Success of a Customs and Excise Department Information System: A Developing Nation Perspective.

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Abstract

Management Information System are common among the different work places around Belize. What is important is knowing if they are being used efficiently and/or if they are being used any at all. The businesses and corporations could show that they are willing to implement the resources needed to improve performance but what is lacking is the willingness to train the workers on how to use the software provided to get the work done and achieve their objectives. Firstly, this paper will focus on what type of Information system a specific company uses; in our case, the Customs and Excise Department, has in place. It will determine whether or not it is being used to its full capacity and if it is helping the company's perceived net benefit. Secondly, it will provide different implications on how to better use the information system and whether it is the system itself that is not suitable for the type of work that the company does or if it is the people working with the information system that need better training on how to work with it. Lastly, it will present the limitations of the study that should be taken in future research.

Keywords: Information system, perceived net benefit

1. Introduction

The Customs and Excise Department of Belize is tasked with the job to provide a well slated set of policies that offer ways on how to increase safety, effective trade facilitation and revenue collection through the borders of the country. To do this in a more improved fashion, there was the introduction of ASYCUDAWorld. The Customs department ASYCUDAWorld Project team has started to work on streamline Passenger Baggage processing through ASYCUDAWorld at the Phillip Goldson International Airport and Passenger Control at both Benque Viejo and Santa Elena Border Stations. What exactly is

ASYCUDAWorld? The primary use of this system is to assist in the compilation of foreign trade statistics in their member States. After an initial evaluation it became quickly apparent that this would require the involvement of Customs clearance offices, and the modernization of Customs clearance procedures, to achieve quality results.

The main objective of this paper was to determine the success of the information system, ASYCUDA, in the Customs and Excise Department. To determine this, the Delone and McLean Information System Success model was used. This tested the information system's system quality, information quality, use, user satisfaction, self-efficacy, and perceived net benefit.

ASYCUDAWorld should assist Customs Administrations' modernization and reforms, by supporting both facilitation of legitimate trade and efficiency of Customs clearance controls. The development included Passenger Customs Declarations as well as duty payments at these stations' Customs Cashier. It Increases capabilities for accounting, post-clearance audit, statistics and information management. Easier aggregation of data at regional and international levels. Better and faster economic decision-making. The system insures the complete coverage of the clearance process and includes the built-in capability to support national specific requirements and/or frequent regulation changes. It is able to cope with different organizational structures, thus generating financial economies of scale.

In this paper we will look at the way other companies similar ours use their information system and draw inferences on how we could somewhat adapt their practices. This study focuses on how the customs and excise department could learn to use ASYCUDAWorld more efficiently. The usage rate will help to determine how well the users know to work with the software and if there is training available for when they need it.

It is important to do research on a topic in this area because, as a developing country it shows that we do have an interest in moving up in the technological era. With a little bit of guidance and initiatives then we will be well on our way to where we would like to be. Also, we must be made aware of the different flaws we may have within the different companies themselves as it relates to how they prepare the workers to use and maintain the resources provided.

The objectives of this research are to analyze the type of information system that is in place at the Customs and Excise Department, the usage rate effectiveness of the system to achieve organizational goals. Also, to compare the information system that customs has to that of one in another developing country to test effectiveness and relevance. The last objective is to provide recommendations that would be useful and beneficial for them to take on. This research is aimed to show how information systems can be linked with organizational performance and yield better results.

2. Literature Review

According to (PRANAB BARDHAN,1997) corruption is an ancient problem. In paper (treatise) on public administration dating back to the fourth century B.C. in India, Kautiliya writes in his Arthasastra: Just as it is impossible not to taste the honey (or the poison) that finds itself at the tip of the tongue, so it is impossible for a government servant not to eat up, at least, a bit of the king's revenue. Just as fish moving under water cannot possibly be found out either as drinking or not drinking water, so government servants employed in the government work cannot be found out (while) taking money (for themselves). (R. P. Kangle 1972, p. 91). Even in big countries like India corruption in the public sector is evidence of inefficiency much like a developing country like Belize with many inefficiency in the public sector. Corruption is present across the board when it comes to the different departments within the public sector in Belize. It is especially evident in the Customs and Excise Department.

Corruption is not the only evidence of inefficiency in the Public sector though. Although there are many forms of inefficiency the fact remains that the public sector is deem to be inefficient to a certain degree. (Habib Zafarullah, Noore Alam Siddiquee 2001) also discussed the presence of corruption along with many other factors that contribute to the aggregate inefficiency of the public sector. He said that the public sector

in Bangladesh is ridden with corruption of various dimensions and shades. Apart from bribery, rent-seeking and misappropriation of funds, the performance of public organizations is adversely affected by a host of other factors like excessive lobbying, delays in service provision, pilferage and larceny, irresponsible conduct of officials, bureaucratic intemperance, patronage and clientelism. He said that the several institutional mechanisms to combat administrative wrongdoings are rendered ineffective by a non-committed political leadership, weak accountability structures, and unproductive legislative labours. The public body for controlling corruption is itself associated with all sorts of malpractices and conducts its affair most unprofessionally.

Many countries governments are now deciding to implement information system in the varying public sector departments to help combat the inefficiency in their different governmental departments. For example (Clay G. Wescott 2001) mention that in the Asia-Pacific governments are only in the initial phases of adopting information and communications technology (ICT) to improve financial management information and reporting, streamline the delivery of government services, enhance communication with the citizenry, and serve as a catalyst for empowering citizens to interact with the government. Not only are these governments implementing information system to assist the inefficiency they are promoting e-governance which accordingly to (Clay G. Wescott 2001) is the use of information and communications technology (ICT) to promote more efficient and cost-effective government, facilitate more convenient government services, allow greater public access to information, and make government more accountable to citizens.

Even though the literature on the implementation of (MIS) in the private sector is very vast there is a gap between the literatures of the public sector. According to (Sharon L. Caudle, Wilpen L. Gorr, Kathryn E. Newcomer, 1991) the MIS Quarterly has only published five articles assessing the importance of information system. Three surveyed Society of Information Management member (Ball and Harris, 1982; Brancheau and Wetherbe, 1987; Dickson, et al., 19984), one used a sample of organization from St. Louis, Missouri, area (Hartog and Herbert, 1986) and other employees interviews conducted with top managers in 49 Irish organization (Moynihan, 1990). These studies identified key issues supporting decision making by businesses and governments agencies. Affecting profitability and effectiveness. However the surveys used in these studies are limited to the private sector. Even in recent time there is still a proportionate ratio between studies in the private sector and the public sector favouring the private sector.

As a result is safe to say that there is no question that governments are now implementing information systems into the public sector globally. For example (Vinod Kumar, Bhasker Mukerji, Irfan Butt, Ajax Persaud 2007) highlights area like Canada whose governments are adopting to information system and promoting e-governance. The study mentioned Canada has been the world's leader in e-Government maturity for the last five years. The global average for government website usage by citizens is about 30%. In Canada, this statistic is over 51%. The vast majority of Canadians visit government websites to obtain information, rather than interacting or transacting with the government.

We do question however if these information system that are being implemented are successful or add business value to the public sector departments and creates quality for the services offered to society. According to (Shaun Goldfinch 2007) a study done in New Zealand the majority of information systems (IS) developments are unsuccessful. The larger the development, the more likely it will be unsuccessful. Though the exact numbers are uncertain and depend to some extent on how success is measured, something like 20 percent to 30 percent of all developments are total failures in which projects are abandoned. Around 30 percent to 60 percent are partial failures in which there are time and cost overruns or other problems.

So in order to add to the literature in Belize we must find what are information system has been implemented in the public sector departments and evaluate the success of that those information system. For the purpose of this study we have chosen the ASYCUDA World management information system implemented by the Belize Customs & Excise department.

Pete Castillo 2016 the author of "The Belize Customs and Reform and Modernization Project – An Overview" said that ASYCUDA (Automated System for Customs Data) is software developed by UNCTAD. It was introduced to Belize in March 1994. Have been using the current version, 2.7 since 1999. It is a computerized customs management system which covers most foreign trade procedures. The system handles manifests and customs declarations, accounting procedures, and transit and suspense procedures and generates trade data that can be used for statistical and economic analysis. Belize Customs is implementing the latest version of ASYCUDA called ASYCUDA World that employs the latest innovations in Information and Communications technology (ICT). It is built on a Java platform and is therefore operating system independent. It is also database independent being able to operate on any of the major relational database systems. It utilizes a state-of-the-art security model based on cryptography, Public Key Infrastructure [PKI] and e-certificates. It is also an e-Customs system, accessible online via the Internet.

According to the ASYCUDA official website the main objective of ASYCUDA is directed at reforming the customs clearance process. It aims at speeding up customs clearance through the introduction of computerization and simplification of procedures and thus minimizing administrative costs to the business community and the economies of countries. It also aims at increasing customs revenue, which is often the major contributor to national budgets in most countries, by ensuring that all goods are declared, that duty/tax calculations are correct and that duty/exemptions, preference regimes, etc. are correctly applied and managed. Furthermore, it aims at producing reliable and timely trade and fiscal statistics to assist in the economic planning process as a by-product of the customs clearance process. An important objective of ASYCUDA projects is to implement the systems as efficiently as possible with a full transfer of know-how to national customs administrations at the lowest possible cost for countries and donors.

So after the review of the literature the researcher had remain with the question: have the ASYCUDA World proven to be successful, have it add business value to the customs and excise department and has the quality of the service offered by the customs and excise department increase as a result of the implementation of the new ASYCUDA World Information System?

3. Research Methodology

This research project tested the overall Information System (IS) qualities of ASYCUDAWorld. This Information system was selected to study its success when using the IS Success Model implemented by William H. Delone and Emphraim R. McLean in 1992. These systems' success were determined by evaluating the relationship between the six dimensions of the model focusing on information quality, system quality, service quality, usage intentions, user satisfaction and overall system benefits (Delone & McLean, 2003). However, in the case of this study the researchers have altered the traditional model given that Belize is considered a developing country on a global scale. In light of this, it can be said that Belize certainly lacks the necessary complementary assets needed to legitimately achieve IS Success. Organizations in Belize have invested extensively in numerous information systems and programs, but these systems are not being utilized to an optimal level due to the country's poor investment in complementary assets and human skill sets needed to run these information systems.

This study attempted to extend the Delone and McLean model regarding IS Success to the developing world of technology. In respect to lacking complementary assets, this research studied the altered version of the traditional model. This model takes into account the testing of available complementary assets and its reliability, efficiency and overall effectiveness. This altered model modifications include two additional dimensions; complementary technology quality and computer self-efficacy as a measurable construct. These inclusion are a key dimension in assessing overall system success in developing countries where internet connections are slow, inadequate and often unreliable. Thus, this study focused mainly on the perspective of the Customs and Excise Department, Belize City, and utilized the modified model which included the six dimensions of IS Success and the additional constructs; complimentary technology quality and computer self-efficacy as shown in Figure 1.

Table 1. Questionnaire		
Construct	Survey questions	Source
Information Quality	IQ1: The Information System provides information that is needed for my specific objectives. IQ2: The information system provides me with updated information IQ3: The information system outputs easy to understand information. IQ4: The information system in place is relevant to get the job done.	Bailey and Person (1983)
System quality	SQ1: The Information System is easy to work around. SQ2: It is an easy to use Information System SQ3: Information is provided at high speed. SQ4: There are interactive features between users and the system.	Alshibly, (20 11)
Service quality	SV1: The Information system is kept up to date by the support staff. SV2: The support staff show interest in helping when a user is stuck or does not know how to use the software. SV3: The information system support staff tell the user when the service has been performed. SV4: There is a quick response by the support staff when help is needed.	Chang et al., (2009)
User satisfaction	US1: Users bring a positive attitude towards the information system function. US2: The perceived utility about the information system is high. US3: I believe that the information system has met my expectations. US4: I am satisfied with the performance of the information system.	Seddon and Yip (1992)
Use	U1: I use the information system often. U2: My everyday objectives at work are dependent upon the use of the information system. U3: I am able to use the information system to get work done when no one is around to guide me. U4: I am capable of using the information system.	Balaban et al., (2013) Rai et al., (2002).
Perceived net benefits	NB1: The information system helps to improve my job performance. NB2: The information system helps to reduce organizational costs. NB3: The information system help the organization achieve its goals. NB4: Using the information system at work increases my overall productivity. NB5: Overall, using the information system enhances recruitment and performance.	Alshibly,(20 11); Tansley et al, (2001)
Complementary Technology Quality	CTQ1: The software on the device is (desktop computer, laptop, and mobile device) used to access the information is adequate. CTQ2: The device hardware (desktop computer, laptop, mobile device) used to access the information system is adequate. CTQ3: The device itself (desktop computer, laptop, mobile device) used to access the information system is adequate.	Teece, D. J. (1988).

Computer Self-Efficacy Measure	CSEM1: I can Complete tasks with this information system with little to no guidance. CSEM2: I can complete tasks with this information system if there was no one there to guide me. CSEM3: I can Complete tasks with this information system if I could ask someone for assistance if I ever got stuck. CSEM4: I can Complete tasks with this information system if I has used a similar one before.	Compeau, D. R., & Higgins, C. A. (1995)

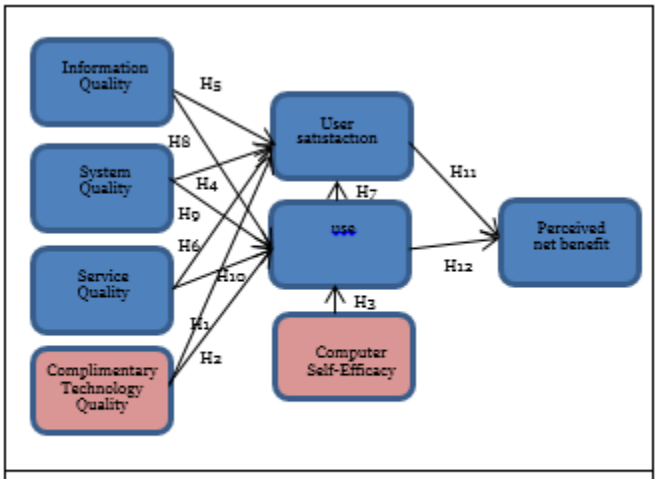


Figure 1. Modified Research Model Developing Countries

The hypothesized relationship between ASYCUDAWorld success variables are based on the theoretical and empirical work reported by DeLone and McLean (2003). Accordingly, the study hypothesized the following nine hypotheses tested:

H1. Complementary technology quality will positively impact user satisfaction.

H2. Complementary technology quality will positively impact system use.

H3. Computer self-efficacy will positively impact system use.

H4. System quality will positively impact user satisfaction.

H5. Information quality will positively impact user satisfaction.

H6. Service quality will positively impact user satisfaction.

H7. Use will positively impact user satisfaction.

H8. Information quality will positively impact use.

H9. System quality will positively impact use.

H10. Service quality will positively impact use.

H11.User satisfaction will positively impact perceived net benefit.

H12.Use will positively impact perceived net benefit.

Construct measurement

To ensure that our research information validity, measurement scales for the quantitative data collection were mainly elicited from previously verified instruments. The Bailey and Person (1983) seven item scale with some adjustments to fit the specific context of BHIS. Bailey and Pearson's instrument is the standard instrument in the IS Field, because it has widely accepted, has been tested for reliability and validity by several researchers.

Table 2. Characteristics of the respondents

Characteristics	Number	Percentage
Gender		
Males	8	40%
Females	12	60%
Age		
1 - Less Than 25	1	5%
2 - From 25 to 35	9	48%
3 - Over 35 to 45	8	42%
4 - Over 45 to 55	1	5%
5 - Older than 55	0	0%
Working Experiences		
<5 years	5	25%
5-10 years	5	25%
11-20 years	10	50%
>20 years	0	
Education Level		
PhD	5	25%
Master	5	25%
Bachelors	10	50%
Associate's Degree	0	0%
High School	0	0%

4. Data Analysis and Results

As a results of the sample size (small), hypothesis testing was not possible so the researchers analyzed the data utilizing applied research techniques.

The primary purpose of the study was to compare the usage and success of the ASYCUDAWorld information system utilized by Belize Customs and Excise Department. A thorough and in-depth questionnaire was used highlighting and emphasizing on the usage of the ASYCUDAWorld information system based on the Delone and McLean Model which were distributed by the four researchers to employees at the Belize Customs and Excise Department. The results of the issued questionnaires were displayed through the use of histograms and bar charts. To allow for effective visuals, the histograms provided a better comparison of success between the two systems using the constructs of the theoretical model.

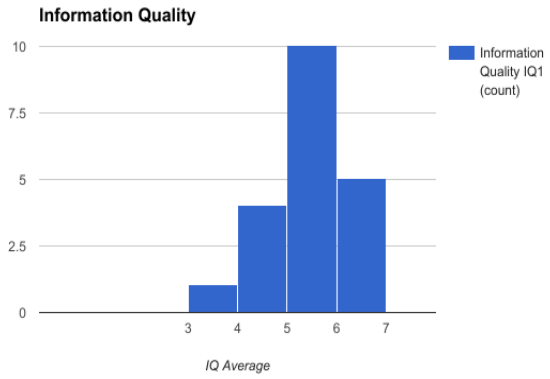


Figure 1. Average responses for Information Quality

The adjacent histogram shows the average responses of employees for the construct that measures information quality.

50% was unsure if they disagree or agreed that the information quality provided by ASYCUDAWorld was not of poor quality or poor quality. 25% somewhat Agree while 15% sum what agree and 10% agreed it was not poor.

The response shows that 50 % was unsure if they agreed or disagreed we can attributes this with the possibility that maybe the employees were not comfortable speaking of the business or were unsure.

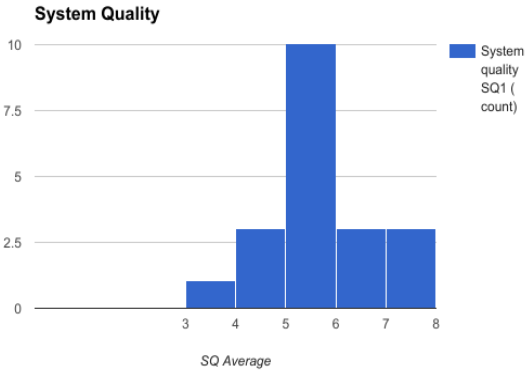


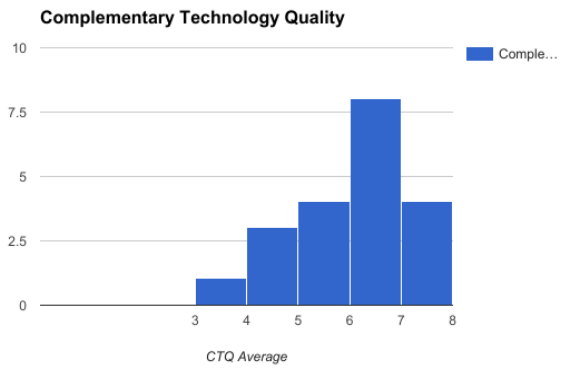
Figure 2. Average responses for System Quality

The adjacent histogram shows the average responses of employees for the construct that measures system quality.

The average agrees that ASYCUDAWorld system quality is of good standing.

50%of the response shows that the users are not fully versed with the software to get maximum information quality. 15% somewhat agreed and strongly agreed which gives and total percentage of 45%. Only 5% somewhat agree that he information quality was poor.

The response shows that 50 % was unsure if they agreed or disagreed we can attributes this with the possibility again that maybe the employees were not comfortable speaking of the business or were unsure.

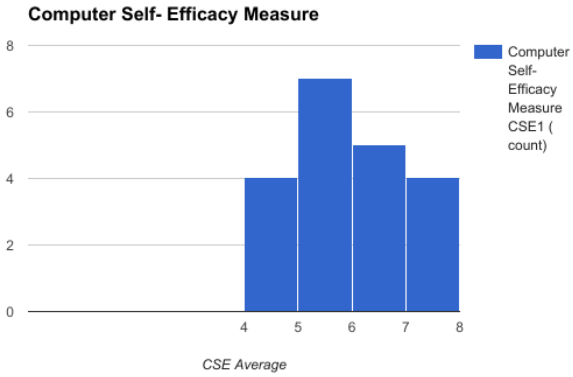


The adjacent histogram shows the average responses of soldiers for the construct that measures complementary technology.

The average response shows that 35%of respondents agreed, 20% somewhat agreed and 20% strongly agreed that the complementary technology with shows a strong arrogance with a total average of 75%. Only 10% somewhat disagreed and 15% was unsure.

We attribute this difference in opinion of the respondents to the fact that 25% the employees have easy internet access and high quality computer systems.

Figure 3. Average responses for Commentary Technology

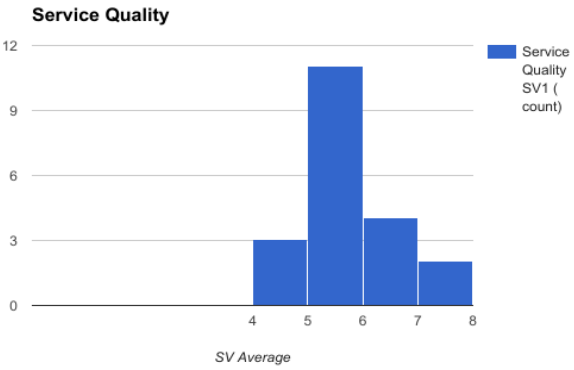


The adjacent histogram shows the average responses of employees for the construct that measures computer Self-Efficacy quality.

The average response shows that 80% of the respondents feel confident utilizing the software. 35% somewhat agree, 25% agreed and 20% strongly agreed. The remaining 20% was unsure.

We attribute this to the fact the vast majority utilizes utilises the software on a daily basis and are already comfortable using the system.

Figure 4. Average responses for Self-Efficacy



The adjacent histogram shows the average responses of employees for the construct that measures service quality.

The average response shows that 85% of the respondents favour the service quality. 55% somewhat agreed, 20% agreed and 10% strongly agreed. While only 15% persons are unsure if they favour it.

We attribute this to the fact 85% of the respondents use the software on a daily basis and have easy access to support IT staff to rectify issues.

Figure 5. Average responses for Service Quality

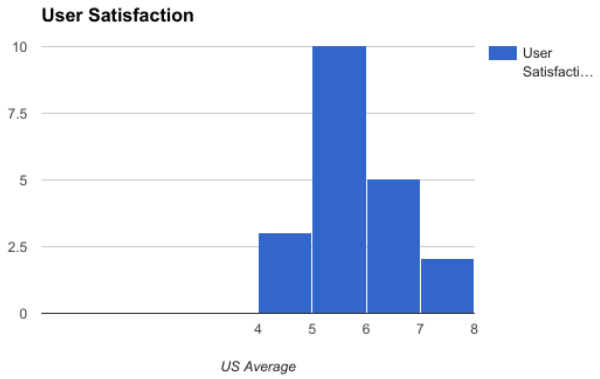


Figure 6. Average responses for User Satisfaction

The adjacent histogram shows the average responses of employees for the construct that measures user satisfaction.

The average response shows that 85% of the respondents were satisfied with the systems. 50% somewhat agreed, 25 agreed and 10% strongly agreed. While only 15% was unsure.

We attribute this satisfaction to the fact that majority of the respondents use the system on a daily basis and are comfortable using the software.

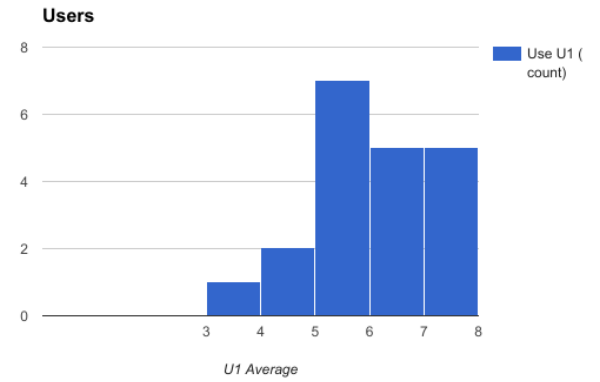


Figure 7. Average responses for User Average

The adjacent histogram shows the average responses of soldiers for the construct that measures use of ASYCUDAWorld.

The average response shows that 85% use this system to accomplish tasks. 35% somewhat agreed, 25% Agreed and 25% strongly agreed. Only 10% was unsure and 5% somewhat disagreed.

We attribute this high percentage to the fact that it is a requirement to use the systems and not for preference.

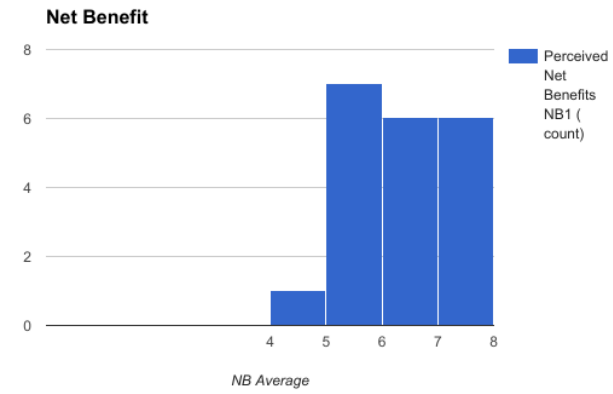


Figure 8. Average responses for Net Benefit

The adjacent histogram shows the average responses of employees for the construct that measures net benefit.

The average response shows that 95% of the respondents enjoy some net benefit from utilizing the AsycudaWorld IS in the execution of their work.

We attribute this high percentage to the fact that it is a requirement to use the systems and not preference again.

5. Conclusion

Discussion

This research has addressed the concern for measuring the success AsycudaWorld Information system. For this purpose, an AsycudaWorld Information system success measurement model was developed based on the DeLone and McLean (2003) updated information system success model, which studies a very diverse perspective of the nature of AsycudaWorld information system success. The results show that information quality, system quality, service quality, complementary technology quality, computer self-efficacy, use, user satisfaction, and perceived net benefit are valid measures of AsycudaWorld information system success. The hypothesized relationships between the eight success variables were remarkably supported.

This research provides several important implications for the Belize Customs and Excise Department AsycudaWorld information system success research and management. According to the proposed model, perceived net benefit is considered to be a closer measure to the AsycudaWorld information system success than the other seven success measures. Perceived net benefit should develop if the information of perceived quality, system quality is appropriately managed. Thus, management attention might should shift with the focus on the development of these psychological view of information quality and quality of the system and it processes.

In order to increase user perceived net benefit, the Belize Customs and Excise Department Information Technology department that run and maintain the AsycudaWorld information system could address the information quality, system quality, and complementary technology, which, in turn, will influence user system usage behaviour and satisfaction even more, and the relative perceived net benefit. In this model, the information system use was found to have a strong direct effect on perceived net benefit, indicating the importance of system use in executing duties and increasing perceived net benefit.

The findings clearly indicate that the total effects of information quality on use, user satisfaction, and perceived net benefit are substantially greater than those of complementary technology quality and service quality. Essentially the Customs and Excise Department needs continue using the hardware and the fast and reliable internet access with the goal of improving where possible in terms of hardware and internet speed to improve the quality of the AsycudaWorld information system.

Limitations and Future Research

Our research has a few limitations, this research is limited in that we used a purposive sampling of a single Department of the Belize Customs and Excise Department (the Belize City Branch) for the data collection. A random sample from a pool of the different customs and excise department that use this system would have increased the generalizability and the scope of the results.

In relation to inviting customs officers or employees of the Belize City Customs And Excise Department to participate in the survey, a representative from the Belize City, Belize Customs and Excise Department to choose a sample that was as representative of the department that utilizes the software on a daily basis. However, by leaving the survey distribution to the representative we had very little control over the sampling process. Despite these limitations, the present study provides valuable insights into the study of AsycudaWorld information system success.

Implications

Empirical evidence generated from applied research has shown that in determining success using the Delone and McLean model of IS Success, AsycudaWorld information system is favourable given that it does yield a high net benefit. In this research, the six constructs of the model along with the two additional was tested in efforts to understand system success in developing countries. Studies from this research have

shown that with the insertion of the seventh and eight construct it provided interesting results that developing countries that are unable to effectively receive optimal success from the integration of information systems. The insertion of complementary technology quality was significant because it is the construct that requires a lot attention. In an effort to manage any information system, a strong relationship must exists between the people who uses the system, the technology used to run and access the system and the organization in which these systems are implemented.

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