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Providing a framework to study the impact of electronic customs services on improving exports in Iran

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Abstract
Traditionally, customs have played a somewhat narrow role, focused primarily on the collection of duties and taxes on imported goods. government agencies, through its enforcement of a range of trade laws, including those concerning tariff collection, compliance with sanitary and phytosanitary standards, and the protection of intellectual property rights. In the rest of this paper, we introduce the role of electronic customs in facilitating the export of goods and services will be discussed. The survey questionnaire was designed using both open and closed questions, where the closed questions are used to gather quantifiable data while the open questions are used to gather additional qualitative information. The results show that the deployment of electronic customs, customs affairs related to the export of more transparent and facilitate the export of goods and services, because the e-customs due to routine process to export customs, customs electronic documentation relating to export using shared structure and create a connection between regulatory agencies. This paper examines the role of electronic customs in facilitating the processes are discussed. In our research, we noted a series of characteristics and categorized these along key facilitators of adoption and barriers to adoption. We also aimed to identify policy implications derived by the adoption and implementation of e-customs solutions. This research paper constitutes the first step of a broad analysis that will consider the three first phases of the innovation-development process. Further research should focus on the second step, research, and the third step, development.

Keywords: E-Customs, Electronic Customs benefits, Facilitate export, Electronic Customs Services.

1 Introduction

Customs administrations perform broad, important functions that facilitate the flow of goods and services across international borders [1]. Traditionally, customs have played a somewhat narrow role, focused primarily on the collection of duties and taxes on imported goods. In the United States, for example, revenue collected by the U.S. Customs Service (USCS)—now the Bureau of Customs and Border Protection (CBP)—was a significant source of income for the U.S. economy before the establishment of the federal income tax system [2]. Over time, the role of USCS expanded so that, in addition to revenue collection, it became responsible for ensuring the legitimacy, safety, and security of goods admitted into the United States. Currently, CBP carries out this responsibility, in conjunction with other U.S [3]. government agencies, through its enforcement of a range of trade laws, including those concerning tariff collection, compliance with sanitary and phytosanitary standards, and the protection of intellectual property rights [4]. The electronic customs project initiated by the European Commission aims to replace paper format customs procedures with EU wide electronic ones, thus creating a more efficient and modern customs environment [5]. The project's dual objective is to enhance security at the EU's external borders and to facilitate trade. Customs has reached already a very high degree of automation, with, for example, over 93% of customs declaration being performed on line. Bearing in mind this high degree of automation, it is obvious that any change of the legislation has to be examined carefully and that most of these changes imply profound changes in related IT systems [1]. The most important role of customs is improving performance of import and export and provide improved process performance and analysis of data related to foreign countries [2]. Business-to-government systems in general could be complex not only from the perspective of the technical innovation and development but also from the perspective of potential users, as it is necessary to take into account different requirements and needs. Indeed, e-customs systems are complex and require special attention. the main focus of the technological context is on how technology characteristics themselves can influence the adoption process. The organizational context considers and describes the characteristics of an organization (e.g., size, structure, quality of human resources, etc.) and looks at the structure and processes of an organization that constrain or facilitate the adoption and implementation of innovations. The environmental context corresponds to the field in which an organization conducts its business (i.e. it includes industry, market, regulations, and relationship with the government) [6].

The main task of customs are taxes and government share of imports and protect the economic entity controlled by the passage of goods and people within the borders of the country. The electronic customs initiative is essentially based on the following three pieces of legislation:

- The Security and Safety Amendment to the Customs Code, which provides for full computerization of all procedures related to security and safety;
- The Decision on the paperless environment for customs and trade (Electronic Customs Decision) which sets the basic framework and major deadlines for the electronic customs projects;
- The Union Customs Code (UCC) which provides the legal basis for the completion of the computerization of customs and repeals the Community Customs Code

Due to the high volume of trade and the increasing speed of business transactions, Customs also has to be transformed, for visitors to Customs as fast as your commodity buy and carry, expect both operations at the same speed customs clearance systems go. In addition,

according to the emergence of e-commerce, business community is now waiting for customs procedures, transparency and predictability, and clearance fast as possible. The government expects to collect revenue and the effective exercise of its import and export regulations and laws. In order to meet these expectations, many Customs administrations attempted to reload and to support their operations [7].

The e-customs process offers companies and freight forwarders the possibility of simplified and efficient customs clearance, and constitutes the basis for the exchange of data. It is the most comprehensive electronic processing system of the Austrian customs administration, which not only uses the latest technologies, but also enables international communication in the customs sector [5]. Because electronic customs play an important role in reduction of transaction costs, speed transfers, enhanced communications, easier participation of business partners. Also, it can be used with all operations, calculations with accuracy and ease customs supervision and other problems as there will be inaccuracies or delays the process.

2 E-commerce and its relationship with Customs

"Electronic Commerce" or "e-commerce" is the term universally used to define the exchange of goods and services via the digital marketplace. The expanding international use of e-commerce and the ease and expediency of cross-border transactions has resulted in a much higher volume of global trade, as consumers are potentially importing and exporting goods and services when they make purchases over the internet [8]. Individual packages shipped directly to the consumers around the world now replace traditional 40-foot shipping containers. This ease and expediency provides the opportunity for businesses of all sizes to compete on a global scale. No longer limited by brick-and-mortar sales, traditional business models have given way to global business-to-business, business-to-consumer, and consumer-to-consumer shipping models [9]. It can also be said that e-commerce is the trade without the use of paper in which electronic data interchange as a tool along with e-mail, electronic bulletin boards, electronic transmission, or other network-based technologies are used. In other words, electronic data interchange serves as the backbone of e-commerce [10]. The customs policy is considered one of the most important financial policy tools aimed to achieve economic and social goals of all countries alike [11], and the customs authorities are one of the basic elements of the international trade cycle. It plays an important role in encouraging local industries, raising the rate of economic development, facilitating trade, contributing to the protection of society and promoting economic development [12]. In addition, customs revenue is an important resource of the sovereign resources of the state. Modern technologies have affected almost every aspect of human life, leading to radical changes in the field of business, and institutions in all their forms, governmental or private, seek to benefit from the massive and rapid developments in the field of information and communication technology and move forward towards digital transformation and transform institutions into what is called In “Electronic Business” [13]. Many countries have taken great steps towards electronic customs systems, or digital customs, where the term digital customs refer to any automated or electronic activity, which contributes to the effectiveness, efficiency and coordination of customs activities, such as automated customs clearance systems [14]. The new era of digital customs has changed the way customs work and transformed the customs landscape. It contributes to enhancing the ability of customs administrations to communicate, receive and exchange information, coordinate border activities, cooperate in law enforcement procedures, and enhance transparency [15].

Behind these trends are the previously marginal participants in trade—small businesses, entrepreneurs, and consumers that transact with foreign buyers and sellers online. Ecommerce

drastically lowers the costs for these small buyers and sellers to be visible and transact with each other. Customs security regimes around the world have been tailored to the patterns of traditional trade: Large, regular trade volumes shipped by large and mid-size companies that are relatively easy for customs agencies to monitor for risk, and which are staffed to comply with trade rules. Customs regimes are not designed to measure risk or accommodate small enterprises and consumers, whose trade is more sporadic and trade compliance capacities limited [16]. Using the information that a customer provides in the registration form, and by placing cookies on the customer's computer, an ecommerce merchant can access a lot of information about its customers. This, in turn, can be used to communicate relevant messages. An example: If you are searching for a certain product on Amazon.com, you will automatically be shown listings of other similar products [17]. Customs does not receive all the supply chain information as, for example, the logistics information, such as the vessel or aircraft manifest, is owned by the carrier; the trade transaction information is owned by the buyer (consignee) and the seller (consignor); while the payment information is owned by the banks. In order to obtain all the relevant information across the whole supply chain, Customs needs to invest resources to collect the fragmented data from the different parties in the supply chain, and then analyse it. [10]. Ecommerce facilitates comparison shopping. There are several online services that allow customers to browse multiple ecommerce merchants and find the best prices. It is not unusual for customers to travel long distances to reach their preferred physical store. Ecommerce allows them to visit the same store virtually, with a few mouse clicks. In a framework, the advantages of electronic commerce are shown:

2.1 Advantages to Organizations

1. Using E-Commerce, organization can expand their market to national and international markets with minimum capital investment. An organization can easily locate more customers, best suppliers and suitable business partners across the globe [18].
2. E-Commerce helps organization to reduce the cost to create process, distribute, retrieve and manage the paper based information by digitizing the information.
3. E-commerce improves the brand image of the company.
4. E-commerce helps organization to provide better customer services.
5. E-Commerce helps to simplify the business processes and make them faster and efficient.
6. E-Commerce reduces paper work a lot.
7. E-Commerce increased the productivity of the organization.

It supports "pull" type supply management. In "pull" type supply management, a business process starts when a request comes from a customer and it uses just-in-time manufacturing way [11, 4, 7].

2.2 Advantages to Customers

1. Customer can do transactions for the product or enquiry about any product/services provided by a company anytime, anywhere from any location. Here 24x7 refers to 24 hours of each seven days of a week.
2. E-Commerce application provides user more options and quicker delivery of products.
3. E-Commerce application provides user more options to compare and select the cheaper and better option.
4. A customer can put review comments about a product and can see what others are buying or see the review comments of other customers before making a final buy.
5. E-Commerce provides option of virtual auctions.
6. Readily available information. A customer can see the relevant detailed information within seconds rather than waiting for days or weeks.

7. E-Commerce increases competition among the organizations and as result organizations provides substantial discounts to customers [11,4, 9].

2.3 Advantages to Society

1. Customers need not to travel to shop a product thus less traffic on road and low air pollution.
2. E-Commerce helps reducing cost of products so less affluent people can also afford the products.
3. E-Commerce has enabled access to services and products to rural areas as well which are otherwise not available to them.
4. E-Commerce helps government to deliver public services like health care, education, social services at reduced cost and in improved way [12, 9, 4].

2.4 Others Advantages

E-Customs offers a comprehensive, robust, flexible complement of innovative and transformative Foreign Trade Compliance solutions, services, content and knowledge. Our Visual Compliance solutions are truly global. So your foreign trade compliance processes can rely on the same infrastructure — from North America to the EU and beyond [19].

Experience and Expertise: For more than 30 years our core business has been providing world-class foreign trade compliance solutions. So when you choose a Visual Compliance solution, you're not just getting technology, you're getting the knowledge, experience, and expertise of seasoned experts. We bring motivated, talented, specialized teams of international trade compliance professionals, IT and content development and management experts, business and process change specialists, and auditors, consultants, and controllers from a wide range of industries. This talent, combined with the latest and very best technology tools and a passionate commitment to excellence, enable us to continue to earn our client's business and their trust [20].

Solutions that are Smart, Flexible and Optimized: Over the past 30 years we have worked collaboratively with some of the most successful and respected companies in the world, helping them transform the way they manage and leverage their most complex international trade compliance issues. The resulting knowledge, practices and technologies equip us to quickly understand each new client's issues and offer a comprehensive set of alternative and complementary solutions [21].

Innovative Ideas & Creative Approaches from a Trusted Partner: Our knowledge encompasses the foreign trade compliance issues of all major industries. With this broad range of expertise and clean-slate approach to finding solutions, we develop new approaches that quickly become the new standard. The objective is not to simply apply best practices, but to invent and refine them. We think creatively and partner with our clients to solve their toughest compliance challenges with innovative, sustainable solutions [22].

Robust, Redundant Infrastructure: We provide around the clock availability and processing services. In support of this we maintain a robust technological infrastructure with layers of redundancy, including backup power generators and server networks on different power and communication grids. And to ensure our clients compliance solutions are always current, our systems, support, content and knowledge groups have sophisticated processes to effectively integrate upcoming and just-released regulatory and content changes [23].

Major, Long-term Investments in Research and Development: Visual Compliance solutions are the result of more than 30 years of major R&D investment, leveraging advancements in:

- Technology
- Regulatory Environments
- Best International Trade Business Practices [24]

Corporate Stability and Longevity: We have been in business since 1981, with revenue increases consequent to new clients in all fiscal years. No one client contributes more than 2% to our revenue stream [25].

The Right Certifications and Memberships: Our solutions are certified by governments and technology companies such as Oracle, SAP and Microsoft. We maintain active membership in a number of technology, customs, and international trade associations that maintain positions of influence and support issues of concern to our clients [26].

3 Traditional customs limitations in the process of customs affairs

The most obvious obstacle in international trade is delayed at the border. The main reason for the delays is the old customs clearance procedures, excessive red tape, lack of clarity in the rules and customs regulations and procedures and risk assessment [13]. An important source of delay for merchants, this is a must before discharge of cargo, almost the same information in different documents forms to send multiple departments. In the traditional customs, the goods must be examined in every respect. Maritime transport of bulk goods provided an enough time to visit and inspect the goods for customs on both export and import. One of the biggest administrative barriers in trade (especially in the field of trade using sea transport) include cumbersome customs regulations and procedures that failed to keep pace with the expansion and increasing complexity of business [27].

Increase the volume of world trade over the past few decades had a significant impact on the volume of customs work in the field of clearance. It should be noted that the increase in the volume of goods made to the customs control of goods that they had been accustomed to change significantly [28]. As a product due to its composition and determine its tariffs, experts are faced with numerous problems makes. In this connection, delay in clearance, ports, airports and warehouses with massive amounts of goods not cleared, abandoned or deposited will face increasing capital loss is sleep. If they fail to deliver goods to customs clearance speed, they will be faced with problems. The use of ICT could reduce these problems and paves the way for the smooth implementation of this organization [29]. Based on the studies and documents on customs across the country, we see that the export and import customs formalities are done with Kennedy and related administrative affairs according to the size of the backlog and piles of documents done by imposing high costs on customs, a waste of time. The fact is that according to today's competitive world and the growing trend of trade, customs traditional cannot optimally allocate your resources needed. Today, as a new way to accelerate electronic customs formalities relating to export and import has been replaced by traditional customs [30]. The cargo manifest is the prime document for control of imported goods. It provides sufficient information to permit identification of the goods, the names of the consignee and consignor, and certain other information (such as weight and container number). The manifest may be a specific customs form or the

commercial forms (bill of lading, airway bill) that meet the information needs of the customs administration. In many customs administrations, this information is available electronically from the carriers or transportation agents [31]. Correct use of the manifest is essential to ensure that all imported goods are brought under customs control and presented to customs for clearance formalities and payment of duties and taxes when applicable [32]. Customs procedures to capture and process data from cargo manifests are generally weak in most countries. Even in developed countries, the reconciliation process to match information on customs declarations with data from manifests is an area where improvements are only quite recent. For example, U.S. Customs reviewed its control procedures in the mid-1980s, and automated systems for processing manifests were not introduced until 1989 for air cargo and late 1991 for sea cargo. It is important to realize that strengthening the capacity for customs to control information from cargo manifests means reducing the possibilities of fraud and leakage, thereby consolidating the import tax base and increasing revenue [33].

A number of procedural steps are necessary to secure these controls, in particular to ensure that the writing-off process is carried out in a timely manner. Moreover, it is important that customs regulations assign responsibility and provide for penalties for transportation companies if there are excesses or shortages of cargo [34]. The same rules should apply to port/airport authorities (or transit shed operators) when unloaded goods are missing. In addition to penalties, duties and taxes should be paid for any missing goods unless operators can satisfy customs that the goods were not shipped or were lost prior to arrival in the country. Once responsibility has been determined and control procedures have been established, computer applications for the processing of data from cargo manifests should be developed [35]. They should provide, in particular, for automated reconciliation of manifested goods with the goods shown on the declarations, and for rapid information retrieval to allow the investigation of discrepancies and excesses. For the computer system to work correctly, carriers must assign a unique identifier to each manifest and to each consignment [36].

4 E-Commerce: Opportunities and Challenges

With the increased use of electronic commerce tools, Customs and other government agencies that are responsible for controlling import goods, every day more and more people need access to digital information. In addition to the commercial expertise, the Internet provides a valuable source of information, customs duties and executive control assists [34]. In general, modern automatic processes in any organization, stability, transparency, increase productivity and to better assess how to deal with administrative violations will result. Good opportunities to coordinate such processes provide organizations and governments together [37]. Traditional customs procedures to enter the field of e-commerce opportunities these changes are found. As a result of the increased use of e-Commerce, communications between customs before they even arrive goods to the country's borders, is established. Each party product that may cause problems during registration, can your data before reaching the destination [17]. The destination Customs will be able to process your preparation much earlier started. From another perspective, e-commerce and Internet digital divide between developed and developing countries increases. However, because of the relatively low cost of electronic equipment and access to global markets information, the Internet can be used as a tool capabilities digital differences between countries has the potential to destroy, not to show off [29].

One interpretation prevents unilateral and independent deployments old car systems (typically network-based multi-systems) that were previously used in international trade transactions, is. Customs should also facilitate the development of electronic control and facilitate trade,

especially with the use of information technologies (IT) to ensure that electronic data interchange, and is flexible and prudent. According to customs issues have to use new technologies like the Internet are so useful tool for improving the management of their information in hand [37]. The amendments by the efficient use of commercially available data to collect and obtaining rights and duties, disk management and use of data will be done by audit and control purposes. Customs have their own abilities in order to protect access to authentic information (valid) expand and increase. This ensures the identification and recognition of the responsibilities of both sides and obtain the necessary information will be required in order to perform tasks. Such operating environment requires appropriate laws be applied equally to both parties, as well as bilateral cooperation appropriate and sufficient resources. The levels of management, customs procedures and adopting decisions that are always being modified and simplified customs procedures will help lubrication [38]. another reason for the application and will be equipped with electronic customs procedures. Of course, other aspects of e-commerce can enhance the junk mail reduction in revenues and profits name that was customs. While in the past, intermediate goods were imported in high volumes, e-commerce is now possible to order goods directly from the manufacturer may, as a result of shrinking mail volume and lower their value. While each case must be performed customs operations fully from beginning to end, which will lead to additional costs for customs. On the one hand facilitate online sales will be detrimental in some cases to local retailers.

5 Statistical communities:

Statistical community of this study is including the experts in the field Electronic Customs and ERP systems such as: managers in organizations, employees, and manufacturing, service and trade, book authors, researchers, professors and masters and university faculty members, who have expertise in this area. As well as the data collection method is using the questionnaires. Also one sample T-Student test is used to test the hypothesis.

6 Validity and reliability:

According to experts and professors and Masters, validity has been reviewed and approved. Questions extracted for the questionnaire are based on the Mukherjee's theory and largely are related with research topic. We use the Cronbach's Alpha to calculate the reliability. The value of this factor has calculated 86.6 percent. The results indicate a high correlation between the results of questionnaire survey.

7 Sample size:

The sample size formulas and procedures used for categorical data are very similar, but some variations do exist. Since the data are qualitatively and the number of statistical community is unlimited, so the sample size calculation formula is as follows [20]:

$$n = \frac{Z\alpha_{/2}{}^2 p_0(1-p_0)}{\varepsilon^2} \qquad (1)$$

In this study, researcher has set the alpha level a priori at .05, plans to use a proportional variable, has set the level of acceptable error at 5%, and has estimated the standard deviation of the scale as .5. Cochran's sample size formula for categorical data and an example of its use is presented here along with explanations as to how these decisions were made.

$$n = \frac{1.96^2 \times 0.5 \times 0.5}{0.1^2} = 96.04 \qquad (2)$$

Where $Z\alpha_{/2}$ = value for selected alpha level of .025 in each tail = 1.96.

(The alpha level of .05 indicates the level of risk the researcher is willing to take that true margin of error may exceed the acceptable margin of error).
Where (p)(q) = estimate of variance = .25.
(Maximum possible proportion (.5) *1-Maximum possible proportion (.5) produces maximum possible sample size).
Where ε = acceptable margin of error for proportion being estimated = .1
(Error researcher is willing to except).
According to the formula at least 97 samples are needed. Therefore, 100 questionnaires were sent between experts and were collected.

8 Analysis of information

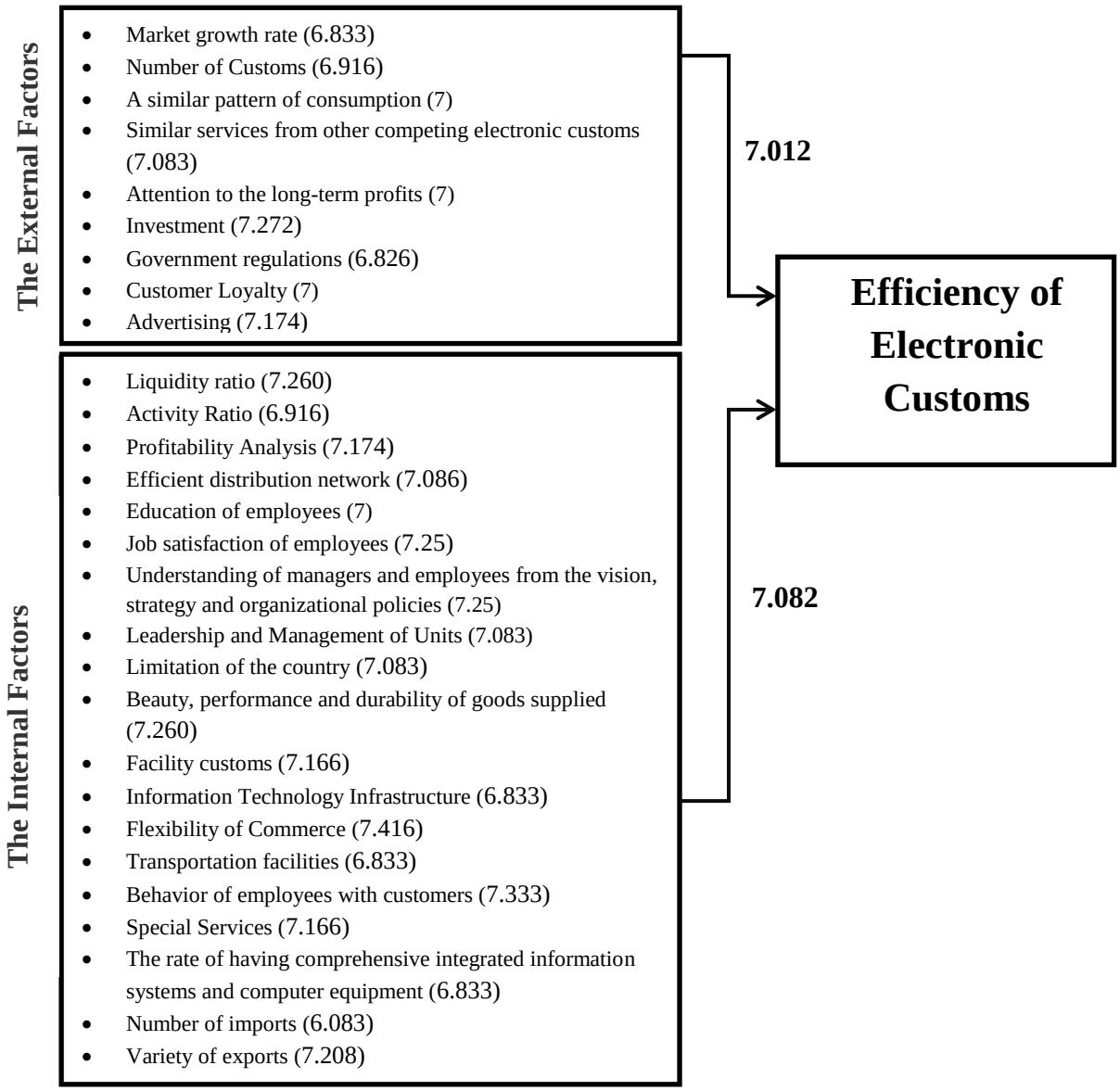
Questionnaires were distributed among experts, managers, book authors, researchers, professors and masters and university faculty members, who have expertise in this area. Results of the descriptive tests indicate that applying E-Customs have good effect to achieve successful implementation based on proposed model in Iran. 47% of these experts have a master's degree, 34% have Ph.D. degrees and 19% have a bachelor's degree. 81% of these experts are male and 19% are female. Also academic field of these experts is Industrial Engineering, Management, IT, Computer Engineering, and few experts have other academic fields.

9 Conceptual model and hypotheses

According to research findings, based on the above description in the previous section, the proposed model is offered:
According to this model, the internal and external variables influencing on Efficiency of electronic customs are shown. Since these factors have been selected according to the opinions of experts and professors, if the managers of electronic customs pay attention to these factors, this can lead to organizational effectiveness. And finally will lead to efficiency in the chain stores.

Fig. 1: The conceptual model: The internal and external variables influencing on Efficiency of electronic customs

(The number in parentheses is the weight of each indicator.)



10 Conclusions

One of the main sectors of e-government, e-commerce is naturally Customs is one of the main roles in this area. So that without the benefit of technology, performing different tasks will be faced with serious problems. The mission of World Customs has changed in the past five decades. In the 1980s, the central mission of customs revenue collection, customs and most important mission is expected in 2010, flexibility, interoperability with other revenue agencies, business entities and border management in virtual Border Agency will become the primary mission of Customs in 2020. Customs will go to the extent of using technology in the mobile communications operations through satellite technology will be common. Implementation of an electronic customs in the country's most important programs in order to serve the people. With the implementation of electronic customs, rules and regulations and collection of such rights, customs duties and taxes is facilitated customs. Provision of distance declaration for cargo owners, the evaluation of absentia for cargo owners provided, in other words, doing customs procedures in electronic form, the end result reduces the time

consuming customs formalities, in practice imports and exports. E-commerce challenges in order to provide with a customs foot. These challenges prompted to review and revise the questions in the first place, and fundamental changes in its business strategies. And then have to acquire hardware and software and communication tools in order to make the online services. For this purpose, the customs had to execute the obligations are as follows:

- Simplification of customs processes and procedures in addition to access to higher levels of security, which in turn reduces the pressure and lowering costs will be imposed by electronic attacks.

- Train for confidence in the use of business information electronically at international level in order to meet the information requirements of customs

- Access and access to reliable software systems that also have a high ability to work and process data, with graphical interfaces are user friendly.

- Development of cooperation between customs and other organizations involved in international trade in order to facilitate the transmission of integrated international trade information. As well as targeting concepts such as risk and risk-taking in the national and international levels

- Preparing personnel and employees at all levels with the necessary training to acquire the skills needed to apply all necessary activities in a fully electronic environment is automatic.

In conclusion, it should be noted that the World Customs Organization substantial activities required to define and implement e-commerce strategies.

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