# Assessing the Success of a Custom's Automated Information System: The Case of Belize

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#### **Abstract**

Various researches have been conducted on Information Systems success models, however, not plenty of information can be represented about the conceptualization and measurement of the CUSTOMS ASYCUDA WORLD AUTOMATED SYSTEM. The board Information System are basic among the distinctive work puts around Belize. What is vital is knowing whether they are being utilized productively or potentially. The organizations and companies could demonstrate that they are content to actualize the assets expected to improve execution, however, what is missing is the readiness to prepare the employers on the most proficient method in utilizing the product gave to complete the work and accomplish their goals. This paper is concentrated on the Information framework the Belize Customs and Excise Department utilizes. It will decide if it is being utilized to its full limit and in the event that it is helping the organization's apparent net advantage. Furthermore, it will give distinctive ramifications on the best way to utilize the data framework and whether it is simple. Exploring and researching on the framework that best describes the ASYCUDA WORLD and the employees working alongside with the data framework assisting in preparing perceived net benefits. Finally, it will display the restrictions of the investigation that ought to be taken in future research.

**Keywords:** CAWIS; information systems success models; perceived net benefits.

#### Introduction

According to the Belize Customs & Excise, the job of the Belize Customs and Excise Department is to create and execute an incorporated arrangement of approaches and techniques that guarantee expanded wellbeing and security. It is the perspective of Custom organization that authentic global exchange is a fundamental driver for financial success (Mckenzie, 2019). They are completely mindful of the significance of eventually accomplishing advanced customs whereby extra mechanization and upgraded electronic action would decidedly add to the improved coordination of our Customs & Excise, and in this manner at last change the manner in which traditions will work (Trapp, 2019). To do this in an increasingly improved manner, there was the presentation of ASYCUDA World. The Customs division has begun to implement the system within the Philip Goldson International Airport in addition to Benque Viejo and Santa Elena Border Stations.

The principle goal of this paper was to decide the achievement of the data framework, ASYCUDA, in the Customs and Excise Department. To decide this, the DeLone and McLean (2003), Information System Success show was utilized. This is tried through the data information quality, system quality, Self – Efficacy, Service Quality, User Satisfaction and Perceived Net Benefits. ASYCUDA WORLD should help Customs Administrations' modernization and extract changes, by supporting both assistance of real exchange and productivity of Customs leeway controls. The improvement included Traveler Customs Declarations just as obligation installments at these stations' Customs Cashier. It Increases capacities for book-keeping, post-leeway review, measurements and data the board. Simpler assortment of information at territorial and universal dimensions. Better and quicker financial basic leadership. The framework protects the total inclusion of the leeway procedure and incorporates the inherent ability to bolster national explicit prerequisites or potentially visit guideline changes. It can adapt to various authoritative structures, hence producing money related economies of scale. In this paper we will take a glimpse at the way different organizations comparative our own utilization their data framework and draw derivations on how we could to some degree adjust their practices.

This examination is centered on how the customs and excise office could figure out how to utilize ASYCUDA WORLD more proficiently. The utilization rate will help to decide how well the clients know to function with the product and if there is preparing accessible for when they need it. As a creating nation it demonstrates that we do have an enthusiasm for climbing in the mechanical time. With a tad of direction and activities then we will be well on our approach to where we might want to be. Additionally, we should be made mindful of the distinctive blemishes we may have inside the organizations themselves as it identifies with how they set up the specialists. The destinations of this examination are to investigate the sort of data framework that is set up at the Customs & Excise Department, utilization rate viability of the framework to accomplish authoritative objectives. Likewise, to look at the data framework that Customs has one in another creating nation to test viability and importance. The last target is to give suggestions that would be helpful and valuable for them to take on. This examination is planned to demonstrate how data frameworks can be connected with authoritative execution and yield better outcomes.

#### **Literature Review**

#### Theoretical foundation: Information system success

The ASYCUDA (Automated System for Customs for Customs Data) is a particular type of IS (Information System). ASYCUDA is a computerized customs management system that handles the procedures of foreign trade (Janaka & Suwendrani, 2009). In this section, we are analyzing the creation and the success of an ASYCUDA based on prior research and studies of this type of IS success.

#### The Success of the ASYCUDA IS

DeLone and McLean (2003) stated that the dependent variable, and IS success and effectiveness could not be evaluated to the accuracy; there is also little relevance in calculating variable such as user participation to the IS. DeLone and McLean developed a model to measure the level of effectiveness of IS on the users of these systems. The DeLone and Mclean IS successes model includes; System Quality (SQ), which measure the technical success of these information systems, Information Quality (IQ), which measures the actual success of the IS. Use and User Satisfaction, measures the actual use of the IS and the individual satisfaction

while using it. The last two categories of this model are the individual and organizational impact which measure the effectiveness of the IS (DeLone & McLean, 2003).

In any country, customs play an important role in the facilitation of international trade which aid in the growth of a countries revenue and economy. The customs department uses an automated system called the "ASYCUDA", this IS help with the processes associated with the clearance of cargos (Dias, 2009). During the 1980s, developed countries design their own automated system for their customs department, while the UNCTAD (United Nations Conference on Trade and Development) developed the ASYCUDA for developing countries (Dias, 2009). According to Dias (2009), the number of countries who use ASYCUDA has risen to 90 countries, however, these country automated systems all operate at different stages and level. Countries implement ASYCUDA to help reduce customs corruption and to help in the facilitation of international trade, although it is yet to be proven as effective against these (Chamnan, 2010). According to Chamnan (2010), ASYCUDA reduces the opportunity of customs officers accepting bribes

The implementation of an ICT (Information and Communication Technology) reduces transaction cost and minimize the difficulty of understanding international trade (McMaster & Nowak, 2006). An automated system is also implemented to reduce the obstacle that comes up during clearance in the export process (Krumeich, Bredehöft, Werth & Loos, 2014).

Information Systems is quite beneficial when the rate of international trade increases, especially when it comes to the increasing number of paperwork that is associated with the increase of trade transactions (McMaster & Nowak, 2006). According to McMaster & Nowak (2006), the main factors that affect the success of an IS is the technical skills that each individual have, the countries internet usage and the price of the internet.

#### ASYCUDA Success in Developing Countries

Sri Lanka was introduced to the ASYCUDA in 1993, which was updated to ASYCUDA++ in 1998. This system reduces the time spent and error of manually filing each report, and also allows workers to work inside and outside the office; this can increase the efficiency of the work being produced at the department (Janaka & Suwendrani, 2009). According to Hamidreza & Masumeh (2016), the main factor that can affect the effectiveness of implementing an automated system in the customs department is the size of the organization and the level in which the organization is operating at. IS can lead to the reduction of transaction costs, increasing competitive advantage and the development of exports.

To reduce problems that occur when exporting products Germany created an automated customs system called the ATLAS (Automated Tariff and Local Customs Clearance System) (Krumeich, Bredehöft, Werth & Loos, 2014). The ATLAS system handles the cross border movement of goods that were usually poorly handled manually. Similar to the ASYCUDA the ATLAS system also lowers the total ownership cost, Increase usability, increase security and also increase integration.

Instead of adopting the ASYCUDA system, Kenya adopted the SIMBA IS; this is because they decided to stop doing pre-shipment inspections (Kireeva & Buyonge, 2008). The ATLAS system has limited functionality when compared to the ASYCUDA++. Since this is the case, Kenya has suffered from inefficient and ineffective management of the ports, which has caused many delays. Since Africa lack most of the equipment needed for inspection purposes. Overall Kenya customs department struggles large delays caused by pre-shipment delays, therefore if Kenya customs department is not modernized then these problems will not be solved and the effectiveness in this department will not increase (Kireeva & Buyonge, 2008).

Similar to other authors, Kireeva & Buyonge (2008) also that the customs department is at a major risk of corruption. The higher the level of automation in the customs department the more the level of efficiency increase which will decrease the risk of fraud, and the reduction of clearance time. The ASYCUDA++ is more advanced than the previous versions of ASYCUDA and it also supports electronic data interchange (Kireeva & Buyonge, 2008).

In Latvian, they use the ASYCUDA ++ automated customs system which is based on the DOS operating system which is now obsolete and cannot provide the needed requirement for the new requirements of customs information systems because of its inflexibility (Ketners & Elmane-Helmane, 2012). After the ASYCUDAM++ there was the ASYCUDA World. There is 22 customs checkpoint located within the

ASYCUDA World for customs clearance (Seng, 2014). With government adopting IS to increase the growth and productivity of a country (Ojedokun & Moahi, 2006).

The ASYCUDA system is adopted by over 70 developing countries to help manage the corruption at the tariff borders, increase the speed at which goods are being transported and reduce transportation costs (Ameen & Ahmad, 2012). The result from a study conducted in Cameroon proved that the implementation of the ASYCUDA system does, in fact, reduce corruption and increase revenue and reduce clearance time (Cantens, Raballand & Bilangna, 2008).

The ASYCUDA allows all the customs procedures to be automated, these procedures are more efficient and productive. However, the downfall to this simplified procedure is that it created a large distance between the customs officials and the users. Without this bond, there is no trust built and little to no face to face communication between the workers. The system does offer security and a more realistic image of the customs clearance field (Cantens, Raballand & Bilangna, 2008).

# **Research Methodology**

The DeLone and McLean model constructed is primarily used in multiple type of research in connection to the Information Systems. DeLone and McLean (2003) stated that the D&M IS Success Model, though published in 1992, was based on theoretical and empirical IS research conducted by a number of researchers in the 1970s and 1980s. The role of IS has changed and progressed during the last decade. Similarly, an academic inquiry into the measurement of IS effectiveness has progressed over the same period DeLone and McLean (2003).

DeLone and McLean's (2003) updated IS success model is detailed to the measurement of the effectiveness and the efficiency of the ASYCUDA WORLD. Consistently, this research is directly in connection that engages a comprehensive model of the ASYCUDA WORLD success model, which identifies that information quality, system quality, complementary technology quality, computer self-efficacy measure, service quality, user satisfaction, use, and perceived net benefit are success variables conducted in the ASYCUDA WORLD.

Upon carefully reviewing the definitions of the D&M IS success model and the success dimensions, and comparing it to the ASYCUDA specified dimensions, and arising to different viewpoints accordingly, we have included the following success dimensions in our hypothetical model.

Information quality, which is highlighted the quality of the ASYCUDA WORLD automated system output (i.e. the quality of the information that the automated system provides) and its usefulness to its users. Information quality has been shown to be an important success factor when investigating overall IS success, especially in the context of web-based systems (McKinney et al., 2002).

System quality, pertaining to the measurement of the ASYCUDA WORLD automated system as a system as it considers performance characteristics, functionality, and usability, among others (McKinney et al.,2002). Accordingly, system quality can be regarded as the degree to which the system is easy to use to accomplish tasks (Schaupp et al., 2006).

Service quality, pertaining to the measurement of the overall support inter-related to the ASYCUDA WORLD automated system and delivered by the service provider. In this context, the success dimension covers aspects such as responsiveness, reliability, empathy, and competence of the responsible service personnel DeLone and McLean (2003).

User satisfaction, which is the accurate demonstration of attitude of an ASYCUDA WORLD automated system of an employee or employees who interact directly with it (Doll and Torkzadeh, 1988). Higher system quality is expected to lead to higher user satisfaction and use, leading to positive impacts on individual productivity, resulting in organizational productivity improvements. DeLone and McLean (2003).

The ASYCUDA WORLD automated system perceived net benefit is in relation to the achievement of a firm's goals and objectives for using the ASYCUDA WORLD automated system and achievement of the users related those goals and objectives from using them.

These perceived net benefits cover principles like job performance, job efficiency, quality improvement, and cost reduction. DeLone and McLean (2003) suggest different players or stakeholders may have different opinions as to what constitutes a benefit to them. Researchers need to clearly and carefully define the

stakeholders and the context in which IS success or net benefits are to be measured (DeLone & McLean, 2003). Additionally, this study focuses mainly on the approach of the employee working with the ASYCUDA WORLD automated system, and usage of the six updated IS success dimensions: information quality, system quality, service quality, system use, user satisfaction, and perceived net benefit.

The two constructs that were added was complementary technology and computer self-efficacy. Complementary technology is assessing knowledge complementarity in both technology and science. This is because their integration is likely to have an increasingly positive effect on innovation productivity and quality. Thus, acquiring complementary knowledge may help extend the fourteen (14) scopes of innovation search and thereby contribute to richer innovations; however, it may also increase knowledge integration costs (Katila & Ahuja, 2002).

Computer self-efficacy understanding the impact of self-efficacy on individual reactions to computing technology computer self-efficacy represents an individual's perceptions of their ability to use computers in accomplishing a task (ie., using a software package for data analysis, writing a mail merge letter using a word processor), as oppose basic component skills (ie., turning on a computer, using a specific software feature such as "bolding text" or "adding a table"). The concept of self-efficacy, while representing a unique perception, is similar to a number of other motivational constructs such as effort-performance expectancy (Porter and Lawler, 1968)

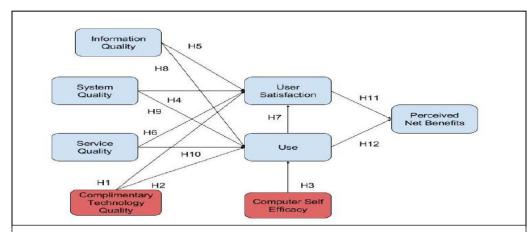


Figure 1. Modified Research Model Developing Countries

This figure demonstrates the six constructs of the DeLone and Mclean model inclusive of the additional constructs, Complementary Technology Quality and Computer Self-Efficacy used to validate this research study.

The success model above has been modified to meet the vital implications of the various changing information systems. DeLone and McLean (2003) state that "quality has three major dimensions: information quality, systems quality and service quality". In the D&M IS Success Model, "systems quality" measures technical success; "information quality" measures semantic success; and "use, user satisfaction, individual impacts," and "service quality" measures effectiveness success.

The theoretical relationship between the ASYCUDA WORLD automated system success variables is based on the hypothesis task reported by DeLone and McLean (2003). As implementation for the success model for it to be improved it requires further development and validation before serving as a basis for the appropriate IS measures. In addition to the study, it theoretically hypothesized the twelve hypotheses:

H1: Complimentary Technology Quality is directly related to positive user satisfaction.

H2: Complimentary Technology Quality has a positive impact on the usage of the ASYCUDA World.

H3: Computer Self-Efficacy and the Use of the ASYCUDA World is positively correlated.

H4: The ASYCUDA system quality will have a positive effect on user satisfaction.

H5: The information quality of the ASYCUDA will have a positive impact on user satisfaction

H6: The Quality of the service will impact the satisfaction of the users positively.

H7: The Use of the ASYCUDA World will enhance user satisfaction.

H8: Information Quality will undoubtedly impact the use of the ASYCUDA World.

H9: The quality of the system has a positive effect on the use of the ASYCUDA World.

H10: Service quality will enhance the use of the ASYCUDA World.

H11: User satisfaction of the ASYCUDA World is positively correlated to the perceived net benefits.

H12: The Use of the ASYCUDA World greatly affect the perceived net benefit.

This Research is based on a quantitative approach that collects numeric data and provides the context of a predetermined approach from the identified variables of interest. The usage of questionnaires conducted by the researchers is to measure the effectiveness and efficiency of the ACYCUDA WORLD that the Belize Customs and Excise Department uses to administer this automated system both by domestic and international trade parties. In measuring the overall success and the validity of the ASYCUDA WORLD between both employers and employees questionnaires were being used. The first fifteen (15) sets of questionnaires were distributed to individuals who work directly with the automated system in the information technology department, and second fifteen (15) set of questionnaires were given to the brokers, agents, and importers who indirectly use this automated system for rendering services to the general public. After gathering this information The DeLone and McLean model will be used to assess the ASYCUDA WORLD.

### Research Environment and Design

The researchers went to the Belize Customs and Excise Department located in Belize City and issued hard copies of the questionnaires to both internal and external users of the automated system of the ASYCUDA WORLD. Both information and data were collected in a punctual manner. Upon collecting the data researchers ensured both parties that the information being conducted and used will be strictly confidential and only for the usage of this research. The questions conducted were closed-ended questions that is geared towards an unbiased approach, and also identifying the effectiveness and the efficiency level success of the automated system the ASYCUDA WORLD.

#### Research Participants

In conducting reliability and validity two types of participants were being used in this research. Those participants were both external and internal of which there were two sets of fifteen (15) respectively. The external participants consist of brokers, agents and importers who indirectly use this automated system for rendering services to the general public. The internal participants consist of individuals who are employed in the information technology (IT) department and directly use the ASYCUDA WORLD on a daily basis.

#### **Construct Measurement**

For the quantitative data to be collected measurement procedures were mostly obtained from previously justified instruments, in order to maintain accuracy in our research information in engaging standards of reliability and validity. The usage of Bailey and Person (1983) seven-item scale with a few alterations to fit in the specific context of the ASYCUDA WORLD information quality construct. Bailey and Pearson's instrument has been approved for accuracy, for its reliability and validity and became the standard instrument in the IS field. Alshibly (2011) was used to measure the system quality to construct a four-item scale. Chang et al (2009)

Service quality construct was measured using a five-item scale. (Balaban et al., 2013; Rai et al., 2002) was measured by a four-item measure all instruments appropriately clarified.

	Table 1. The measurement items for questionnaires	
Construct	Survey Questions	Source
Information Quality	IQ1: ASYCUDA automated system provides information that is exactly what you need.	
	IQ2 ASYCUDA automated system provides information you need at the right time.	
	IQ3: ASYCUDA automated system provides information that is relevant to your job.	Bailey and Person
	IQ4: ASYCUDA automated system provides sufficient information.	(1983)
	IQ5: ASYCUDA automated system provides information that is easy to understand.	
	IQ6: ASYCUDA automated system provides up-to-date information.	
Systems Quality	SQ1: ASYCUDA automated system is easy to use.	
	SQ2: ASYCUDA automated system is user-friendly.	Alshibly,(20
	SQ3: ASYCUDA automated system provides interactive features between users and the system.	11)
	SQ4: ASYCUDA automated provides high-speed information access when needed.	
Complementary Technology Quality	CTQ1: The software on the device (desktop, laptop, mobile device) used to access the ASYCUDA automated system is adequate.	
Quanty	CTQ2: The computer (desktop, laptop, mobile device) you normally use to access ASYCUDA automated system is adequate.	D 11 1
	CTQ3: The speed of the internet connection used to access the ASYCUDA automated system is adequate.	Bailey and Person (1983)
	CTQ4: The computer (desktop, laptop, mobile device) you normally use to access ASYCUDA automated system has a fast and reliable internet connection.	
	CTQ5: I could complete my job using the ASYCUDA Automated System.	
Computer Self- Efficacy	CSEQ1: If there was no one around to tell me what to do as I go using the ASYCUDA automated system.	
	CSEQ2: If I had never used ASYCUDA automated system before.	
	CSEQ3: if I had only the ASYCUDA automated system manuals for reference	Bailey and Person (1983)

CSEQ4: If I had seen someone else using the ASYCUDA automated system before trying it myself.	
CSEQ5: I ask for assistance when having issues using the ASYCUDA automated system.	
CSEQ6: If someone else had helped me get started On the ASYCUDA automated system.	
CSEQ7: If l had a lot of time to complete the job for which the ASYCUDA automated system was provided.	
CSEQ8: If I had just the built-in help facility in the ASYCUDA automated system for assistance.	
CSEQ9: If someone assisted me how the ASYCUDA automated system first.	
CSEQ10: If I had used an information system similar to the ASYCUDA automated system before this one to do the same job.	
SV1: The support staff keeps ASYCUDA automated system. system software up to date	
SV2: When users have a problem ASYCUDA automated system support staff show a sincere interest in solving it	Chang et al., (2009)
SV3: ASYCUDA automated system staff respond promptly when users have a problem	
SV4: ASYCUDA automated system support staff tell users exactly when services will be Performed	
US1: You have a positive attitude towards ASYCUDA automated system.	Seddon and
US2: You believe that ASYCUDA automated system is useful	Yip (1992)
US3:The ASYCUDA automated system has met your expectations	
US4: You are satisfied with ASYCUDA automated system.	
U1: Your frequency of use of ASYCUDA automated system is high	
U2: You are depend upon ASYCUDA automated system.	
U3: You were able to complete a task using ASYCUDA automated system even when there was no one around to tell you what to do.	
U4: You have the knowledge necessary to use ASYCUDA automated system.	Balaban et al., (2013) Rai et al., (2002).
NB1: The ASYCUDA automated system helps you improve your	
	automated system before trying it myself.  CSEQ5: I ask for assistance when having issues using the ASYCUDA automated system.  CSEQ6: If someone else had helped me get started On the ASYCUDA automated system.  CSEQ7: If I had a lot of time to complete the job for which the ASYCUDA automated system was provided.  CSEQ8: If I had just the built-in help facility in the ASYCUDA automated system for assistance.  CSEQ9: If someone assisted me how the ASYCUDA automated system first.  CSEQ10: If I had used an information system similar to the ASYCUDA automated system before this one to do the same job.  SV1: The support staff keeps ASYCUDA automated system. system software up to date  SV2: When users have a problem ASYCUDA automated system support staff show a sincere interest in solving it  SV3: ASYCUDA automated system staff respond promptly when users have a problem  SV4: ASYCUDA automated system support staff tell users exactly when services will be  Performed  US1: You have a positive attitude towards ASYCUDA automated system.  US2: You believe that ASYCUDA automated system is useful  US3: The ASYCUDA automated system has met your expectations  US4: You are satisfied with ASYCUDA automated system.  U1: Your frequency of use of ASYCUDA automated system is high  U2: You are depend upon ASYCUDA automated system.  U3: You were able to complete a task using ASYCUDA automated system even when there was no one around to tell you what to do.  U4: You have the knowledge necessary to use ASYCUDA automated system.

NB2: The ASYCUDA automated system helps the organization save time and costs  NB3: The ASYCUDA automated system helps the organization achieves its goal	Alshibly,(20 11); Tansley et al, (2001)
NB4: The ASYCUDA automated system improves the assessment and training	
NB5: Using ASYCUDA automated system in job increases my productivity.	
NB6: Overall, using the ASYCUDA automated system enhances recruitment and performance management.	

Table 1. Measurement items for questionnaire

#### Sampling and Data Collection

The data for this study were collected from a sample of employees which included Information Technicians, brokers, agents and importers of the Belize Customs and Excise Department. The method of the research sampling is "purposive sampling" which allows the researchers to use their own critical judgment to select suitable individuals for the research sample. Out of over two hundred employees working in the ASYCUDA world, a total of 30 questionnaires were handed out to various employees of the department within Belize City.

In regards to instructing the participants to read carefully on the first page of the questionnaire for reassurance that the responses would be kept strictly confidential and anonymous. This first page is served as a platform in gaining informed consent from the participants. In all thirty questionnaires were returned of which 14 were females and 16 females.

Male participants demonstrated a higher percentage of the completed sample (roughly 53.3%) compared to female participants (roughly 46.7%). 30.0% of the participants were aged 25-35 years. The completed research sample was composed of well-educated individuals, approximately 40.0% of whom were postgraduate students. 43.3% of the participants were mostly experienced in the ASYCUDA WORLD.

#### Sampling and Data Collection

,	Table 2: Characteristics of	the Respondents
Characteristics	Number	Percentage
Gender		
Female	14	46.7%
Male	16	53.3%
Age		
Less Than 25	0	0.0%
From 25 to 35	9	30.0%
Over 35 to 45	12	40.0%
Over 45 to 55	9	30.0%
Older Than 55	0	0.0%
Education		
PhD	0	0.0%
Masters	1	3.3%
Bachelors	11	36.7%
Associates	12	40.0%

High School	6	20.0%
Primary School	0	0.0%
Work Experience		
Less Than 5 Years	3	10.0%
From 5 to 10 Years	2	6.7%
From 11 to 15 Years	12	40.0%
More Than 15 Years	13	43.3%

## The respondents' characteristics are presented in Table 2

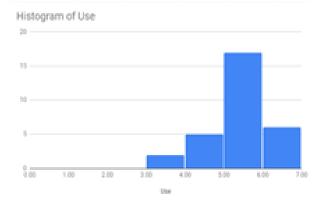
# **Data Analysis and Results**

As an aftereffect of the small sample size, theory testing was impractical so the analysts investigated the information using applied research techniques.

The basic role of the examination was to analyze the utilization and success of the ASYCUDA WORLD information system used by Belize Customs and Excise Department. An exhaustive and top to bottom survey was utilized featuring and underscoring on the use of the ASYCUDA WORLD information system dependent on the DeLone and McLean Model which were disseminated by the four analysts to representatives at the Belize Customs and Excise Department.

The consequences of the issued surveys were shown using histograms and bar charts. To take into consideration functional visuals, the histograms gave a superior correlation of success between the two frameworks utilizing the set-up of the theoretical model.

Figure 1: Histogram of Use

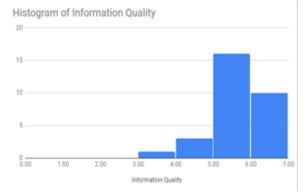


The contiguous histogram demonstrates the normal reactions of officers for the build that estimates utilization of ASYCUDA World.

The normal reaction demonstrates that 94% use this framework to achieve assignments. 17% to some degree agreed, 57% agreed and 20% firmly agreed. Just 6% was uncertain.

We credit this high rate to the way that it is a prerequisite to utilize the frameworks and not for inclination.

Figure 2: Histogram of Information Quality



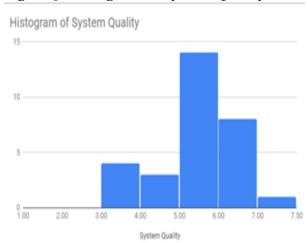
The contiguous histogram demonstrates the normal reactions of employees for the build that estimates information quality.

About 3% was uncertain on the off chance that they agreed or disagreed that the data quality given by ASYCUDA World was not of low quality or low quality. 10% fairly agreed while 53% agreed and 33% strongly agreed it was not poor.

The reaction demonstrates that 3% was uncertain in the event that they agreed or disagreed we can conclude this with the likelihood that possibly the employees

were not pleased with talking about the business or were uncertain.

Figure 3: Histogram of System Quality

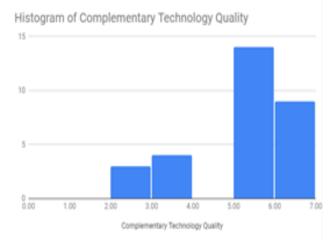


The contiguous histogram demonstrates the normal reactions of employees for the build that measures system quality.

The average agreed that ASYCUDA World system quality is of good standing. 10% of the reaction demonstrates that the users are not completely versed with the product to get the greatest data quality. 47% fairly agreed, 27% agreed and 3% strongly agreed which gives an all-out level of 87%. About 13% to some degree agreed that the data quality was poor.

The reaction demonstrates that 10 % was uncertain if they agreed or disagreed. We concluded this with the likelihood again that perhaps the employees were not open to talking about the business or were uncertain.

Figure 4: Histogram of Complementary Technology

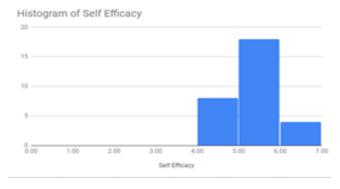


The contiguous histogram demonstrates the normal reactions of employees for the build that measures complementary technology quality.

The normal reaction demonstrates that 47% of respondents agreed, and 30% firmly agreed that the complementary technology which demonstrates solid self-importance with a complete normal of 77%. Just 10% to some degree disagreed and 13% was uncertain.

We characterize this distinction in the assessment of the respondents to the way that 23% of workers have simple web access and high quality PC frameworks.

Figure 5: Histogram of Self – Efficacy



The contiguous histogram demonstrates the normal reactions of employees for the build that estimates computer Self-Efficacy quality.

The normal reaction demonstrates that most of the respondents feel sure using the product. 27% to some degree agreed, 60% agreed, 13% strongly agreed.

We ascribe this to the reality most by far uses the software every day and are as of now open to utilizing the framework.

Figure 6: Histogram of Service Quality

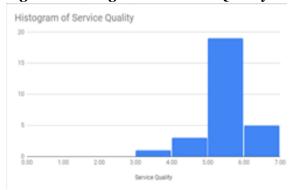
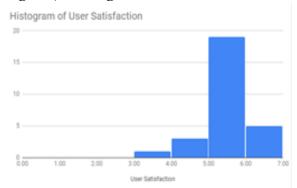


Figure 7: Histogram of User Satisfaction



The contiguous histogram demonstrates the normal reactions of employees for the build that measures service quality.

The normal reaction demonstrates that 96% of the respondents support the service quality. 11% to some degree agreed, 68% agreed and 17% firmly agreed. While just 4% of people are uncertain in the event that they support it.

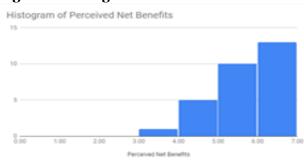
We concluded this to the reality 96% of the respondents utilize the product every day also, have simple access to help Information Technology staff to correct concerns.

The contiguous histogram demonstrates the normal reactions of employees for the build that estimates user satisfaction.

The normal reaction demonstrates that 90% of the respondents were satisfied with the frameworks. 10% to some degree agreed, 63% agreed and 17% firmly agreed. While just 3% was uncertain.

We credit this fulfillment to the way that a greater part of the respondents utilize the framework every day and are content with utilizing the programming.

Figure 8: Histogram of Perceived Net Benefits



The contiguous histogram demonstrates the normal reactions of representatives for the build that estimates perceived net benefits.

The normal reaction demonstrates that 93% of the respondents appreciate some net profit by using the ASYCUDA WORLD in the execution of their work. We ascribe this high rate to the reality that it is a prerequisite to utilize the frameworks and not inclination once more.

Figure 9: Bar Chart of Average Responses

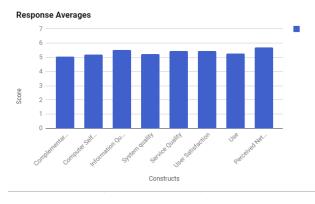


Figure 9 is a bar chart representing the average responses from the respondents that utilize and engages in the ASYCUDA WORLD at the Belize Customs and Excise Department.

The information gathered was used to measure the success of CAIS at the Belize Customs and Excise Department.

The key areas that were researched upon included the complementary technology, computer selfefficacy, information quality, system quality, service quality, user satisfaction, use, perceived net benefit.

#### Conclusion

The research conducted addressed measuring the overall success and the validity of the ASYCUDA WORLD between both employers and employees of the Customs and Excise department in Belize. In order to measure the effectiveness of the Information System, The DeLone and McLean model was used to assess the ASYCUDA WORLD. There were eight variables which highlighted the success of the ASYCUDA WORLD (AW). The variables included: utilization, perceived net benefits, information quality, system quality, complementary technology quality, self-efficacy quality, and service quality and user satisfaction. The findings clearly highlight that if service quality and system quality are improved then the user satisfaction would improve.

Considering that the working environment comes with psychological tactics to ensure the productivity of the employees. If the department would invest in the IS to develop their user license, then more Belizean based users would be able to access the IS all at once. The research highlights how the users see the benefit of the AW IS. However, some investment in internet connection speed, computer peripherals, and software development needs to be done in order to improve the AW IS. If these improvements are done then the users would have a much more positive attitude towards the automated system. In addition, the AW would keep on saving the department more time, resources and allow the users to perform their jobs better.

We recommend the department to invest in their AW to buy the licensing for more users to actively using the software, have more hands-on training in using the IS and gather more technicians to be readily available to assist with the IS. The research could have been more in-depth, however, a major limitation seen while conducting this research was time. Time plays a huge role in conducting any research. However, this research was one that needed more than four months in order to have more accurate results. With an extension of time, the researchers would be able to analyze data from countrywide users. Due to this issue, it became hard to generalize the results gathered.

Another limitation was access to the users; the majority of the participants came from the Belize district department due to the lack of time as mentioned before, and the openness to reveal information. The customs officers and brokers are spread throughout the country of Belize and it is during this time that the research was done is when the customs officer are transferred so it is very hectic for them. Therefore, conducting this research at the beginning of the year rather than after July, limited the number of customs officers and their willingness to provide information. The last limitation encountered was the region/district in which our research was conducted. The different districts have an abundance of certain ethnic groups and cultures which would have created a different result as mentioned earlier. At times, other districts are not given as much resources: computers, network connectivity and technicians as is being done in Belize District.

Our recommendation would be to have more time on your hand when conducting such research, in order to gather a more definite finding. It would also provide us with a broader group of ASYCUDA users. Another recommendation would be to extend the research countrywide rather than to have a focus only on Belize City since there are also brokers and customs officers in other parts of the country.

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# **Appendix**

# Questionnaire I - Effective Usage of the ASYCUDA World

#### **Purpose**

This questionnaire inquires for information about the experience with the ASYCUDA world services, and measuring its effectiveness and efficiency to its various users. The ASYCUDA world has recently updated its automatic system in making it more accessible to multiple users. As a team we would like to measure the use of the service and the effectiveness and efficiency to the users in operation and how it utilizes the goals and the organization's performance.

Please answer the questions in relation to your personal knowledge. Your individual responses to the questionnaire will be strictly confidential.

#### Instructions

This is a survey, not a test; there are no right or wrong answers. Please tick the boxes to mark your answers.

1. Background Information	Response
Please indicate your gender:	Male ☐ Female ☐
Please indicate your age:	<25
Please indicate highest education level attained:	PhD ☐ Masters ☐ Bachelors ☐ Associates ☐ High School ☐ Primary School ☐
Please indicate your working experience:	<5

# Indicate your agreement with each statement by rating it from (1) strongly disagree to (7) strongly agree.

2. Information Quality	DisagreeAgre
IQ1: ASYCUDA automated system provides information that is exactly what you need	1 🗌 2 🗎 3 📗 4 📗 5 🗎 6 🗎 7 🗀
IQ2 ASYCUDA automated system provides information you need at the right	1 🗌 2 📗 3 🔲 4 📗 5 🗎 6 🗎 7 🗀
IQ3: ASYCUDA automated system provides information that is relevant to your job	1 🗌 2 🗎 3 🗎 4 🗎 5 🗎 6 🗎 7 🗀
IQ4: ASYCUDA automated system provides sufficient information	1 🗌 2 🔲 3 🔲 4 🔲 5 🔲 6 🔲 7 🗀
IQ5: ASYCUDA automated system provides information that is easy to understand	1 🗌 2 🗎 3 🗎 4 🗎 5 🗎 6 🗎 7 🗀
IQ6: ASYCUDA automated system provides up-to-date information	1 🗌 2 🗎 3 🗎 4 🗎 5 🗎 6 🗎 7 🗀
3. System Quality	DisagreeAgre
SQ1: ASYCUDA automated system is easy to use	1 🗌 2 🗎 3 🗎 4 🗎 5 🗎 6 🗎 7 🗀
SQ2: ASYCUDA automated system is user-friendly	1 🗌 2 🗌 3 🗌 4 📗 5 🗎 6 🗎 7 🗀
SQ3: ASYCUDA automated system provides interactive features between users and the system	1 🗆 2 🗆 3 🗆 4 🗆 5 🗆 6 🗆 7 🗀
SQ4: ASYCUDA automated provides high-speed information access when needed.	1 🗌 2 🗎 3 🗎 4 🗎 5 🗎 6 🗎 7 🗀
4. Complementary Technology Quality	Disagree
CTQ1: The software on the device (desktop , laptop, mobile device) used to access the ASYCUDA automated system is adequate	1 🗆 2 🗆 3 🗆 4 🗆 5 🗆 6 🗆 7 [

CTQ2: The computer (desktop, laptop, mobile device) you normally use to access ASYCUDA automated system is adequate	1 🗆 2 🗆 3 🗆 4 🗆 5 🗆 6 🗆 7[
CTQ3: The speed of the internet connection used to access the ASYCUDA automated system is adequate	1
CTQ4: The computer (desktop, laptop, mobile device) you normally use to access ASYCUDA automated system has a fast and reliable internet connection	1
CTQ5: I could complete my job using the ASYCUDA Automated System	1 🗆 2 🗆 3 🗆 4 🗆 5 🗆 6 🗆 7
5. Computer Self-Efficacy Measure	DisagreeAgree
I could complete my job using the ASYCUDA automated system	
CSEQ1: If there was no one around to tell me what to do as I go using the ASYCUDA automated system.	1 🗌 2 🗍 3 🗍 4 🗍 5 🗍 6 🗍 7 [
CSEQ2: if I had never used ASYCUDA automated system before.	1 🗌 2 🗎 3 🗎 4 🗎 5 🗎 6 🗎 7 [
CSEQ3: if I had only the ASYCUDA automated system manuals for reference	1 🗌 2 📗 3 📗 4 📗 5 📗 6 📗 7 [
CSEQ4: if I had seen someone else using the ASYCUDA automated system before trying it myself.	1 🗌 2 🗍 3 🗍 4 🗍 5 🗍 6 🗍 7 [
CSEQ5: I ask for assistance when having issues using the ASYCUDA automated system.	1 🗌 2 📗 3 📗 4 📗 5 🗎 6 🗎 7 [
CSEQ6: if someone else had helped me get started On the ASYCUDA automated	1 🗌 2 🗌 3 🗌 4 🗎 5 🗎 6 🗎 7 [
CSEQ7: if l had a lot of time to complete the job for which the ASYCUDA automated system was provided.	1 🗆 2 🗆 3 🗆 4 🗆 5 🗆 6 🗀 7 [
CSEQ8: if I had just the built-in help facility in the ASYCUDA automated system for assistance.	1 🗌 2 🗌 3 🗌 4 🗍 5 🗍 6 🗍 7 [
CSEQ9: if someone assisted me how the ASYCUDA automated system first.	1 🗌 2 🗎 3 🗎 4 🗎 5 🗎 6 🗎 7 [
CSEQ10: if I had used an information system similar to the ASYCUDA automated system before this one to do the same job.	1 🗌 2 🗎 3 🔲 4 🗎 5 🗎 6 🗎 7 [
6. Service Quality	Disagree
SV1: The support staff keeps ASYCUDA automated system. system software up to	1 🗌 2 🗍 3 🗍 4 🗍 5 🗍 6 🗍 7 [
SV2: When users have a problem ASYCUDA automated system support staff show a sincere interest in solving it	1 🗌 2 🗍 3 🗍 4 🗍 5 🗍 6 🗍 7 [
SV3: ASYCUDA automated system staff respond promptly when users have a problem	1 🗌 2 🗍 3 🗍 4 🗍 5 🗍 6 🗍 7 [
SV4: ASYCUDA automated system support staff tell users exactly when services will be	1
7. User Satisfaction	Disagree
US1: You have a positive attitude towards ASYCUDA automated system.	1 🗌 2 🗌 3 🗌 4 🗎 5 🗎 6 🗎 7 [
US2: You believe that ASYCUDA automated system is useful	1 🗌 2 📗 3 🔲 4 📗 5 🗎 6 🗎 7 [
US3:Tthe ASYCUDA automated system has met your expectations	1
US4: You are satisfied with ASYCUDA automated system.	1 🗌 2 📗 3 🔲 4 📗 5 🗎 6 🗎 7 [
8. Use	NeverOfte
U1: Your frequency of use of ASYCUDA automated system is high	1 🗌 2 🗎 3 🗎 4 🗎 5 🗎 6 🗎 7 [
U2: You are depend upon ASYCUDA automated system.	1 🗆 2 🗆 3 🗆 4 🗆 5 🗆 6 🗆 7 [

U3: You were able to complete a task using ASYCUDA automated system even when there was no one around to tell you what to do.	1
U4: You have the knowledge necessary to use ASYCUDA automated system.	1 🗌 2 🗌 3 🗌 4 🗎 5 🗎 6 🗎 7 [
9. Individual Usage	Place a check where appropriate
IU1: How many workers use the ASYCUDA World daily?	2-10
IU2: Is there sufficient computers to access the ASYCUDA World.	Disagree ☐ Agree ☐ Never ☐
IU3: How many hours do you spend on the ASYCUDA world daily?	<10hrs  >13hrs >24hrs
IU4: Do you have access to ASYCUDA automated system outside of the workplace	Disagree ☐ Partially agree ☐ Agre
10. Perceived Net Benefits	NeverOfte
10. Perceived Net Benefits  NB1: The ASYCUDA automated system helps you improve your job performance	NeverOfte 1
NB1: The ASYCUDA automated system helps you improve your job performance	1
NB1: The ASYCUDA automated system helps you improve your job performance  NB2: The ASYCUDA automated system helps the organization save time and costs	1
NB1: The ASYCUDA automated system helps you improve your job performance  NB2: The ASYCUDA automated system helps the organization save time and costs  NB3: The ASYCUDA automated system helps the organization achieves its goal	1

Please return this survey to the person who gave you the form.

Thank you for your participation and cooperation.