E-Single Window Implementation: A Case of Jordan Customs Department

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Electronic single window perceived as a contemporary solution in forefront of e-government initiatives. However, it involves many complex processes and challenges. The challenges facing electronic single window implementation are still underdeveloped in the current literature. This paper aims to provide understanding on the challenges of ESW implementation, and how overcome those challenges. This study adopts a qualitative case study approach of ESW project in Jordan Customs. The findings show that the challenges of ESW implementation in Jordan Customs are IT infrastructure, system integration, internet infrastructure, change resistance, computer skills, and legislative and regulatory issues.

Key words: Electronic Single Window; Challenges; E-government; Developing Countries; Jordan Customs.

INTRODUCTION

For several years, e-government has been high priority on the agenda of many countries around the world. Increasingly, several governments worldwide have launched and implemented, or are in the process of implementing a variety of e-government initiatives in order to transform the way they are functioning from traditional approach towards a customer oriented approach and enabling the citizens access services and information via a single point in timely and effective manner (Haque & Pathrannarakul 2013; Ndou 2004), promoting communication between public organizations and citizens (Pina et al. 2010b; Ray 2012), modernizing and reforming public administration (Kim 2014), reducing bureaucracy (Ahn & Bretschneider 2011), improving an overall performance and better service delivery (Ray 2012; Rowley 2011), minimizing service costs (Bertot et al. 2008), reducing corruption (Aladwani 2016; Elbahnasawy 2014; Mistry & Jalal 2012), and enhancing openness, transparency, and accountability in public organizations (Aman et al. 2013; Halachmi & Greiling 2013; Hamiduzzaman 2012).

Recently, the electronic single window has emerged as a new paradigm in the forefront of e-government initiatives which reflects the evolvement of e-government in the wake of the recent growth of technological innovations and emergence a new generation of web applications to reform and modernize public sector organizations, and transform the way they are functioning towards a customer oriented approach (Veljković et al. 2012). The electronic single window (ESW) can be defined as a one-stop-shop which allows the customers whether citizens, business, or public organizations access to services and information provided by different public and private entities via single entry point regardless the geographic spread (Casalino et al. 2013). Some studies (Askim et al. 2011; Dong et al. 2014; Veljković et al. 2012) indicated that the ESW is one of a cutting-edge e-government approaches that has a potential to improve coordination and collaboration between government authorities and shifting their structures from services structured

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around the fragmentation of public organizations towards a customer-centric services in the manner that meet the customers' expectations and needs. It contributes to make public services and information more accessible, eliminates duplication in the procedures, reduces the costs and saves the time and efforts for both citizens and government agencies (Askim et al. 2011; Casalino et al. 2013; Monga 2008; Paul & Paul 2014; Wimmer 2002).

Although e-government holds great promise in modernizing and reform public administrations, many e-government initiatives have failed to deliver in terms of specific outcomes, particularly in developing countries (Chen et al. 2006; Heeks 2003; Mofleh & Wanous 2008). Yet, e-government projects in most developing countries have not been fully exploited to achieve the desired transformation (Aladwani 2016). Thus, these promises remain unrealized (Al Athmay 2013).While the ESW is one of the new evolving topics among academia and practice as a dominating approach of the current e-government initiatives, it is still underdeveloped in the literature (Askim et al. 2011). Moreover, the fact of ESW implementation is not simple task, rather it involves many complex processes and challenges (Askim et al. 2011; Scholl et al. 2012). Thus, there is a need to recognize those elements that contribute to overcome the obstacles, avoid the potential risks and ensure the successful implementation of ESW projects (Pardo et al. 2010; Scholl et al. 2012).Therefore, this paper aims to provide understanding on the implementation of ESW using a case of Jordan Customs. This paper addresses specific questions on what are the challenges of ESW implementation in Jordan Customs, and how the Jordan Customs overcome those issues. The implementation of ESW in Jordan Customs has been perceived as a success story and best practices by several international organizations (ESCWA 2011; UNECE 2012; USAID 2011b, 2015a; WCO 2011).

The significance of this study lies in responding to those criticisms regarding lack of empirical evidences that address the obstacles facing ESW implementation in Customs administrations. This study is essential particularly in the context of developing countries as most of the recent studies of ESW in developing countries indicated that they are suffering from difficulty of managing ESW implementation successfully, and struggling with a lack of resources and experiences to handle this new trend of technology (Paul & Paul 2014; Veljković et al. 2012). Therefore, the findings of this study serve as a guidelines for Customs administrations in the developing countries to plan, manage, and implement their ESW projects properly by assisting them to improve their ability to assess the opportunities that increase the ratio of success and decrease the probability of failure of ESW projects. This consequently will enhance the likelihood of ESW success, and customs administrations will gain maximum benefits from their ESW projects. This paper proceeds as follows. Next section provides review of existing literature about the research context. Later, this paper presents the methodology used in this study and background of ESW in Jordan Customs. This follows with the findings and discussion. Finally, this paper ends with conclusion.

LITERATURE REVIEW

Early of 2000s, the majority of governments around the world have increasingly moved towards implementation of e-government programmes by establishing websites and portals in order to improve service delivery, strengthen the interaction with citizens, increase openness and transparency, and enhance accountability (Cordella & Tempini 2015; Pina et al. 2010b; Ray 2012). While these websites that set up at that time -which labelled as a first generation of e-government portals- may have been appropriate to provide a new ways to access public services and information at that time, it have not kept

pace with the recent technological innovations and meet the constituent demands (Paul & Paul 2014). These websites were traditional in nature, which reflect old-style models of bureaucracy and red tape in public organizations structures, rather than facilitate and simplify procedures in providing public services (Casalino et al. 2013; Dong et al. 2014; Smith & Sparkes 2004). They have been described as a rigid, stand-alone, separate, non-dynamic and constitute one-way interaction with the citizens (Justice et al. 2006; Monga 2008). As a result, many governments globally faced criticism for poor services provided by their websites, and lack of coordination and information sharing amongst different public institutions to provide an integrated services (Askim et al. 2011).

In recent years, the fast pace of technological developments and emergence a new advanced ICT applications, along with the rising demands of stakeholders whether citizens, business, or government agencies to keep in pace of society progress and needs, streamline operations, provide better and more integrated services through single point entry like those provided by private sector have led to emerge a new models of cooperation and collaboration e-government initiatives such as ESW (Bukhsh & Weigand 2012; Chen & Chou 2015).The ESW perceived as a contemporary solution in forefront of e-government initiatives which appeared as an alternative to keep pace with constituent demands and create more modernization and transformation towards service-oriented governments and meet the information and service demands of the twenty-first century (Casalino et al. 2013; Millard 2013; Veljković et al. 2012). The ESW is an umbrella structure which comprises of a front office that operates as an interface between clients and public organizations and a back offices that are responsible for the processing of clients' requests (Petrakaki et al. 2009). It also serves as an intergovernmental partnership including private sector to provide better access to an integrated services and information from all levels of public and private organizations from one place via single access point, even if these services are provided by different organizations, whether at a physical location or electronically (Askim et al. 2011). In this manner, the ESW involves building systems, integrating business processes, information sharing, setting formal standards, and interoperation amongst all authorities that share in service delivery to be interconnected, so the clients whether citizens, business or other public organizations are able to access services via single point entry in a well-structured manner that meets their expectations and needs (Bukhsh & Weigand 2012; Chen & Chou 2015).

Studies show that the ESW benefits both public and private concerns. For instance, Askim et al. (2011) noted that the ESW improves coordination amongst different levels of government organizations, enhances public and private partnership, develops communication with citizens, and maximize the convenience for all parties including clients through more efficient channels of service delivery. Moreover, the ESW creates a paperless environment as all business processes become fully integrated from front- to-back-office and throughout all agencies that involved in service delivery, i.e. they are fully e-processing from end-to-end (Dong et al. 2014). Thus, it eliminates the redundant processes and duplication in measures, unifies the procedures, cut back on overstaffed offices, reduces transmission costs by using e-documents, saves the time, and thereby achieving optimal use of resources and improving the operational efficiencies and savings for both government and customers (Monga 2008).In addition, the implementation of ESW can assist government to achieve the desired goals of public administration reform by making government more open, transparent, participative and inclusive (Bukhsh & Weigand 2012; Dong et al. 2014). It has a potential to reduce corruption and improve the commitment among staff (Monga 2008). The ESW also offers opportunity for clients to monitor the performance of back office in handling the clients' requests (Petrakaki et al. 2009). Furthermore, the ESW providing a new participatory platform to serving citizens and businesses in a seamless and cost-efficient manner, without jurisdiction limitations

(Dong et al. 2014; Veljković et al. 2012). Thus, it offers a real opportunity to achieve the transformation of governmental structures towards customer-oriented approach. The United Nations Conference on Trade and Development (UNCTAD) has identified a set of benefits that can be achieved through ESW implementation as shown in figure 1 (David 2013).
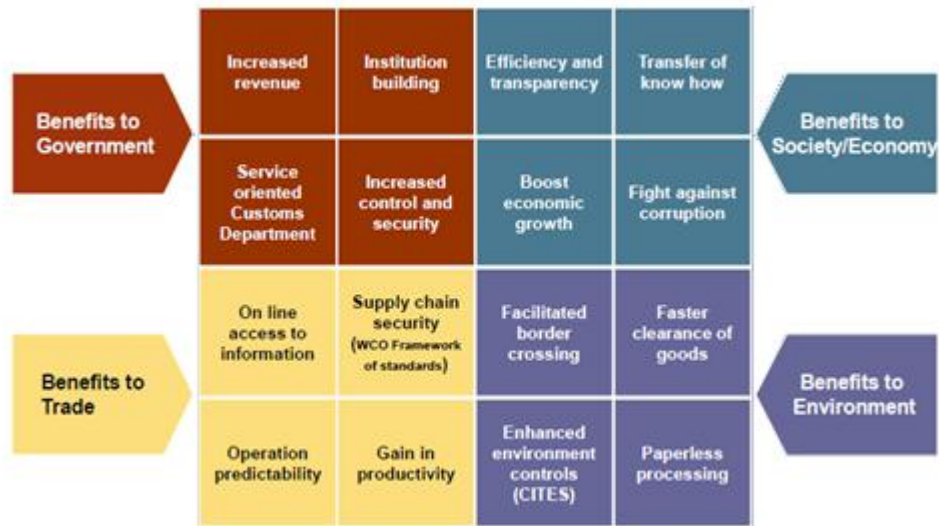

Figure 1: The benefits of ESW implementation
Source: David (2013)

Only few studies focus on ESW implementation and investigate the expected benefits and perceived impediments (Gil-Garcia et al. 2008), public administration reform (Dong et al. 2014), policy formulation (Estevez et al. 2010), service design (Chen & Chou 2015), and how ESW has been adapted in different contexts (Askim et al. 2011). None have examined in-depth the implementation challenges of ESW and how public organizations overcome these challenges. Many think of ESW as mere a new tool for cost savings and improvement of service delivery by integrating the business processes of different levels of services providers regardless their physical location, or it only focuses on interconnection of information and communication technology (ICT) means amongst several authorities (Askim et al. 2011). However, some studies have also indicated that the ESW involves many difficulties and challenges of the process of implementation, but remain unrevealed (Bukhsh & Weigand 2012; Pardo et al. 2010; Scholl et al. 2012). Therefore, this study highlights on the challenges facing ESW implementation, and provides understanding on how public organizations overcome such challenges using Jordan Customs case.

METHODOLOGY

This study adopts a qualitative case study approach (Walsham 1995) of ESW project in Jordan Customs. Early 1997, Jordan Customs adopted reform and modernization program with the aim transform its operations from intensive control over the imported goods and tax collection to customer-centric approach, improve service delivery, streamlining the Customs processes, promote investment, facilitate cross border trade, and enhance transparency and accountability in Customs actions (JCD 2011b; UNECE 2012; Younis 2004). To do so, all aspects have been addressed, including set the plans and re-formulating the strategies, amend legislation, and modernize the operations using

the latest technologies and benefiting from the newest ICT applications which automate the whole Customs processes (Younis 2004).

Despite all the interest and investments in e-government initiatives, not all IT projects in Jordan Customs live up to achieve the desired goals of reform in terms facilitate trade movement, speed up customs transactions processing, or meet the expectations and demands of clients in obtaining an integrated services in effective manner. This is due to the services provided by Customs do not start and end within Customs Department, rather it requires series of regulatory requirements, complicated actions, and be subject to inspection from several concerned authorities. The vast majority of these measures that being performed on Customs transactions are carrying out by other authorities. According to the Simplification of International Trade Procedures Board (SITPRO), "…it is widely believed that non-Customs checks now make up between 70 and 80 % of all official checks on imports that take place within the port environment" (SITPRO 2005, p.16). This in turn, make the Customs transactions processing more arduous and need a wait time, where the procedures insulated and completely differ from one another in each authority, and the geographic distances spaced among government entities which caused a delay in the complete transactions and lack of transparency in terms of difficulty determine who is responsible for delay or wrongdoings that were occurring. Thus, the dereliction of one institution performance was negatively influenced the performance of Customs Department, even if the Customs did the best in its own measures in transaction processing, as they all are interdependent with each other, which consequently the Customs Department could be held accountable and blaming for wrongdoings caused by others.

During the past decade, the need to minimize time processing, cutting down cargo costs, and reducing the volume of documents and measures required to Customs transactions have been grown as one of the international requirements to facilitate cross border trade. Doing Business Report issued by the World Bank (WB) has raised the problem of increase time required for the completion of customs transactions, and its negative effects in terms of cost and effort not only on the business sector, but also on the whole government (Doing Business 2008). The United States Agency for International Development (USAID) also confirmed this point about Jordan precisely that: "To comply with the requirements of international trade, the import and export companies operating in Jordan have to prepare and submit a large volume of information and documents to the government regulatory agencies. The information and documents are provided, either manually or electronically, to a number of different agencies; incurring additional costs which may constitute a significant burden on both the government and the business community" (USAID 2011b, p.2) Moreover, influenced by the international pressure of Jordan's accession to the World Trade Organization (WTO) and other international agreements, the Jordanian government directed the Customs Department to minimize the time release and simplify the procedures in order to fulfill international commitments.

To comply with the international requirements, reduce the costs and time required for transaction processing and to realize a paperless work environment, the Jordan Customs take the initiative to improve coordination and collaboration with other authorities that involved in transactions processing by implementing ESW project. In 2008, the Jordan Customs launched ESW program as one of a flagship initiatives with the aim to re-invent the way the Customs operates. Through ESW, Jordan Customs integrate the services of various authorities rather than to have each authority provide its services separately by using ASYCUDA World System as an integrated single system to complete all measures from all concerned authorities, and all operations are performed through one platform(as illustrated in figure 2). The authorities involved in single window are: Jordan

Customs Department (JCD), Brokers (Clearance Agencies), Jordan Institution for Standards and Metrology (JISM), Jordan Food and Drug Administration (JFDA), Ministry of Environment (MOENV), Ministry of Agriculture (MOA), Jordanian Telecommunications Regulatory Commission (TRC), Jordan Nuclear Regulatory Commission (JNRC), Security agencies, Aqaba Container Terminal (ACT), and logistics Companies.
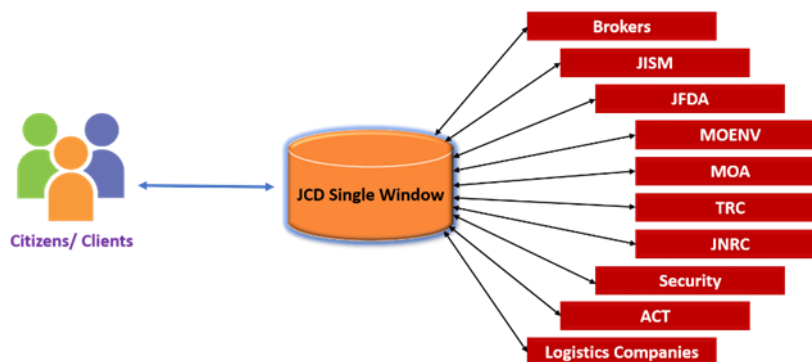

Figure 2: Single Window Framework in Jordan Customs Department
Source: JCD (2010b).

Many international organizations have recognized that the Jordan Customs has made major breakthrough in ESW implementation (ESCWA 2011; UNECE 2012; USAID 2011b, 2015a; WCO 2011). They perceived the experience of Jordan Customs in ESW as a successful best practices to facilitate international trade movement, improve the competitive edge of Jordan and enhance its rank in international reports. For instance, USAID published a report entitled "Success Story: Jordan Customs leads Middle East in Single Window implementation" (USAID 2011b), and another report entitled "Success Story: Improved Customs Processes Benefits Jordan's Trade across Borders" (USAID 2015a). In addition, the Doing Business reports for the years (2006-2011) issued by World Bank indicated that the time required to exporting process in Jordan is 13 days in 2011 compared to 28 days in 2006 (before single window implementation). It take 15 days to import process in 2011 compared to 28 days in 2006. The same report in 2015 demonstrated that the Jordan position in the release time of goods in exporting and importing process has advanced 54 in 2015 compared to 77 in 2011 in Trade across Borders (TaB) index. The report shown also that Jordan is a leading country compared with Middle East and North Africa countries in this regard (Doing Business 2015).

Data were collected in this research using a triangulation approach that included semi-structured interviews as a main data collection method, document reviews and observation. As suggested by Aman and Kasimin (2011); Heeks and Bailur (2007), the data triangulation method could develop a detail rich data on e-government research. The data triangulation approach also improves the validity of case study research, and maintains the improvement of converging lines of inquiry (Walsham 1995).

Interviews involved 19 individuals with 34 hours interviews from Jordan Customs and other governmental and non-governmental entities. Table 1 shows details of interviews. Internal category of interviewees comprises three managerial levels, are senior, middle, and operational officers in Jordan customs including IT and business officers. While, external interviewees include people from the public and private sector who are users of ESW and have experience in Customs work. This in line with Heeks (2002b) who emphasized that the research investigating the implementation of e-government projects should take into consideration the perspectives form different

organizational levels to capture the phenomenon from different perspectives. Moreover, the selection of a variety of participants in interviews ensures more credibility of viewpoints and validation of e-government research (Yildiz 2007).The interviewees were questioned on their experience and understanding of the ESW project, implementation process, procedures, and the key success elements and barriers to ESW implementation in Jordan Customs. All interviews were taped on recorder device, and then transcribed. Researchers carried out coding of transcripts and rechecked repeatedly for final coding.

Table 1 List of interviews

Position of interviewee	Level	Hours
Telecommunications and Electronic Control Director.	Internal\Senior	1:15
Information Technology Director (CIO).	Internal\Senior	2:30
Director General	Internal\Senior	2:00
Head of Single Window Program.	Internal\Senior	2:00
Internal Control &Inspection Director.	Internal\Senior	1:15
Quality Management Director.	Internal\Senior	1:45
Head of ASYCUDA World Division.	Internal\Middle	1:45
Head of Customs Intelligence Division	Internal\Middle	1:15
Expert Customs Measures &Business analyst	Internal\Middle	2:00
Head of Post-audit Division.	Internal\Middle	1:00
Strategies and Institutional Development officer.	Internal\Operational	2:15
E-government Division officer in Jordan Customs.	Internal\Operational	2:20
Systems Analyst in ASYCUDA World Division.	Internal\Operational	2:45
Post-audit officer.	Internal\Operational	2:00
Risk Analyst	Internal\Operational	1:00
Staff Member in the Audit Bureau.	External\ Government entity	1:00
IT ASYCUDA Expert from United Nations Conference on Trade and Development (UNCTAD).	External\ International organization	3:15
Head of Syndicate of Clearance Companies and Transport of Goods.	External\ Private sector	2:00
Member of Jordan Chamber of Commerce.	External\ Private sector	0:45
TOTAL		**34**

Data analysis includes identification of issues and development of themes from the transcripts, documents and notes. Documents that were collected involve annual reports, strategic plans, Customs Journal, reports, publications, instructions, notifications, circulars, regulations, laws, daily press reports, meeting minutes, results of surveys, guides of work, international reports, and many others. In addition, observations in Jordan Customs cover the work processes through ESW implementation and how it handles customs transaction, and screenshots of ESW system. Researchers later review literatures to explain the themes. Hence, the findings of this study are not a priori. The researchers make sense of the data and explain the findings accordingly.

FINDINGS AND DISCUSSIONS

This section presents findings of the empirical study in Jordan Customs Department. This includes analysis and discussions in respect to the challenges in ESW implementation and actions taken by Jordan Customs to overcome these challenges.

IT Infrastructure

The main challenge in ESW implementation is related to the gap in the level of e-readiness and IT infrastructure between Jordan Customs and other concerned institutions, and the variation in software and applications used in each entity. The findings show that Jordan Customs has a very advanced IT infrastructure and automation more than other institutions. While Jordan Customs has adequate and advanced IT infrastructure using the latest software and technologies, others lag behind and have obsolete technologies. In addition, there is a lack of a unified database, as well as a variation in hardware, software, standards, and applications used in different institutions which causes incompatibility between applications, and make it difficult to exchange information among them. Previous studies (Gil-Garcia et al. 2008) noted that the implementation of collaborative e-government initiatives such as one-stop-shop projects are usually facing barriers in incompatibility between software and database, non-unified data, incongruous data definitions, and conflicting information distribution channels among the systems components of different institutions.

The results of this study provide further explanation to address this issues that the implementation of ESW by engagement of all authorities involved in customs transaction processing to use of single system (ASYCUDA World System) in order to complete all measures from all concerned authorities is an appropriate approach to bridge the gap of e-readiness and overcome the technical obstacles and variation between institutions. The IT Director elaborates:

> When we studied the procedures related to the implementation of the single window, we found that the model of bringing together all agencies under one system was the most suitable to success the project; because the e-readiness of some other agencies such as the Ministry of Agriculture was not of the level of its counterpart in Jordan Customs, and because each agency had its own software and applications, it was consequently difficult to compatibility among all of these systems, so all these agencies were incorporated to the ASYCUDA system so as to make the exchange of information more efficient.

The director of ESW added to this point that Jordan Customs improves the human and e-readiness infrastructure of other authorities involved in ESW implementation by providing them with technical support. He said:

> We worked towards improving infrastructure and empowering the agencies involved with us as we supplied them with equipment and computers, servers and printers. And for almost a year, Mrs. Hanan Al Mohtaseb and other employees from the IT directorate helped them on how to program their needs and requirements at the system and ensuring the work continuity and the success of implementation.

System Integration

Findings show another hurdle faced the implementation of ESW is the lack of integration between ASYCUDA system and other operating systems that were implemented earlier in the Jordan customs. There were several systems operated in each Customs center separately with various divisions and departments. The clients have to visit each division separately in multiple physical locations, and fill out several forms for each division, even though these forms request similar information which consequently will end up in providing a bad or delayed services. This is in line with Aman and Kasimin (2011), Lam (2005) who asserted that the lack of systems integration is among the main challenge of e-government projects.

To overcome such systems integration hurdles, Jordan Customs carried out several integration projects between ASYCUDA system and other subsystems were operated separately. These subsystems became embedded within the components of ASYCUDA system. Most interviewees emphasized that this step of systems integration contributes to enhance the implementation of ESW effectively. It allows the clients to submit all required information and documents via one platform without shifting from one system to another or the need to fill additional documents or repeating data entry into other systems, or waiting until one division finish and then another starts the processing. As a result, the systems integration supports the implementation of ESW in terms integrate the Customs operations at different levels and connecting them with each other to provide an integrated services and information needed by the service recipients via a single point entry, avoid the duplication in data entry, decrease the number of documents and signatures required to complete transactions, eliminate geographical barriers, simplify procedures, reduce red tape which consequently contributes to meet the expectations of service recipients about improve service delivery, save time and cut down the costs. One officer in e-government division said:

> the integration of the sub systems- or let's call them the supporting systems- into the ASYCUDA system indeed contributed to address the drawbacks of single window and making the ASYCUDA the core system for all customs operations without shifting from one system to another and without the need to submit additional documents or repeating data entry into other systems. I can say this process in itself constitutes a step forward to single window implementation in terms of connecting the clients with all operations of the department in one platform and meeting their expectations in improving the level of services provided by customs. There is no need now to transfer the transaction manually from the reception to the inspection and accountancy, and each time data is reentered on a separate system and signatures and queues waiting for hours. All procedures are now in one system and this in turn met the demands of clients to a great deal and shortened the cycle time and saved a lot of effort and cost.

Internet Infrastructure

The findings show that the internet infrastructure was one of the serious challenges faced ESW implementation. The director of telecommunications and electronic control described the ASYCUDA as a "greedy" system which requires a bandwidth internet infrastructure. Interviewees noted that the developments that introduced on ASYCUDA system such as systems integration have increased the number of users which led to increase the load of internet network infrastructure. The internet networks were operating in Customs Department could not accommodate this development in ASYCUDA. In addition, most of

Customs centers are operating in the rural and border areas where a weakness of internet connectivity can caused network failure and disconnection. This point has been highlighted by Krishnan and Teo (2012) who affirmed that whatever the public organizations have a sophisticated IT systems, the implementation of these systems would be futile in achieving the e-government goals unless they have an adequate internet infrastructure.

In order to overcome such problem, the Customs Department improved its network infrastructure by upgrading the speeds of internet connection throughout customs centers, as well as establishing a reservist internet network from two separate internet providers to ensure sustainability of the connectivity. This development transformed the challenge of internet network infrastructure to be one of the success elements of ESW implementation, so ensure the sustainability of service delivery in effective and fast manner and avoid the delays of transactions treatment. The director of telecommunications and electronic control added:

> We reached a radical solution for the problem by means of increasing the speed of communication lines between the headquarters and other customs centers to reach 4mbit/sec. and to avoid interruptions that happen for reasons outside the control of customs we also established a supporting network with a speed of 4MB. So there are two networks for communication for all customs centers from separate suppliers; ZAIN and ORANGE, so that if one is interrupted the other will be operated with high speed to ensure no delay in completing the transactions and fast response in getting the service. Imagine that at one stage we were not able to benefit from the system because of the slow communication lines! But we moved into a stage where the communication lines no more constitute a problem but on the contrary the lines became a supporting factor in the success of single window.

Change Resistance

The findings show the change resistance is among the main obstacles that hinders the progress of ESW implementation. Most interviewees indicate that the staff's resistance to change has a significant negative influence on ESW such as delaying the deployment and expansion of implementation, or halting the planned projects. One e-government division officer comments, .."The implementation of ESW in Sahab Center has been suspended for more than eight months because of some employee from Ministry of Agriculture resistance to it".

According to director of ESW, the change resistance is not restricted to Customs officers, rather it was considerable among staff of other entities at different category of employees. The dramatic transformation towards implementation of new technology in itself is often facing resistant to change, particularly when it comes to replace the old procedures and actions with new automated systems (Nkwe 2012). According to expert customs measures, this is due to there are wrong perceptions and beliefs among officers about new technology. He argues that some officers fear of introduce new technology in their work, while others feel they will lose their power, and their actions are constantly monitoring. He said:

> The implementation of single window for all procedures is practically a change which face resistance because attitude of employees and even managers is that the customs declaration is completed manually and that made them feel some power, but everything became now automated and their performance is

exposed in addition to the fact that tendency to technology in itself is resisted so it is normal to see some challenges of resistance in the beginning of implementation… The beginning was very difficult, the automation was difficult issue for the majority of staff. We faced through our field visits some employee afraid of keyboard or mouse! This issue hinders the work.

Head of Customs intelligence division provides further explanation that the Jordan Customs overcome such challenge by training and increase the awareness among officers about the benefits of ESW. He explains:

Resistance gradually been overcome through training programs for all employees. There were many training programs for all levels of management as well as other partners of government institutions. In addition to awareness campaigns carried out by Customs of the brochures and announcements about single window and its features for service recipients and even to the staff themselves.

This finding coincides with Al-Naimat et al. (2013) who noted that the training reduces resistance to change. The Director of IT added to reduce change resistance, the Customs has engaged all staff from different institutions in the implementation process and planning to ESW. He emphasizes that such engagement is essential for success ESW project to ensure an effective change management, transfer the knowledge, overcome the administrative obstacles, and eliminating the resistance to change. An IT expert from UNCTAD comments on this point:

I witnessed a lot of support but the greatest of them was that no one objected on the application process, in other countries problems are not technical but they used to object to the implementation because they were not consistent or contradicts their interests so to speak. But the situation in Jordan is different as there is participation from all parties in the development process then the development is continued.

Documents revealed that the Customs managers usually conduct periodic meetings with staff to discuss previous and current work actions, and take their suggestions and ideas to improve the work process and inform the senior management about it. Moreover, the staff participate in system development process by surveying their perceptions and satisfaction about ESW in their work environment. According to systems analyst in ASYCUDA division, this process contributes to enhance the officers' acceptance to use of new technology in their work and decrease their resistance to change.

Another challenge related to change resistance is that some managements of other institutions were not interested in collaboration with Customs and they have rejected to participate in the implementation of ESW project. Head of ESW program stated that the top management of Jordan Customs plays a key role to overcome such obstacle by supporting the initiative from senior authorities to force other government institutions to participate in ESW. He said:

In fact, the single window project is a big one and a new topic that needed lots of effort to change the culture and mentalities of the employees and obtain the cooperation of other agencies which used to reject cooperation sometimes. So we were in need for the support of the higher administration who in turn received the support of the cabinet to force other agencies to cooperate.

In addition, circulars issued by Customs indicate that the top management has a key role in forcing the staff to accept new technology in their work by issuing instructions stress on the necessity of strict obligation with implementation. Head of ASYCUDA division considers the support by senior management as one of the key success elements to break down the resistance to change. She said: ..“One of the reasons for the success of implementation is support from the Director-General personally. The Director-General was imposed the implementation by issuing instructions for all employees and culpable to adhere to implement this system”.

Several studies (Al-Azri et al. 2010; Al-Mashari 2007; Heeks 2002b; Hussein et al. 2007) considered the commitment and support of top management as an imperative element to overcome change resistance issues in e-government projects.

Computer Skills

The findings reveal that the lack of IT skills is one of challenges to ESW implementation. The interviews indicate the implementation of ESW through ASYCUDA system requires having a skilled staffs who are familiar with ASYCUDA system to perform their actions on such system. However, the staffs from other institutions are not-qualified in dealing with new system in their work, as well as there is a variation in IT skills and academic qualifications among staffs of different institutions. For instance, Head of ASYCUDA division noted that the qualifications of most brokers (Clearance agencies staffs) are less than secondary school, and this is similar to employees in Ministry of Agriculture. A systems analyst in ASYCUDA division commented:

Computer skills are among challenges we faced in the beginning, because the employees of other institutions are not familiar with use of ASYCUDA system, they used to work on their own systems in their institutions. Besides that, users of ASYCUDA are not one segment, but there are a number of segments dealing with the system such as traders, brokers and employees form other government institutions and those are different in their academic qualification and computer skills and each segment of those is considered complementary for the others in terms of working on the system so that if any party is no has computer skills or not able to work on the system the other party cannot replace it.

Many studies (Al-Azri et al. 2010; AL-Naimat et al. 2013; Khan et al. 2010; Madzova et al. 2013; Ndou 2004) emphasized that IT skills is among a critical issues of e-government initiatives implementation in developing countries.

In order to overcome this issue, Customs department promoted the computer skills of all Customs officers by organizing training workshops on computer applications. The operational officers who are working on ASYCUDA system were asked to acquire the International Computer Driving License (ICDL) to give them computer skills needed to perform their work on the system. In addition, Customs Department trained staffs of other agencies including business sector, clearance agencies, and other government institutions that involved in ESW implementation. According to IT Director, the number of training courses in the first years of implementation amounted more than 1,800 courses. An IT officer indicated that these training courses contributed to bridge the gap in IT skills among ASYCUDA users, and improve their competency which resulting in the effectiveness of ESW implementation in the successful and smooth manner. He said:

> We worked towards qualifying not only our employees but clients and staff of other agencies as well, a fact that can be considered as one factor for the success of the single window and its efficiency because the users are qualified and know how to handle the system.

Jordan Customs sought also to educate the clients about using the ASYCUDA system by several ways. Through observations, that there are user guides, tutorials, and Frequently Asked Questions (FAQ) published on the Customs website explain step by step how to use ESW through ASYCUDA system, and illustrate the symbols and fields of Customs declaration on the system. Besides, the Customs announce in social media such as Facebook, and distribute a printed publications and brochures that explain the benefits of ESW. An expert customs measures added that the Customs Department aims from these publications to diffuse the awareness about e-service provided by ESW and encourage the clients to utilize it. When he said:

> We seek through our website and publications to reach as far as possible of our clients in anywhere, in their offices, even in their houses to give them an idea and further awareness about our services to empower them recognize the benefits of our services and how they can use it so as to motivate them to make use of it.

Legislative and Regulatory

The findings show that the variation of legal and regulatory requirements, and lack of a unified standards required to transactions processing is among a critical challenge to ESW implementation. As a matter of fact, the Customs transaction processing requires enforce many different laws and regulations of other government entities such as Standards and metrology Act, the Food and Drug, Jordan Nuclear Regulatory Commission and many others. However, the interviews revealed that there is a lack of a unified regulatory and legal requirements needed to complete transactions processing among government entities. Moreover, there is duplication in procedures and overlapping in tasks and responsibilities among concerned government institutions involved in the Customs transactions processing. Thus, this hinders the implementation of ESW successfully, and causes duplication in the measures such authorizations, permits, laboratory testing, and licenses required to the transactions from other authorities which in turn consumes time, efforts and costs for both government entities and service recipients, as well as causes confusion in transaction treatment. According to one officer who involved in ESW implementation:

> One of the problems that we faced in the first stages of implementing the single window is that the clearance paperwork requires approvals and tests from more than one government agency and this caused problems and delay in completing the clearance process. We faced cases where JISM approved certain goods but the same goods are rejected by JFDA. Such cases put us in awkward situations as who is the real competent agency for admitting such goods.

To address this issue, the Customs Department signed a Memorandums of Understanding (MoUs) with other institutions involved in customs transaction processing. The purpose of these MoUs is improve cooperation and standardize procedures within ESW framework, particularly for management, operational coordination, and sharing-information process in order to align with international standards, eliminate the replication in measures, save the costs, and reduce release time of goods. By review a copy of these

MoUs, it stated that: Jordan Customs assume administrative supervision of the actions carried out by all government institutions involved in customs transactions processing, strengthen exchange information between all concerned institutions that participate in ESW, and adoption of ASYCUDA system as a tool to facilitate exchange information among all concerned authorities. Interviewees stated that these MoUs contributed to eliminate the duplication of procedures and unify regulatory requirements, reduce the time of transactions processing and simplify the procedures. As General Director of Customs Department said:

> We have signed MOUs with all agencies involved in the single window to regulate the work to ensure the success of implementation of the single window. Through these MOUs, we defined the requirements of each agency working with us in the clearance process in terms of approvals and tests for each type of imported goods so that each agency becomes responsible for clearing certain types of goods to avoid duplicity in required approvals such as agricultural products which need the approval of the Ministry of Agriculture. Such products needs no more be tested BY JISM after the MOU, and this in fact balanced between the requirements of other agencies in a way that ensures such paperwork is approved by the competent agency and at the same time cut down the time release and provide our clients with more facilitations.

The findings also show that the Jordan Customs and other institutions established a senior steering committee to overcome the challenges face ESW and support implementation. This committee headed by Director General of Customs Department and the membership of the General Managers other concerned authorities. The tasks of this committee is to follow up the implementation and improvements, overcome the obstacles, simplify the procedures and enhance the coordination, aligning between the goals, and setting the plans which in turn contributed to success of ESW in simplifying the procedures and reducing the time of transactions treatment. This point was expressed by some interviewees, for instance Director General of Customs Department said:

> A steering committee was formed made of the director general of JISM, the undersecretary of the Ministry of Agriculture, the Director General of JFDA, the Audiovisual Commission, and Telecommunication Regulatory Commission; all those are members of the committee chaired by me the director general of customs. This committee is assigned with drawing the outlines and the policies and plans for implementing and developing the work of the single window and simplification of procedures, and aligning between the objectives of all government parties in addition to discussing the electronic exchange of information.

Head of ASYCUDA division also added that:

> There is a steering committee for the single window on the level of directors general of agencies related to cleaner process. This committee convenes on regular periods and follows up on the cooperation, the hurdles in the face of implementation and examines the improvement opportunities. Because it is a high level committee, it is of strong authority to support the success of the implementation of the single window as their decisions are binding to all employees and officials with view to decrease the time release.

Furthermore, interviewees mentioned that the Jordan Customs and other authorities established a follow-up team which comprises staff from all concerned entities. The mission of this team is to follow up the resolutions of steering committee decisions, and enhance the coordinating between all parties. Head of ASYCUDA division who is one member of this team affirmed that the efforts of team work resulted in standardization of information required to customs transaction to be in line with international standards, and reduce the duplication in data entry which led to save the time and effort. She commented:

> The working team and for a period of more than three months met twice a week, and each party has to define its requirements from the trader in terms of information that must be submitted. Then we issued the standard data set and Jordan was the first Arab country to do that, and we requested the WCO data model to be modified accordingly. So the customs declaration on the system became more comprehensive and meets the informational requirements of other agencies! This is also considered an advantage for the trader in terms of submitting the information one time only and to one side only where each agency takes the part that is related to them, thus this provided more facilitation to the trader and other agencies.

The efforts of follow-up team contributed to improve the international data model standards which enhanced the international reputation of Jordan globally. As mentioned by USAID report (2012):

> The Jordanian single window (JSW) data set was mapped to the World Customs Organization (WCO) data model. There were a number of Jordan specific requirements, particularly in the area of export and transit, not present in the WCO data model. To correct this discrepancy Jordan prepared 146 Data Maintenance Requests (DMR) to modify WCO Data Model Version 3 to meet Jordan, and potentially the requirements of other nations. In March, Jordan Customs was informed that all Jordan DMR's were approved and incorporated into Version 3.1 of the WCO Data Model. This is a significant success to Jordan as it is the first time an Arab country has made a major contribution/impact to the international standards.

In addition, the findings indicate that the integrated risk-based inspection approach has been adopted in ESW implementation to eliminate red tape and duplication of inspection goods process, and standardize the procedures. From interviewees' viewpoint, an integrated risk-based inspection achieves many advantages for both government agencies and service recipients. They emphasize that this approach identifies a single competent agency responsible in inspection process rather than the consignments be subject to inspection from several parties. This process contributed in standardize the procedures, and eliminated the duplication of regulatory requirement of transactions, and save the time and costs to service recipients. It also determines the responsibility of each authority.

Another issue related to administrative challenges that is the conflict in the official working time between Jordan Customs and other entities. For example, the opening hours in some Customs centers are 24 hours, while most of other government authorities are often operating eight hours daily. This makes the ESW initiative unattractive for other authorities as they lack to human resources. However, Director of ESW explains that the Jordan Customs gives a wages for overtime hours in order to overcome this issue and motivate other agencies to join the ESW program. He said:

Among the hurdles that faced the implementation of the single window is that the working hours of other agencies contradicts with those of customs especially in customs centers, so customs paid the employees of other agencies overtime to motivate and encourage them to work under the single window.

Another legislative challenge is privacy and confidentiality issues. The findings show that the information related to traders is protected by law, which means that each party of stakeholders whether internal such as an employee or external like a government entities or clients cannot see all information because of privacy and confidentiality issues in accordance with the Customs Act. Therefore, this issue restricts information sharing between Customs and other authorities. However, Jordan Customs amendment its regulation to maintain confidentiality and privacy while ensuring exchange information with other government authorities. Article No. 68 of amended Customs Act No. 20 of 1998 states that: "Other than concerned parties or their representatives are not allowed to access the customs declarations except for judicial or competent formal authorities"

According to Head of ASYCUDA division, all screens of ESW have been designed to provide information for all parties in accordance with the Customs regulation to ensure that the exchange of information is supported by a legal framework that maintains privacy, confidentiality, and security. Table 2 summarizes the analysis and discussions of the findings.

Table 2: ESW challenges and how to deal with it.

CHALLENGES	HOW TO DEAL WITH CHALLENGES
IT infrastructure	• Engagement of all authorities involved in customs transaction processing to use of single system (ASYCUDA World System). • Technical support.
System integration	• Integrate ASYCUDA system with other subsystems that were operated separately.
Internet infrastructure	• Upgrading the speeds of internet connection throughout customs centers. • Establishing a reservist internet network from two separate internet providers to ensure sustainability of the connectivity.
Change resistance	• Training. • Increase the awareness among officers about the benefits of ESW. • Engagement the staff from different institutions in the implementation and planning process to ESW. • Top management commitment to the implementation.
Computer skills	• Training. • Educate the clients through website, social media, printed publications and brochures.

Legislative and regulatory	• Memorandums of Understanding (MoUs).
	• Establishing a senior steering committee.
	• Establishing a follow-up team.
	• Adopting an integrated risk-based inspection approach.
	• Financial support.
	• Amendment the regulations to maintain confidentiality and privacy while ensuring exchange information.

IMPLICATIONS

The implementation of ESW projects in public organizations are often involve many complex processes and challenges (Bukhsh & Weigand 2012; Pardo et al. 2010; Scholl et al. 2012). This study proposes to understand the challenges of ESW implementation in public organizations using a case study of Jordan Customs. For researchers, this study contributes to enrich the literatures ESW implementation (Askim et al. 2011; Chen & Chou 2015; Dong et al. 2014; Pardo et al. 2010). Specifically, the findings of this study confirm to the previous studies (Askim et al. 2011; Gil-Garcia et al. 2008) that the challenges of ESW implementation are often related to incompatibility between IT infrastructure among the systems components of different institutions. Another important issue is the lack of systems integration (Aman & Kasimin 2011; Lam 2005). This study shows that the establishing a senior steering committee, and follow-up team is critical to overcome the obstacles facing ESW implementation, enhance coordination and alignment the goals between all concerned authorities which would contribute to success of ESW implementation. Moreover, availability of regulations that maintain confidentiality and privacy while ensuring exchange information is an imperative to support ESW implementation.

For practitioners, this study provides guidelines for future ESW implementation strategy in public sector organizations. The implementation of ESW has been identified as an aspirational approach in the strategy of national Jordanian e-government project to achieve e-transformation in the future at all Jordanian government institutions (MOICT 2014). This requires future strategies to ensure proper implementation of ESW. This is essential particularly in the Jordan context as a developing countries which struggles with a lack of resources and experiences to handle this new trend of e-government initiatives.

CONCLUSION

This study highlights on the challenges facing ESW implementation, and provides understanding on how public organizations overcome such challenges using Jordan Customs case (Table 2). The findings revealed that the challenges of ESW implementation in Jordan Customs are IT infrastructure, system integration, internet infrastructure, change resistance, computer skills, and legislative and regulatory issues. Challenges such as legislative and regulatory can be overcome through MoUs, establishing a senior steering committee, follow-up team, adopting an integrated risk-based inspection approach, financial support, and amendment the regulations to maintain confidentiality and privacy while ensuring exchange information.

This study provides a basis for further thought on the challenges faced by developing countries in ESW implementation. Despite there are many challenges of legislative and regulatory, lack of IT infrastructure and skills, risk management approach

may achieves many advantages in ESW implementation for both government agencies and service recipients. Therefore, future research in ESW implementation should investigate how risk management approach could assist public organizations in improving their performance to enhance public services delivery and the efficiency in their operations.

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