Implementation of Single Window on Customs Airports with Approach to Information Technology (IT) and Business Process Re-Engineering (BPR)

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Abstract: The purpose of this study is to investigate aspects of the implementation of single window on customs airports with approach to information technology and business process re-engineering. This study aims to examine, based on the aspects covered in the literature and the theoretical basis of previous studies and standard questionnaire designed and placed at the disposal of some merchants of Tehran Imam Khomeini International Airport. According to Morgan and sample of 100 businesses were selected as sample. Completed questionnaires were designed based on the assumptions contained in the study were analyzed using SPSS Software. Results showed merchants cross-border trade single window customs systems based on information technology re-engineering processes and has been revised to more desirable and an important factor in their satisfaction and leads to relish more of the system in the export and import of because that always saves time and cost as well as customs procedures have been improved and easily.

Key words: Cross-border single window, customs, information technology, business process reengineering, Tehran

INTRODUCTION

Today, the expansion of trade, investment and international interdependence, globalization and the internationalization of production activities of the firm as a transnational phenomenon effects of the economy and industry in the new global economy. In such circumstances, trade liberalization at regional level in the form of treaties, regional and international level continues. These commercial arrangements are all on the principle that the interests of the participants to promote their business and are due to a merger or integration. These developments in the global economy, resulting in improved relative position of developing countries but all countries alike have benefited from this situation. Of course, economies that have a comparative advantage in the production of goods and services as well as the competitiveness of firms and production units with appropriate domestic policies and increased cross-border trade are more profitable. In addition, the regulations easier and better infrastructure facilities for export and import of goods and the use of ships and large aircraft to reduce the processing time and the importation of goods including measures that various countries have made to expand its foreign trade. In Iran, a comprehensive system of customs very serious change to improve the business environment creates and rank Iran as the business climate

improves. The system also prevent any corruption of loss prevention resources and can increase productivity and efficiency. The aim of this study was to investigate the consequences of the implementation of the single window in customs airport with cross-border approach is reengineering and information technology. Studying the processes of traditional customs and then based on process re-engineering and information technology to improve pay and conditions at the end we will be judged by SPSS Software.

Theoretical foundations and research literature
Cross-border single window (commercial) and the need for its establishment: CEFACT or UN Center for Trade Facilitation and Electronic Business (UN/CEFACT) with the aim of facilitating trade and commercial cooperation between the countries has been formed to help promote and through analysis of the key elements of international trade processes and provide recommendations in this regard and cooperation with international organizations such as the world customs organization, the world trade organization and other recommendations on trade facilitation and development of electronic commerce has to offer. CEFACT with recommendations 33 (with a focus on the overall window unit, steps to implement key elements of it), 34 (with a focus on standardization of business data in order to establish trade single window)

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and 35 (with a focus on issues legal unit window) this issue has become one of the most important topics in the field of development and facilitating e-Commerce business processes. The standard network environment, dynamic and integrated processes to implement e-Commerce on the part of foreign trade will provide. According to recommendation No. 33 CEFACT, single window as follows.

The possibility that the parts involved in trade and transport, allowing you to insert standardized information and documents through a single entry point to fulfill all the needs of the common unit for the handling, import and export (generally carry out commercial transactions). If information is electronic then only need to enter the information once. Due to the benefits of trade single window, many countries (both developed and developing) have tried to establish the benefits of the network window business benefit. However, due to the novelty of the concept of single window business, different countries have different paths and experiences in this regard in the past of these countries in the development of e-Commerce impact on their business is choosing the path of the establishment of the single window.

Business process re-engineering: Re-engineering of business strategies for change in that with the organization of the task moves toward process-centric orientation. This will accelerate the pace of research, reduce costs and thus more competitive organization. "Hammer" and "Champy" defined business process reengineering as "a fundamental re-thinking and radically new design processes to achieve great progress in a crisis due to criteria such as cost, quality, service and speed". The key words in this definition are:

- Fundamental: what are the main ways?
- Radical: all business processes and existing structures and new ways of researching need to do to be discovered. Changes in the root surface are helpful and change should be implemented
- Amazing: to achieve extraordinary dramatic changes and minor improvements and slight not
- Process redesign should focus on processes rather than tasks, jobs, people or structures

As a result, an organization must establish with the old business processes to a slow start. Re-engineering processes at the center of focus. "Davenport" and "Short" process defined set of tasks that are logically related to one another and to achieve a defined business outcome are implemented. Process, a series of activities

that together, resulting in valuable time for the customer to take (Davenport, 1990). There are other methods based processes such as continuous improvement or total quality management organization to meet customer needs for maintenance tasks but they may not offer these new processes. "Hammer" in his book, reengineering the start again introduced. He said the book outlines the method and its application in business benefits of employing it with the United States as "Ford" and "Life Benefit Mutual Film Corp" outlined (Hammer, 1990). "Damampour" said the sweeping changes, fundamental changes in the activities of an organization. This change reflects the obvious cracks in research practices on the contrary, gradual changes in researching practices, usually as accompanying them. That is why it is necessary to distinguish between incremental change and radically changed (Damanpour, 1991). "Barzak" and his colleagues have shown that long-term gradual changes are causing performance. On the contrary, radical transformation they can reorganize their companies. They have identified the variables that companies will leave the existing structures and processes and create new and different structures and processes encourage (Barczak *et al.*, 1987). Hammer and Champy this methodology in his book "Redesigning business" developed. This book explains when a decision is taken on the redesign of and improvements to how people are affected. Today, organizations can not be proved with business processes, continues to maintain its competitive advantages. So whatever the appropriate processes are designed we need to review and change. On the other hand, many organizations have found that their problems are not the way for gradual changes and other surface and to survive you need to make fundamental changes in the organization. Today, any modification or improvement of the infrastructure in question, the concept of re-engineering is considered to be a fundamental change. Most organizations contain provisions that in former times based on assumptions about technology, staff and organizational goals have become no longer useful. By reengineering the investigation stage and the removal of these provisions that underlie the current business performance are based. Re-engineering processes and research methods and means of reconstruction in an effort to achieve progress on criteria such as quality and speed of service. The re-engineering, the researchers expressed different models that can be considered different categories for them. A method for classification of reengineering projects how to focus on factors such as information technology, strategy, quality management, operations and human resources. Alternatively, the attitude of the model is that it is inherent in the nature of innovation and

re-engineering. For example, Hammer and re-engineering Champy degree of dependence on creativity, innovation and new thinking more than reliance on past experiences and know now as we believe that reengineering, the organization should have a fresh start with a white page. With such a definition look at a structured approach to re-engineering is impossible. On the other hand, people like Davenport, Shorts, Harrison and Fury believes the definition of a clear framework for the use of experience in re-engineering and re-engineering required and believe the re-engineering projects, presentation of projects and research programs with training and motivating people is required. In general it can be re-engineered as some famous models to models provided by Kelein, Furey, Gaha, Gohanwwon, Stepper and Petrozzo, Davenport and Short, Harrison and Pratt, Barrett, Kettinger, Coopers and Lybrand, Texas Instruments, Ruessemann, Condore and Obolenesky noted (Love and Gunasekaran, 1997). By examining a variety of models, failure and success reengineering projects and the atmosphere on Iranian companies to the conclusion that most models are more noted that special attention to defining, improving the outlook or create such as Gaha, Davenport and Short, Harrison and Pratt, Kettinger and Condor and Obolenesky Models. But the important thing is that these models which ones should be used to determine the improvement or creation of landscape examined within the organization because of the weakness prevailing in Iran in the absence of a landscape of for the organization. Thus, Davenport and Short, Harrison and Pratt, Kettinger and Condor and Obolenesky models can lodge further assistance in the implementation of re-engineering. Another important issue is due to increased tensions even among senior managers in change projects, a continuous improvement process re-engineering is one of the elements in the final phases. After this it appears that the models, re-engineered of Condor and Obolenesky and better conditions for the implementation of Iran's organization. But more noteworthy about the lack of staff of the Iranian and improvement projects, the implementation of a project of transformation, even if employees cannot resist simply confuse them. But as a first step by identifying the needs of the organization for change Obolenesky re-engineering model can determine the vision, mission and strategic objectives of the overall organization and to assess the organization's ability to meet these needs and analysis of key stakeholders and analyze the strengths and weaknesses of competitors improvement programs short period with little change in the organization created and in the last step by ongoing transformation to achieve continual improvement, this model is more appropriate for the implementation of re-engineering of the organization of Iran.

Re-engineering and information technology: Today, information technology is increasing day by day. Advances in technology, communications and computer (either mother or person) to allow employees of an organization which while outside the organization is also connected to the organization they work for their respective organizations. In other words, using these technologies, organizations are slowly progressing towards virtualization. Examples of these technologies include email, video conferencing technologies such as computer-aided design, computer-aided manufacturing and computer aided engineering. These technologies will coordinate the activities of the organization. From the perspective of Smith and Ostroff generally includes 3 core of: decision-making process; the flow of information and the flow of material that information on all of the above core technology can be effective. Important points such as information technology enables companies to achieve the following:

- Reducing the cost and improving the exchange of information
- Avoid repetitive tasks or when human error is very complex
- Financial savings due to reduced errors and time tasks
- Integration and coordination of multiple tasks in a task
- Improving the efficiency and effectiveness
- Improvement in middle management and reduce redundant processes through the provision of useful information

Re-engineering business is how to modify the new processes and new methods of work organization and the organization introduced. So, to achieve this purpose certain elements of the organization will be required to make changes to the elements known to facilitators and act as the vehicle for change processes. IT organizations can help to make changes it is mainly changes in the nature of research, the integration of organizational tasks and become competitive forces (Scott-Morton, 1995). IT can assist in making changes to the re-engineering and hence it can be ruled as a facilitator of business process re-engineering as well. Redesign process is often done by the help of IT. In most cases information technology is the ability to re-engineer. Although, already in the process of information technology as a critical need for reengineering the company was not used. A successful approach would require re-engineering of IT applications and the redesign of processes in a way that complements each other. In many cases, software and equipment for

re-engineering methodology used and the choice of the correct methodology for engineering plays a critical role in the success of the project. What is important today is to know about the role of information technology services, only how to work does not change but the definition of economy, trade and competition has changed. One of the key outstanding issues facing the evaluation of the assessment to determine the fact that whether a business investment in information technology, in fact from a business process redesign support? These framework for determining whether an entity actually involved in reengineering a process makes, provides.

Case study (customs airport of Islamic Republic of Iran): Customs of Islamic Republic of Iran as the country's border guards responsible for the actions of government in the implementation of laws and regulations related to the passage of goods under the procedures of export, import and transit in accordance with study the interaction and coordination of the customs and neighborhood-based organizations between the peer responsibilities of is significant. Accordingly and in order to improve the business environment, through the provision of facilities in the process of foreign trade in line with the policies of the World Customs Organization, the simplification of customs procedures from last year in all procedures and eliminate red tape by using new technologies information and intelligent systems is electronic. Therefore, in order to fulfill the organization's e-Customs and the World Customs Organization Picard design, produce and implement a comprehensive system covering all processes and operations with the possibility of customs clearance of arrival of goods into the customs territory until the completion of the formalities clearance. Key indicators of the traditional customs in Fig. 1.

According to the principles of re-engineering based on information technology that was described in the previous sections can be mentioned processes in traditional customs in order to save time and costs and increase productivity and improve the registration system customs information to re-by and designed for cross-border single window. Figure 2 shows the key indicators customs by re-engineering based on information technology.

Figure 2 is understandable considering using single window customs and to help re-engineer processes based on information technology can significantly reduce the time and cost of registration and the issuance of permits. But the main purpose of this research is to examine the conditions and satisfaction of cross-border Single Window system is based on re-engineering. In order to achieve this goal on the basis of the assumptions
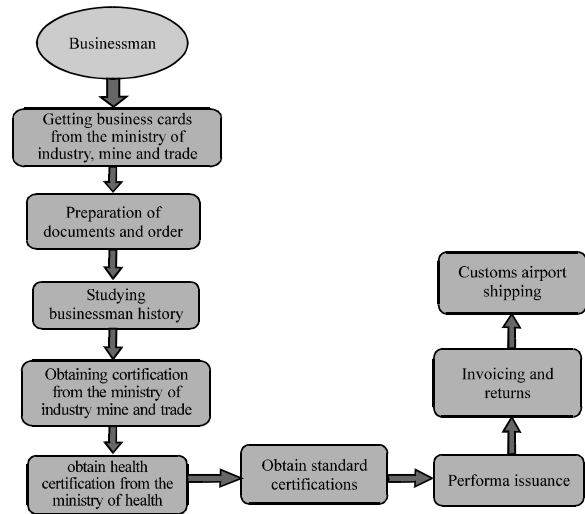

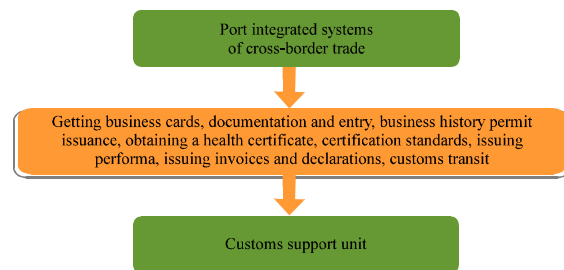Fig. 1: Key indicators in traditional customs airports

Fig. 2: Key indicators customs border window

considered in the new customs system intended to SPSS Software to verify the assumptions described above. Hypotheses include:

- H_1: there is a significant relationship between licensing and declaration of consent and commercial use of the system remotely
- H_2: there is a significant relationship intelligent search and intangible liabilities with satisfaction and commercial use of the system
- H_3: there is a significant relationship circles merge authentication and expertise with the consent and commercial use of the system
- H_4: there is a significant relationship with the consent documents electronically and commercial use of the system

In order to verify the hypotheses, the population (all merchants customs of Imam Khomeini Airport) using Cochran's and Morgan table businessman select 100 completed the questionnaire and SPSS Software using our analysis. Research in terms of data collection, research is descriptive survey. Also, since, the results could be

Table 1: Frequency distribution of respondents by age

Age	Frequency	Percent	Cumulative frequency
35-45	25	25.0	25.0
45 -55	45	45.0	70.0
Top 55	30	30.0	100.0
Total	100	100.0	-

Table 2: Normality study

Variables	Statistics	df	Significance level
Licensing and application of remote	0.910	100	0.041
Intelligent search and intangible liabilities	0.094	100	0.030
Integrated authentication and expert circles	0.127	100	0.000
Receive documents electronically	0.105	100	0.009

df = Degree of freedom

applied to the objectives and nature of applied research. Statistically as well as use of sampling and sample used to generalize the findings to society and conclusion, this study is a comprehensive study. In this study, to collect the required data from the two methods are used:

- Libraries method to collect primary data: in this way, referring to various organizations and academic libraries, databases, the Internet and Information and Documentation Center of Iran, gathering the required information
- Field method for the preparation of secondary data: the questionnaire and sampling and data extraction can be used to study population

Frequency distribution table of respondents based on their age group is given below (Table 1). To verify the normality of the data to the Shapiro Wilk test of normality are going to get reliable data. Usually if a significant level in the Kolmogorov-Smirnov at the table with sig. displayed >0.05 can be considered normal data with high reliability. Otherwise you cannot say that the data distribution is normal (Table 2).

As you can see, none of the data were not normally distributed because the significance level of <0.05. As a result, non-parametric test hypotheses should be used.

Reviews and test hypotheses: The relationship between a remote issue and expressed satisfaction and business re-engineering of the customs:

- H_0: there is no significant relationship between the issue and the declaration of consent and use remote business re-engineering of the customs system
- H_1: there is a significant relationship between the issue and the declaration of consent and use remote business re-engineering of the customs system

Table3: Spearman correlation test and declaration issued remotely with satisfaction and business re-engineering of the customs system

Variables	Values
Intensity correlation	0.373
Significant quantities	0.000
Number of samples	100.000

Since, the data is not normally distributed nonparametric test was used and the fact that the present study we used a Likert-scale rating is the relationship between two variables that measure the direction and intensity of coefficient Spearman correlation we use this reasoning applies to other research tests. In this test, according to a sig achieved a significant level of 0.00 and 0.000 confidence level of 99% which is a value that is much <0.01 so we suggest no relationship H_0 hypothesis is rejected and H_1 hypothesis that there is a relationship that is established according to the number obtained in this regard is quite significant and the direction and intensity 0.373 can be concluded that the relationship is a linear and direct intensity of this correlation is high and all the be statistically and empirically quite sure whether it is true. In other words, whatever the issue, saying a distance of more and better satisfaction of re-engineering of customs and commercial use of the system increases (Table 3).

Studying the relationship between intelligent search and intangible liabilities with satisfaction and commercial use of the system re-engineering of the customs:

- H_0: there is no significant relationship between intelligent search and intangible liabilities with satisfaction and business re-engineering of the customs system
- H_1: there is a significant relationship between intelligent search and intangible liabilities with satisfaction and business re-engineering of the customs system

In this test, according to a Sig. achieved a significant level of 0.00 and 0.000 confidence level of 99% which is a value that is <0.01 so we suggest no relationship H_0 hypothesis is rejected and H_1 hypothesis that there is a relationship that is established according to the number obtained in this regard is quite significant and the direction and intensity can be inferred 0.377 that the direct relationship is linear and is strongly correlated and can be statistically and empirically quite sure whether it is true. In other words, what the study is intelligent and subtle debt to the satisfaction of re-engineering of customs and commercial use of the system increases (Table 4).

Table 4: Smart search Spearman correlation test and intangible liabilities with satisfaction and business re-engineering of the customs system

Variables	Values
Intensity correlation	0.377
Significant quantities	0.000
Number of samples	100.000

Table 5: Spearman correlation test authentication and expert circles integration with satisfaction and business re-engineering of the customs system

Variables	Values
Intensity correlation	0.474
Significant quantities	0.000
Number of samples	100.000

Table 6: Spearman correlation test documents electronically with the consent and commercial use of re-engineering of the customs system

Variables	Values
Intensity correlation	0.425
Significant quantities	0.000
Number of samples	100.000

Studying the relationship between integration and degree of satisfaction and business circles authentication system re-engineering of the customs:

- H_0: there is no significant relationship between integration and expert circles authentication with satisfaction and business re-engineering of the customs system
- H_1: there is a significant relationship between integration and expert circles authentication with satisfaction and business re-engineering of the customs system

In this test, according to a sig achieved a significant level of 0.00 and 0.000 confidence level of 99% which is a value that is <0.01 so we suggest no relationship H_0 hypothesis is rejected and H_1 hypothesis that there is a relationship that is established according to the number obtained in this regard has been quite significant and the direction and intensity of 0.474 is presumed that the relationship is linear and direct and is strongly correlated and can be statistically and empirically quite sure whether it is true. In other words, whatever the departments to integrate authentication and expertise to the satisfaction of re-engineering of customs and commercial use of the system increases (Table 5).

Studying the relationship between documents electronically with the consent and commercial use of system re-engineering of the customs:

- H_0: there is no significant relationship between satisfaction and business documents electronically with the re-engineering of the customs system
- H_1: there is a significant relationship between satisfaction and business documents electronically with the re-engineering of the customs system

In this test, according to a Sig. achieved a significant level of 0.00 and 0.000 confidence level of 99% which is a value that is much <0.01 so we suggest no relationship H_0 hypothesis is rejected and H_1 hypothesis that there is a relationship that is established according to the number obtained in this regard has been quite significant and the direction and intensity of 0.425 is presumed that the relationship is linear and direct and is strongly correlated and can be statistically and empirically quite sure whether it is true. In other words, the greater the amount of documents in electronic form as well as satisfaction and business re-engineering of the customs system will increase (Table 6).

DISTANCE DECLARATION

The possibility of electronic declaration of goods to customs without the physical presence of the most important features of the system owners and manufacturers of customs said. With this system, entrepreneurs from the office, home or any other location with Internet lines are able to express their goods act. In this system, all steps can be performed in absentia clearance and clearance of their status via SMS informed.

INTELLIGENT SEARCH AND SUBTLE CUSTOMS DEBT ARTICLE 7

Customs debts are determined on the basis of Article 7 of the Customs act, before the semi-automated and controlled by human intervention as possible counterfeiting or infringement of the heart. With the launch of a comprehensive system of customs affairs, the debt for the system and will not allow persons under the debt automatically declared and exit of goods. In this way, the individual should pay his debt to the customs services received and it will have a huge impact on the reduction of customs debt. Direct connection and control of the debtor's debt automatically has made possible not say and no, the manpower and administrative procedures for the review and therefore will not reduce the clearance time.

INTEGRATED AUTHENTICATION CIRCLES, VALUE AND EXPERTISE ROUTE

As described in previous studies in the past, there have been a number of questions that sometimes overlap

in addition to customs declarations have been made repeat the process control. By merging the offices and create a degree of duplication in the customs gate and with regard to the control mechanism to prevent the possibility of the process by an expert is possible. Intelligent systems based on the relevant risk management expert selection and items such as legal check, money management and other value taken as a system that alerts the system to be put relevant expert. With this method in addition to significantly reducing the time of customs clearance, customs procedures has increased control and accuracy.

RECEIVE DOCUMENTS ELECTRONICALLY

The system will scan all study documents and statements attached to electronic file storage and transfer of any application and attached documents to the authorities, only takes place electronically and without movement of the study.

Another advantage of the system
Reduced the time master declaration: Among the many problems they have faced in the past with the customs administration, the large number of statements have been expert in the queue. This is due to the large volume and lack of proper distribution by the previous system, so that the customs declarations in the queue martyr Rajai average value of >100 experts and the expert's statement. This clearly shows in the past much time has been spent to stay in the queue customs stages. At the moment, implementation of a comprehensive system of customs and control the distribution of returns among experts as well as the integration of different parts and improved risk management has led to an average of 10 items per expert is in turn expected returns. In this way, by reducing the waiting time, significantly decreased the time of registration.

Get duties electronically: Electronic payment amounts, duties and customs duties to be taken and all funds deposited in electronic form which not only results in facilitating and providing facilities in this regard but also the systems, customs and banking electronic communication to carefully control and management of getting exact state law takes place. The system in each specific deposit, taxes, customs duties and commercial benefit to be separated. The output of the treasury accounts are transparent and accurate customs will be investigated. The product can also go through the online payment system, the amount of the deposit. This makes
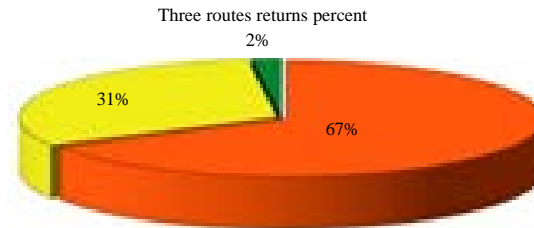

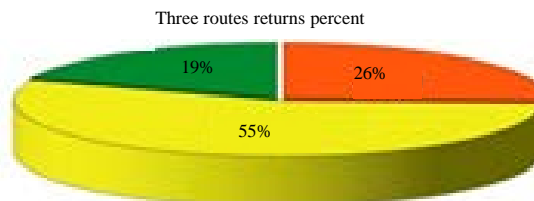Fig. 3: To set up a comprehansive system and update rules

Fig. 4: After setting up a comprehensive and update the privacy policy

a waste of time to deposit in the bank deposit receipt and delivery of customs clearance process also slowed which in total will have a significant impact.

Policy reform path: Risk management is a logical and systematic way to identify, analyze, treat and control the risks in any activity that will help this type of management, managers can maximize the utilization of existing resources have. Due to the lack of criteria to day system, choose the path of customs declaration is designed to apply risk management processes. Figure 3 of the three routes before running comprehensive system of customs declaration and revised and updated criteria were as follows.

Decelerations a path that red and yellow are therefore, more risky and the process will be further investigated and discharge will also increase. Until a comprehensive system of customs, risk management assessment service took only a short time and based on information in that statement, it was determined the risk routes. By creating a comprehensive system of customs risk management system that can be optimized and intelligent variable criteria also be considered in addition to covering part of the assessment service, part of the exit door and also manages the payments will continue as it. After updating criteria for risk management, diagram of the declarations was changed as follows. As seen in the Fig. 4, the number of declarations on the green patr and therefore, clearance time is greatly reduced.

Reform processes and eliminating unnecessary steps: In the past, multiple steps and customs formalities include:

sign in to investigate the debt, authentication and matching documents, physical assessment and documentation, evaluation and other there. Numerous steps and repeat steps do they overlap some states such as authentication and owner of the goods, the owners of outstanding obligations under Article 7 of the Customs Act, compliance with the contents of the declaration documents, determine the route returns to determine the appraiser and expert statements, the legal permits required for traditional and non-mechanized, check the return value, document control and licensing by the fund, obtaining bank draft and implement a graduated amount in payroll entry and other clearance of the time that many of these steps including the physical presence of the product, authentication and debt of 7, the value of the individual units, pay for mechanization and intangible done in person and in the process re-engineering while simplifying and reducing the steps in the process of clearance time has been reduced. Another advantage of the system and control access inventory information and the ability to track the entry and exit of goods to the warehouse in order to comment and clearance process. In addition to giving participants expressed acceptance to the customs value of the goods declaration and remove any ambiguity in this regard, the information on them is available electronically. The system to provide more facilities to entrepreneurs fully accessible on mobile devices as well as monitoring units including police can SMS road routes anywhere in the country, information about the cargo, driver and vehicle for and through their online inquiry system.

CONCLUSION

The use of information technology re-engineering on the basis of not only the speed and ease of customs formalities but also due to the use of risk management and control system and intangibles, increased precision in control. According to World Bank calculations index, the cost per day of delay in clearance equivalent to one percent of their value, respectively. Thus, substantially reducing the costs of customs clearance times, based on the above-mentioned reduction of the advantages of setting up the system based on the re-engineering of processes based on information technology and the causes and take corresponding measures to reduce clearance times.

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