A STUDY ON THE EFFECT OF ONLINE SYSTEM OF SRI LANKA CUSTOMS ON SHIPPING LINES' SATISFACTION

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Abstract- Sri Lanka Customs performs a vital role in the country. The functions performed by them include collection of government revenue as customs duty and other levy on behalf of a number of other government authorities and further the securing of national airports/seaports in relation to the export and import of both commercial as well as personal goods. With the introduction of the new online system, due taxes for the import and exports are collected by way of processing Customs declarations submitted to the ASYCUDA system. The purpose of this study was to identify the effect of the new online system on customer satisfaction. Primary data was collected via a questionnaire survey. The sample size used was 30 shipping lines and agents. The purposive sampling method was used to select the sample to include the larger shipping lines. The questionnaire consisted of fifteen questions covering five main factors. The SERVQUAL model was used to measure service quality. The questionnaire included a likert scale consisting of five options to obtain the responses. Respondents for the questionnaire were employees who were using the online system. During the analysis the KMO and Bartlett Test were used for the evaluation of reliability and SPSS statistical software was used to conduct the analysis. The correlation was analyzed using Kendall's tau_b and Spearman's rho tests. As per the findings the online system's reliability, responsiveness and tangibility have a positive and strong effect on satisfaction of shipping lines, while assurance and empathy have a negative effect on shipping line's satisfaction. Therefore as recommendations, the features relevant to assurance and empathy should be enhanced in order to boost the customer satisfaction of the online Customs system.

Keywords- Online Customs system, Shipping lines, Customer satisfaction

I. INTRODUCTION

Sri Lanka Customs which celebrated its 200 years in 2009, is one of the oldest Customs administrations in the world. Sri Lanka Customs is coming under the wing of the Ministry of Finance. Its functions include prevention of revenue leakages and other frauds, collection of revenue for different purposes, facilitation of lawful trade, collection of import/export data to provide necessary statistics, proper coordination and cooperation with additional government departments and stakeholders with respect to imports and exports.

A. Background of the study

The term 'trade facilitation' is frequently used in the perspective of trying to progress on smoothing the interface between government bodies and importers/exporters at state borders. It is the process of simplification of the related procedures, standardization of work and harmonization of procedures and the related information flows which are required for the smooth and efficient movement of goods from sellers to buyers and to fulfill the necessary payments. In view of the fact that trade facilitation and security of the international trade supply chain are key elements in the rapidly growing global trade, there are several international organizations involved in regulating and implementing trade facilitation

and security-related provisions. The United Nations Conference on Trade and Development has designed an Automated System for Customs Data (ASYCUDA) which is a computerized system designed to administer a country's customs.

Sri Lanka Customs comes under the Customs Ordinance No. 17 of 1869, to which 51 amendments have been made to date. It works mainly through the powers vested in it, under the Customs Ordinance, at the same time it utilizes powers given through several other related enactments. The functions performed by them include collection of government revenue as customs duty and other levy on behalf of a number of other government bodies and further the securing of national airports/seaports in relation to the export and import of both commercial as well as personal goods.

With the introduction of the new online system, due taxes for the import and exports are collected by way of processing Customs declarations submitted to the ASYCUDA system. When processing some of these Customs declarations Sri Lanka Customs needs approvals, permits and licences of over 43 government institutions and departments. At present most of these licenses, permits and approvals are paper based. That is the importer/exporter attaches a hard copy of the approvals to the Customs declarations. At present there is no way to authenticate the accuracy of these documents real time and cost effectively. Therefore, it is of great national importance to have a mechanism to obtain these approvals online, securely and effectively.

Sri Lanka Customs has identified a way to address this issue by way of connecting these government institutions to the ASYCUDA system to obtain the relevant approvals, licences permit etcetera on line and real time.

The intention of the system is to perform as a regulatory single window where all the regulatory agencies are connected through the ASYCUDA system. When a Customs declaration is submitted the system checks as to whether an approval, permit or a licence is required to process the same. If required it then checks from which government agency the approval should be obtained and refers the relevant Customs declaration online to the relevant government agency. The officers of the relevant government agency either approves/rejects or calls for further clarifications from the importer/exporter.

Customs intends to connect all these regulatory agencies to obtain their approvals online. Currently out of the related 43-odd government organizations, Sri Lanka Tea Board and the Food controller are connected.

The research has studied the effect of this online system on customer satisfaction.

B. Problem statement

Sri Lanka Customs account for nearly 55% of the national tax revenue. Prior to 1993 the revenue collection was totally manual (Sri Lanka Customs, 2014). This included the submission of the manifest. The manifest contains details of all the goods in a ship arriving at a country. During this period the shipping lines and the freight forwarders had to undergo severe difficulties because submission of the manifests was paper based. Over 16 copies of the manifest had to be submitted to various branches of the Customs previously. These included the preventive division, long room, bonding division, "D" branch etcetera. The agents had to personally visit the relevant divisions and branches and deliver the hard copy of the manifest. This involved a huge cost to the shipping lines and to the freight forwarders. Next the declarants had to key in the Customs declaration at their office and submit the same to the Customs. This was again a time-consuming process.

When the duty payment came in the importers/exporters had to go to the banks and obtain pay orders or checks, come back to Customs and make the payments. All these manual processes were time consuming and was costing the trade a lot of money. Subsequently certain parts of revenue collection was automated. However, this was not an online web-based system and did not provide for online submission of the customs declarations through which the state revenue is collected. With the introduction of the new online system, due taxes for the import and exports are collected by way of processing customs declarations submitted to the ASYCUDA system.

Therefore the objective of the study was to identify the effect of the online system of Sri Lanka Customs on shipping line's satisfaction. As it is a service that is provided by the Custom's online system, the service quality parameters were used to measure the effect of the system on customer satisfaction.

II. LITERATURE REVIEW

Customs service's play an important role in the development of a country's exports/imports of goods and services.

Customer satisfaction can be defined as "It is a judgment that a product or service feature, or the product or service itself, provided (or is providing) a pleasurable level of consumption-related fulfillment, including levels of under- or over fulfillment" (Oliver, 1997). In current context, customer satisfaction is a very important aspect in the organization and it plays a major role in the future sustainability and prosperity of the organization.

"Customer satisfaction measurement is now considered as the most reliable feedback, considering that it provides an effective, direct, meaningful and objective way about the customers' preferences and expectations" (Grigoroudis and Siskos, 2010). Dissatisfaction means the failure of meeting customer expectations and needs (Zeithaml, Parasuraman and Berry, 1990). The main goal of every organization is satisfying customers with their products.

Customer satisfaction is based on service quality. There by as an instrument to measure service quality SERVQUAL method can be used (Zeithaml, Parasuraman and Berry, 1990)

It is based on five major dimensions: tangibility, responsiveness, reliability, empathy and assurance. Tangibility means the appearance where the attractiveness of facilities, equipment and materials of the company. Reliability means the delivery of the service in a careful manner understanding everything without any mistakes. Responsiveness means the service personal provides a customer response quite actively to his//her request. Assurance is evidence of importance of trust and confidence that employees give to client by convincing him/her of their professional skill and behaving politely. It gives security to the customer. Empathy is the ability of understanding the need of each person and providing an answer at the best level towards his/her request.

Three main steps can be used to ensure customer satisfaction in the process which are understanding of the customer needs, obtaining the customers' feedback for a particular product/service and implementing an ongoing program to ensure customer contentment. It is the key to success of a service firm.

Satisfaction is the state of mind attained by an individual who has experienced a performance/outcome which was supposed to fulfill his or her expectation or need. Expectations are formed based on experience, with the same or similar situations, statements by friend or other associates and statements by the organization (Kotler, 1997). Satisfaction is an overall psychological state that appraises a company, its environment and the product or service provided to a person. Satisfaction is an opinion that a product or service feature or the product/service itself, provided a delightful level of consumption related fulfillment, a satisfying level or an under fulfillment (Oliver, 1997). Satisfaction also can be an individual's feeling of bliss or discontent which results with a company's product's perceived performance or outcome with their expectation (Kotler and Keller, 2011).

Equipping organizations with the modern technologies and information systems is the main method to facilitate trade. The application of information and communication technology plays a significant role for EDI (electronic data interchange) in the form of electronic customs systems. Observing this situation, many nations have taken the initiative to implement an electronic customs administration, experiencing the benefits and positive effects of the operation (Shirsavar and Shirinpour, 2016). In Iran, numerous steps have been taken to integrate modern information and communications technologies to their customs system. By strengthening trade facilitation of a country the competitiveness of cross-border trading can be improved. This becomes beneficial to the country by reducing the cost of exports and reduction of lead times. One of the strategies to improve the export competitiveness of the nation is to develop the trade facilitation through the utilization of modern systems such as information and communication technology which supports the electronic customs system.

Shirsavar & Shirinpour (2016), discusses the benefits of using technology, including the remote identification of merchandises using radio waves in the electronic customs administration (RFID). The technology has to be adopted in customs operations as well as in activities of individuals and related establishments involved in import-export process and transit of goods. As a result

of this, an increased efficiency of customs procedures and the faster and safer security of exchanges and transactions can be achieved.

Service is "any intangible act or performance that one party offers to another that does not result in the ownership of anything (Kotler and Keller, 2011)." Consumers seek quality through product or service (Soloman, Russell-Bennet and Previte, 2009). Therefore, product or service should have the ability to deliver satisfaction with characteristics and features of the product or services. Service quality can be further defined as "the differences between customer expectations and perceptions of service" (Parasuraman, Zeithaml and Malhotra, 1988). Service improvements and quality of the service drives customer satisfaction.

Service quality has 10 important aspects that play an important role in its estimation made by consumer. These dimensions are reliability, responsiveness, competence, courtesy, credibility, security, access, communication and understanding the customer but only five dimensions under the famous SERVQUAL technique. (Zeithaml, Parasuraman and Berry, 1990)

Most commonly acknowledged measurement tool ever developed include 10 dimensions and later reduced to 5 dimensions. SERVQUAL method is using to conduct customer satisfaction surveys service quality is measured (Zeithaml, Parasuraman and Berry, 1990).

Tangibility: physical facilities and equipment available, appearance of staff, personal framework for employees and normative materials.

Reliability: ability to perform promised service dependently and accurately

Responsiveness: helping customers and providing a prompt service safe and efficient manner

Assurance: ability of employees to convey trust and confidence, knowledge and courtesy of employees

Empathy: providing a caring, individualized attention provided to customers, understanding accessibility, sensitivity, and effort in understanding the needs of users.

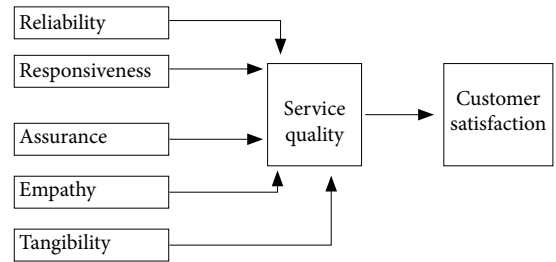## III. METHODOLOGY

A. Conceptual Framework

Figure 1. Conceptual framework

As it is a service that is provided by the Custom's online system, the service quality parameters were used to measure the effect of the system on customer satisfaction as depicted by Figure 1.

Table 1. Operationalization table

Variable	Indicators	Measurement
Reliability	Capability to perform promised service in dependently Capability to perform promised service accurately	Five-point Likert Scale
Responsiveness	Helping customers in an efficient manner Providing a prompt service in a safe and efficient manner	Five-point Likert Scale
Assurance	Ability of system to convey trust and confidence	Five-point Likert Scale
Empathy	Providing a caring, individualized attention provided to customers Understanding accessibility Effort put in understanding the needs of users	Five-point Likert Scale
Tangibility	Physical facilities and equipment available (user freindly) Framework for employees and normative materials	Five point Likert Scale

For the data collection purpose, a questionnaire was developed out of the operationalizing of the variables identified as depicted in Table 1. No mediating variables were used as the previous study in Iran had not utilized any mediating variables. The primary data collection was done from 30 shipping lines. The method of purposive sampling which is a non-probability sampling method was used to select the sample to include the larger shipping lines. Employees who are involved with the online Customs system were selected to administer the questionnaire. The employees were selected by the organizations, as employees who are using the customs system were needed to administer the questionnaire. Therefore the main method of data collection of the study was the questionnaire method. The analysis methods used for the data collected were mainly the Kendall's tau b test and Spearman's rho.

IV. RESULTS

A. Internal Consistency of data

The alpha coefficient was 0.631, suggesting that the items have an acceptable level of internal consistency.

B. Model Summary

Table 2. The Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.822a	.675	.607	.25494

a. Predictors: (Constant), empathy, responsiveness, reliability, empathy, assurance

As depicted in Table 2 the R squared value is 0.675, which depicts that the variables are able to explain sixty seven percent of the variance of the model.

Table 3. ANOVAa

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	3.240	5	.648	9.971	.000b
	Residual	1.560	24	.065		
	Total	4.800	29			

a. Dependent Variable: shipping lines Satisfaction

b. Independent Variables: (constants), reliability, responsiveness, assurance, empathy, tangibility

According to Table 3, the model is significant as the test statistic is less than 0.05.

Table 4. Results of KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.719
Bartlett's Test of Sphericity	Approx. Chi-Square	63.330
	Df	15
	Sig.	.000

According to Table 4, the KMO test statistic was 0.719 which depicts the sampling adequacy of the sample used.

Table 5. Correlations (Shipping lines satisfaction and the reliability of system)

			Shipping line satisfaction	Reliability
Kendall's tau_b	Shipping line satisfaction	Correlation Coefficient	1.000	.494**
		Significance (2-tailed)	.	.003
		N	30	30
	Reliability	Correlation Coefficient	.494**	1.000
		Significance (2-tailed)	.003	.
		N	30	30
Spearman's rho	Shipping line satisfaction	Correlation Coefficient	1.000	.548**
		Significance (2-tailed)	.	.002
		N	30	30
	Reliability	Correlation Coefficient	.548**	1.000
		Significance (2-tailed)	.002	.
		N	30	30

**. Correlation is significant at the 0.01 level (2-tailed).

As per Table 5 Kendall's tau b value (0.494) and Spearman's rho (0.548) value both indicate that reliability of the ASYCUDA online system and the satisfaction of shipping lines are significantly (at 0.01 level) and positively related. Therefore the shipping lines are satisfied with the reliability of this system.

Table 6. Correlations (Shipping lines satisfaction and the responsiveness of system)

			Shipping line satisfaction	Responsiveness
Kendall's tau_b	Shipping line satisfaction	Correlation Coefficient	1.000	.491**
		Significance (2-tailed)	.	.005
		N	30	30
	Responsiveness	Correlation Coefficient	.491**	1.000
		Significance (2-tailed)	.005	.
		N	30	30
Spearman's rho	Shipping line satisfaction	Correlation Coefficient	1.000	.526**
		Significance (2-tailed)	.	.003
		N	30	30
	Responsiveness	Correlation Coefficient	.526**	1.000
		Significance (2-tailed)	.003	.
		N	30	30

**. Correlation is significant at the 0.01 level (2-tailed).

As per Table 6 Kendall's tau b value (0.491) and Spearman's rho (0.526) value both indicate that responsiveness of the ASYCUDA online system and the satisfaction of shipping lines are significantly (at 0.01 level) and positively related. Therefore the shipping lines are satisfied with the responsiveness of this system.

Table 7. Correlations (Shipping lines satisfaction and the assurance of system)

			Shipping line satisfaction	Assurance
Kendall's tau_b	Shipping line satisfaction	Correlation Coefficient	1.000	-.067
		Significance (2-tailed)	.	.699
		N	30	30
	Assurance	Correlation Coefficient	-.067	1.000
		Significance (2-tailed)	.699	.
		N	30	30
Spearman's rho	Shipping line satisfaction	Correlation Coefficient	1.000	-.072
		Significance (2-tailed)	.	.706
		N	30	30
	Assurance	Correlation Coefficient	-.072	1.000
		Significance (2-tailed)	.706	.
		N	30	30

As per Table 7 Kendall's tau b value (-0.067) and Spearman's rho (-0.072) value both indicate that assurance of the ASYCUDA online system and the satisfaction of shipping lines are not significantly (at 0.01 level) related. Also there is a negative relationship between these two variables. Therefore the shipping lines are not satisfied with the assurance of this system.

Table 8. Correlations (Shipping lines satisfaction and the empathy of system)

			Shipping line satisfaction	Empathy
Kendall's tau_b	Shipping line satisfaction	Correlation Coefficient	1.000	-.226
		Significance (2-tailed)	.	.207
		N	30	30
	Empathy	Correlation Coefficient	-.226	1.000
		Significance (2-tailed)	.207	.
		N	30	30
Spearman's rho	Shipping line satisfaction	Correlation Coefficient	1.000	-.234
		Significance (2-tailed)	.	.213
		N	30	30
	Empathy	Correlation Coefficient	-.234	1.000
		Significance (2-tailed)	.213	.
		N	30	30

**. Correlation is significant at the 0.01 level (2-tailed).

As per Table 8 Kendall's tau b value (-0.226) and Spearman's rho (-0.234) value both indicate that empathy of the ASYCUDA online system and the satisfaction of shipping lines are not significantly (at 0.01 level) related. Also there is a negative relationship between these two variables. Therefore the shipping lines are not satisfied with the empathy of this system.

Table 9. Correlations (Shipping lines satisfaction and the tangibility of system)

			Shipping line satisfaction	Tangibility
Kendall's tau_b	Shipping line satisfaction	Correlation Coefficient Significance (2-tailed) N	1.000 . 30	.738** .000 30
	Tangibility	Correlation Coefficient Significance (2-tailed) N	.738** .000 30	1.000 . 30
Spearman's rho	Shipping line satisfaction	Correlation Coefficient Significance (2-tailed) N	1.000 . 30	.772** .000 30
	Tangibility	Correlation Coefficient Significance (2-tailed) N	.772** .000 30	1.000 . 30

As per Table 9 Kendall's tau b value (0.738) and Spearman's rho (0.772) value both indicate that tangibility of the ASYCUDA online system and the satisfaction of shipping lines are highly significant (at 0.01 level) and positively related. Therefore the shipping lines are highly satisfied with the tangibility of this system.

V. DISCUSSION AND CONCLUSION

This study was conducted to analyze and identify the effect of the online system of Sri Lanka Customs on shipping line's satisfaction. As the ASYCUDA online system is providing a service, the service quality parameters: responsiveness, reliability, assurance, tangibility and empathy were used as the independent variables and the shipping lines' satisfaction was the dependent variable. The data analysis was done using both Kendall's tau b test and Spearman's rho test. According to the findings reliability, responsiveness and tangibility have a positive and strong effect on satisfaction of shipping lines, while assurance and empathy have a negative effect on shipping line's satisfaction. Therefore it can be recommended that the features of the online system which will enhance the assurance and the empathy aspects need to be improved. This will help to improve the customer satisfaction of the new online Customs system. As further research it can be recommended to study the cost impact (potential cost reduction) of using the online Customs system on shipping lines, shippers and consignees.

VI. ACKNOWLEDGEMENT

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