results indicate that with the deployment of information technology in customs, due to the daily processes of electronic customs, the electronic documenting in customs affairs related to export by using a common structure and also create a link between regulatory offices, relevant customs affairs should be more transparency and exports of goods and services be facilitated.

Keywords: information technology, electronic commerce, electronic customs, facilitating exports

INTRODUCTION

In the world today countries economic engage and interaction continues to promote their economic and political life. In present world that economy is a very important and crucial issue (Gilaninia, Kiani& et al,2012).All aspects of a country's economic with the economies of other countries have found relationship. Part of This communication is manifesting the form of international transport of goods and services. Certainly presence in world markets is need to ability compliant with Scientific and technological developments. Internationalization of financial markets and goods markets services with rapid access to information is cause what happens in one country quickly and strongly felt in other countries (Amid,A;Ghamkhari,S.M,2009). However, e-Business, referring to conduct of business with assistance of Internet and other information technologies (Gilaninia& Amiri & et al, 2011). Today, any country does not live in complete separation from other countries. (Gilaninia& et al, 2012)Research has shown that the root of many barriers in exports is weak information and also effective communication. Therefore, preparing strategies for provision of commercial information required exporters and to facilitate foreign trade, especially in the field of export is necessity of discussed strategic in the field exports development. In general, rates and benefits the use of ICT can include several things such as increase speed of information and services, increasing the quantity and quality of production, market development potential, the feasibility of providing new goods and services, preventing the tendency of customers to competitors, creating added value for customers, reduce operating costs, speed up exchange, increase efficiency, strengthen the competitive position of Iran in the world, taking advantage of temporary opportunities in the field of exports and even timely purchase of goods from overseas, increasing exports, employment and production (Golmohammadi,2008). From industrial revolution onwards, companies have been seeking the promotion of their competitive advantage to increase their profiles and shareholding (Gilaninia, Ramzani & et al,2011).In fact the early days of computerization, the challenge for international trade was posed more in customs administration. Today trades between companies represent at about one on third to half of all international trade.

According to studies predicted that the country's total exports of goods and services can totaled \$ 108 billion in 2020 That industrial sector's share of goods and services exports has more than 52% (Amid,A;Ghamkhari,S.M,2009). To predict future Iranian exports is essential that some actions will performed in order to open Iran's economy and exports.

LITERATURE REVIEW

Technology concept: Various definitions have been given to technology. According to one definition, technology is divided to four parts as follow:

A) *Technical application:* physical or device takes place technology in it.

B) *Human application:* a collection of people who are working in military production.

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C) *Information or documentation and information application*: Documents that technology is defined and described in them.

D) An enterprise application: it is a space that above three components can match, are guided and managed. Each technology has the four components simultaneously.

Information Technology: it is including all forms of technology are used for processing, storage and connectivity information in electronic form. Physical facilities that are used for this purpose include: computers, communications equipment and network.

The concept of information and communication technology: include management networks of production, processing, distribution and optimized consumption efficiency systems to enhance information (Hejber Kiani, K; Akhavan, Sh, 2007).

Customs is an organization that two goals consider in its current duties. First: to provide facilities for the international trade and second enforce rules and regulations.

Electronic customs include using e-business at customs offices for meet the needs of their administrative and service and also for better meet the needs of participants' beneficiaries in international trade and transportation and increase business competitiveness through faster clearance of goods, increase revenue and protect its borders and security (Elahi,Sh;Hasanzadeh,A,2007).

Most important electronic customs duties are:

- 1 - Ensure the correct amount and payment of customs duties and taxes related to exports and imports.
- 2 - Control and evaluate goods and products in the import and export.

Exports in general, require a series of activities that can be divided into two categories:

1. establishing a relationship, that include identify the needs and motivation and create demand in foreign markets.
2. Processing and responding to customer needs, which include response to identified customer needs at the international level (Elahi, Sh; Hasanzadeh, A, 2007).

Effective use of the Internet is low-cost way to enter global markets for companies who intend to enter the export arena. Today, globalization has become an undeniable necessity for companies and countries.

Globalization: it is integration in economics, politics, environment, and social development and..... in the context of globalization, development of information technology increases the richness of the information society. If different sectors of society, especially the business sector have the richness of information adequate is expected Successful Presence of companies and businesses in different sectors of society in the competitive and global markets field.

As Figure 1 shows that ultimately all of these factors lead to the development of export with the effects together. To term development of exports is dependent on the richness of information which is also in turn depends on the development of ICT and particularly e-commerce (Hashemi & et al, 2010).

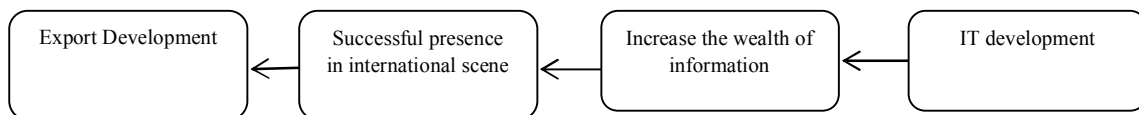


Figure 1 - Effects of Information Technology on the development of export (Hashemi & et al, 2010)

The main issues and problems of customs procedures in relation to the process of export include:

- 1- Requires too much documentation.
- 2 - Automation of small and little use of information technology.
- 3 - Lack of transparency in import and export needs and requirements.
- 4 - Inadequate and incomplete procedures, particularly in the control based on non-efficiency and inspection of risk assessment techniques.
- 5 - Lack of sufficient attention to the renewal and the lack of sufficient cooperation between other government departments relevant that as a result is impossible any effort to deal effectively with the growing business process.
- 6- Almost all of export and imports goods testing and inspection physically and several times each document is controlled that it is caused a waste of time.
- 7- Despite the computerization of customs affairs in many cases, in relation to simple and repetitive tasks takes place physical and presence contact.
- 8 - The various organizations and institutions involved in the clearance of goods.
- 9- The large number of the decision maker organizations involved in export and import and the lack of coordination between relevant agencies.
- 10 - Complexity and a lot of contradictions and exceptions to rules and regulations and circulars issued by the agencies and ministries.
- 11 - Different definitions of the decision maker various agencies involved in export and import rules (Elahi,Sh;Hasanzadeh,A, 2007).

The main benefits of using IT in customs include:

- 1 - The customs control with greater efficiency.
- 2- Goods clearance with more efficient.
- 3 - The same application of customs rules.
- 4 - The best collection of customs revenues.
- 5 - Analysis of the data better.
- 6 - Providing more quality foreign trade statistics and improve information quality.

Most important advantage for traders of electronic customs: Reduce lost time for issuing licenses and permits and goods clearance.

Electronic business benefits of customs offices for customers include:

- 1 - Improve access to information and service levels.
- 2 - The meet the needs of trusted traders.

Electronic business benefits customs offices for itself:

- 1 - Simple and effective operations of customs.
- 2 - Better integration, the effectiveness of continuous service through automation of routine processes.
- 3- providing possibility of apply more centralized rules.
- 4 - Evaluation of comply with the provisions.

Electronic Business Benefits of customs offices for the national economy:

Increase business competitiveness through faster clearance of goods, increase revenue, security and border protection.

The main advantages of electronic customs is its ability to adapt to the changing world without government intervention another advantage of it is fill the gaps created by commercial contracts (Hashemi & et al, 2010)

European Society Commission can be expressed benefits of electronic customs as follows:

A - Electronic customs benefits for traders:

- 1 - Less time wasted for certification and licensing and clearance.
- 2- Simplification and effectively procedures and customs duty.
- 3 - To increase transparency, predictability and cooperation and unity between customs offices and other systems.
- 4 - Reduce in cost of affairs business through automation of procedures and create Process to replace paper-based procedures.
- 5 - Existence of a custom mechanism with low cost that is formed from a unit set of specifications And in all countries involved, it can be used instead each country has its own mechanism.

B). Benefits of electronic customs for offices:

- 1- To strengthen existing laws and promote safety and improve in methods of detection spoofing and scams
- 2 - To earn more revenues as a result of better control of goods and also improve the legal rate
- 3- Optimal and efficient allocation of human resources and other resources for that systematic re-engineering, simplification of customs processes and procedures are established.
- 4 - Reduce the costs in automated processes in a paperless environment for customs operation that is done electronically (Elahi, Sh; Hasanzadeh, A, 2007).

Amid & Ghamkhari in 2009 in their paper investigate the effect of information technology on the development exports, small and medium industries on basis of two dimensions of market share and respond to the needs of their customers and found that information technology on export rate industry is effect and target priority this effect is different in different industries (Amid, A; Ghamkhari, S.M, 2009).

Hashemi in 2009 examined the application impact of electronic commerce on exports of oil products, gas and petrochemical industries in Iran. He identifies and formulates 24 key indicators in the form of three variables improving efficiency of export process, increase revenue and reduce export costs. His results indicate significant and positive impact of e-commerce applications on exports amount and evaluated three variables (Hashemi, S.M, 2010).

Tayebi & et al in 2007 in their paper examined the effect of internet use on flows export of selected countries for the years 1992-2002 and found that 1% increasing in Internet users in each country, the 44 / 0% increase in export volume.

Table 1: Summary of the electronic Customs role in facilitation of goods and services export

Row	Benefits and impacts of e-customs	Resources	Relative Frequency
1	automation of routine Customs processes	Asycuda++,2000; HMCustoms and Excise,2002;United National,2003; Customs of Iran Islamic Republic, 2004; Beheshtian 1379	5
2	e-Documentation of by using a common structure	Unescop,2000	1
3	Make Internet connection between regulatory offices	Unescop,2000;commission of European community,2003; STPRONews,2001	3
4	information services For tracking shipment status quickly and accurately	Kuik,1998; United National,2003; IBM Consulting Services,2003	3
5	make available Customs laws and regulations as online	Unescop,2000	1
6	providing online access to form different customs of different countries	Kuik,1998	1
7	Reduction of customs violations	Customs of Iran Islamic Republic 2004	1
8	Improve the level of customs services	HMCustoms and Excise,2002	1
9	Increase transparency in customs affairs	Unescop,2000; STPRONews,2001;commission of European community,2003	4
10	Perform the duties Affairs at less cost (addition proceeds to reduce complications)	Robert and Polanski,2002; commission of European community,2003; ; Customs of Iran Islamic Republic 2004 Tan et al,2006	3
11	Improve assessment and accuracy Customs risk	Unescop,2000; HMCustoms and Excise,2002	3
12	Same application of customs rules and prevent acts of personal preferences	Customs of Iran Islamic Republic 2004 Kyoto Convension ,chapter 7; ; Customs of Iran Islamic Republic 1999 United National,2003; commission of European community,2003; Customs of Iran Islamic Republic 2004	5
13	Better sampling of the goods for inspection	Unescop,2000;	1
14	Better Physically inspection	Unescop,2000;	1
15	Immediate clearance	Unescop,2000; Matto and schunkenct,2000; HMCustoms and Excise,2002; Robert and Polanski,2002; commission of European community,2003; United National,2003; ; IBM Consulting Services,2003;UNCTAD ,2006 ; Statistics office and machine services,1999 ; Customs of Iran Islamic Republic 1999 Karbasian 2004 ;Beheshtian 2000 Customs of Iran Islamic Republic 2004	2
16	Increase speed inventory turnover and financial business community	Asycuda++,2000	1
17	creating opportunities for business without borders	Unescop,2000;	1
18	Facilitate in trade matters and expedite of exports	Statistics office and machine services,1999 karbasian,2004 Zhang ,2002	2

RESEARCH HYPOTHESIS

According to previous studies, the main research questions of this research are:

What is electronic customs impact on exports Facilitate?

In response to the above question, with a review of scientific literature and research the main hypotheses and sub-hypotheses were formulated as follows:

1. Electronic customs affect to facilitate exports of goods and services.

1-1 – make electronic customs routine procedures have impact on facilitate the export.

1-2 - electronic customs through perform electronic documentation by using a common structure in customs affairs related to export have impact on facilitate the export.

1-3- electronic customs by providing the internet communication between relevant regulatory offices in customs affairs related to export have impact on facilitate the export.

4-1 - electronic customs by providing information services for tracking customs shipments status have impact on facilitate the export.

5-1 - electronic customs through make available customs laws and regulations as online have impact on facilitate the export.

- 6-1 - electronic customs by providing online access to form different customs of different countries in customs affairs have impact on facilitate the export.
- 1-7 - electronic customs by providing more transparent of customs affairs have impact on facilitate the export.
- 1-8 - electronic customs through the reduction of customs violations in customs affairs on related to export have impact on facilitate the export.
- 1-9- electronic customs by creating opportunities for business without borders have impact on facilitate the export.
- 1-10 - electronic customs through avoid imposing personal preferences in the application of laws relating to customs affairs related to export have impact on facilitate the export.
- 1-11 - electronic customs through immediate clearance have impact on facilitate the export.
- 1-12 - electronic customs by improving the accuracy in risk assessment of customs have impact on facilitate the export.
- 1-13 - electronic customs through better sampling of the goods for inspection have impact on facilitate the export.
- 1-14 - electronic customs by facilitation of customs procedures relating to the export have impact on facilitate the export.
- 1-15 - electronic customs through improve the level of the customs service have impact on facilitate the export.
- 1-16 - electronic customs through the improvement of physically inspection of goods have impact on facilitate the export.
- 1-17 - electronic customs by increasing inventory turnover rate and financial of exporters have impact on facilitate the export.
- 1-18 - electronic customs through the improvement of customs procedures relating to exports have impact on facilitate the export.

According to hypotheses Graphical model of present study are as follows:

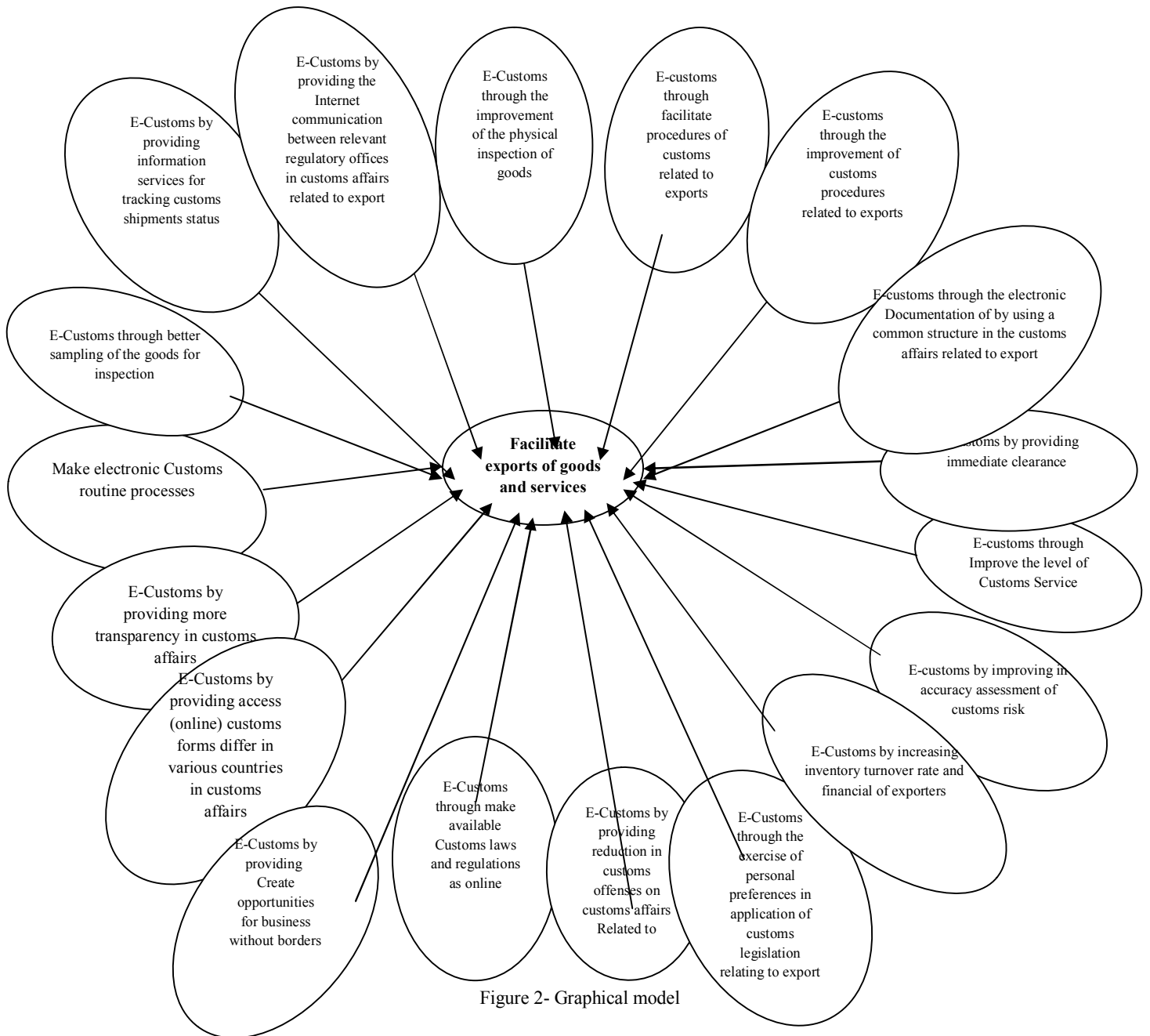


Figure 2- Graphical model

RESEARCH METHOD

In this study, a questionnaire has been prepared and certified by 10 professors and then validity with Cronbach's alpha was measured and confirmed and then questionnaire distributed between 50 experts who worked in relevant field And also to test hypotheses was used binominal test and the result was in Table 2. In the next step benefits were prioritized by the Friedman test and result is showed in table 3. In the next stage the relationship between benefits and facilitation of export reviews software LISREL and the results are given in Table 4.

RESULTS

Table2: Opportunities and benefits (effects) of electronic customs to facilitate the export of experts and specialists opinion

Row	Opportunities and benefits (effects) of electronic customs to facilitate the export of experts and specialists opinion	Average responses	Standard deviation	percentage of Responses larger 3	Binomial test results For confirm or reject any of the significant effects of in 0/5
1	Make electronic Customs routine processes about Customs affairs export of goods (services)	4/30	0/65	90%	Confirmed
2	Perform electronic Documentation by using a common structure in customs affairs related to export of goods (services)	4/0	0/79	70%	Confirmed
3	providing the Internet communication between relevant regulatory offices in customs affairs related to export of goods (services)	3/80	1/1	80%	Confirmed
4	providing information services for tracking customs shipments status related to export of goods (services)	4/10	0/84	70%	Confirmed
5	make available Customs laws and regulations as online about Customs affairs export of goods (services)	3/80	1/19	70%	Confirmed
6	access (online) to customs forms differ in various countries in customs affairs related to export of goods (services)	3/30	1/12	50%	Rejected
7	providing more transparent of customs affairs related to export of goods (services)	3/93	1/08	90%	Confirmed
8	reduction in customs offenses on customs affairs Related to export	3/37	0/80	37%	Rejected
9	Create opportunities for business without borders	3/87	0/82	90%	Confirmed
10	Avoid imposing personal preferences in the application of laws relating to customs affairs Related to export	4/20	0/76	80%	Confirmed
11	immediate clearance	3/80	0/79	80%	Confirmed
12	improving in accuracy assessment of customs risk	3/40	1/13	50%	Rejected
13	Better sampling of the goods for inspection	2/63	1/40	23%	Rejected
14	facilitate procedures of customs related to export of goods (services)	4/10	71%	80%	Confirmed
15	Improve the level of customs services	4/13	0/73	73%	Confirmed
16	Improve Physically inspection of goods	2/80	1/09	20%	rejected
17	increasing inventory turnover rate and financial of exporters	4/30	0/79	80%	Confirmed
18	Improvement of customs procedures (customs doing things with less cost, addition reducing the complications proceeds)	4/0	0/64	64%	Confirmed

Summary of Tables 1 and 2 can be found that the main opportunities and benefits (effects) of electronic customs to facilitate the export of experts and specialists opinion are including:

- 1- Make electronic Routine processes of customs in the field of customs affairs export of goods (services)
- 2- Conducting electronic documentation in customs affairs relating to exports of goods (services) through a joint structure.
- 3- Existence of internet connection between regulatory offices related to in customs affairs export goods and services
- 4 - Existence of Information Services for track the status of shipments customs relating to goods exports
- 5- Have been available Laws and customs online
- 6 - More transparency in customs affairs relating to exports of goods (services)
- 7- Creating opportunities for business without borders
- 8 - Avoid imposing personal preferences in application of customs rules in matters related to exports of goods (services)

- 9 - Immediate clearance
- 10- Facilitation of customs procedures relating to exports of goods (services)
- 11- Increase speed of inventory turnover and finance of exporters
- 12 - Improving customs procedures (performing customs affairs with less cost, addition reducing the complications proceeds)
- 13- Improve the level of customs services

Prioritize the opportunities and benefits of electronic customs to facilitate exports of goods and services

Table 3 - Friedman test results for the priority scheme to facilitate export opportunities and benefits of electronic customs

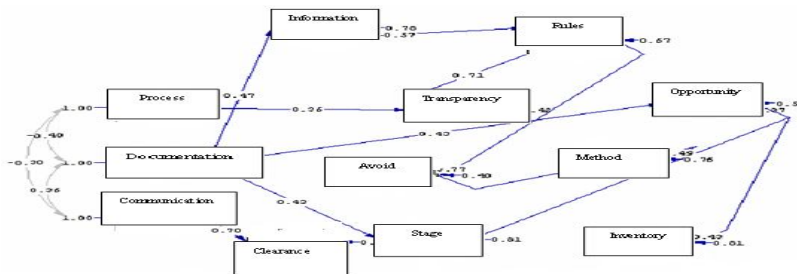
Row	Opportunities and benefits of e customs in facilitating export of goods and services	Rank average
1	Increase the speed Inventory turnover and finance of exporters	8/12
2	make electronic Customs routine processes in the field of customs affairs export of goods (services)	8/07
3	Avoid imposing personal preferences on the application of customs laws in customs affairs related to exports of goods (services)	71/83
4	Existence Information services For track the status of customs shipments related to exports of goods (services)	7/15
5	facilitate customs procedures related to the export of goods and services	7/15
6	Improve the level of customs services	7/15
7	having more transparent the customs affairs related to exports of goods and services	6/97
8	Improvement of customs procedures	6/72
9	Despite Internet connection between the relevant regulatory offices in customs affairs	6/62
10	Perform electronic Documentation in customs affairs related to exports of goods (services) by using a common structure	6/55
11	Having access to an online customs laws and regulations about customs affairs related to exports of goods (services)	6/47
12	Immediate release	6/25
13	Create opportunities for business without borders	5/97

As Table 3 is significant Friedman test showed that in significant level of 0 / 05 rating average difference between responses to these 13 indicators, there is no impact of electronic customs. In other words, opportunities and benefits of electronic customs to facilitate exports of goods and services cannot be classified as priorities. Results obtained from examination relationships between benefits facilitation of exports by LISREL software is given in Table 4.

Table 4 - t statistic values for each of path coefficients impact Model of electronic customs on facilitation of export

Path	Path coefficient	t
Documentation of informing	0/47	2/69
informing Access to Rules	0/57	3/55
access to Transparency rules	0/71	5/57
being electronic of Transparency process	0/36	2/79
facilitation of business opportunities Process	0/76	2/46
Documentation of business opportunities	0/43	2/67
Access to rules Avoid preferences	0/77	6/18
Internet connection of Immediate clearance	0/70	5/04
documentation Process facilitation	0/43	2/43
Avoid preferences of improve the Methods	0/49	2/89
Business opportunity, inventory turnover and financial	0/43	2/46

Results of the LISREL software are as follows:
Chi-square statistic was 26/66 with df 0/142226 show that model is good fitted.



information services, the field of the availability of customs laws and regulations as online is caused prevent actions of personal preferences in application of customs rules. Prevent actions of personal preferences in application of customs rules provide improving customs procedures. In addition to the electronic documentation in customs affairs relating to export by using a common structure provide possible information services for track the status of shipments in customs affairs and may facilitate customs procedures relating to exports. In addition to the electronic documentation in customs affairs relating to export by using a common structure provide and facilitate customs procedures relating to exports provide a good opportunity for trade without borders that this increases speed of inventory turnover and financial exporters

In general, the essence of globalization is increasing in level of dependence between economies, cultures and the like it. Revolution in information and communications technology has a significant impact on the development and spread of globalization and it was recognized as an important infrastructure for transnational activism.

Based on opportunities and benefits of electronic customs to facilitate export goods and services following recommendations are offered in order to take advantage of electronic customs:

The main barriers to the use of electronic customs to facilitate exports are as follows: Not a complete guarantee against shipments sent through the electronic system, little Traders skills in the use of electronic customs systems, security considerations (espionage, sabotage and felonious attacks) and the weakness of the cultural context for the use of electronic customs.

Executive Suggestions

- It is recommended addition strengthen communications context for support e-customs is addressed to strengthen the security system national electronic customs in order to prevent espionage, sabotage and felonious actions so increase confidence in electronic systems.
- It is recommended in order to culture-building in use electronic customs are developed and implemented for introduction of businesses with electronic customs benefits for promotional and educational programs.
- It is recommended in all Iranian customs also has a national single form this means that traders are sent only once the standard information required for a single database . Customs and other agencies qualified to perform legal matters related to import, export and transportation; they have access to this information electronically. Thus it does not work again and in terms of timesaving and increase efficiency.

Suggestions for future research

- It is recommended that effect of information technology will be investigated in all other areas in the economic cycle, profitability and revenue generation.
- It is recommended that present study is done in other communities' customs of Iran and the results compared together.
- It is recommended that investigations results of electronic customs compared to with global results and other developing countries.

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